

Bi-weekly Wetland and Stream Corridor Restoration Update
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Welcome to the Bi-weekly Wetland and Stream Corridor Restoration Update. This Web site

- Provides current information on wetland and river corridor restoration projects
- Recognizes outstanding restoration projects
- Offers a forum for information sharing

We welcome the submission of articles and announcements related to your restoration project. Just send your write-up to EPA's contractor at restorationupdate@tetrattech-ffx.com or mail it to Rebecca Schmidt, Bi-weekly Restoration Update Coordinator, Tetra Tech, Inc., 10306 Eaton Place, Suite 340, Fairfax, VA 22030. We will carefully consider your submission for inclusion in a future update. If your submission is selected, please note that it might be edited for length or style before being posted. Because this Web site is meant to be a public forum on restoration information, we cannot post any information that is copyrighted or information that advocates or lobbies for any political, business, or commercial purposes or has the appearance of doing so.

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Feature Article

Restoring Reed Canyon

A small Oregon college is taking big steps to help restore habitat and improve water quality in Reed Lake and Crystal Springs Creek. Reed Lake is fed by a series of springs that flow into Reed Canyon, located in the heart of the Reed College campus in southeast Portland. The lake drains into Crystal Springs Creek, which flows into Johnson Creek and ultimately the Willamette River. The 15-acre canyon on the Reed College campus has historically provided habitat for a diverse array of wildlife. An assessment of fish and wildlife habitat commissioned by the Portland Parks and Recreation Department summarizes the value of the site for wildlife, noting that “the diversity of habitat types, plant diversity and quantity, and the mosaic of wetland communities make the Reed Canyon the highest quality habitat area within the City of Portland’s portion of Johnson Creek basin.” But plant diversity has been gradually diminishing as invasive and noxious species replace the former species. Stream modifications performed on campus 70 years ago prevent spawning fish from accessing the upper reaches of the canyon. In response, Reed College has developed a plan to restore the canyon and lake to a self-sustaining, ecologically balanced condition over a period of 5 years.

The canyon provides 15 acres of high-quality wildlife habitat, but there is still room for improvement. In the 1930s the college installed a swimming pool and altered the natural stream alignment. The college piped the creek under a road and extended it 200 feet downstream, past the swimming pool, before returning it to the streambed. Although spawning gravels are present and silt-free, the diversion of the stream made the waterway impassable for fish. In addition, invasive plants are spreading unchecked throughout the site. As part of its long-term restoration plan, the college has reestablished the original stream channel, placed woody debris in the stream to provide better fish habitat, and installed a fish ladder. A team of facility maintenance staff, contracted labor, students, neighbors, and volunteers is working to remove the invasive plants and reestablish a riparian edge and upland plant communities using appropriate native species.

The objectives for the project are to improve habitat for birds, animals, and aquatic species; create new spawning and rearing grounds for salmon and other resident fish species; and ensure the quality of this important water source for the Johnson Creek system. Most important, the project will work in concert with efforts by the city of Portland and others in the region to reconnect one of Portland’s remaining historical waterways to the Willamette River and the Pacific Ocean and contribute to the long-term survival of Oregon’s native fish populations.

Based on fish sampling data, the city of Portland has established a hypothesis that Johnson Creek and its tributary, Crystal Springs, support an independent population of listed Columbia River steelhead trout. Portland’s sampling work also demonstrates that fish from a number of streams south of Portland are

using Crystal Springs during their migratory life cycles. Thus, the canyon project has the potential to provide improved habitat for all salmonids that use the Willamette River, not just the salmonids native to Johnson Creek and Crystal Springs.

Putting the Plan into Action

An annual event at Reed College is helping to make the plan a reality. For almost 90 years, the college community has set aside at least one day—sometimes two—for a large work party aimed at cleaning up and improving the forested canyon area. The day is known as Canyon Day, and the focus of the work parties has changed over the years. In the early years, efforts involved raking leaves, burning debris, and attempting to make the canyon into a park. More recently, the focus of Canyon Day has been on protecting and restoring the natural vegetation to make the canyon a better habitat for urban wildlife. For instance, the fall 2001 Canyon Day focused on removing invasive weeds, bringing back native plant habitat, and enhancing water quality at the headwaters of Crystal Springs Creