U.S. Fish & Wildlife Service Summer/Fall 2007

Fish & Wildlife *News*

Special Issue
children & nature

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Editor's note: Connecting children with nature is a theme that clearly resonates with Service employees. We received about 100 submissions for this special issue from all regions and nearly every Service program. To accommodate the high volume of stories, we have added a regular section called **Around the Service** *that highlights events, programs and activities in all Service regions. Stories that did not make it into the print edition eventually will be included in an online version of* Fish & Wildlife News, *which is currently under development.*

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On the cover: *Two children explore the woods near the National Conservation Training Center in West Virginia.*

STEVE HILLEBRAND / USFWS

Borrowing From Our Children

Growing up in the hills of Harlan County, Kentucky, I never thought about the importance of connecting with nature; it was as much a part of my life as breathing. If I wasn't up in the mountains chasing squirrels, I was down on the Cumberland River trying to fish and run trot lines or making boats out of old car tops. Even though we didn't have a lot of money, I always felt rich.

For many kids today, however, exploring nature is fast becoming a thing of the past. Time in the woods has been replaced by time in front of a computer or television screen; unstructured play has been replaced by organized events run by adults; the art of daydreaming has been replaced by a non-stop schedule. Author Richard Louv, who writes about this in his book *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder*, believes one of the biggest problems is fear: Parents are terrified of "stranger danger," and many view the outdoors as more of a threat than a sanctuary.

The result is a younger generation that is less active and less interested in spending time outside, which can lead to a host of physical and emotional problems. And you can bet kids who prefer virtual reality to natural reality are going to have a tough time understanding why they should care about conservation.

Director Hall with youngsters during a break at the National Dialogue on Children and Nature at the National Conservation Training Center in September 2006.

TODD HARLESS / USFWS

So what can we do?

The Service has identified connecting people with nature as one of its six highest priorities. We have formed a Children and Nature Working Group—including representatives from every region and program—to identify ways to reach out to communities and build awareness that "nature play" is good for both children and adults.

This special edition of *Fish & Wildlife News* provides a glimpse of what Service employees from coast to coast are already doing to reconnect children with nature. From the Don Edwards San Francisco Bay National Wildlife Refuge, where youngsters sample brine shrimp in the salt ponds or investigate bird and plant life with their parents, to the Chesapeake Bay Field Office, where students create schoolyard habitats outside their classroom door, our land base and our people are helping folks of every age to get outdoors. But we can always do more. We should look for opportunities to connect children and families to nature as we go about our daily work and help them share in our conservation mission.

Connecting people with nature should not be just another box to check off on a performance plan; it should be something we want to do, something that is a part of us. Sometimes when I'm bass fishing on a lake and the sun is just breaking over the horizon and the birds begin to fly low across the water, I lay down my rod and realize I didn't come here to catch fish; I came for the healing power of nature and to feel better as a human being. I know many of you have had similar experiences and have a strong desire to help people—especially youngsters—rediscover what Rachel Carson called a "sense of wonder" for the outdoors. Now is the time for all of us to act on that desire.

John James Audubon once said, "A true conservationist is a man who knows that the world is not given by his fathers but borrowed from his children." It is time for us to pay back that loan and share the riches of nature with tomorrow's caretakers.

To learn more about the Service's children and nature initiative, visit <www.fws.gov/children>. □

No Child Left Inside

By Richard Louv

Leveraging its expertise, the U.S. Fish and Wildlife Service is already a leader in the growing public movement to leave no child inside.

The future of children and conservation is at stake, and this organization takes the outcome seriously.

Studies show that most conservation leaders credit their commitment to the environment to two sources: many hours spent outdoors, when they were children, "in a keenly remembered wild or semi-wild place in childhood or adolescence, and an adult who taught respect for nature," according to University of Colorado environmental psychologist Louise Chawla. I wonder how many of you reading this have a personal story confirming her statement.

The famous biologist E.O. Wilson addressed this in his memoir, *Naturalist*: "Most children have a bug period, and I never outgrew mine. Hands-on experience at the critical time, not systematic knowledge, is what counts in the making of a naturalist."

Edmund Morris' description of the boyhood years of the presidential patron of conservation, Theodore Roosevelt, suggests a similar genesis:

"Teedie's interest in all 'curiosities and living things' became something of a trial to his elders. Meeting Mrs. Hamilton Fish on a streetcar, he absentmindedly lifted his hat, whereupon several frogs leaped out of it." A family maid protested the boy's predilections: "How can I do the laundry with a snapping turtle tied to the legs of the sink?"

We may owe the existence of our protected national wild lands to that turtle.

Unfortunately, today we see diminishing sales of fishing and hunting licenses and a decline in attendance at many of our national parks. If the gap between children and nature continues to widen, where will the future conservationists come from?

How will future natural scientists and nature poets develop? What will happen to the political constituency for our fish and wildlife, streams and rivers, parks and refuges?

The U.S. Fish and Wildlife Service offers wonderful opportunities for fishing, hunting, wildlife photography and other outdoor experiences. But the Service Directorate is determined to do more—to create, in essence, a new national backyard.

Here are possibilities to consider:

Wildlife refuges close to urban area areas should be expanded to provide kids with the hands-dirty, feet-wet experiences that no classroom or digitally simulated nature provides.

The Youth Conservation Corps should be expanded. Conservation agencies should reach even deeper into inner-city schools and neighborhoods to offer these youngsters substantial and repeating experiences in nature. These agencies could identify the kids with nature talents, and then encourage and prepare them for careers in conservation and the natural sciences.

As a tribute to Rachel Carson, the National Wildlife Refuge System could designate certain areas as Sense of Wonder Zones—special, safe places that would encourage children to build tree forts and collect (and release) bugs and turtles just as E.O. and Teedie did.

This is not to suggest that kids be allowed to damage protected natural areas. But children cannot love what they can never touch. As a matter of policy, the conservation services should view the child-in-nature as an endangered species, an indicator species of the future—because if the young are not bonding with nature now, who will care about the refuges in the future?

Evidence suggests that children and adults benefit so much from contact with nature that conservation "can now be viewed as a public health strategy," says Howard Frumkin, Director of the National Center for Environmental Health, Centers for Disease Control and Prevention.

Think about that for a moment. This is a powerful argument, one that the U.S. Fish and Wildlife Service is well positioned to make, and by so doing will improve the health of children and the health of the earth. □

Richard Louv is the author of Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder *and chairman of the Children & Nature Network <www.cnaturenet.org>.*

Service Expands Wildlife Forensics Lab

Since 1988, the U.S. Fish and Wildlife Service's Clark R. Bavin National Fish and Wildlife Forensics Laboratory in Ashland, Oregon, has helped solve wildlife crimes around the world, resulting in convictions of caviar and ivory smugglers, poachers of rare animals and dealers of forbidden "medicinal cures." In the process, the lab's scientists have developed many of the advances in the field of wildlife forensics.

But there were things the lab couldn't do, such as accepting carcasses and animal parts from overseas and conducting toxicology work that involved handling hazardous materials such as poisons, pesticides, blood pathogens and other substances that can carry diseases.

Now, thanks to a new $15 million addition, that will change. The world's most comprehensive wildlife forensics lab will truly be able to serve the world.

The 17,000 square-foot addition includes a Biological Containment Area that meets Department of Agriculture requirements for containment of potentially bio-hazardous materials entering the United States; an expanded state-of-the-art genetics lab; a modern necropsy unit; new offices and meeting rooms; and an odor-free "bug room," where the lab's domestic beetle collection chews meat off bones so scientists have pristine skeletons to analyze.

"The expansion will really enhance our ability to engage with the national and international wildlife forensics communities," said Ken Goddard, director of the lab, which is named after a longtime director of the Service's Law Enforcement Program. "We simply didn't have the proper facility where we could keep diseases contained so we had to refuse some cases."

The addition will be dedicated on August 16, and the lab and new facilities will be open for public tours sometime in the spring.

"The forensics lab is essential to our work in enforcing wildlife laws and protecting resources in this country and around the world," said Service Director H. Dale Hall. "The lab helps our special agents and wildlife inspectors develop the evidence they need to bring charges and obtain convictions."

Besides aiding the work of Service law enforcement officers, the lab, with a staff of 35 and a 2007 budget of $3.5 million, provides forensic support to all 50 state fish and wildlife agencies. By treaty, it is the official crime lab of the 172 signatory countries of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Wildlife Subgroup of Interpol.

With global illegal trade in wildlife and related products estimated at billions of dollars each year, the lab has no shortage of work.

DNA analysis done by the lab's scientists led to the conviction of U.S. Caviar and Caviar, Ltd., in 2001, resulting in a $10.4 million fine — the most ever in a wildlife trafficking case. In 2000, work done at the lab led to convictions for the illegal sale of smuggled shahtoosh shawls made from the highly endangered Tibetan antelope. More recently, genetics work by lab scientists led to the 2006 conviction of a Portland, Oregon, man who admitted selling shavings from the horn of a black rhinoceros, one of Africa's most endangered species.

Authorities in Israel want the lab to help them find out who has been killing wild gazelles but Goddard said they had to decline because of the lack of a containment lab. The new Bio-Hazard III facility will change that.

Among the many discoveries by the lab's scientists is a means of distinguishing non-fossilized ancient mammoth and mastodon elephant ivory from modern African and Asian elephant ivory, utilizing the simplest lab instrument known: a protractor. After discovering that each species has its own hemoglobin molecules, lab scientists developed a species identification technique that takes 15 minutes instead of up to three days.

The lab's scientists are starting research on a means of determining where an animal is from by identifying the stable isotopes in its body. This technique will enable the lab to determine the origin of an animal or animal product, thus confirming or contradicting the information on an import/export permit.

The new addition also features a forensics garden designed to educate the public about wildlife forensics and provide a protective buffer for the lab. This scientific garden, one of only four or five in the world (including the one in France where Leonardo daVinci is buried) was designed by 14 graduate students from the University of Oregon's Landscape Architecture School. It will be planted this fall with native plants.

"A walkway will take visitors through the three-dimensional garden showing the connection of victim, suspect and crime scene and leading to a solution," Goddard said. "This will be the only one of its kind." □

Joan Jewett, External Affairs, Portland, Oregon

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Clark R. Bavin National Fish and Wildlife Forensics Laboratory in Ashland, Oregon.

Hot Topic

The 95-degree heat at the Service's National Conservation Training Center in West Virginia provided a strange setting for a meeting to discuss international polar bear conservation. Representatives from the five "range states" (those nations that host populations of polar bears; the U.S., Canada, Norway, Greenland, and Russia), most of whom were more accustomed to northerly climates, soldiered on through the heat with good humor. More than one, however, was heard to compare the beautiful Shepherdstown outdoors to the inside of a sauna.

The delegates were gathered at NCTC to discuss the management and conservation of polar bears across the Arctic region. The United States delegation, lead by Director H. Dale Hall (and including representation from Service, USGS, the Department of State, the Alaska Nanuuq Commission, and the State of Alaska) was joined by similar groups representing the other four range states.

The attendees focused their discussions on such pivotal issues as sport harvest, subsistence harvest, import/export of polar bear parts and products, polar bear research and monitoring, and bear-human interactions. Although not intended to develop or change policy, the meeting was intended to serve as a starting point, and to initiate information exchanges leading to enhanced polar bear conservation in all of these Arctic nations. Reports presented by countries during the meeting are available on the Fish and Wildlife Service Web site, at <www.fws.gov/international/animals/polarbears>.

SUSANNE MILLER / USFWS

Polar bear female with young.

Concerns about the status of the world's polar bear populations, driven by such actions as the International Union for the Conservation of Nature (IUCN) Polar Bear Specialist's Group's 2005 decision to change the species' conservation status from "Low Risk" to "Vulnerable" and the Service's January 2007 proposal to list the polar bear worldwide as "threatened" under the ESA, have increased in recent years in the face of observed and predicted changes in the extent and seasonal duration of sea ice. These and other concerns stem from the impacts of changing world climate patterns, which are especially visible in the arctic regions.

The five nations participating in the meeting are also signatories to the landmark 1973 Agreement for the Conservation of Polar Bears. That agreement (which the IUCN's Polar Bear Specialist Group helped champion) called for the member nations to coordinate research efforts, share information, cooperate on the management of migrating polar bear populations, and continue to consult with one another for the purpose of providing increased protection for the world's populations of this emblematic marine mammal.

In the spirit of the agreement, Hall hopes this will be the first of a series of annual meetings, either by teleconference or face-to face, the latter to rotate among the range-state nations. Such gatherings would bring together representatives who serve at the directorate level of their countries' conservation agencies, and provide a companion structure to the IUCN Polar Bear Specialist Group, which is a group of scientists that meets every three to five years. The new series of range-state directorate-level meetings would serve as an international forum able to take the findings and recommendations of the Specialist Group's biologists and translate them into coordinated actions for the benefit of polar bears worldwide.

"Each of the countries shares the goal of ensuring healthy polar bear populations for future generations. This meeting enabled experts and policymakers to come together and share ideas and I'm extremely pleased at the progress we made," Hall said. □

Bruce Woods, Media Relations Chief, Anchorage, Alaska

Delegates from the five polar-bear "range states" gathered at NCTC in June to discuss cooperation in polar-bear conservation.

BRUCE WOODS / USFWS

Okefenokee NWR heals from wildfires

As of mid September, remnants of wildfires that consumed about 85 percent of the 403,000-acre Okefenokee National Wildlife Refuge continued to smolder. Refuge Ranger Shawn Gillette said while no active flames are present, some hot spots exist in the thick layers of peat moss, and it will take at least a two-foot rise in the water table to extinguish them. Because the hot spots are contained in an isolated area, Gillette said most of the world-famous wildlife refuge has reopened and visitors are slowly returning.

"Visitation is starting to increase," he said, adding that visitors are seeing more wildlife than normal because the fires have removed the thick underbrush, and animals such as black bear, bobcat, and deer can now be better observed.

The Big Turnaround Complex of wildfires spread into the refuge's native longleaf pine habitat, which supports many endangered and threatened species. Despite the fire, Gillette said the majority of the forested upland resources were not significantly damaged because of the aggressive and successful prescribed fire management program used by the refuge to promote this ecosystem.

Decades of experience have demonstrated that wildfire cannot be fought successfully inside the Okefenokee Swamp. The swamp's sheer size and its mosaic of habitat types render traditional ground suppression efforts impractical. Incident managers typically have adopted a confine-and-contain strategy on the refuge using a combination of ground and aerial suppression tactics to keep fire from spreading outside the swamp.

One of the endangered species most at risk from the fire was the Red-cockaded woodpecker, which nests in upland areas. There was concern the fires might have damaged or destroyed colonies of cavity trees used by the birds; however, Refuge biologists Dean Easton and Sara Aicher inspected the colony sites and discovered no evidence of red-cockaded woodpecker mortality. In fact, they found ample evidence of post-fire woodpecker activity. "We discovered that some of the birds re-nested after the fire." Easton said. "These are hardy woodpeckers, which gives us hope for their continued survival."

The largest fire in refuge history will benefit the swamp for decades to come, Gillette said.

"Fire enhances the ecosystem and is a primary force of nature that sustains the diversity and richness of a wide variety of plant and animal species," he said. "Whether it is fast moving or slow and creeping, fire in one form or another makes the Okefenokee a world-class resource and a fascinating unit of the National Wildlife Refuge System." □

Shawn Gillette, Refuge Ranger, Okefenokee National Wildlife Refuge, Folkston, Georgia

SHAWN GILLETTE / USFWS

Biologist Aicher monitors longleaf pine habitat at the refuge.

Okefenokee Swamp Featured on New Postage Stamp

The most recent addition to the Scenic American Landscapes postage stamp series featuring Okefenokee Swamp was unveiled June 1 at the NAPEX 2007 stamp exhibition in Northern Virginia.

This stamp depicts the still water, cypress trees and yellow cow-lilies of the Okefenokee Swamp in southeastern Georgia and northeast Florida, an image that contrasted sharply with the wildfires that raged this summer on the Okefenokee National Wildlife Refuge. Established in 1937, the refuge protects 402,000 acres of the 438,000 swamp.

The photograph on the stamp was taken by José Azel. This new $.69 First Class Mail International stamp can be used for postage for letters between the U.S. and Mexico or Canada.

Through its support of the Federal and Junior Duck Stamp programs, the U.S. Postal Service is an important conservation partner of the U.S. Fish and Wildlife Service. Sales of the Federal Duck Stamp have helped protect more than 5.2 million acres of wetlands for national wildlife refuges.

The Postal Service is also an active partner in the Junior Duck Stamp program. Each year, more than 30,000 schoolchildren from kindergarten through twelfth grade participate in the Junior Duck Stamp program. Through this unique program, kids learn not just about ducks—but also learn about conservation, ecology, wetlands, waterfowl, and more. □

Joshua Winchell, Public Affairs, Washington, DC

Private Hatchery Owner Sentenced for Killing Birds

The owner of a private western Massachusetts hatchery found guilty of violating both the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act for killing an eagle and hundreds of other birds has been sentenced to six months in a halfway house and five years probation with no contact with weapons.

Michael Zak also must pay a $65,000 fine, which will go to the North American Wetlands Restoration Fund.

In addition to shooting an immature bald eagle, Zak also killed hundreds of great blue herons and ospreys over the course of nearly 30 years. The birds were feeding on trout in the hatchery's unprotected raceways.

Northeast Region special agents, led by case agent Tom Ricardi, investigated Mohawk Trout Hatchery in the fall of 2005 and the spring of 2006 based on a tip from Massachusetts Environmental Police. Agents conducted more than 30 days and hundreds of hours of surveillance from the woods surrounding the Sunderland, Massachusetts hatchery. Agents videotaped Zak shooting at a heron and Zak's son-in-law Timothy Lloyd shooting and killing an osprey. They also observed Zak shooting and killing a heron.

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A Service special agent examines carcasses of an immature bald eagle and an osprey killed on private hatchery property during an investigation of bird shootings.

On their first day at the hatchery, agents collected the remains of more than 200 heron carcasses in various states of decay hanging from trees and on the ground. Under a dead pine tree, agents found piles of bird bones.

They sent several heron carcasses to the National Fish and Wildlife Forensics Laboratory in Ashland, Oregon where scientists determined the cause of death to be gunshot.

Resuming surveillance in the early spring, agents collected more heron and osprey carcasses. They also found a freshly killed immature bald eagle under the dead pine tree.

Agents arrested Zak and Lloyd and searched the hatchery, seizing two rifles. As a condition of their release, the court ordered Zak to surrender 118 firearms and Lloyd to surrender seven firearms.

In all, agents collected carcasses of nearly 300 herons, 15 ospreys, one red-tailed hawk and one crow. For killing herons and ospreys, the pair each pleaded guilty to two Migratory Bird Treaty Act violations and one count of conspiracy, but Zak requested a trial on the charges of killing a bald eagle.

In April, following a six-day bench trial, U.S. District Court Judge Michael Ponsor found Zak guilty of violating both the MBTA and the Bald and Golden Eagle Protection Act for killing the eagle.

Lloyd was fined $1,500 and must serve two years probation and perform 200 hours of community service. □

Diana Weaver, External Affairs, Hadley, Massachusetts

Internet Sleuths

It's true, said U.S. Fish and Wildlife Service Special Agent Ed Newcomer, the Internet has made wildlife crime easier — and easier to hide. But the anonymity of the online world has also made it easier for wildlife law enforcement agents to pose as potential customers and to catch people.

"What works for criminals also works for us," said Newcomer. "The Internet provides anonymity for everyone, and when we go online, the people we're after have no idea who we are."

Wildlife crime is a huge growth industry, grown larger still by the Internet. Most experts believe that the global illegal wildlife trade measures in the billions of dollars, annually. Profits in this illicit market are so huge that law enforcement officers routinely note that the black market in wildlife is now the second largest in the world, ranking only behind the trade in illegal drugs. (In the mid-1990s, an ounce of rhino horn sold in Yemen for about $1,687 per ounce, according to the World Wildlife Fund — making it more valuable than gold, which has a current price of $667 per ounce).

Animals — including everything from insects to bizarre objects like footstools made from elephant feet — have always had aficionados in the more developed Western countries. The nations that are most likely to have the most vigorous

conservation movements also have citizens with the most disposable income. "That's the engine that really drives this train," said Newcomer.

The drive that pushes people to buy such things as bird-eating spiders, giant African scorpions, poisonous snakes, macabre furniture and other ornaments made from animal parts is, said Newcomer, as simple as the desire to want something that nobody else has. The buyers are frequently people in upper income levels who simply seem to be taken by a novelty of the moment. The crime is compounded when the new owners of live exotic creatures become bored—and decide to dump them in the wild. That has helped place Florida at the top of the list of states with invasive species. California, where Newcomer is based, has its share.

How much illegal wildlife is available on the Internet? Newcomer said it's difficult to know; there is no authoritative, dependable research. But as someone who spends time chasing Internet crime, he's confident the numbers run to the thousands.

Newcomer thrives on the challenge; he relishes telling the story about how he and his colleagues nabbed a man in Los Angeles not long ago who billed himself as "the world's most wanted butterfly smuggler." He sold Newcomer $14,000 worth

of protected butterflies and would have sold him $300,000 worth, if Newcomer had had the cash. The smuggler is serving a two-year sentence in federal prison.

The agents' undercover work is as much a battle of wits as anything else; they must change their tactics often—to fit the changing tactics of the people they are after.

Newcomer, who earned a law degree before deciding he wanted to be a wildlife agent, isn't discouraged. "Everything I work for is incapable of dialing 9-1-1," said Newcomer. " Wildlife is resilient, but it's not inexhaustible. You worry about reaching the end of the line. I want every illegal wildlife dealer who is online to think about one thing: your next customer may be a Fish and Wildlife Service law enforcement agent." □

Ken Burton, Public Affairs, Washington, DC

Windy City Wilderness

More than 200 Chicago Wilderness member organizations, including the Midwest Region's Chicago Ecological Services field office, are forging a connection between children and nature with programs such as camping trips, nature scavenger hunts and birding hikes. Beginning next year, Chicago Wilderness members will begin offering all-new programs as part of Leave No Child Inside, the consortium's new effort to get kids outdoors.

The Leave No Child Inside program kicked off June 16 at Chicago's Jackson Park, as officials from the U.S. Fish and Wildlife Service, BP America and the U.S. Forest Service helped Chicago Wilderness launch its effort to encourage youth to explore the outdoors.

"Our nation has a great heritage of outdoor activity and stewardship," said Robyn Thorson, Midwest Regional Director, at the kick-off event. "Because we treasure the link between people and nature we've added Leave No Child Inside and similar initiatives to our agency's national priorities."

Leave No Child Inside offers hundreds of year-round events in nature accessible to millions of children throughout the region, and a Chicago Wilderness Field Book to encourage fun and educational visits to local natural areas. The Leave No Child Inside Web site <www.kidsoutside.info> offers a wealth of information on how to connect kids and nature through Chicago Wilderness programs, lands and activities. Kids can play "Bat and Moth," find out how to raise monarch butterflies, take a nature hike, or learn how to become year-round birdwatchers.

Web site visitors can use a site locator to find places throughout the Chicago Wilderness system to take their kids, along with a list teacher resources and the latest news on current and upcoming events and activities to get children outside. The program's ultimate goal is fostering generations of children who care enough about nature to protect it.

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A teen gets close to nature at the Leave No Child Inside event at Chicago's Jackson Park.

Chicago Wilderness is a partnership of more than 200 public and private organizations working together to protect the Chicago region's natural spaces, help conserve the diversity of plants and animals, and enrich local residents' quality of life. The partnership forms a natural network spanning more than 300,000 acres of forests, prairies, savannas, wetlands, lakes and other protected open spaces, in southeastern Wisconsin, northeastern Illinois, northwestern Indiana, and southwestern Michigan. □

Georgia Parham, External Affairs, Bloomington, Indiana

back to nature

For years, Service employees have been connecting children with the land and with the agency's conservation mission. Today those efforts may be more important than ever.

By David Eisenhauer

At four feet six inches, 9-year-old Lexi Monroe isn't much taller than the clump of native bunchgrass she is trying to plant. Her knees are sinking in mud and her shovel is losing its battle with the hard-packed soil, but the freckled fourth grader is steadfastly determined to get her plant in the ground.

Monroe and 36 of her classmates at Rockledge Elementary in Bowie, Maryland, are spending the warm spring morning installing vegetation in the school's backyard "wetland" under the guidance of Fish and Wildlife Service biologist Carolyn Kolstad. The knee-high trench behind the school serves as a living laboratory where the youngsters learn how to build habitat for local wildlife and receive a first-hand lesson in environmental conservation.

As director of the Chesapeake Bay Field Office Schoolyard Habitat program, Kolstad provides a combination of biological expertise, onsite technical and design assistance and hands-on training for teachers and students—all the necessary components for implementing a successful student-led restoration project on school grounds. The students are involved every step of the way, from planning and design through grant writing, planting and community outreach.

To date, the Service has assisted approximately 150 Maryland schools in completing wetland, meadow, and forest projects involving more than 30,000 students. An additional 50,000 to 60,000 students have used the restored habitat sites as part of an integrated curriculum approach. Annually, the program provides training for hundreds of teachers and involves thousands of students in projects on school grounds that create habitat for wildlife, help to improve water quality and provide outdoor classrooms where students can interact with and observe natural resources daily.

The Schoolyard Habitat program not only teaches children about natural systems, Kolstad says, but it also sows seeds of conservation in their budding young minds.

"This may be the first time some of these students have ever planted a plant," she says. "The experience can forge a life-long connection to the natural world."

These kinds of lessons are taking place at refuges, hatcheries, and Service field stations across the country—from the "Kids in the Creek" program, where high schoolers in Chelan County, Washington, assess stream health by identifying aquatic insects to the Prairie Wetlands Learning Center in Fergus Falls, Minnesota, where students spend a semester studying traditional subjects in an outdoor learning environment.

For years, Service employees have taught children about nature and respect for natural resources while accomplishing important wildlife habitat goals. But today those efforts may be more important than ever.

Mounting evidence shows an increasing number of children are becoming disconnected from nature, preferring to spend time indoors immersed in a virtual reality of television, video games, and I-pods rather than explore the natural reality outside their front doors. Author Richard Louv, whose book *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder* chronicles this trend, argues that increased urbanization, parental anxiety, residential development restrictions and structured play have kept children on a tight leash. This separation from the natural world can result in a host of physical and mental ailments, Louv warns—from childhood obesity to Attention Deficit Hyperactivity Disorder—and erode future support for conservation.

"If this gap between children and nature continues to widen," he asks, "where will future conservationists come from?"

Sparking a Conservation Ethic

As the nation's primary conservation agency, the Service has a significant stake in answering that question. Alarmed by Louv's conclusions and steady declines in hunting and fishing license sales, the Service, The Conservation Fund and >>

LAVONDA WALTON / USFWS

Below: Service biologist Carolyn Kolstad, director of the Chesapeake Bay Field Office's Schoolyard Habitat program (here with students from Rockledge Elementary in Maryland) explains thecacies of wetland plant plugs.

It's gratifying to know the passion I have for the outdoors is being passed to the next generation — not because I tell them they should have this passion, but because they have been given the opportunity to discover it on their own."

Carolyn Kolstad

STEVE HILLEBRAND / USFWS

(Nature, continued)

Louv organized a national dialogue on children and nature at the National Conservation Training Center (NCTC) in September 2006 to discuss the how to reconnect a generation of youth with the natural world—and secure the mental and physical health benefits that go with it.

About 350 educators, health professionals and conservationists participated in the meeting, including Secretary of the Interior Dirk Kempthorne, Service Director H. Dale Hall, The Conservation Fund's President Larry Selzer, Executive Director of the North American Montessori Teachers' Association David Kahn and Yale University's Stephen Kellert.

"Fishing and just playing around in the woods was an important part of my childhood," Hall says. "Our kids need to have a chance to tromp through a woodlot or muck around in a creek. That's the foundation of a healthy relationship with the outdoors and a way to spark a conservation ethic."

In January 2007, the Service Directorate listed connecting people with nature as one of the agency's six top conservation priorities and created a national Children and Nature Working Group of field and regional office representatives from each program to map a course of action for the future. In December, the working group is sponsoring a national workshop at NCTC that will give Service employees new skills and training to help children and families develop strong life-long connections with the natural world.

NCTC Director Rick Lemon, who leads the Service's Children and Nature Executive Team, says the agency—with its extensive land base and passionate and knowledgeable employees—is well positioned to help children reconnect with nature. But while the Service already provides public use opportunities—ranging from hunting, fishing, observing and photographing wildlife, or simply exploring and discovering connections to nature on refuges—Lemon says an "even greater and more focused effort is needed."

"With big issues like climate change impacting our conservation mission, we will need every American to become part of the solution. Engaging children in our conservation and restoration efforts—from planting a tree to banding a duck—gives them a sense of connection to the natural world and personal empowerment that they can make a difference," Lemon said. "Whether they grow to be a biologist, a banker or a mechanic, we will need them to be aware and care about the natural world. That starts with connecting them with nature when they are young. When you see the light in a child's eyes when they come in contact with a wild animal, you know that you have kindled a flame in their soul."

Making the Connections

As this issue of *Fish & Wildlife News* shows, the Service hasn't been sitting on the sidelines when it comes to connecting children with nature. Dozens of hands-on conservation projects help restore habitat and wildlife species and teach children outdoor and scientific skills. Service employees also regularly give presentations at schools, provide expertise on field trips, conduct training for teachers, participate in summer camps, and help develop curricula and lesson plans that deal with natural resource issues.

The Refuge System's nearly 100 million acres provide plentiful opportunities to reconnect children and family with the outdoors through the System's "Big Six" recreational uses—hunting, fishing, wildlife observation, nature photography, environmental education and interpretation. Nearly 40 million visitors enjoy refuges each year, and more than 300 refuges annually offer environmental education programs for some 700,000 students and teachers. Likewise, many hatcheries also provide excellent recreational and educational opportunities for schools and communities and regularly host events to share the Service's conservation message.

Most programs and initiatives are done in collaboration with a variety of partners, including watershed groups, scouting groups, refuge and hatchery friends groups, volunteers and junior naturalist programs. The Service also regularly teams up with national conservation organizations such as Audubon, the Recreational Boating and Fishing Foundation, the National Wildlife Federation and the National Fish and Wildlife Foundation.

Lemon says he is encouraged by the wide range of Service programs that connect children with nature, but suggests the agency needs to integrate existing and new programs with its five other top conservation priorities (National Wildlife Refuge System, endangered and threatened species, landscape conservation, aquatic species, and migratory birds) seek nontraditional partners, incorporate new technologies to reach kids and speak with one voice. The Service's children and nature initiative will include:

- Develop a consistent message and materials to raise awareness within the Service and externally about the importance of connecting children to nature.
- Identify opportunities within each region to connect children with nature. These will be either new efforts or a refocusing of existing efforts that better target children.
- Reach out to urban environments and/or with traditionally underserved audiences.
- Identify national campaigns or develop one Service-wide campaign to connect children to nature.

■ Develop a Web site to provide a one-stop source of readily accessible information, outreach materials, curricula and lesson plans and a community of practice where practitioners can interact in posting best practices, success stories, questions and issues.

■ Analyze existing training courses and make adjustments and/or create new courses to build competency in Service employees to connect children with nature.

■ Work with traditional and nontraditional partners such as the healthcare community, educators, technology and medical companies to link efforts to get children outside into nature.

"The core mission of the Service has not changed," Lemon says. "However, stressing the wellness benefits from connecting with nature in our outreach message is a paradigm shift for the Service; one that will surely reap rewards in terms of increased advocacy and conservation."

Discovering the Passion

For Carolyn Kolstad, connecting children with the outdoors is second nature. She sits on the ground behind Rockledge Elementary, encircled by a gaggle of young onlookers as she explains the intricacies of wetland plant plugs. Kolstad describes the different plant characteristics—roots, leaves, and in some cases, flowers—and explains that wetland plants have a unique ability to live under water. Her words are sinking in.

"The Chesapeake Bay is a really good resource," says student Lisa Chen, 8, as she carefully pats the soil around tiny vegetation that will soon be submerged. "The Bay gives you food and powers the city."

"Nitrogen and phosphorus makes the fish die in the Chesapeake Bay," pipes in 10-year-old Taylor Peterson. "A wetland is a natural filter. It gets out all the chemicals."

Kolstad's duties as a teacher extend to her role as a member of the Service's Children and Nature Working Group and her life as a working mother. She says she spends most of her "free time" with her 2-year-old son playing outside and exploring the universe of living things in her own backyard. For her, connecting children with nature isn't a job; it's a labor of love.

"The Service's children and nature initiative is important to me because I can see the connection kids are making with the outdoors," Kolstad says. "I see it in the eyes of children I've been fortunate to meet in my experience at work, and I see it in my own child's eyes. It's gratifying to know the passion I have for the outdoors is being passed to the next generation—not because I tell them they should have this passion, but because they have been given the opportunity to discover it on their own."

For more information about the Service's children and nature initiative, visit <www.fws.gov/children> or e-mail Janet Ady, Chief, Division of Education Outreach at the National Conservation Training Center, at <janet_ady@fws.gov> □

David Eisenhauer is a public affairs specialist in Washington, DC. Additional reporting by Claire Markgraf; Cathy Rezabeck, outreach coordinator in Anchorage, Alaska; and Janet Ady, Chief, Division of Education Outreach at the National Conservation Training Center in Shepherdstown, West Virginia.

Links to the Outdoors

Here is a sampling of Web links for Service programs that connect children with nature. This is not an exhaustive list but demonstrates a range of activities designed to get kids outside and teach them the importance of conservation.

Environmental Education

<www.fws.gov/educators/students.html>
<www.fws.gov/tennesseerefuge/kids corner.html>
<www.fws.gov/sacramento/ed.htm>
<www.fws.gov/nwi/educator.htm>
<www.fws.gov/chesapeakebay/schoolyd.htm>
<alaska.fws.gov/external/education/curricula.htm>
<www.fws.gov/midwest/pwlc/aboutus.html>
<alaska.fws.gov/external/education/camps.htm>

Endangered Species

<www.fws.gov/endangered/kids>

Recreation

<www.fws.gov/leavenworth/kidsfishingfun.htm>
<www.fws.gov/midwest/fisheries/kidspage.htm>

Refuges

<www.fws.gov/blackwater/kidpage.html>
<www.fws.gov/ridgefieldrefuges/adventure/index.htm>
<www.fws.gov/rockymountainarsenal/kids/kids.htm>
<www.fws.gov/refuges/profiles/recEdMore.cfm?ID=33670>
<www.fws.gov/northeast/chinco/kids.htm>
<www.fws.gov/northeast/primehook/kids corner.html>
<www.fws.gov/saintmarks/education.html>
<www.fws.gov/northeast/patuxent/events.html>
<alaska.fws.gov/internettv/nwrtv/tetlintv/kids.htm>

Fish Hatcheries

<www.fws.gov/leavenworth/kc.htm>
<www.fws.gov/dalehollow>

Migratory Birds

<66.241.214.202/index.cfm>
<alaska.fws.gov/external/education/calendar.htm>
<www.fws.gov/duckstamps/junior/junior.htm>
<www.fws.gov/birds/urbantreaty.html>
<www.fws.gov/birds/imbd.html>

Path to Discovery

Kathy Jacobson and Janet Strong didn't just help restore a mile of riparian area on one of the biggest salmon-bearing rivers in Washington; they blazed a trail for lifelong learners.

Story by Taylor Pittman
Photos by Kathy Jacobson

Jacobson says the students' "passion for learning is obvious."

The Chehalis River. The Discovery Trail was built to help people of all ages learn the importance and value of the complex interrelationships between the land, the Chehalis River and the people who have inhabited the region for decades.

When Kathy Jacobson was growing up in California, she roamed Wildwood Regional Park. "The defining moments in my life," she recalls, "were watching a tarantula hawk (a type of wasp) preying on a tarantula to use its body as a nesting site for her eggs. I also loved walking through the park's dry canyon for hours and seeing Chumash Indian pictographs on its walls. They lent an air of magical human habitation and deep rootedness in the land."

Today Jacobson directs the Chehalis Basin Educational Consortium (CBEC), a partnership composed of Educational Service District 113, the Washington State Departments of Ecology and Fish and Wildlife, the U.S. Fish and Wildlife Service, several school districts, Grays Harbor College, the Chehalis River Land Trust and Council. The primary purpose of CBEC is to support the Chehalis watershed with environmental education that meets the state's learning goals while addressing issues in the watershed.

Jacobson and Janet Strong, Director of the Chehalis River Bain Land Trust, were instrumental in getting Discovery Trail on the ground. The nature trail was built to help people of all ages learn the importance and value of the complex interrelationships between the land, the Chehalis River and the people who have inhabited the region for decades.

The trail is the result of a partnership between the City of Centralia and the Chehalis River Basin Land Trust—a collaboration built on a mutual desire to protect wild salmon and to provide support to the riverbanks from flooding by planting thousands of native trees and shrubs along the river. The 1.5-mile long trail allows visitors to see a river-riparian ecosystem in action: bald eagles nesting, king fishers darting over the river in search of fish, a jumping salmon. Each trail station examines a different aspect of a working biological system.

When Jacobson's CBEC classes got involved, science teachers expanded the experiential education program from students gathering data to planting trees, producing a nature guide and writing poetry about their experiences.

Two students record their observations.

One teacher said, "This was the chance for the kids to see first hand how what we learn in school applies to the real world."

"The students' passion for learning is obvious," Jacobson says. "When students participate in a real activity with real consequences, the learning objectives are being met and I never hear, 'I'm bored.'"

Strong adds, "It is so rewarding to watch the kids working with wheelbarrows, shovels, their hands—they are so proud. They'd come back with friends to take walks. There's no doubt in me that these kids get a lot out of hands-on work."

At year's end, the Chehalis Student Congress was held and students from all over the watershed came together to share and compare their data, participate in workshops given by resource professionals and view the art created. When asked about the most important thing they learned, students responded:

"I learned to take care of and watch what we put in the rivers."

"I learned to teach people to love the earth and not to change the environment for our needs."

"If you live farther away from the harbor, your pollution will take longer to get there, but it will still get there."

These lessons come from being outdoors, up to their armpits in water, dirt and trees. Jacobson and Strong didn't just help restore a mile of riparian area on one of the biggest salmon-bearing rivers in Washington; they blazed a trail for themselves and others in becoming lifelong learners and good citizens of the land. □

Taylor Pittman is an Information and Education Specialist for the Western Washington Fish and Wildlife Office in Lacey, Washington

By The Numbers

The Discovery Trail

Location Centralia, Washington

Length 1 mile

7,000 trees planted from 2003-06

22 tree species planted in the last three years

700 participating students

20 participating teachers

100 participating parents

2,700 square miles of watershed

FLICKR / MAXWELL WOODS

FLICKR / AJ SCHROEDLIN

A Prescription for Healthy kids

Getting children outside is not just fun and games. Their health may depend on it.

By Kyla Hastie and Shani Howard

For many parents, some of our best childhood memories are of the outdoors. Whether it was playing neighborhood freeze tag, building a fort in the nearby vacant lot, splashing around in a creek, or riding our bike to the park, most of us had a lot of fun playing outside. Our formative years consisted of hours of unstructured, outdoor play.

But today's children will have very different childhood memories.

Today, we lead busy and highly structured lives. We get off of work and shuttle our children to sports practice and music lessons. Then we rush home in time to feed them, help them finish homework and get them into bed. This leaves them with no unscheduled time.

When we do have some down time, most of parents today don't feel comfortable letting our kids roam free through the neighborhood without supervision. In fact, experts estimate that a child's range for roaming and wandering today is one-ninth of what ours was.

And besides, many kids will tell you they don't want to go outside. Why would they choose the challenges of the outdoors ("That's boring mom!") when they can be easily entertained by TV, video games and the internet?

But our highly structured lives, lived primarily indoors, are not good for our children's health. Today we are raising a generation of children who have lost their connection with the outdoors. It is a crisis that has become known as "nature-deficit disorder."

The result? In his book *Last Child in the Woods: Saving Our Children From Nature Deficit Disorder*, Richard Louv shows that this disconnect may play a big role in increased rates of obesity, Attention Deficit Hyperactivity Disorder (ADHD), depression and stress in our children.

Pediatric care providers are particularly tuned into the problem of reduced time for unstructured play. They've known for a long time that getting children out and moving about burns calories, lowering the risk of childhood obesity. But new research shows additional benefits of outside play.

A 2006 report from the American Academy of Pediatrics (AAP) states that free and unstructured play is healthy—and in fact essential—for helping children reach important social, emotional, and cognitive developmental milestones. Unstructured play, whether indoors or outside, helps children manage stress and become resilient.

Fortunately, "nature deficit disorder" is a problem parents and communities can solve. Spurred by the publication of Louv's book, a movement referred to as "No Child Left Inside" is sweeping the nation.

Connecticut has launched a program to get children and parents out to state parks and provide more outdoor opportunities.

TERRI JACOBSON / USFWS

Many school districts are restoring previous cuts in outdoor playtime and investing in outdoor classrooms where children can learn through direct contact with nature. And in some communities, developers are rethinking how they build neighborhoods to include areas where children can play safely.

Health care providers are also addressing this problem. As a result of the AAP report on children and play, health care providers have been given new guidelines for patients and parents, which include recommending that all children be afforded ample, unscheduled, independent, non-screen time to be creative, to reflect, and to decompress. Health care providers are also encouraged to be advocates for developing safe spaces for children to play.

As Louv says, "Healing the broken bonds between our young and nature is in everyone's self-interest, not only because aesthetics or justice demands it, but also because our mental, physical and spiritual health depend upon it."

Time is one of the most valuable resources, so reserve some of it for your kids to get outside and play. It's not just for fun. Their health depends on it. □

This article was adapted from one that appeared in the March/April 2007 issue of Athens Parent *magazine. Kyla Hastie is an outreach and partnerships coordinator for the Service's Southeast Regional Office in Atlanta. Shani Howard is a nurse practitioner at Oconee Pediatric Associates in Watkinsville, Georgia.*

Why Do Children Need Nature and Play?

Research shows that children need to spend time in nature for physical, mental and emotional development. Here's why*:

Nature reduces stress and lowers the risk of depression. Many studies have shown that a relationship with nature and animals lowers blood pressure, reduces stress, and wards off depression in both children and adults.

Children work through issues by playing outdoors. When something is troubling you, how many of us have found quiet and solitude in the outdoors? Nature has a restorative, spiritual quality that enables children (and adults) to think more clearly.

Outdoor experiences may combat Attention Deficit Hyperactivity Disorder (ADHD). Children with ADHD are restless, and have trouble paying attention, listening, following directions, and focusing on tasks. Studies have found that TV may increase a child's likelihood of developing concentration problems, but that nature experiences may improve a child's ability to listen and focus.

Children who spend more time outdoors may reduce their risk of obesity and other physical health problems. 40 percent of five- to eight-year-olds suffer cardiac risk factors such as obesity. Two-thirds of American children can't pass a basic physical. There is a growing body of evidence suggesting contact with nature is as important to children as good nutrition and adequate sleep.

"Nature smart" children have heightened sensory skills. Outdoor environments challenge, excite, and stimulate our sense (while controlled, indoor electronic environments tend to drown our senses with noise and visual stimulation). Outdoor experiences help develop our kids' sense of sight, sound, smell, taste and touch all at once. Nature-connected kids tend to pay more attention to the world around them, often noticing things that others miss. They also tend to do better on standardized testing.

Outdoor experiences foster more creativity. Natural spaces stimulate children's limitless imaginations. Children who connect with nature may be more inventive and better problem solvers due to the hands-on learning that the outdoors provides.

Learn more about nature-deficit disorder and the AAP's study on the importance of play at:
<www.cnaturenet.org>
<greenhour.blogspot.com>
<www.aap.org/pressroom/play-public.htm>

RIVER EXPLORERS

A Winona State University pre-service teacher shows students how to identify macroinvertebrates.

Class is in session at the Upper Mississippi River National Wildlife and Fish Refuge.

By Cindy Samples

CINDY SAMPLES / USFWS

A crew of fifth graders climbs aboard the River Explorer and soon the boat is filled with excitement. Children on the top deck try out binoculars and learn where the "head" is located (they love the captain's "sailor talk"). One young boy named Jordan asks if I am a "cop" and whether he can keep the pair of binoculars I hand him.

Today 30 students, parents, teachers, pre-service teachers from Winona State University have joined staff from the Upper Mississippi River National Wildlife and Fish Refuge to explore the refuge by water. Captain Dick Karnath, a veteran riverboat pilot who goes by the name "Captain Kutch," steers the boat away from the dock and we are underway.

"How many of you have ever been on the river?" I ask. Most hands go up. "How many of you have ever been on the Upper Mississippi River National Wildlife and Fish Refuge?" Only a few hands go up. Then I ask, "What is a refuge?" Young Jordan replies that it is a "place where animals are protected." I point to a white refuge sign and explain that on this refuge people can hunt, fish, hike, boat, and watch wildlife—so refuges are for people, too.

In collaboration with refuge staff, Winona State University developed this interdisciplinary program to use the river refuge as a natural "classroom." The River Explorer is the conduit by which students can explore a myriad of subjects from poetry to sociology.

"Through our summer workshops, teachers learn first-hand about the refuge and then they get to bring their students on a river field trip once school is in session," said WSU Chemistry Professor Jeanne Franz. "That's a great way to connect the teachers and students with this refuge. Surveys from the workshop indicate that the teachers and student teachers are much more likely to incorporate the Refuge into their curriculum as a result of traveling through the refuge with a refuge staff member onboard."

I instruct the crew to view an eagle nest with their binoculars. One student exclaims, "I see two heads!" Another says, "Look there's something in the water is that a beaver?" "It's a river rat! It's a muskrat."

Noah, one of the Winona State University pre-service teachers, shows the students how to use their "Discovery Scopes" and teaches them how to identify macroinvertebrates. "Those guys are really important to the animals on the river," he says. "Fish eat them, ducks eat them, and you're going to discover what they look like. They are tiny so you need the Scopes to see and identify them. Let's go overboard."

The children comb the river's edge scooping up water. Soon there are shouts of, "Oh my goodness, it's moving, I found a bug! Look there's a worm thingy in here! Ranger Cindy what is this? I got a baby dragonfly in here! Look at mine—it's a baby mosquito!"

All too soon the children are back on the boat as we motor upriver to the lunch stop and canoe launch. The water is cold today, so they will stay in their canoes and avoid the temptation to swim.

After a day on the river refuge, the River Explorer docks at Winona, Minnesota and the children file off one by one. Jordan, the young boy who asked if I was a cop looks up at me and says, "That was awesome."

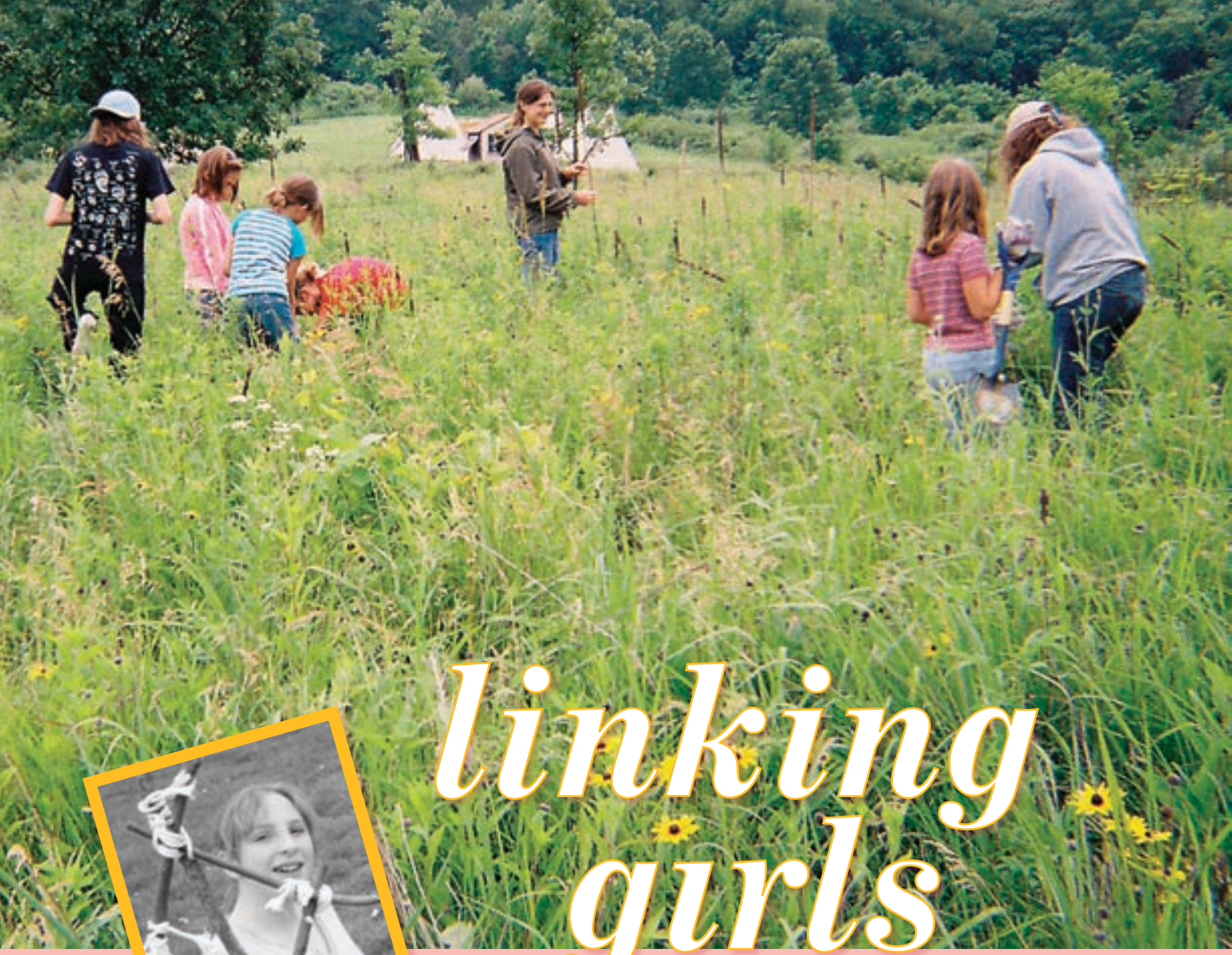
WSU sociology professor Todd Paddock says the students' day on the river reinforces their connection to nature and helps the understand the importance of conserving the Upper Mississippi's natural treasures.

CINDY SAMPLES / USFWS

FLICKR / DAISY BAXTER

"I had a class of 28 students sign up for my sociology class. When I told them the class included a weekend trip on the river refuge and that they needed to be ready to get wet and muddy, the class size dropped to nine," Paddock says. "It just shows why I need to get them out on the river. Next time I won't say anything about water or mud. I truly believe that once they get their feet wet it will create a connection and they'll begin caring about and for the river refuge." □

Cindy Samples is a Refuge Ranger at Upper Mississippi River National Wildlife and Fish Refuge



linking girls to the land

By Jennifer Anderson

Each year, this innovative partnership is encouraging more than 35,000 Girl Scouts to work with agencies to identify conservation and outdoor projects in their communities.

One morning in early June, a group of about 10 Girl Scouts in rubber boots and waders revisited a wetland area they helped create a year earlier through a U.S. Fish and Wildlife Service partnership.

The girls, all middle- and high-school aged, were taking inventory of the native grasses and invasive species growing in the wetland, built on their 140-acre Camp White Rock outdoor classroom in Hampshire County, West Virginia. An abundance of dragonflies, deer, raccoons, frogs and other creatures once scarce in the area are now drawn to the marsh. "If we expose children to the beauty of nature, they will be more inclined to treat the natural world with respect and work to protect it," said Sue Jarvis, chief operating officer for the Girl Scouts of Shawnee Council in West Virginia.

The partnership between the Shawnee Council and the Service is not unique. Across America, Girl Scout councils are joining together with Service biologists to restore nature. They are planting native grasses, pulling invasive weeds, studying wetland habitats and planning conservation projects on their privately owned and public lands.

Begun in 1995 between the Girl Scouts of the USA and several federal agencies including the Fish and Wildlife Service, Environmental Protection Agency and Bureau of Land Management, the Linking Girls to the Land partnership encourages more than 35,000 Girl Scouts each year to work with agencies to identify conservation and outdoor projects in their communities. The partnerships not only enhance Girl Scout leadership skills and their appreciation for nature but also provide them with opportunities to restore native habitats, expose them to careers in the outdoors and help them understand their roles as caretakers of the land.

The Shawnee Council's Camp White Rock project was launched in 2004 when the Service agreed to help restore land the Girl Scouts use for educational purposes. The Council applied for a $3,000 Linking Girls to the Land grant, funded by the Girl Scouts' Elliott Wildlife Values Project, U.S. Forest Service, EPA and Fish and Wildlife Service, making the Shawnee proposal among 20 that year to receive the competitive grant. Jodi Schwarzer, national manager of Linking Girls to the Land for the Girl Scouts, explained that the Council's proposal appealed at a national level because it carried an educational component likely to result in the partnership lasting beyond the scope of the immediate project.

Partners for Fish and Wildlife State Coordinator John Schmidt from the West Virginia Field Office, joined by members of the state Department of Natural Resources, visited the site and developed a preliminary design for the creation of the wetland. An archaeologist with the U.S. Department of Agriculture in Morgantown determined the land contained nothing of archaeological significance, and in April 2006, the U.S. Corps of Engineers issued a Clean Water Act permit for the wetland reconstruction, clearing the way for the project to proceed. **>>**

JODI STEWART SCHWARZER / GIRL SCOUTS OF THE USA

Girl Scouts search for macroinvertebrates at Ditch Creek in the Grand Teton National Park, Wyoming.

DEBORAH ELLMAN

A cold, wet day at Daubenspeck Community Nature Park in Indianapolis doesn't deter these girls from hauling mulch and planting trees.

Within two months, heavy equipment operators from Canaan Valley National Wildlife Refuge and the West Virginia Field Office, in just one day, completed construction of a short dike and spillway to create approximately a half-acre of wetland within Camp White Rock under the direction of Al Rizzo, state coordinator of Partners for Fish and Wildlife in the Chesapeake Bay Field Office. Fish and Wildlife Service biologists seeded and mulched the area, and the water was allowed to fill in naturally.

"The girls benefit because they are learning the science behind what these agencies are doing and developing real connections to their public lands. This type of hands-on involvement leads to a genuine and life-long commitment to care for our planet."

Jodi Schwarzer, national manager of the Linking Girls to the Land program for the Girl Scouts

The Girl Scouts have been exploring the wetlands since they were developed and going out monthly since January, said Jarvis, of the Shawnee Council. They are observing wildlife, looking at microscopic organisms and learning to identify the native and invasive species.

The partnership already is proving itself sustainable; establishment of the wetland led to a $32,600 grant awarded to the council this past June from the West Virginia Commission for National and Community Service. The funds are to be used to develop outdoor educational programs on marsh ecosystems.

Future goals include having the Service teach the girls about wetland habitats and their importance in the ecosystem.

Prairie Partnership

In Iowa, where 99 percent of the native prairie land has been lost to development and agriculture, a Girl Scout-Fish and Wildlife partnership led to the restoration of prairie habitat on the 340-acre Girl Scout Camp Conestoga, near New Liberty, Iowa.

The project got its start in 2004 when Girl Scout council staff member Hillary Blevins approached Kraig McPeek, biologist with the Rock Island, Illinois Ecological Field Office, and explained that the Girl Scouts of Eastern Iowa and Western Illinois had already restored two plots totaling 11 acres and were interested in restoring a third.

McPeek's office is experienced in working with both private landowners and nonprofit organizations and was eager to help the Girl Scouts restore some of their property, both for educational purposes and to protect wildlife. The partnership received not only a $2,500 Linking Girls to the Land grant but also obtained an $1,800 grant through the Partners for Fish and Wildlife program, to purchase native prairie seed. McPeek described the six-acre plot as "marginal old pasture" running along a hillside and overrun with poison ivy and other invasive grasses, trees and shrubs.

A contractor already on-site repairing roads for the Girl Scouts cleared the land and seeded it with a mix of 50 different grass and flower species, all native to Iowa. Unlike the two other plots previously restored as either all grasses or all flowers, the six-acre plot offers a mix, which should add to the girls' understandings of native vegetation and the different species they attract, McPeek said.

Although construction is complete, this partnership has also not ended. Service biologists are teaching the Girl Scouts about how fire and other wildlife management techniques are used to care for the prairie, and plans are underway to expand the curriculum to include one-day seminars on identifying butterflies or other prairie-related topics hosted by Fish and Wildlife Service biologists.

Because of the success of the project, McPeek is confident the partnership will not only continue but enable his office to use the Camp Conestoga project as an example for other landowners and organizations in Iowa that would like to pursue habitat restorations.

Just as the land benefits, so do the girls.

"They are learning the science behind what these agencies are doing and developing real connections to the public lands," stated Schwarzer, Linking Girls to the Land National Manager. "This type of hands-on involvement leads to a genuine and life-long commitment to care for our planet." □

Jennifer Anderson is a freelance writer living in Falls Church, Virginia

ANNE S. FEGE

A Service biologist teaches Girl Scouts about insects in their local environment.

Going Wild

When lifelong field ecologist Julie Concannon, an environmental contaminants team leader for the U.S. Fish and Wildlife Service in Portland, Oregon, became leader of a local Girl Scout troop in 2005, she couldn't wait to get the girls out in nature.

But her expectations crashed when several of the 11- to 14-year-olds showed up for a camping and hiking trip along muddy trails in flip-flops and cotton pants and with Teddy bears in tow.

"I realized on that first camping trip that connections to the landscape take time and are experienced differently by each girl," she recalled.

Elaborate outdoors plans gave way to learning the basics such as how to use a compass, pack a backpack, cook in a Dutch oven and keep an adequate supply of food and water at all times—even in the city.

JULIE CONCANNON / USFWS

Co-leader Cynthia Carlton shows Zoe Naimo how to use a compass.

After nine months of "basic training," the girls asked to go on a "real" camping trip. To Concannon's delight, they were ready to connect with a wild landscape. She decided to push the girls to the next step, applying in June for a Linking Girls to the Land grant to partner with the National Wildlife Refuge System in the Northwest and Pacific Islands to restore a part of nature.

The girls will have to decide on the project—whether it's pulling invasive plant species, restoring a riparian area or countless other possibilities—and the location. Some projects may be pricier than others, but all are doable as long as the girls are motivated and creative in their fundraising. As Concannon put it: "Their opportunities are limited only by their imaginations."

But are the girls ready to do their part for the planet? When Concannon asked, 15-year-old Girl Scout Lindsey Carter replied, "I would do it because it makes me feel good inside."

Even the youngest of the troop, 11-year-old Zoe Naimo, said: "I would do anything to save nature." □

Jennifer Anderson

Senses in the

Imperial National Wildlife Refuge is an oasis of life and learning for thirsty young minds.

By Betty Mulcahy

"How much farther do we have to go?" the girl behind me asks.

"How long do we have to walk?" her friend chimes in.

"This could be a very long hike," I think as I lead 20 third graders along the Painted Desert Trail at Imperial National Wildlife Refuge north of Yuma, Arizona. The trail is just over a mile, and we've barely begun.

"We have quite a ways to go," I tell the girls.

"Good! Because this is so fun!"

Big cities offer many choices and opportunities that are unavailable in a remote town the size of Yuma. Children from Yuma have no zoo and few museums. Their connection with nature is limited, and they may be only vaguely aware of its significance. They may live in the desert, but they don't live the desert.

Imperial National Wildlife Refuge offers the chance to experience what these children learn in the classroom. Today we are awakening their senses to the desert that surrounds them.

"We'll look for signs of water," I told the hikers before we stepped onto the trail. But when I asked them what those signs might be, they merely stared at me.

Now we stop at a dry wash striated by occasional water flow. I ask if anyone sees signs of water. Several point to the cracked dried mud. "That's right. And what about erosion on the hillside? Does anyone know what erosion means?"

"We've discussed this in class," the teacher is quick to remind the pupils as they peer up at the deep grooves, beginning to connect what they've only read or heard about with what they are now witnessing.

We walk down a wash to a wide, flat space populated with cactus, creosote, palo verde, and numerous other plants. As I cup my hands around a creosote branch, breathe on it and inhale, I invite the class to join me. The children surround the bush and inhale the acrid odor.

"It smells like rain!" several announce. They know from experience something I had to learn on my first trip to the desert. I smile at their discovery. When I ask why none of the plants have large leaves, they eagerly recall what they've learned at school. It's becoming real for them.

One young girl brings me a leaf she has plucked from a brittlebush. "Why is this soft?" she asks. The bush will regrow the leaf, but it has piqued the girl's curiosity. She is paying attention to details.

"As we walk, let's look for holes where animals live," I tell the group. Intrigued, the students locate a hillside riddled with various sized and shaped burrows.

"There are some tracks!" one declares after investigating the entrances to these homes. Increasingly, the children are honing their observation skills. They begin seeing signs and details that I miss. And I begin to understand why people teach. Igniting excitement and awareness in these students has augmented my own senses.

"Now see if you can count the number of colors in the rocks as we walk," I say. Soon we stop again to investigate the different shades. They come up with "reddish-orange" and "pinkish-brownish-whitish" and "purple-maroon" and "green." One child comes up with "blue."

"Blue?" I ask. But then I realize that some of the dark gray could appear blue. I've learned something.

After climbing a steep incline, we stop at the highest point of the trail. "Does anyone see a sign of water in the distance?" I ask.

Answers of erosion and caked mud abound. "Look farther," I insist. "Way in the distance."

"It's green," one child offers.

Then someone spots the ribbon of blue. "That's the Colorado River," I say. "If you were a bighorn sheep, that's where you'd have to go for a drink. How many of you would want to travel that far just to

Desert

Imperial National Wildlife Refuge offers children the chance to experience what they learn in the classroom.

drink?" Most shake their heads. One, however, offers to walk the six hilly, rocky miles right now. I admire his enthusiasm.

When we descend again to the wash, I ask the group to sit on the gravel. "Close your eyes and listen," I say. "Each time you hear a different sound, hold up a different finger."

I give the children one minute of silence with their eyes closed. It must seem an eternity, but not one makes a sound except for an occasional foot crunching the little stones. "Open your eyes," I say when time is up. "What did you hear?"

One child heard an insect buzzing in her ear. Another heard the wind through the trees. Still another heard an airplane in the distance. "I heard a lion roar," one proclaims. I don't dispute it. Imaginations have been sharpened this morning.

We're coming to the end of the hike, and I have heard few if any complaints. "I want to stay here," one boy says.

"Aren't you hungry?" his friend asks.

"Yes. But I'd rather stay here than eat." I don't try to hide my satisfaction. Making a difference in a child's life, I find, also makes a difference in mine.

Now the children are continually pointing out signs of water and animal burrows and colors in rocks. They are excited with their discoveries.

When we round one more hill, the parking lot comes into view. A boy in front of the line marches toward the bus. "This is the most funnest field trip I ever been on!" he declares. "Even better than Sea World!"

I wonder if this child has ever been to Sea World. Nevertheless, I stop him long enough to give him a hug. This is one of the most funnest things I've ever done too!

Chattering with new awe, the children board the bus. I may have awakened their senses, but they have awakened my sense of wonder. □

Betty Mulcahy is a Volunteer Interpretive Naturalist at Imperial National Wildlife Refuge in Yuma, Arizona

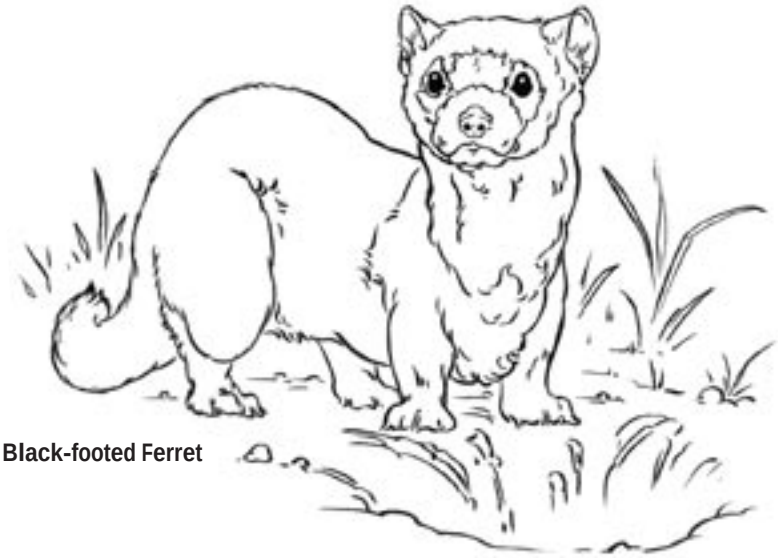
CHUCK MULCAHY / USFWS

The author teaches young conservationists about life in the desert.

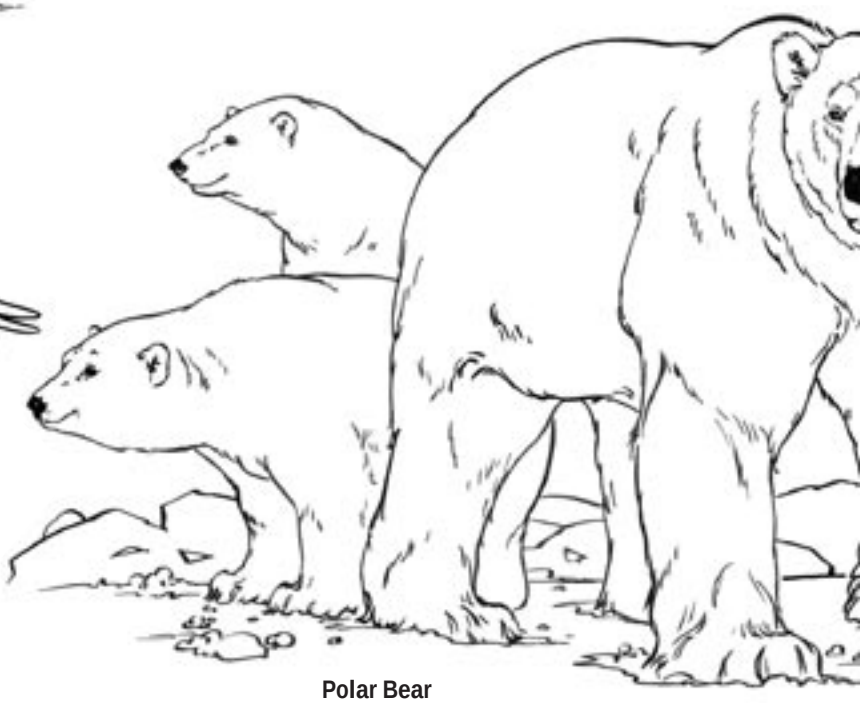
kids coloring page

Share this pull-out section with a child to further his or her interest in nature.

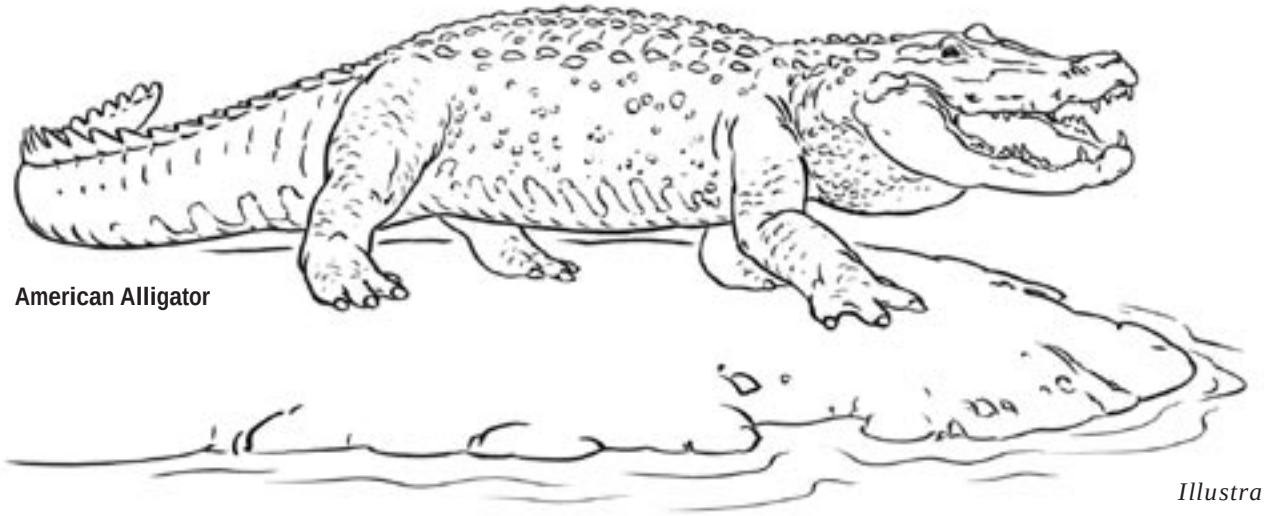
California Condor



Black-footed Ferret

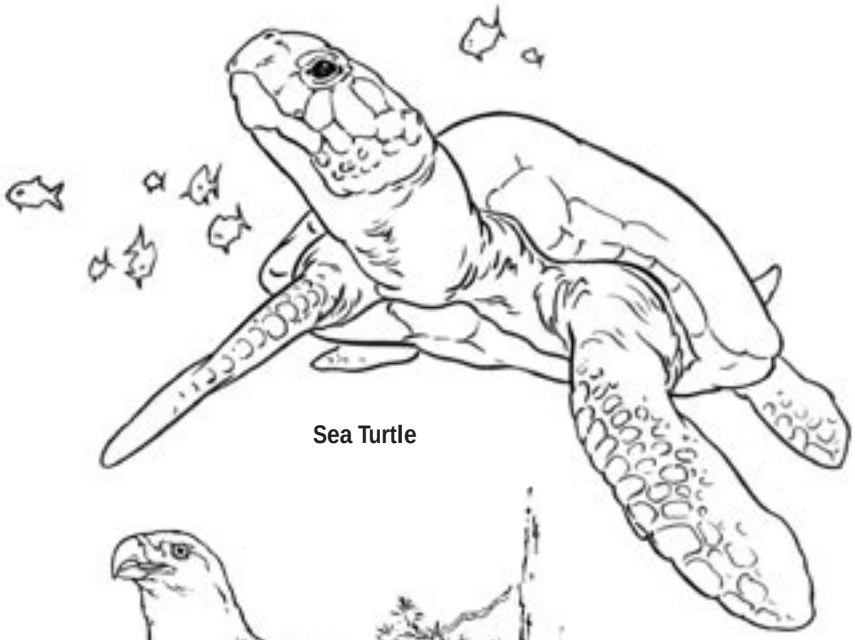


Polar Bear



American Alligator

Illustrations by Tim Knepp



Sea Turtle

Emperor Penguin

Bald Eagle

Gray Wolf

Treasure Hunting

Geocaching — a new-age combination of orienteering and hide-and-seek — gets families around the world out and hiking together.

By Kathleen M. Reilly

Janell Lovelace's three-year old son, Bram, is an experienced treasure hunter. And we're not just talking pretend treasures, either. Bram hikes through forests and down trails until his parents' Global Positioning System (GPS) lets his family know they're getting close to the treasure they're seeking. Once they're close enough, Bram rummages among the fallen leaves and peers into tree stumps, until — eureka! Hidden treasure!

The Durham, North Carolina family is part of a growing worldwide trend — geocaching. This new-age combination of orienteering and hide-and-seek gets families around the world out and hiking together. Here's how it works: Someone hides a treasure box ("cache") and notes its coordinates — its unique position on the globe. Then, they post those coordinates online at <www.geocaching.com, along with an optional clue. Other geocachers can then use their own GPS systems to track down the cache.

It's not as easy as it sounds, though. The GPS will only get you so close, and then it's up to old-fashioned detective work to find the cache itself, usually a sealed rubber container or army ammo box. Inside, treasure hunters will find a logbook to sign and date, and an assortment of trinkets to choose from. They then replace the loot with a trinket of their own — small toys, CDs, movies, books, and such — and carefully hide the container back in the same place for the next player to find.

Traditional caches are located all over the world. But since leaving behind a cache in federal wildlife refuges is illegal, there's another component to geocaching that entices participants to these wonderful wildlife areas: Virtual caching.

With a virtual cache, participants use clues, GPS waypoints and landmarks to get themselves to a particular spot in the reserve. Clever virtual caches can include amazing scenic spots, lesser-known public trails, key bird watching spots, locations of natural mineral deposits, or other natural wonders. It's low-impact treasure hunting at its best.

To assist local cachers, rangers at the Upper Mississippi River National Wildlife and Fish Refuge in Minnesota created a special virtual cache with multiple locations and questions. When cachers complete the entire circuit, they return to the headquarters to report back and collect a reward. Cachers have been amazed at the wildlife they've spotted and thrilled to discover new trails they'd previously overlooked.

For families, geocaching is just the ticket to get outdoors and explore nature — what kid could resist a treasure hunt? An added benefit of virtual cache: It helps kids really look closely at nature's beauty as they work the clues and seek out natural landmarks.

For your first few caches with the kids, look for caches that are easy to find and in easy terrain (they're clearly marked online). If you're choosing your destinations from the online site, read through the log entries to see if other people have had a lot of difficulty getting to the cache. Bushwhacking with young children can be a quick way to a frustrating outing.

PHOTO COLLAGE / FRED MCWILSON

JAMIE HARPER / USFWS

A Saint Mary's University (Minnesota) student shows high schoolers from Riverway Learning Community Charter School how to use a GPS unit.

KATHLEEN M. REILLY

Using their GPS device, two young geocachers close in on the "treasure."

KATHLEEN M. REILLY

Geocaching returns a sense of outdoor adventure to a world dominated with indoor entertainment.

Many geocachers keep a backpack just for geocaching, loaded with what they need, so they can just grab it and go when the urge for adventure hits. Stock your bag with your GPS unit, a local map, flashlight, bug sprays, pens, small first aid kit, and binoculars for checking out the nature scenes.

Geocaching is not only fun, but it's a great way to get out and exercise as a family, too, says Maria Nardini, fitness manager of the Duke Health and Fitness Center in North Carolina. "When you're hiking, especially in that kind of environment, there's going to be a variety of terrain," she says. "It's a variety of ways to challenge the body. You may be climbing a steep hill, which is an interval workout, and then return to flat ground, where you're getting a good cardiovascular benefit."

One of the best rules of geocaching gives kids a hands—on way to care for the environment, too: Cache In, Trash Out. In an effort to preserve and improve the natural areas of the world, geocachers are asked to tread lightly on the land—and actually help improve it, too—by bringing along a bag to remove any litter you come across in your outings. It's not only helping the environment, but it's setting a great example for your children. "We've carried out dozens of bags of trash from public parks over the past year," Lovelace says.

For families, geocaching is just the ticket to get outdoors and explore nature. What kid can resist a treasure hunt?

Getting out in search of treasure returns a sense of outdoor adventure to our world dominated with indoor entertainment, and families across the country are enthusiastically jumping into geocaching. And it's helping their families grow closer, too. "A family that does this kind of activity together is likely to support each other in other types of activities, too, and will continue to do so long-term," says Nardini. And that's one treasure you'll always keep close.

Kathleen M. Reilly is a freelance writer in North Carolina. She and her family are avid geocachers.

headquarters

Teaching the Teachers

A biology teacher suggests that a student try working for the Youth Conservation Corps in the summer. An elementary school teacher teaches children to write poetry on a refuge. Another conveys math concepts by asking students to calculate how many acres need to be planted to feed migratory birds on a refuge.

Engaging the next generation means not only encouraging young people to think of conservation careers but also educating them to become knowledgeable citizens enthusiastic about conservation. That often starts with teachers.

Many refuges offer professional development programs for teachers. They are often created by private nonprofit organizations. Many of these programs are being correlated to new public school curriculum standards.

A Project Wild course created by the nonprofit Council for Environmental Education, for example, is regularly offered at Patuxent National Wildlife Research Refuge. Teachers leave the workshop with an interdisciplinary curriculum guide covering science, math, social studies, physical education, environmental, music, art and education.

Erika Scarborough, education specialist at John Heinz at Tinicum National Wildlife Refuge in Philadelphia, concluded that training teachers would give them ownership over the content, thus better engaging the many urban students who come to the refuge. Scarborough offers "pre-field trip orientations" one Saturday a month so that teachers can return with their students and lead their own activities.

Heinz Refuge also offers a wide variety of other courses and workshops for teachers of all grade levels throughout the school year, covering everything from wetlands, biodiversity, energy, trees and songbirds. A nominal fee is charged and participants earn continuing education credits.

Heinz Refuge Environmental Education Specialist Erika Scarborough teaches a Project WILD workshop to local teachers. They are on the deck of the Cusano Environmental Education Center, which opened to the public in January 2001.

BILL BUCHANAN / USFWS

The workshops build confidence and knowledge among teachers, who are often as unfamiliar with green spaces as their students. Scarborough remembers one teacher involved in a hands-on activity who said she had "never seen a real live frog." One student who came to the refuge said it was the "first time she ever planted something that wasn't in a paper cup."

Further west, new professional development projects for teachers focus on a single location or a single species. The Matagorda Island Teacher Workshop Cooperative Initiative, which involves staff and Friends of Aransas and Matagorda Island at Aransas National Wildlife Refuge has created an annual workshop that shows teachers an array of learning opportunities on Matagorda Island.

Twelve teachers attended the first workshop in November 2006, sleeping in a bunkhouse on the island and spending two days with naturalists from the refuge and local partner organizations. They tried their hand at birding, observing the ecology of beaches and marshes, stargazing and photography. Teachers earned continuing education credits and received curriculum guides that enable them to meet Texas public school requirements to educate middle and high school students about coastal resources.

Tonya Stinson, environmental education specialist at Aransas National Wildlife Refuge, was the prime mover behind the teacher initiative. The Friends organization provided financial and administrative support. Stinson believes it's important for successful professional development initiatives to fill a need that hasn't already been met and take advantage of as many local partners as possible.

At Sevilleta National Wildlife Refuge in New Mexico, an effort to provide educators with information about the endangered Mexican gray wolf led to design of an education outreach program focused on the wolf. In 2005, several retired teachers volunteered to help the refuge create an educator's guide. The guide includes activities for pre-school through twelfth grade and will eventually be available online.

In the "Build a Wolf" lesson, for example, elementary students learn about wolf adaptations as they dress up in a costume that includes large teeth, ears, feet and a fluffy tail. Middle school students play a hunting game to learn about predator/prey relationships. High school students become members of a fictitious "Wolf Reintroduction Team;" they must decide where and how to reintroduce Mexican gray wolves and then defend their recommendations.

More than 150 guides have been distributed to educators, from those who teach in public, tribal and parochial schools and those who provide home schooling. Last year, the refuge's wolf outreach program reached more than 650 students and 100 teachers, according to Kimberly King-Wrenn, visitor services professional at Sevilleta Refuge. "While the Mexican gray wolves are still searching to find their place in the southwest," says King-Wrenn, "wolf education has found a home at Sevilleta Refuge." □

Karen Leggett, NWRS Communications, Washington, DC

MATT POOLE / USFWS

Nature Through the Looking Glass

Television, video games, computers and other forms of technology are frequently blamed for keeping children inside. But these same technologies can also open a door to nature for kids growing up in a digital age. This premise led to the genesis of the Digital Nature Photography Day Camp, an innovative educational partnership between the National Conservation Training Center (NCTC), Potomac Valley Audubon Society and Nikon USA.

Eight high school students participated in the inaugural session of the camp at NCTC during summer 2006. The goal of the five-day camp was to directly engage children in a variety of nature-based experiences in the course of practicing newly learned photography skills. Live raptors from Cunningham Falls State Park in Maryland provided the opportunity for the students to practice wildlife photography "up close and personal." Simple, unstructured time spent investigating a butterfly garden, wandering NCTC's trails, and exploring a rocky stretch of the Potomac River shoreline provided many opportunities for discovery, reflection and sharpening photo skills. Additional nature experiences and image-making occurred during a day-long field trip to Patuxent Research Refuge, where the campers witnessed and photographed the refuge's conservation work.

Unlike many environmental education programs where time outdoors is limited or omitted entirely, the campers spent most of their time in nature. And by having one of their photographic prints framed and exhibited in a public forum at NCTC last fall, each camper could share his or her view of the outdoors through the camera lens. Perhaps the photo camp's most visible measure of success is the fact that half of last year's participants signed up for the session conducted at NCTC this summer.

This summer's camp session was expanded to six days. In addition to the field trip to a national wildlife refuge, the campers also visited the National Zoo's Conservation and Research Center in Front Royal, Virginia. There they learned about the important conservation work done by zoos. National Geographic photographer Steve Uzzell visited with the kids and provided tips on nature photography as a potential career. NCTC's Matt Poole and Bill Wallen, an experienced nature photographer and volunteer for the Potomac River National Wildlife Refuge Complex, served as the primary instructors.

Because the basic model of the photo camp is so easily adaptable, NCTC developed a video-based case study of the camp session in July and August. The case study and other resources comprised a new "tool kit" that will be made available to national wildlife refuges and other Service field stations that have an interest in starting their own local nature photography programs for kids and their families.

The success of the Digital Nature Photography Day Camp supports the idea that technology can be used to facilitate meaningful connections between children and nature. During a focus group that was conducted in conjunction with NCTC's conference about children and nature, one student spoke to the spirit of the day camp when she urged adults to "take those activities which we enjoy...and move them outside!" □

Matt Poole, Conservation Land Management, National Conservation Training Center, Shepherdstown, West Virginia

Fun on the Water

Boating and fishing are great ways to spend time outdoors, experience new places, learn about different types of wildlife and connect children with nature — whether at home or in the classroom.

Formed in 1997 by congressional action to address a trend in declining angler and boater participation, the Recreational Boating and Fishing Foundation (RBFF) offers grants for boating and fishing programs, free educational materials and extensive "How to" and "Where to" information for first-time anglers and boaters.

The National PE Grants Initiative — or PhyshED — engages kids in the classroom, providing grant funding to PE teachers to design and deliver boating and fishing as part of their regular physical education curriculum.

Texas educator Mark Fobian has used the RBFF grant to help his third-, fourth- and fifth-graders learn fish anatomy, filleting and cooking. His students collect insects, identify them through **>>**

CRAIG SPRINGER / USFWS

(Fun, continued)

microscopes and determine water quality. They also measure, tag and release their fishing catch and log all the information online.

"With many parents working two jobs and kids engaged in computers and videogames, they don't have the opportunity to get outdoors," Fobian says.

Another grant program introduces kids to fishing and boating in a family setting at local parks. RBFF and the National Recreation and Park Association (NRPA) created the Take Me Fishing™ Community Grants Initiative that helps local park and recreation directors offer instruction and loaner equipment, and provide convenient access to safe, public fishing and boating facilities.

According to RBFF Education and Outreach Manager Jim Stewart, "Providing meaningful introductions to these activities at safe, family-friendly public facilities can help spark and sustain children's interest and participation, and expose these activities to families of all backgrounds and incomes."

Kathy Spangler, NRPA's director of national partnerships, says the grant program raises awareness about more than just boating and fishing. "Public lands don't exist without stewardship, and people of all ages need to understand how to conserve them," she says. "We see the programs as a valuable first step in reconnecting children with nature. From there, we can teach them how to properly care for these precious resources."

RBFF offers other programs and resources aimed at piquing children's interest in outdoor activities. The Passport to Fishing and Boating Program, which many organizations use to plan events throughout the year and during National Fishing and Boating Week in June, provides materials to enable even non-anglers and boaters to introduce the sports to kids and families. To help newcomers get started, RBFF also offers downloadable tip sheets on kids and freshwater fishing, basic boat care, fishing terminology, how to tie knots and more. These materials may be downloaded at <www.RBFF.org>.

RBFF's TakeMeFishing.org Web site hosts a database with more than 11,000 locations to boat and fish. Site visitors can search by state, region or zip code to get all the information they need to plan a day on the water, including "Family Friendly Hot Spots" — places to fish and boat that make it easy to take the family. The site also features the Kids Fishing Hall of Fame, where parents, friends and relatives can honor the accomplishments of junior anglers.

For more information about RBFF programs that help connect children with nature, visit <www.RBFF.org>. □

Stephanie West, Recreational Boating and Fishing Foundation, Alexandria, Virginia

Learning About the Birds and Bees

What do raspberries, chocolate, and almonds have in common? Besides being best-selling ice cream sundae toppings, they are also foods from plants that require pollinators. Raspberries are typically pollinated by bees, as are almonds. Chocolate is pollinated by a small fly called a midge.

Pollinators are critically important to both the ecosystem and the U.S. economy. More than 75 percent of the flowering plants rely on pollinators, and honey bees alone are responsible for an estimated $15 billion worth of pollinator services to agriculture in the U.S. Many of our fruits, vegetables, and nuts, as well as other food products rely on pollinators. Pollinators include endangered and threatened species, such as the long-nosed bat, and migratory birds, such as the ruby-throated hummingbird.

Activities centered on pollinators are a great way to connect children to nature, and questions can be explored with little or no equipment required. For example, how are wind-pollinated flowers distinguished from animal-pollinated flowers? What does the color, shape or smell of a flower tell us about its pollinator? What happens if pollinators are not available?

Information on pollinators can be combined with tips on good nutrition, since diets high in fruits and vegetables (foods dependent on pollinators) are healthy. Without animal pollinators, our diets would be much more limited and less flavorful. We are not the only animals whose diets include animal-pollinated food. Fruits and berries are a component of the diet of many birds and some mammals, such as bears.

The Service has a partnership with the Coevolution Institute, the nonprofit administrator for a collaboration known as the North American Pollinator Protection Campaign (NAPPC). Through NAPPC, more than 100 government, private, university, and nonprofit organizations are working to promote the health of resident and migratory North American pollinators. NAPPC partners have created a variety of educational products on pollinators. The most exciting is Nature's Partners: Pollinators, Plants and You: a comprehensive pollinator curriculum for grades 3-6. The curriculum is available online <www.nappc.org/curriculum>.

NAPPC also has a Web site with tools helpful to educators, such as information on gardening for pollinators, things children can do to help pollinators and fact sheets on pollinators and wildlife. These documents and links are located in the "Resources" section of the <www.pollinator.org> .

For more information contact <dolores_savignano@fws.gov> or visit <www.fws.gov/pollinators>. □

Dolores A. Savignano, Division of Environmental Quality, Arlington, Virginia

pacific

Kids in the Creek

The "Kids in the Creek" program in north central Washington State has helped connect children with local watersheds for more than a dozen years.

Each spring, hundreds of high school students pull on waders and slip into an outdoor classroom — a cold mountain stream. For one day, students will experience what it is like to be a biologist. Most of them have never been this close to nature. They collect and identify aquatic macroinvertebrates, map stream features and fish habitat, measure stream flow and temperature, analyze chemical characteristics, identify riparian plants, and observe and identify watershed geology and boundaries. At the end of the class, students present land use plans to actual planning commissioners. The innovative curriculum gives students and teachers a better understanding of watersheds and the critical role of human land management practices.

The Kids in the Creek program was created by the Leavenworth National Fish Hatchery, Mid-Columbia Fisheries Resource Office, and the Central Washington Ecological Services Field Office in Washington State. It is a great example of an adaptable outdoor learning experience that not only connects students to nature but instills respect for watersheds for years to come. It also meets Washington State academic learning targets and provides teacher planning and event logistical guidelines. The program is the result of a 12-year partnership of agencies and organizations, including the Fish and Wildlife Service, Chelan County Conservation District, U.S. Forest Service, Cascade Analytical, Washington State Department of Ecology, Washington State Conservation Commission and various schools and communities.

The Kids in the Creek curriculum won first place in the Interpretive Media Awards Competition at the 2006 conference for National Association for Interpretation (NAI). The competition promotes excellence in the delivery of natural, cultural, and historical interpretation. □

Susan Blair and Corky Broaddus, Leavenworth National Fish Hatchery, Leavenworth, Washington; Judy DeLavergne, Ecological Services, Wenatchee, Washington.

USFWS

Students participating in Kids in the Creek test water quality on Icicle Creek.

Salmon in the Classroom

Sixteen fourth- and fifth-grade classes throughout Washington's Columbia River Gorge are learning about the extraordinary world of the Pacific salmon by raising the endangered fish in their classrooms. The "Salmon in the Classroom" program is provided by the Service's Columbia Gorge Information and Education Office. During the past eight years, students have come to anticipate the "fish lady" who frequents their classroom to teach them all sorts of interesting things about salmon and lead them on outdoor adventures.

The schools also do their part: teachers decorate their classrooms with stuffed and colored salmon; children's literature about salmon crams book shelves; school walls are adorned with unique art and stories about salmon; music classes teach songs with salmon themes; and several of the schools hold evening showcases to allow parents to see and hear what their children have learned about this miraculous fish.

The course begins with a visit to the Spring Creek National Fish Hatchery so students can see salmon spawning. The eggs collected from these adults are later taken to classrooms for students to observe. During the next few months, students write daily journal entries, use math to compute hatch dates and percent survival, and learn about the importance of habitat and the salmon's amazing ability to adapt to its environment. As the young salmon grow, students begin feeding them daily. They continue to observe and document the species' growth and survival. The program culminates when students release their salmon fry into the wild, wondering where they may end up.

JIM ANDERSON

Cheri Anderson helps a student from Whitson Elementary inWhite Salmon, Washington monitor water quality on Jewett Creek as part of a larger stream adoption program.

In addition to in-class learning, many of these classes have "adopted" nearby streams where they take field trips to test water quality, wade in the water looking for water bugs, and learn about soil composition and how it factors into plant growth for particular habitats. Students also are learning valuable testing techniques and data collection skills that are reflected in their journal entries. Service learning projects are woven into other class projects during the school year, such as tree planting, trash removal and trail work. Stream adoptions are a cooperative effort with other federal agencies and local conservation districts. □

Cheri Anderson, Information and Education Manager, Underwood, Washington

JEFF SERVOSS / USFWS

Students from Thunderbird High School in Phoenix, participate in a Ranid frog survey on Hassayampa River in Maricopa County.

southwest

DEEP in the Heart of Texas

Volunteers, partners and staff at the Texas Mid-Coast National Wildlife Refuges bring the Discovery Environmental Education Program (DEEP) alive. Thousands of students and adults experience nature each year in this intensive hands-on outdoor education program coordinated by Texas Mid-Coast Training Technician Bryan Adams. DEEP enables children to experience the Texas Gulf coast much as it was before the arrival of humans, and they are often amazed at what is outside their front door.

Headquartered at the Discovery Center at the Brazoria NWR, the DEEP program allows students to discover a multitude of invertebrates in a freshwater pond; touch and learn about reptiles; examine ways in which water chemistry affects life; and learn about the importance of wetlands to the fisheries of the Gulf of Mexico. The Discovery Center allows students to bring samples from the wild into a laboratory setting and conduct experiments and observations they could not make in the field. The Discover Outpost, at the Hudson Woods Unit of San Bernard NWR, provides opportunities for students to discover the ecology of a bottomland forest and the impact invasive species have on the natural environment.

Fueled by local partnerships, the DEEP program has encouraged involvement by new schools and organizations during its 12-year history. A Nature of Learning grant to the Friends of Brazoria Wildlife Refuges enabled Northside Elementary School in Angleton, Texas to incorporate multiple field trips to the refuges into their fourth grade curriculum. The year-long program integrates nature into all subject materials. A Coastal Management Plan grant from Texas General Land Office was instrumental in providing environmental education equipment and displays for the Discovery Center. The Cradle of Texas Chapter of the Texas Master Naturalists supports the program and is the source for most of the trained volunteer docents. Nearly 2,000 volunteer hours were donated by these volunteers during field trips in 2006. □

Jennifer L. Sanchez, Project Leader, Texas Mid-Coast NWR Complex, Angleton, Texas

USFWS

The DEEP program allows students to discover a multitude of invertebrates in a freshwater pond.

ESA 101

Biologists at the Service's Arizona Ecological Services Office (AESO) teamed-up with Thunderbird High School in Phoenix, Arizona to create a year-long pilot curriculum that introduces urban public high school students to the Endangered Species Act (ESA) and the plight of Arizona's threatened, endangered, and sensitive species.

Three classes of freshman and sophomore accelerated biology students were asked to individually choose a native plant, animal, or invertebrate species to research and integrate into a year-long project and final oral presentation. This pilot curriculum also includes a history of the ESA and how this pioneering legislation has been used to conserve and recover listed species.

Section 7 of the ESA is used as a framework in this curriculum. The curriculum requires each student to complete several individual writing assignments during the academic year addressing historical and current threats to their chosen species and the current status of their species. It also requires students to create a hypothetical proposed action affecting their species, the environmental baseline in the area of their proposed action, and their recommendations on how to minimize effects to their species. In essence, each student completes a biological opinion on their chosen species.

In addition, students were required to contact or interview professional biologists in the public, private, or academic sectors to hone communication skills and get additional information on their project.

This pilot curriculum was designed as a "backdrop" to integrate other major topics that are covered in the Glendale Unified High School District's accelerated biology curriculum throughout the school year. Topics include cell biology, cellular respiration, photosynthesis, genetics, evolution, ecology, animal behavior, biochemistry, and mammalian physiology. The fact that many or all of these topics pertain directly to issues affecting students' chosen species reinforces their understanding of the connectivity of ecosystems and the cause and effect dynamics of actions on the landscape.

As an attempt to reconnect urban students with nature, several students were granted the opportunity to join AESO biologists in the field to learn more about native ecology and wildlife and gain insight into the professional careers of Service biologists. For example, students participated in native fish electro-shocking surveys in a pristine canyon stream, conducted Yuma clapper rail surveys in marshland habitat; conducted nocturnal ranid frog surveys and identification; conducted northern Mexican gartersnake surveys; and collected specimens for a captive propagation and release conservation project. □

Jeff Servoss, Ecological Services, Phoenix, Arizona

midwest

A Classroom Without Walls

Take a moment and think back to when you were in fifth grade. You probably had a typical classroom with rows of desks and a chalkboard in the front. If you were lucky, your classroom had a window or two facing outside, and if you were really lucky, your desk might have been near a window. Maybe your classroom even had an aquarium or two. The only time you got outside was for recess, to climb on the monkey bars or play a game of kickball.

Now imagine something completely different. Every day of the school year, you take a short bus ride to the U.S. Fish and Wildlife Service's Prairie Wetlands Learning Center. You still spend two hours learning science, applied math, writing, and health—but not just from a textbook. You learn math by measuring the wing of a duck you've just banded, or by recording the length of the seed head on a native plant such as big bluestem. You experience science firsthand by capturing aquatic invertebrates and comparing what you find in different wetlands, or making sound maps on the prairie. You write about changes that occur throughout the year in your one-meter prairie plot, or create a haiku about your experience tracking a mink across the marsh on snowshoes. And as far as health goes, well, you're outside walking and exploring every day. Sometimes it doesn't feel like learning at all—but it most certainly is.

For fifth graders in the Prairie Science Class in Fergus Falls, Minnesota, the second scenario is a reality. Now in its fourth year, this unique partnership between the Service and the Fergus Falls Independent School District 544 brings 100 students each school day to the Prairie Wetlands Learning Center.

The students are taught primarily by two school district teachers housed at the Prairie Wetlands Learning Center, supplemented with field, instructional, and planning support from Service environmental educators. Two indoor classrooms house 25 students each, but those classrooms are often empty while the students spend time in their true classroom: the 325 acres of prairies and wetlands right outside their door.

For students in a traditional classroom, a typical day includes reading textbooks and answering questions; for students in the Prairie Science Class, a typical day includes reading the land and asking questions. Prairie Science Class teachers and staff at the Prairie Wetlands Learning Center use the seasonal changes and rhythms of the prairie wetland ecosystem to bring lessons to life. National, state, and local education standards are incorporated in daily activities and long term studies. Students summarize and reflect on their learning through writing and literature assignments such as describing their impressions of the monarch butterfly or scientific reports on the process of capturing and banding ducks. Fractions and percentages take on new meaning as students study them in the context of plant cover on a wetland or invasive species on a prairie tract.

By studying famous naturalists such as Aldo Leopold, Rachael Carson, Lewis and Clark, and Byrd Baylor, students discover different ways to observe nature, sharpen their observation skills and deepen their sense of wonder about the natural world.

USFWS

For students in the Prairie Science Class, a typical day includes reading the land and asking questions.

This unique educational partnership is proving that using the environment as an integrating context for traditional subject areas works for students, teachers, and parents. The first three years of the program were formally evaluated, and the results have been positive. Evaluations have shown that in the Prairie Science Class, students learn science, applied math, and writing at least as effectively as their counterparts in the traditional fifth grade classroom. Their motivation for learning, attitudes towards the environment and stewardship behavior improve. But perhaps the proof is best heard from the students themselves:

"It's made me a better thinker because it helps you take the time to think. Like if you are outside and looking at tracks, you think about what the animal was doing and why it was there," said one student. "In the weather, you think about how the temperatures have changed. Yesterday the humidity was 88 percent and today it was 100 percent. And you think about the difference and what affect that will have."

"It changes your attitude," said another student. "In fourth grade I got detention all the time. This year I haven't had any detention. I stay out of trouble because I have more to do. I like coming to school this year."

Thanks to bonding money directed to the City of Fergus Falls from the Minnesota legislature, the PWLC visitor center will be expanded to include four additional classrooms. Construction is slated to begin this summer, and Prairie Science Class enrollment will double in fall 2008.

For more information about the Prairie Science Class, visit <www.fws.gov/midwest/pwlc/prairie_school.html> or call 218/736 0938. □

Laura A. Bonneau, Visitor Services, Prairie Wetlands Learning Center, Fergus Falls, Minnesota

Planting SEEDS

The Missouri Ecological Services Office's SEEDS program (Students, the Environment, and Endangered Species) brings fish and wildlife biologists and the endangered species they work to protect into the classroom to educate students about wildlife and environmental conservation.

The program was unveiled at Lee Expressive Arts School in Columbia, Missouri during National Environmental Education Week. Service biologist Heidi Kuska took a class of fifth graders to an outdoor park to introduce them to the world of caves and karsts and the bat species that call them home. Back in the classroom, Sybill Amalon from the U.S. Forest Service introduced the students to "Chewbacca" and "Pinky," two brown bats.

"The bat felt really hairy and the wing was kinda smooth, but kinda rough," said 11-year-old Tarus Moore.

Service biologist Andy Roberts took students back to the time of the dinosaurs, unveiling a shovel-nosed sturgeon in a mobile tank in the school's media center. The shovel-nosed sturgeon is a close relative to the prehistoric and endangered pallid sturgeon and features the same sharp, moustache-like barbells along its mouth.

RICK HANSEN / USFWS

Service biologist Andy Roberts shows a shovel-nosed sturgeon to two Lee School fifth graders.

Roberts also introduced endangered Topeka shiners to the school's new aquarium, which was donated by the Service. Students were surprised to know these endangered minnows can be found in creeks right in their own backyards.

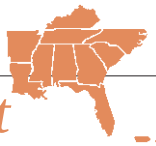
Biologist Jill Utrup introduced students to raptors and birds of prey, and told the children about recovery efforts that saved the bald eagle from extinction. Toward the end of the presentation, the students were surprised by visitors from the MU Raptor Rehabilitation Center, who brought two real birds of prey, the great-horned owl and American kestrel.

The program culminated in the SEEDS Bookfair. Teachers, parents, students and onlookers helped the Service raise more than $400 to buy wildlife books for Lee Expressive Arts School's media center.

"SEEDS is a long-term commitment by our office towards ensuring future conservation in Missouri," said Missouri Ecological Services Field Supervisor Charlie Scott. "We hope to expand this program into more and more schools in the near future." □

Ashley Spratt, Ecological Services, Columbia, Missouri

southeast



World of Discovery

We all have seen children enthralled when someone brings out an animal or when they are exploring the natural world on our public lands—that wide-eyed look of discovery and sense that this experience will stay with them for a long time, if not a lifetime.

The SEWEE (South Eastern Wildlife and Environment Education) Earth Stewards program is giving students along the coast of South Carolina multiple discovery moments and an understanding and respect for the mission of the National Wildlife Refuges found in their own backyards.

Cape Romain NWR became a part of the U.S. Fish and Wildlife Service's Earth Stewards project in 1998. Since then, SEWEE Earth Stewards has become a vibrant, growing environmental education project in conjunction with the SEWEE Visitor and Environmental Education Center and the SEWEE Association, the Friends group for South Carolina Lowcountry Refuge Complex (Cape Romain, Ernest F. Hollings ACE Basin, and Waccamaw refuges).

The initial project focused on fifth-grade students in a local rural school. After looking at the state educational standards for that age, the SEWEE Association decided to highlight freshwater wetland habitats that are abundant in the coastal plain and are important areas for many

migratory birds and threatened and endangered species. The SEWEE Association hired a teacher to put together the program curriculum and to guide the group through initial classes with students. Eventually, the program featured a set of cross-curriculum lesson plans that included a field trip to a swamp for hands-on learning activities. Since 2000, the program has grown from the initial school with 50 students to eight elementary schools with approximately 650 students and one middle school with 60 students.

What do SEWEE Earth Stewards do? Throughout the eight-week curriculum they read books on animals and their habitats; write stories and poems; calculate water absorption rates in wetland experiments; discover animal adaptations and behaviors; and identify flora and fauna of swamps and learn about interdependence. Since Cape Romain NWR is composed of salt marsh and barrier islands and only accessible by boat, the SEWEE Association worked with the Francis Marion National Forest (where the SEWEE Center is located) and use a swamp trail in the forest as a study site. Students have an initial visit to I'on Swamp and participate in multiple activities to heighten their observation skills. This visit also gives them the context for activities during the following weeks, as they study animals and plants found in the swamps.

At mid-term, the students and teachers spend a day at the SEWEE Center where they study several of the habitats found in the coastal plain. They learn about the Endangered Red Wolf Recovery Project, the role that Cape Romain plays in the recovery project, and visit the red wolf enclosure. Students also learn about birds of prey found in the area by participating in a live raptor program presented by the International Center for Birds of Prey.

Their studies conclude with a research trip to I'on Swamp where students use dip nets to find aquatic macro-invertebrate species, examine them using microscopes and discovery scopes and identify what they found. By the end of the term, the students are more knowledgeable of alligators, turtles, snakes, red wolves, migratory birds, birds of prey, and invertebrate species, and have a greater understanding of how valuable the freshwater wetlands are to the survival of all living things.

The SEWEE Earth Stewards program has now expanded to Waccamaw and ACE Basin refuges and includes curriculum for seventh graders focusing on the salt marsh and barrier island ecology. Since the program's inception, nearly 2,900 students have become SEWEE Earth Stewards. That's a lot of students, teachers and parents who have a better understanding of the role of the Refuge System as it relates to South Carolina and the nation as a whole. □

Karen Beshears, SEWEE Association Executive Director, South Carolina

Loxahatchee Through the Lens

Arthur R. Marshall Loxahatchee National Wildlife Refuge helped 40 students from low income schools become amateur photographers during the annual Trail Spruce-Up volunteer event sponsored by the Arthur R. Marshall Foundation.

"The Everglades through the Eyes of Children" project is funded by the Palm Beach County Cultural Council. Students ages nine to 17 learned basic photography from skilled mentors and then took pictures of people and nature around the refuge.

"It's never boring," said 16-year old Stephanie Dorsainvil. Josette Kaufman, Marshall Foundation executive director, says the project also introduces urban youth to the Everglades. "We hope that giving them a positive, hands-on experience will help them develop an interest in the wetland wilderness in their backyards."

One photo from each child will be in an exhibit traveling around Palm Beach County later this year. □

Karen Leggett, NWRS Communications, Washington, DC

STEVE TISCI / ARTHUR R. MARSHALL FOUNDATION

A group of students and mentors at the Marshall Foundation's "Everglades through the Eyes of Children" Photography Project focuses lenses on an alligator at the Arthur R. Marshall Loxahatchee National Wildlife Refuge in Florida.

ROXANNE BOGART / USFWS

northeast

Wild About Teddy

The notion of creating an animated Teddy Roosevelt character had been on Jonathan Schafler's mind for years. In 2002, the approaching National Wildlife Refuge System Centennial inspired the refuge manager to find a way to bring the founder of the Refuge System to life.

Never short of creative ideas, Schafler initially made a call to Art Institutes (AI) International, which offers undergraduate degrees in animation at campuses in 33 U.S. cities. The students at AI-Minneapolis enthusiastically took on the task of developing the first cartoon featuring the animated Rough Rider.

The Teddy Project has since taken on a life of its own. Bolstered by a $25,000 grant from the National Fish and Wildlife Foundation in 2005, the Teddy Project has expanded to every Fish and Wildlife Service region with active projects in 13 states. Students at AI campuses in Atlanta, Miami, Houston, Boston, Philadelphia, Los Angeles, San Diego, Seattle, Denver, Minneapolis, Chicago, Washington, DC and other major metropolitan centers are producing short animation features relating to a nearby Service field station.

"Before The Teddy Project, my knowledge of animation included watching 'The Flintstones,' 'Jetsons,' and 'Johnny Quest,'" Schafler said. "My vocabulary now includes terms like storyboards, 3D rigging, and animatic drafts. The Teddy

Project offers the students an opportunity to learn about the natural world while applying technology familiar to their generation."

To date, AI students have contributed more than 80,000 hours of time creating more than two dozen short cartoons revealing the wildlife and wild places managed by the Service. In each, Teddy and Puddles the Blue Goose visit a national wildlife refuge, national fish hatchery or ecological services office carrying a conservation message to viewers of all ages. The project's cast of characters includes Sarah the Heron at Nisqually National Wildlife Refuge, Eddy the Eagle at Rocky Mountain Arsenal, and Denny the Delmarva Fox Squirrel at Prime Hook National Wildlife Refuge.

Schafler began the project while serving as the assistant refuge manger of Crab Orchard National Wildlife Refuge. He recently became the manager at Canaan Valley refuge in West Virginia. Under his dedicated stewardship of The Teddy Project, hundreds of young adults living and studying in urban areas have gained an appreciation for the environment. Even Teddy Roosevelt would say, "Bully!" to that. □

Terri Edwards, Public Affairs, Hadley, Massachusetts

In September, Jonathan Schafler was selected Northeast Regional winner of the 2007 Sense of Wonder Award for his work on The Teddy Project. The Sense of Wonder Award recognizes a Service employee who has "designed, implemented, or shown visionary leadership in an interpretive or environmental education program that fosters a sense of wonder and enhances public stewardship of our wildlife heritage." Schafler will compete with seven other regional winners from around the Service for the national 2007 Sense of Wonder Award to be announced at the National Association of Interpretation (NAI) conference in November.

The Teddy Project on Tour

In November 2006, The Teddy Project brought one student from each AI campus and four instructors to West Virginia to show their cartoons at the American Conservation Film Festival at NCTC. The students, many of whom had neither traveled out of their home state nor by plane, also had the opportunity to share their work with leaders of The National Geographic Society and the Service's Directorate. Schafler plans to host the students for the film festival this November, and also plans a presentation of their work in Washington, DC, at National Geographic Society's Grovesnor Auditorium.

Hands-on Restoration

As a wildlife biologist and mother, I am always looking for opportunities to engage my two young daughters in nature—whether it's a hike up Mount Philo in search of red efts, listening for the spring's first wood frogs and snipe in nearby wetlands, or raising milkweed caterpillars into monarch butterflies and releasing them back into the wild for their long southward migration.

My children's time in nature is often filled with magic. Berries are picked and mashed to make a natural dye. A palace is imagined in a small grove of white pines. A climbing tree is made sacred. A small hill, named 'magic mountain,' becomes a favorite backyard hiking destination. Innumerable and varied stones are collected and carried home. This kind of free form exploration of nature fosters a sense of wonder in young children.

But what about the next step—teaching stewardship? We only conserve what we love, but we need to understand the importance of conservation and how to do it. Children need to understand they can make a difference.

The Bellwether School, an elementary school in Williston, Vermont, is doing just that: helping children know and feel that even the smallest person can change the course of the future.

Inspired by the Jane Goodall Institute's Roots and Shoots Program, the school takes a hands-on, service learning approach to teaching

A mother and daughter work together to plant vegetation near the Bellwether School in Vermont.

stewardship. Roots and Shoots is a powerful, youth-driven, global network of more than 8,000 groups in almost 100 countries. Together, youth of all ages are taking action to improve our world through service learning projects that promote care and concern for animals, the environment, and the human community.

Adjacent to the Bellwether School is a 100-acre red maple-black ash swamp teeming with wildlife: hairy woodpeckers, wood ducks, common yellowthroats, white-breasted nuthatches, blue spotted salamanders, wood frogs, northern red-backed voles, white-tailed deer. Right outside the schoolyard fence, red maple, quaking aspen, and gray birch are naturally regenerating following past disturbance: a drainage ditch that was dug to develop land just north of the wetlands.

Inside the schoolyard fence, in a grassy field adjacent to the swamp, children splash and hunt for frogs in ephemeral pools created every spring by a natural hydrology that is still intact. In the fall, when much of the wetland is dry, students and teachers walk a trail through the swamp, cleared by students and parents from the school's Grounds Committee. Teachers use this time to teach tree identification, sustainability, soil science, nature detective journaling, even poetry.

But we, the parents and teachers, wanted to do more. Given that this beautiful and important natural resource exists on and adjacent to schoolyard property, the Bellwether's Service Learning Committee, a group of parents and teachers dedicated to the Roots and Shoots philosophy, decided to educate students on wetlands and sustainability, using a service learning approach.

I introduced the Committee to Chris Smith, Vermont's Partners for Fish and Wildlife Coordinator at the Service's Lake Champlain Field Office. Together, we funded a child-driven restoration of the swamp inside the schoolyard.

The larger vision? To create an outdoor environmental classroom that gives children and the local community on-going opportunities to connect with, learn about, and take responsibility for the natural world, through scientific study, inspired art and reflection, and stewardship.

The first step was to create a plan for the restoration. Children in grades 2-6 worked together on a landscape design based on area needs and hydrological requirements for trees and shrubs native to the swamp: red maple, green ash, yellow birch, American elm, red osier dogwood, white pine, mountain holly, northern arrowwood, spicebush, and high bush blueberry and raspberry bushes.

Then, on Green-Up Day Vermont, June 6, 2006, with funding from the Partners Program, parents, teachers, and children, including my own girls, worked together to plant the trees and shrubs according to the children's plan.

In addition to Service funding, the school raised $400 through the sale of cloth grocery bags (also sold to raise awareness of sustainability) and winter solstice crafts. The children helped set up nest boxes for house wrens and tree swallows in the schoolyard, and wood duck boxes in the swamp.

The restoration was the culmination of a four-week wetlands science unit I taught in the spring. The children learned about many kinds of wetlands and visited a local bog and marsh to see the differences for themselves. Students also collected seven bags of trash from the marsh in the same watershed as the wetland on school property. The restoration inspired several second and third graders to research wetland-related topics for their independent projects, including pollution, beavers, preying mantis, and frogs.

Many of these same students had studied the ecology of Lake Champlain basin the previous year. As part of a service learning project to prevent non-point source pollution, they made and sold earth-friendly cleaners to the community, raising $70 which they donated to the Lake Champlain Basin Program, a federal, state, provincial, and local initiative to restore and protect Lake Champlain and its surrounding watershed for future generations.

Nature provides children with a wonderful living laboratory for learning about the interconnectedness of our world. It entices young children to use their imaginations and all of their senses to feel, explore, dream, observe, invent, problem-solve, create, and decision-make. Time spent exploring and learning about the natural world gives children a sense of place and an awareness of the importance of that place to the greater community. Only then will they be inspired to become Earth's caretakers: to protect and restore natural habitats at home, and in other places they bond with throughout their lives, to create a healthy, sustainable world. □

Roxanne E. Bogart,
Bird Habitat Conservation,
Essex Junction, Vermont

LORI IVERSON / UWFWS

mountain-prairie

Art for the Birds

As environmental education leader for the Fort Peck Interpretive Center, I was trying to create a fun and informative project for our local Northeastern Montana schools to celebrate International Migratory Bird Day (IMBD). How could we teach kids about these amazing avian athletes, while involving our neighboring communities in the process?

I reasoned that kids love to draw and that kids love animals. Plus, I knew that everybody has to buy groceries at the local market during any given week. Put those facts together, and we have a winner of an art project.

I began this undertaking by enlisting the help of the local supermarkets. Both stores agreed to supply me with 300 paper grocery bags each to use as our canvas. I would return 600 beautifully illustrated kids' art bird bags to them, to be used to bag groceries on IMBD weekend May 12 and 13.

I then dedicated a solid week to interested K-8 classrooms in the Glasgow and Nashua schools. To stimulate each student's sense of wonder about birds, I introduced each class with a brief overview of the importance of migratory birds and their seasonal flights from nesting to resting grounds and back. I visually enticed the kids with lots of maps and colorful pictures. Then, depending upon size of class and level of sophistication, we either used bird field guides (for those with a more discerning eye) or bird playing cards (each with a familiar species and concise description of such) for our subjects. Simply put, the students were to creatively draw personal interpretations of their bird of choice on the bags.

As I circled the classroom like a mother hen, providing guidance with feather coloration, background habitat, and choice of informational tidbits to inscribe on the bags, the melodious sounds of songbirds and symphonies wafted through the air via a borrowed boom box. Each child completed the masterpiece by stapling a factual IMBD flyer or kids' coloring page to the empty side of the bag.

At the conclusion of that hectic week at the schools, I had close to 600 pieces of pure avian magic. Artwork styles ran the gamut, from the simple yet surprisingly accurate kindergarten mallards to the intricately detailed highschoolers' tropical winged denizens, menacing hawks, and long-legged shorebirds.

By all reports, the project was a soaring success. The students had a blast making functional art, and both kids and adults seemed to develop a deeper appreciation for the remarkable journey of migratory birds. And I confess, I kept a handful of that beautiful artwork to remind me of a super teaching tool and an amazingly fun week! □

Levy (left) and young artists show off their work.

UWFWS

Joyce Levy, Outdoor Recreation Planner, Charles M. Russell National Wildlife Refuge, Fort Peck, Montana

Writing About Nature

"Journals and JPGs: Seasons on the Refuge," a pilot program centered around three field trips onto the National Elk Refuge, uses classroom lessons and field experiences to merge art, writing, and science as second-grade students learn about various aspects of the refuge's wildlife and habitat.

Prior to the start of the school year, the National Elk Refuge and Jackson Hole Wildlife Film Festival teamed up to develop the program. It allowed students to experience the refuge under different conditions throughout the school year and note seasonal changes. The program not only incorporated scientific and artistic approaches to learning, but it also brought together natural resource professionals from the community to provide a wide range of information to the children.

Each season's field trip and lessons centered on a particular topic, with the fall curriculum focusing on geology and the winter sessions on area mammals. The spring lessons used birds as the focus of study and took place at the refuge's environmental study area located to the north of Jackson Elementary School.

Craighead Beringia South, a nonprofit science and education organization based in Kelly, Wyoming, helped facilitate the bird studies. They provided staff at three stations who taught the students about bird characteristics, adaptations for survival and migration. The students observed and listened to birds and other sounds in the study area, simulated the netting

A student uses his field journal to record a soundscape map during a listening exercise.

of a bird for banding purposes, learned about bird tracking devices, and designed an imaginary bird with special adaptations. Their field lessons were preceded by a classroom presentation by Roger Smith from The Raptor Fund, who was accompanied by "Owlie," a great horned owl, and "Petey," a peregrine falcon.

During each outing this year, the students used both field journals and digital cameras to record their experiences. After each field trip, Jackson Hole Wildlife Film Festival Director Lisa Samford and her staff downloaded and printed pictures from the students' cameras, purchased through a Nature of Learning grant. They returned the photos to the students to include in the journals they created, which will serve as a both a keepsake and record of their experiences. The teachers and students hosted an open house for parents to showcase the journals and photographs the students had created and spotlight the environmental education program. Family members attending the open house also had an opportunity to meet all of the partners involved in the program and to view a slide show of students' photos presented by the Jackson Hole Wildlife Film Festival.

"The collaboration with all the different organizations is what made this so unique and worked so well," said Patti Berlin, a second grade teacher who participated in the program. "Everyone brought something special."

Program organizers will get together next week to review the program and make plans for next year. "Not only were these teachers pleased with the program, but we've had inquiries from teachers in other regions interested in modifying our program for their ecosystems," adds Samford. "This program was wildly successful. It's so satisfying to do something that benefits everyone." □

Lori Iverson, National Elk Refuge, Jackson Hole, Wyoming

california/ nevada

Birding by the Bay

The sound of young voices rings out across the Humboldt Bay National Wildlife Refuge in Northern California as a group of at-risk students from a local charter school begin their first "Bird Walk."

The walk is led by local bird expert who conducts the sessions every other Wednesday morning at the refuge's Salmon Creek Unit. Using funds from a State Farm Service Learning grant, the students study migratory as well as native birds and waterfowl, view migratory shorebirds (using lessons based on the Sister Shorebird curriculum) and assist with removal of non-native plants.

The charter school student's classroom activities included in-depth study of local birds using Internet resources and Birds of Northern California, a guide written by a local author who provided the students with autographed special copies of the book. Each student selected their favorite birds, learned facts about those birds and recorded their thoughts and impressions of the refuge visit in field journals.

The grant funds also allowed the school to purchase digital cameras for the students, which they used to take photos of their refuge experience that were later used in a workshop presentation at Humboldt State University as part of an Education Summit. The students did not just connect to nature, but learned to teach others about their connections.

During the same time the students were visiting the refuge for service learning activities, a small group of refuge volunteers was busy creating a non-profit organization named "Friends of Humboldt Bay National Wildlife Refuge." One of the primary goals in forming the nonprofit was to be able to generate funding for building an Environmental Education program at the Salmon Creek Unit.

Knowing that many local families with small children visit the refuge, one of the group's first projects was to create a special children's environmental education corner in the visitor's center at Salmon Creek. Local businesses contributed carpeting, lumber for bookcases and storage units. A woodshop professor at College of the Redwoods built furniture for the facility and three members of the Friends group contributed supplies for children's activities.

The grand opening of the environmental education corner coincided with the annual Aleutian Cackling Goose Fly-off and Family Fun Weekend held the first weekend in March during the height of the Aleutian migration. During the weekend, children who visited the facility — officially named the "Fledgling's Fort" — created a mural and built "migration mobiles" of origami geese. With the help of Service wildlife biologists, children also painted replicas of the wide variety of waterfowl that migrate through the refuge and built songbird houses. □

Betsy Burch, interim president of Friends of the Humboldt Bay National Wildlife Refuge, Loleta, California

From Burrowing Owls to Jiminy Cricket

A class project that will help conserve and protect burrowing owls and other raptors on Stone Lakes National Wildlife Refuge earned teacher Mitch Carnie and his fifth-grade class at Sutterville Elementary School in Sacramento, California an all-expense-paid trip to Disneyland.

The project, titled "The Great Watershed Investigation: Saving Our Burrowing Owls & Raptors," was selected as California's grand prize winner of the 2007 Jiminy Cricket Environmentality Challenge, an environmental education program sponsored by The Walt Disney Company in partnership with the California Environmental Education Interagency Network. The network includes the U.S. Fish and Wildlife Service, Environmental Protection Agency and the California Departments of Education, Food and Agriculture, Environmental Protection Agency and the Resources Agency.

As grand prize winners, the Sacramento fifth graders were honored in a special ceremony at Disneyland May 4. The ceremony capped two days of educational and recreational activities involving state and federal dignitaries, Disney Company executives and several Disney characters.

During the ceremony, California-Nevada Operations Manager Steve Thompson praised the students for choosing to make a difference for the environment and for wildlife. "Not too far into the future, my generation will turn the stewardship of our environment and its wildlife over to you, the next generation of conservationists," Thompson told the students.

SCOTT FLAHERTY / USFWS

Using plastic irrigation pipe, concrete block and other materials provided by the refuge, the class constructed six artificial owl dens.

The students' focus on burrowing owls and raptors was sparked by a tour of the Bufferlands, a 2,650-acre area of open space surrounding the Sacramento Regional Wastewater Treatment Plant. The tour was led by Biologist Roger Jones of the Sacramento Regional County Sanitation District, who taught the students about the habitat values of riparian forests and wetlands and introduced them to burrowing owls. The class was told how recent repairs to levees around the Sacramento area had displaced more than a dozen burrowing owls.

Using historical survey data, the class built data tables that tracked the numbers of owls by season, breeding pairs and chicks observed since 1996. Using plastic irrigation pipe, concrete block and other materials, the class eventually constructed six artificial owl dens on the refuge.

To view details of the project, visit <www.savetheburrowingowls.org>. □

Scott Flaherty, External Affairs, Sacramento, California

alaska

Lessons on the Land

"I remember this!" an excited third grade student recently told me during a field trip to Kenai National Wildlife Refuge. "Last year I was a porcupine and I found my habitat right here in the boreal forest."

It took me a moment to realize she was recalling what she had learned while standing in that exact spot during a field trip the year before. Experiences like this remind us why we educate our youth. Their excitement and curiosity to learn about the world around them inspires us all.

Environmental educators at the refuge often see the same students participate in more than one program over the years. I have had some students tell me what they have learned after coming on multiple field trips. There are children I can instantly recognize who I have taught throughout many of their elementary school grade levels.

Since the Environmental Education Program began in 1983, refuge educators have worked hard to provide high quality, hands-on environmental education programs to local school teachers and their students. Many teachers have returned, year after year, even if they are teaching a different grade level.

We currently have nine hands-on environmental education programs for youth in kindergarten through sixth grade. All of these outdoor based programs are correlated to grade-appropriate borough curriculum standards. Students learn a variety of subjects such as the role and value of habitat, how wildlife survives in the wild, the importance of wetlands and fire ecology, and impacts of human interaction with nature.

Exploring a trail at Kenai NWR.

The Kenai National Wildlife Refuge Environmental Education Program is growing by leaps and bounds, and we hope the trend will continue in the future. In 2000, approximately 918 local kids participated in programs at the Kenai National Wildlife Refuge. Six years later, we reached more than 3,000.

Programs are underway to reach more home school students, students in after-school programs, and those in grades higher than the sixth grade. It never ceases to amaze me what children learn. Whether children have spent a tremendous amount of time outdoors or they have never gone on a long hike, they dearly enjoy being outside and learning about the amazing world that surrounds them.

For more information about the Kenai National Wildlife Refuge's Environmental Education Program, contact Education Specialist Nicole Gustine at 907/262 7021. □

Nicole Gustine, Education Specialist, Kenai National Wildlife Refuge, Soldotna, Alaska

Joining the Band

Over sounds of "Haw… haw… ye-aw...haw" coming from the line of people waving their arms and walking across the muskeg and low tundra grasses, U.S. Geological Survey biologist Craig Ely calls out, "OK, Good. Slow. Keep in line and continue herding them toward the pot."

The line is made up of 10 volunteer youths between ages 13 and 18, several USGS and U.S. Fish and Wildlife Service biologists, and two schoolteachers. The objects being herded are flightless cackling canada and emperor geese, plus an occasional tundra swan or two. Once in "the pot"—a circle-shaped corral of mesh netting—the geese are tested for avian influenza, banded, and their weight and sex are recorded before all are released in a group to waddle back to their hiding spots on the tundra.

For more than 20 years Alaska Native teens have volunteered to assist research biologists in capturing and banding the waterfowl. The birds are captured using traditional Yupik Eskimo trapping methods, but today's Native kids study the natural history and conservation of the geese rather than capturing them for food.

By melding traditional Native methods of capturing geese with today's need for population data, the project encourages participation in natural resource stewardship and gives the participants a renewed appreciation for their heritage.

"Residents of rural Alaska have been living a subsistence lifestyle for generations," Ely says. "This camp allows participants to discuss how to respect their traditions while also maintaining healthy habitats and populations of species for future generations."

Since 1986, this field camp—the brainchild of Ely, and funded by the Service's Division of Migratory Bird Management in Alaska—has been a successful cooperative project with the Cu'pik village of Chevak, located about 30 miles from the Bering Sea within the Yukon Delta National Wildlife Refuge. In 2006, cooperative efforts were expanded to include new partners, Ducks Unlimited and outdoor gear retailer Orvis.

During the annual week-long program, two groups (with between 10 to 12 teens in each) are taken to the Old Chevak village site. The focal point of the camp is a former church where naturalist Roger Tory Peterson once visited and wrote about the birds he saw on the tundra and where the Service and USGS staff have conducted a variety of field camps. The church building, with its brightly painted orange and white corrugated tin roof, spotted from a distance on the treeless tundra, is one of three remaining structures on the historic site dating to the 1940s.

"We look forward every summer when Craig arrives to sign us up for the goose camp," said volunteer Bo Boyscout. "At first some of us didn't want to pick up the geese—or were nervous about it all—but then we understand more about why and that we're doing good work. I've learned a lot."

This year, through a Challenge Cost Share grant from the Refuge System, camp organizers were able to purchase four digital cameras for the teens to use to document banding activities, and as part of learning about careers in wildlife photography.

While biologists and teachers were there to help educate youth on stewardship practices of important bird species in their community, they also learned a lot about nature from the youth participants. The kids showed the adults several types of tundra plants that could be used for food or for medicinal purposes, and talked about how they go to gather food to help their families and villagers through the long harsh tundra winters. Food-gathering activities are based on each season's offerings, from picking berries to catching and preserving fish, to hunting larger game on the land and water. Villagers also make and sell homemade crafts—intricately weaved baskets, or carved dolls, masks, and jewelry—from items found on the land.

To culminate the 2006 science camp, and to recognize the 20-year milestone of this beneficial program, the community hosted a potluck dinner for the camp participants and guests. Alaska Regional Director Tom Melius greeted the village members and handed each of the volunteers a duffel bag with the embroidered youth-designed goose camp logo, filled with the items donated by Ducks Unlimited and Orvis, as well as other educational materials from the Service. The kids, biologists and teachers closed out the festivities by performing the goose roundup dance for the crowd.

DONNA DEWHURST / USFWS

An Alaska Native teen with friend.

"The annual goose roundup is an example of how scientific agencies like the Service and USGS can work together to build strong and successful stewardships with communities, particularly those living on federal lands," Melius says. "As long as there are children willing to learn, biologists and teachers willing to teach, and species needing continued research and protection, there will be projects to enable us to connect children with nature in a hands-on-way, like what we do annually at Old Chevak." □

Julie St. Louis, Outreach Coordinator, Division of Migratory Bird Management, Arlington, Virginia

Prudence

By Ben Ikenson

BEN IKENSON

The author's daughter, Ella.

Growing up, my brothers and I were not taught to shoot a rifle. We never tied a fly and we never went camping. We were typical of our world, that limbo that is neither city nor country—the 'burbs. We were given bikes and told to be home by dinner.

But that slot of time meant freedom, as did the woods that skirted the backyards of the split-level homes of our 1970s suburbia. Behind the houses, a path meandered into dense deciduous forest and soon enough, you could easily forget that those homes and all other civilization existed, enclosed as we were in this miniature wilderness.

A few hundred feet in, the path was dissected by a creek. Crossing a fallen log, the trail led up a steep incline, around some tricky granite boulders and finally out onto the green centerfield of a local baseball park. Between this park and the street, the swath of woods was an untamed jungle, and the creek was its heart of darkness. Up and down its length, we explored every twist and bend, lay the relics of our parents' world—junked lawnmowers, old tires, shells of cars, stacks of rotting newspapers, a bowling ball half-submerged in muck and covered in algae. In short, paradise for kids like myself.

A few years ago, I found myself driving around in the old neighborhood. I pulled over and walked to the entrance of the footpath. The split-levels on either side had been replaced by even more hideous McMansions. In front of me, where I remembered almost by instinct where to set my foot, the path was indiscernible, entirely overgrown with weeds and thickets.

I may not have fished or hunted as a kid, but I loved being outdoors; in it was a sense of mystery and adventure that packed a pleasant punch of excitement to the gut. It's sad to think that sense is so alien to youth who would take an iPod over a bike, let alone a fishing rod, in a heartbeat.

It's not just that some of the toys got a lot cooler. There is no more "be back before dinner," either. My generation seems ironically to have developed a compulsion to plan almost every moment of our children's day, as if we're afraid that our own offspring might also find delight in imagining their parents' world extinct, null and void. If someone uttered the phrase "play date" when I was a boy, they'd be met with cruel mockery if not actual physical abuse. Young people these days need more time than they are given to figure things out on their own—yes, without the mindless distraction of electronics, but also without the obsessive regimentation.

Also, I think, the commodification of the environment has somehow deflated the actuality of appreciating it. For kids to care about the environment, they have to know what it means. As it is, the "environment" is something of a marketplace abstraction: it is far away, where polar bears desperately cling to melting glaciers; it is something that may benefit from recycling, hybrid automobile technology and organic farming; it is somehow sacred to liberal people with disposable incomes who shop at fancy outdoor-rec stores; it is for politicians to argue about; it's an inconvenient idea, instead of a spontaneous day in the neighborhood.

Now that I'm a father, these notions are more than just food for thought. They are more pressing as indications of the kind of world in which Ella may grow into. As of this writing she is four months old and blissfully asleep in the stroller parked next to my desk. Out my window, a hummingbird floats around a flowering trumpet vine. The sun coming up filters through the green canopy of elms that line my yard. The Beatles tune I always play for her is now playing:

Dear Prudence open up your eyes
Dear Prudence see the sunny skies
The wind is low the birds will sing
That you are part of everything
Dear Prudence, won't you open up your eyes? □

Ben Ikenson is a freelance writer living in Albuquerque, New Mexico

A Pathway to Nature

By Dr. Mamie Parker

Dr. Mamie Parker

Waters long ago coursed downstream press on me still. The lunges of memorable fish linger in the eddies of my mind. Bright waters beckon this private vice of mine called fishing. And my recollections, no matter how old, always have the tenor of springtime when all things are new. Fishing fixes me to places where I really feel alive. As a young girl and even today, the experience carries a vestige of adventure and wildness — an escape from the artifices of man.

It pains me that some children don't experience nature as I have. A recent book by Richard Louv, called Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder, has brought into the national dialogue the condition of today's children and in particular their poverty of outdoors experiences.

Electric cords tether them to the indoors while diabetes and obesity have soared, Louv reports. Increasingly they suffer from ADHD; they're shuttled to and from pre-planned events, with little chance for spontaneous and creative play. Think about this: you don't see many children playing outside. It's a simple observation — but telling. The dearth of youthful experience in nature makes us all the poorer.

Recent scientific research at Cornell University reports what I instinctively know. The Cornell study of 2,000 adults by professors Nancy Wells and Kristi Lekies revealed that kids that fish and have unstructured time outdoors grow into adults who care more about conservation and the environment.

The U.S. Fish & Wildlife Service is helping enrich lives through introductions to nature. During National Fishing and Boating Week, the first full week in June, most of our 70 National Fish Hatcheries across the nation invite thousands of kids and adults to fishing derbies at hatcheries or on waters supported by fish from our hatcheries.

But we're going to do one better.

Congress gave the U.S. Fish and Wildlife Service a charge in the National Fish Hatchery Volunteer Act of 2006, requiring us to create educational guidelines and make use of our hatcheries and fisheries field stations across the nation as outdoor classrooms. In October, Wolf Creek National Fish Hatchery in Kentucky launches the first environmental education curricula with training sessions for staff, volunteers, and teachers from local schools, public and private.

Curricula standards will follow national guidelines and relate to those of the local schools, providing the chance for students to up their science literacy and increase their awareness of nature with personal hands-on experience involving fish and their habitats. It's my ardent hope that we touch the lives of youth by planting a germ of an idea in their minds that nature matters, that conservation matters.

Our work with the state natural resources agencies and conservation groups also matters, not just for conservation, but for people. Witness our work restoring lake trout in the Great Lakes, at the same time monitoring a novel, but serious fish disease called viral hemorrhagic septicemia. Developments we've made in fish nutrition help steelhead on the west coast and Atlantic salmon in the northeast. In July, the copper-colored Gila trout in the Southwest will be open to fishing for the first time since the 1950s thanks in large part to our determined fish biologists. It falls upon our scientists at the Aquatic Animal Drug Approval Partnership Program to marshal the rigorous research necessary to have the Food and Drug Administration approve new aquatic animal drugs for the good of conservation and commerce.

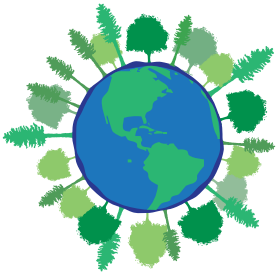
This favorite of American pastimes supports commerce and creates jobs for people. For example, eight southeastern National Fish Hatcheries stocking 11 game fish species from American shad to walleye creates 277 private-sector jobs associated with fishing. Based on what a dollar would buy in 2005, those 11 species generated nearly $27 million in total economic output at a cost to the taxpayer of $2 million to raise them.

Fishing surely has its values, intrinsic and otherwise. The sport has produced an enduring body of literature. The welfare of people and families depend on quality fishing. And for youth, fishing is an entrée toward feeding their innate curiosity about nature.

All these factors are circuitous, like a lazy oxbow turns back toward itself; healthy habitats mean healthy fish, healthy economies and healthy people. We need young people in the circle; we need them outdoors where nature will nurture them as they grow — and they'll grow to nurture nature. Fishing is surely a pathway there. Let's do it. □

Dr. Mamie Parker is Assistant Director for Fisheries and Habitat Conservation

A New World



By Ken Burton

In the little Southeast Alaska fishing town where I grew up, my friends and I spent not just hours, but days, wandering through the woods or taking a skiff to neighboring islands, sneaking up on ducks in a creek or just trudging through the rain.

The Norman Rockwell picture would be complete if I could top off my lead paragraph with a sentence telling the world that we did all that stuff because of an undying love of nature and the outdoors and that we were driven by a pristine urge to witness wildlife and wilderness in unbounded and undisturbed splendor.

The truth is, we did it because our Moms told us to get out of the house and "find something to do." Women of the 1950s had a lot to take care of at home, because most of them stayed at home. The last thing our Moms wanted was to have their kids underfoot.

And we took off for the great outdoors—rain or shine, by the way, and in Southeast Alaska, that meant a lot more rain than shine. But, as you've heard before, we were kids and didn't know any different. We thought everyone lived like that. The town was on an island, so we couldn't get seriously lost. In retrospect, I have to be very honest and tell you that our other great motivator was that there was no competition.

Fast forward for about 50 years, and consider what's here now that wasn't there, then: the Internet, iPods, Blackberrys, CDs, DVDs, Gameboys, Xbox, HD. That's just a partial list. How do you convince kids that they can expand their world by just getting out more, when the entire world is literally at their fingertips, and the whole thing is as close as the nearest electrical outlet? The odds are today that if a kid is home, he or she is likely to be home alone for a good part of the time; both parents are still at work. So there is no Mom to tell the kids to "find something to do," or to offer a suggestion that the kids go outside. If the family lives in suburbia, a trek outdoors could be as adventurous as a walk to Starbucks. More likely than not, the kids are perfectly happy, thanks, sitting at their computer. The news, in fact, supports exactly that.

Not only are electronics sales continuing to rocket upward, but bicycle sales are off these days. So are hunting and fishing license sales, and the downward glide path is most noticeable among the young. Even Hollywood suffered from a stagnant box office last year. Who wants to take their date to the movies when you can get a fistful of movies from Netflix for the price of a single admission?

My point? It isn't going to be good enough to simply tell kids that nature is wonderful and exciting and beautiful and inspirational because the world they have been born into (the one, by the way, that we created for them) can expose them to nature electronically. The Internet can take them from outer space to the Australian outback to Britney Spears to the world's greatest aquarium to rare wild animals to you-name-it. Even our 5-year-old grandson uses a computer, and to paraphrase one of his favorite expressions, "What in the world?"—how in the world are we going to compete?

Frankly, I think we're going to have to compete within our kids' world and not try to force them to adapt to what we believe they should be doing or seeing. This campaign to reconnect children and nature must be on the children's level, and I confess I'm far from certain about where we need to begin.

But it seems to me that convening a group of adults—and young people—who share an interest in electronics and in electronic information and entertainment, and throwing all that the word nature implies on the table, might not be a bad beginning. But it must build on our children's interests as they are today, and the beauty and attractiveness and special things that are wildlife and wilderness must conspire with our kids' world in a way that will make them want to get outdoors.

Someone a long time ago said that every generation has a new set of questions, for which there must be a new set of answers.

For this generation, the old must come to the rescue of the new, not to force them into a mold that was common 50 years ago, but to find that new mix that will spike a curiosity about nature in a brand-new way.

I think it's time to convene that meeting. □

Ken Burton is a public affairs specialist in Washington, DC

transitions

Headquarters Region

Kevin Adams, who served as Chief of the Service's Office of Law Enforcement (OLE) for nine years, retired on August 3 after 31 years of federal service.

Adams, who left OLE in October 2006 to assist the Directorate with Service-wide strategic and workforce planning initiatives, was the first executive-level leader of the agency's law enforcement program. His accomplishments as Chief included transitioning the program to line authority; securing additional funding for field staff and operations; and strengthening its leadership role in global conservation.

Adams served previously as Special Agent in Charge of OLE's Branch of Special Operations (a high-profile covert investigative unit) and as the Law Enforcement program's deputy manager for the Southwest Region. He supervised Service investigations and inspections in Minnesota and Wisconsin for six years and worked as a criminal investigator with Special Operations and in field offices in Illinois and Iowa. During this period, he frequently worked undercover, exposing black market trafficking in striped bass and completing cases that helped protect waterfowl, mussels, and game resources from unlawful commercialization.

A native of Shawneetown, Illinois, Adams earned a B.S. in zoology at Southern Illinois University in Carbondale. He started his Federal law enforcement career in 1976 as a special agent with the National Marine Fisheries Service before becoming a U.S. Fish and Wildlife Service special agent in 1979.

The National Fish and Wildlife Foundation honored Adams earlier this year with the 2007 Guy Bradley Award in recognition of his lifetime contributions to wildlife conservation.

Gary Frazer, Service liaison to U.S. Geological Survey, succeeds Adams as Special Assistant to the Director.

After a 34-year Service career, **Megan Durham** retired as Deputy Assistant Director for External Affairs on August 3. Durham is one of the agency's most prominent advocates for making effective communications an integral part of Service management decisions. She joined the Fish and Wildlife Service as a secretary in the Division of Endangered Species in 1973 and eventually became the agency's first National Outreach Coordinator and later, Chief of Public Affairs. In 2002, she became Deputy Assistant Director for External Affairs, where she assisted in managing the Service's Congressional, Public Affairs, Partnerships, and Native American Liaison programs. Durham, who holds a degree in English Literature from Washington University in St Louis, lives in Reston, Virginia with her husband Richard Graus, a retired geologist. The couple has two children, Rowland and Jessica.

Tom Bauer has returned to the Fish and Wildlife Service and the Southwest Region after spending a few years working for the Department of Interior in the Main Interior Building. Judge Craig Manson, former Assistant Secretary for Fish, Wildlife and Parks, hired Bauer in 2003 to be his Chief of Staff. Bauer returns to Albuquerque, New Mexico, as Special Assistant to the Regional Director, Dr. Benjamin Tuggle. He will oversee the Sport Fish and Wildlife Restoration Division as well as special projects.

The National Wildlife Refuge Association (NWRA) has named **Desiree Sorenson-Groves** as Vice-President of Government Affairs and **Mark Hufford** as Director of Grassroots Outreach. Both will help fulfill the NWRA's mission to build support for the National Wildlife Refuge System through work with Congress, the Administration, local decision makers and the growing network of refuge "Friends" groups.

Dr. James Mosher has been named Deputy Assistant Secretary for Fish and Wildlife and Parks. Mosher will focus on endangered species issues, hunting and access to public lands, energy policy and climate change.

Mosher earned his bachelor's degree from Utica College, a master's degree in wildlife biology from S.U.N.Y.-College of Environmental Science and Forestry and Ph.D. in Zoology from Brigham Young University. He completed a post-doctoral research appointment at the Naval Arctic Research Laboratory in Pt. Barrow, Alaska, served eight years on the faculty of the University of Maryland and one year in the Veterinary Physiology program at University of Minnesota.

Mosher has authored peer-reviewed papers on avian ecology, biology, and management as well as several book chapters. In addition to his academic pursuits he has worked in industrial human resources and environmental consulting. Mosher comes to Interior from his position as Executive Director of the North American Grouse Partnership. In that role, he led a coalition of conservation organizations working collaboratively with representatives of the energy industry to resolve challenges to wildlife from expanding development.

Northeast Region

Carl Burger retired in October 2006 after a 32-year career that spanned assignments in Alaska, Washington State, and Maine. He helped the Northeast Region administer its restoration and recovery program for endangered Atlantic salmon as manager of the Maine Fisheries Complex in East Orland, Maine (2002-06). He also directed the Service's Abernathy Fish Technology Center in Longview, Washington (1996-2002), and spent the preceding 22 years as a fisheries research scientist in Alaska.

When **Clifford Day** retired as project leader of the New Jersey Field Office earlier this year, he left a rich conservation legacy. Perhaps his finest accomplishment was the culmination of 20 years of advocacy for a regional resource priority—8,400 acres of estuarine wetlands and uplands coveted by developers and known as the Hackensack Meadowlands.

The Meadowlands is one of the last large blocks of open space in the New York metropolitan area. Despite past abuse, it still supports 275 plant species, 115 invertebrate species, and 426 vertebrate species, including 332 species of migratory birds, and lies within a critical bird migration corridor.

Day's opposition to filling these wetlands for offices, warehousing and a mall attracted congressional attention to citizen concerns as **>>**

well as support for stakeholder work sessions. The result was a partnership among federal and state agencies to protect and restore the Meadowlands.

After serving as a Marine, Day obtained a master's degree at West Virginia University. He began working for the Service in 1977 as a biologist in a trailer office on Edwin B. Forsythe National Wildlife Refuge in New Jersey.

From a special developmental assignment in the Washington, DC, fish and wildlife enhancement office from 1985 to 1987, Day became field supervisor of the Absecon Field Office in New Jersey. Two years later, he moved the field office to Pleasantville and the office was renamed the New Jersey Field Office.

During the next decade, Day built staff and capabilities to expand from federal activities to a full complement of ecological services work. Day and his staff responded to numerous oil spills, restored more than 8,600 acres of wetlands, provided environmental education to elementary schools, produced a high-quality newsletter with topical themes such as invasive species, and took in more than $7.5 million in reimbursable funding for interagency agreements.

Ed Christoffers retired from the Service in early 2007 after a distinguished career in federal government. He started his Fish and Wildlife Service career in 1993 as the branch chief of federal activities in the Chesapeake Bay Field Office in Annapolis, Maryland. From there he served as field supervisor for the Delaware Bay Estuary Project Office before moving to the regional office in Hadley, Massachusetts. Prior to his retirement he served as special assistant to the Regional Director.

Prior to his Service career, Christoffers spent 23 years with the National Marine Fisheries Service. During his years at NMFS, he served as the living resources coordinator for the Chesapeake Bay Office, managed the grant programs for oyster disease research and stock assessment, was the officer in charge of the NMFS habitat conservation program in Oxford, Maryland, and worked in the regional office in Gloucester, Massachusetts, and in Ann Arbor, Michigan. In Michigan he was active in the NMFS habitat conservation program and represented NMFS on the Great Lakes Water Level Study.

Gordon Russell retired as project leader of the Maine Field Office in fall 2006 after working 28 years for the U.S. Fish and Wildlife Service.

Russell was known for his ability to bring people together. He received the Northeast Region's 2005 John S. Gottschalk Partnership Award for his work on the Penobscot River Restoration Agreement. This agreement will restore 500 miles of wildlife habitat in the Penobscot River drainage. Russell played a key role in negotiating the Penobscot agreement by building positive trusting relationships with the Penobscot Indian Nation; Pennsylvania Power and Light Corporation; and numerous federal, state, and non-government partners.

Southeast Region

Bubber Carnathan of Lexington, Mississippi retired from the U.S. Fish and Wildlife Service in May after more than 28 years of service. He has been the law enforcement supervisor for Mississippi and the Caribbean for the past two years.

Mountain-Prairie Region

After 30 years with the U.S. Fish and Wildlife Service, **Mitch King**, presently serving as the Regional Director for the Mountain-Prairie Region, is switching gears for the next 30 years. King and his wife, Carla, plan to settle in Montana, visit their kids and grandkids on the east coast and enjoy the many recreational activities available out West. A native of Kentucky and graduate of the University of Tennessee, King began his career as a biologist stationed at Vicksburg, Mississippi, working on wetland issues in the Mississippi River Valley. Since that time, he has worked for the Service in Cookeville, Tennessee; Washington, DC; Bozeman, Montana; Brunswick, Georgia; Atlanta, Georgia and Denver, Colorado.

His responsibilities have included preserving and restoring wetlands, working with Congress on Farm Bill legislation, implementation of the North American Waterfowl Management Plan, providing wildlife management assistance on Indian Reservations, carrying out the responsibilities of the Endangered Species Act, managing the Southeast Region's National Wildlife Refuge System; managing the Migratory Birds and Federal Assistance Programs in the Southeast, serving as the Deputy Regional Director in the Southeast Region, the Assistant Director for the Service's Wildlife and Sport Fish Restoration Program in Washington, DC, and most recently the Regional Director of the 8-state Mountain-Prairie Region.

Throughout his 30-year Service career and beyond, Mitch continues to be committed to natural resource management and conservation.

After 38 years with the National Wildlife Refuge System, **Ron Shupe** retired on September 2, 2007. Shupe served as an Assistant Refuge Manager at Valentine NWR, Charles M. Russell NWR, Bosque del Apache NWR, and then as Project Leader at Audubon NWR in North Dakota. He also served as an Assistant Refuge Supervisor, Deputy Refuge Supervisor, and in his last position, as the Mountain-Prairie Region's Deputy Regional Chief for the National Wildlife Refuge System. He also spent a year guiding the Rocky Mountain Arsenal NWR through the l egislation creating this Refuge as an "Urban" NWR in the metropolitan Denver area.

California-Nevada

Program analyst **Sam Rapphahn** received her 20 year pin in August.

honors

Headquarters Region

Ken Stansell, Deputy Director for the Fish and Wildlife Service and **Rick Lemon**, Director of the National Conservation Training Center received the Secretary's Executive Leadership Award, an annual career performance award established by the Interior Department's Executive Resources Board to recognize superior performance and excellence in leadership. Stansell received a Silver Award and Lemon received a Bronze Award.

U.S. Fish and Wildlife Service employees **Kate Eschelbach** and **Keri Parker** were selected through a competitive application process to be part of the 2007-08 Emerging Wildlife Conservation Leaders (EWCL) class. EWCL is an initiative sponsored by the Service in partnership with the Gilman International Conservation Foundation, Wildlife Conservation Network, and Defenders of Wildlife. Jeff Flocken, International Affairs Specialist in the Service's Division of International Conservation, co-founded the EWCL program with Nina Fascione of Defenders of Wildlife in 2004. The program brings together emerging leaders in the wildlife conservation field for capacity building and intense training in campaign development and skills.

Eschelbach is a wildlife biologist in California with the Ventura Fish and Wildlife Office. Her EWCL team's conservation project focuses on environmental education in the Okapi Wildlife Reserve of the Democratic Republic of Congo. Parker is a wildlife biologist with the Division of Migratory Bird Management's Population and Habitat Assessment Branch, and is stationed at the Patuxent Wildlife Research Center in Laurel, Maryland. Her EWCL team is working to support efforts by the international conservation community to stem the illegal trade in Asian pangolin species.

Northeast Region

Craig Koppie, endangered species biologist at Chesapeake Bay Field Office in Annapolis, Maryland, has received a Department of the Army Commander's Award for Civilian Service for protecting bald eagles at the Army research laboratory Aberdeen Proving Ground (APG) in Maryland.

APG's 72,000 acres—half land and half water—are home to the largest bald eagle population in the northern Chesapeake Bay with some 40 nesting pairs of eagles and an average winter count of 180 eagles. Nearly 70 organizations conduct research, development, testing and evaluation at APG.

During 2001 and 2002, resident bald eagles as well as eagles migrating south from New York and New England and north from Florida were dying from contact with electric and communication lines at APG. Complicating matters were increasing Department of Defense activities at APG as the country prepared for war. Despite this challenge, Koppie worked with APG staff on several measures to reduce bald eagle deaths without interrupting Defense missions. He also reviewed plans for training exercises and recommended alternatives to minimize impacts to bald eagles. He is working on revising the APG Bald Eagle Management Plan.

Supervisory Wildlife Inspector **Paul Cerniglia**, who works for the U.S. Fish and Wildlife Service Office of Law Enforcement in New York, has received the 2007 Clark R. Bavin Law Enforcement Award from the Animal Welfare Institute in recognition of his contributions to wildlife protection.

Honors for Cerniglia and seven other award recipients (including fellow countryman John Webb of the Department of Justice's Environment and Natural Resources Division) were announced at a June 4 ceremony at the 14th Conference of Parties of the Convention on International Trade in

Endangered Species of Wild Fauna and Flora (CITES) in The Hague, The Netherlands. The Bavin Award spotlights accomplishments in combating wildlife crime involving species protected under the CITES treaty. It is named after Clark Bavin who, as chief of Service Law Enforcement from 1972 through 1990, launched and guided U.S. efforts to stem global wildlife trafficking.

Kofi Fynn-Aikins, Project Leader of the Lower Great Lakes Fishery Resources offices in Amherst, Massachusetts received the Milford "Pinky" Robinson Memorial Award for dedication to the Great Lakes fishery resource.

Southeast Region

Special Agent **Bill Mellor** of the U.S. Fish and Wildlife Service's Law Enforcement Office in Slidell, Louisiana, received a Director's

Superior Service Award on March 21 at the National Conservation Training Center. Service Deputy Director Ken Stansell presented Mellor with the award during the 2007 special agent in service meeting Mellor was honored for nearly 30 years of successfully protecting migratory birds, endangered species, and other wildlife resources.

Midwest Region

The Midwest Region's Reynoldsburg, Ohio, field office and the Ohio Department of Transportation received the Service's **2007 Transportation Environmental Stewardship Excellence Award**. The agencies were honored for a statewide initiative that conserves the endangered Indiana bat during transportation construction projects. The initiative includes a five-year agreement that guides transportation project planning to protect valuable Indiana bat habitat, including waterways and forests. At the same time, it streamlines regulatory processes and improves DOT's ability to meet project deadlines.

The agencies identified the biological needs of the Indiana bat along with a range of impacts to the bat from transportation projects within geographic units across the state. Conservation measures were then developed to address the bat's needs and the expected impacts of project construction. It is estimated that review times for construction projects that affect the Indiana bat have been reduced by 50 percent, and the time savings has saved DOT $7 million to $10 million to date. In addition, protecting habitat for the Indiana bat—particularly forested stream areas—also conserves habitat for a range of other species, minimizes flood damage and improves water quality.

Ron Refsnider, a biologist with the U.S. Fish and Wildlife Service's Midwest Regional Office in Fort Snelling, was honored by the U.S. Department of the Interior as part of a team that helped recover the gray wolf in the western Great Lakes. Interior Secretary Dirk Kempthorne presented the Cooperative Conservation Award to the 10-member team at a ceremony in Washington, DC.

The award recognizes conservation achievements by groups of diverse partners, including federal, state, local and tribal governments, non-government organizations, and individuals. The award recognized the wolf partnership's work to establish the political, cultural and biological conditions that allowed the once-imperiled gray wolf to recover in Minnesota, Michigan and Wisconsin.

Other team members receiving the award included **Michael DonCarlos**, Minnesota Department of Natural Resources; **Abigail Kimbell**, U.S. Forest Service; **L. David Mech**, U.S. Geological Survey; **Walter Medwid**, International Wolf Center; **William Paul**, U.S. Department of Agriculture; **Brian Roell**, Michigan Department of Natural Resources; **Richard Thiel**, Timber Wolf Information Network; **Pam Troxell**, Timber Wolf Alliance; and **Adrian Wydeven**, Wisconsin Department of Natural Resources.

As lead biologist for the Service for Midwest wolf recovery, Refsnider coordinated the federal role in wolf recovery, as well as efforts by the Service in the Midwest to implement recovery actions. He worked with partners to educate the public about wolf recovery and authored the rules that removed gray wolves in the western Great Lakes from the list of endangered and threatened species.

Andy King and **Tom Simon**, biologists in the Midwest Region's Bloomington, Indiana, Ecological Services office, were presented the Forest Supervisor's Honor Award by Hoosier National Forest Kenneth Day. King and Simon were cited for their part in development of a film on cave biota, produced by filmmaker Dave McGowan for the Forest Service, Indiana Karst Conservancy and the National Speleological Society. The award recognized the biologists' role in education and outreach for the Cave Biota Project, and developing ownership with partners and collaborators to facilitate cave conservation. The two received the award at the premiere of the 30-minute documentary film in Bloomington, Indiana.

Mountain-Prairie Region

Tom Wickstrom, a Partners for Fish and Wildlife Program biologist at Waubay National Wildlife Refuge, received a 2007 Professional of the Year Award from the South Dakota Chapter of The Wildlife Society. Wickstrom helped implement nearly 71,000 acres of managed grazing systems, the planting of nearly 5,500 acres of native grasses and forbs, and the establishment of over 350 wetlands. He has forged strong partnerships with conservation districts, sportsmen's clubs, the Sisseton Wahpeton Sioux Tribe, many non-governmental organizations, and state and federal agencies. His greatest tangible accomplishment is the restoration of nearly 1,500 wetlands totaling nearly 6,500 surface acres.

The staff of **Ennis National Fish Hatchery** was recognized by the Montana Chapter of the American Fisheries Society for "Outstanding Group Achievement" toward the wildlife resources of the State of Montana in 2006.

Steve Brimm, a 30-year veteran of the Fish and Wildlife Service National Fish Hatchery System, has been named this year's Federal Land Manager of the Year. For the past 11 years, Brimm has been the project leader of the D.C. Booth Historic National Fish Hatchery in Spearfish, South Dakota. Brimm nurtures key partnerships by taking an active role in the many organizations that work together to keep the hatchery thriving, including the American Fisheries Society and the nonprofit Booth Society. He has helped develop a Hatchery Helpers youth volunteer program as well as a youth outreach program that allows middle school students to work on the refuge. The Hatchery Helpers program won its own Take Pride in America Award in 2003.

John Cornely, who recently retired as the Migratory Bird Chief for the Mountain-Prairie Region, received the Department of the Interior's Meritorious Service Award in recognition of his outstanding accomplishments with the Service. Cornely's 28-year career with the Service was characterized by exceptional contributions in all areas of migratory bird management. He was also recognized for his work in refuges, particularly for his work with dusky Canada geese and his efforts to improve monitoring and evaluation of habitat and population management actions. Although he never served in a research position, he authored more than 40 publications, many of which had a direct influence on the management of natural resources. Cornely is currently Executive Director of The Trumpeter Swan Society and on the Board of Directors of the National Wildlife Refuge Association.

Pacific Region

Dawn Grafe, Supervisory Park Ranger for the Oregon Coast National Wildlife Refuge Complex, received the 2007 Legends Award from the American Recreation Coalition (ARC). The ARC is a Washington-based nonprofit organization, which strives to promote and facilitate public/private partnerships to enhance and protect outdoor recreational opportunities and the resources upon which such experiences are based.

in memoriam

It was like **Jim Rothschild** to come up with a great sound bite—even on the final day of his battle with cancer on May 24, 2007. We lost a great member of humanity when Jim succumbed to cancer at home, dying the way he lived—surrounded by people who adored him.

When a few of us had a chance for a final visit with Jim at his home, on May 23, 2007, we found him heavily sedated but resting comfortably, wearing a Nachitoches National Fish Hatchery T-shirt. Elsie Davis, his former assistant, took the opportunity to thank Jim for being a wonderful boss and teaching her so much during his tenure with the Service. His response was pure Jim:

"Service...wonderful mission."

"In all my years with the U.S. Fish and Wildlife Service, I never met a man who loved our organization and its mission more than Jim," said Vicki McCoy, Coordinator, Strategic Planning and Communications for the Service's Southeast Region. "We became dear friends. While he made more money working for private clients like Coca Cola, we always knew he only wanted to work with us."

His video production work with Habitat for Humanity ignited a passion to do more than remain behind the camera, as exemplified by tributes from its founder.

"I loved Jim's company and knew and respected his work for many years when he did films and videos for us in the 80s and 90s," said Millard Fuller. "His uplifting demeanor made Jim such wonderful person—his passing is a true loss for us all."

A native of Atlanta, he selflessly promoted causes that matched his passion for life when he launched Habitat for Humanity at St. Anne's.

"He thought I was going to give him a fight for it, but I said 'sure let's start it—why not?'" said Father Bob Susann, currently the Chaplain at Orlando Airport, who was at St. Anne's in Marietta from 1991-2003. "Thanks to Jim, we built two houses a year for about 12 years, and even started different coalitions to build them—Catholic, non-Catholic, and we even did a video in Cobb County. He was a great worker and a wonderful family person. He was just a fantastic guy, and we're going to miss him deeply."

His powerful spirit was evident in the many movies and videos he created and supported, such as "Briers in the Cotton Patch," an Emmy-winning documentary.

Jim's legacy of film and video production spanned 25 years, garnering numerous industry awards at the New York International Film Festival, Cine Golden Eagles, and Houston Film Festival. Rothschild's work has been seen on the major networks, the A&E Network, and PBS, to name but a few.

When Jim Rothschild passed away, his legacy included a warm loving family nurtured by his love, fashioned through his example, and honed by his dedication. Good friends from around the country beamed their sadness with similar refrains, each echoing of professionalism, dedication, and passion. Jim's primary topics for conversation and energy were: God, his grandchildren, and politics—not always in that order.

His unique ability to transmit his vision into deeds, both on screen and off, was his special talent displayed in Fish and Wildlife Service videos on the Vieques National Wildlife Refuge, Hurricane Katrina and Rita response and many more. Armed with a sense of humor and well as a deep dedication to his family, our country and his God, he could get the toughest firefighter in Hurricane Katrina recovery efforts laughing—just to break up the intensity of the moment and lift everyone's spirits. Then encourage them to say the right things on camera to capture the moment on tape.

Just as his last words praised "service," his life and deeds speak volumes of his service to our country. As a soldier in the Army, as a federal employee with the Bureau of Land Management, U.S. Forest Service, and the Fish and Wildlife Service, to his work with Habitat for Humanity and now The Fuller Center for Housing—but most of all, service to his family.

Jim always made you feel like you were the only person, the only client, his only and best friend in the world—though we doubtless number in the thousands.

Tom MacKenzie and Vicki McCoy

Elizabeth Sharpe died June 5 after a long battle with cancer.

Sharpe started as a biologist in the Pacific Islands Office in 1993, and most recently worked on vertebrate recovery issues, including conservation efforts on Oahu and the Big Island, Army training consultations, recovery planning, communication tower evaluations, and sea turtle recovery coordination. She had recently completed an environmental law degree at the University of Hawaii.

Earlier in her career, Sharpe was awarded for her excellent work for the Service in Alaska, which included conservation of wolves, sea otters (including the rescue effort in the wake of the Exxon Valdez oil spill), Aleutian Canada geese, seabirds, and bald eagles. Before moving to Honolulu, Sharpe worked for Ecological Services in our Regional Office in Portland on listing, recovery plans, recovery permits, and habitat conservation plans.

Colleagues remarked on how professional and personable Sharpe was—she was always willing to help out in any way she could. Her empathetic and easygoing style allowed her to forge positive relationships. She forged personal as well as professional bonds with her co-workers, and always brought sensitivity—and levity—to the workplace. Her strong and kind spirit will be missed.

Roger Preuss, a conservation leader and the first Minnesota-born artist to paint the image on the federal duck stamp died in May. He was 85.

Preuss, a Waterville, Minnesota native, and a longtime Minneapolis resident, won the duck stamp contest in 1949. In the ensuing years his work was exhibited in museums across the United States and in London.

"Preuss established the initial standards for future duck stamp winners to exceed. His enthusiasm for wildlife art and his support of conservation work done by natural resources professionals will be missed," said Mark LaBarbera, communications director, Minnesota Department of Natural Resources. "He made a lasting impression by his ageless energy and his convictions about his artwork and his passion for sharing his outdoor images."

Among many honors, Preuss was named the U.S. Bicentennial Wildlife Artist in 1976, and in 1997 was awarded the U.S. Department of Interior's Public Service Award for his achievements in waterfowl and wildlife conservation.

parting shot

ADAM CAMPBELL / USFWS

This happy angler was one of hundreds of participants in the Fishery Park Kids's Fishing Derby held last May in Unicoi County, Tennessee. Erwin National Fish Hatchery and the TWRA Buffalo Springs State Fish Hatchery donated 1,800 rainbow trout for the event.

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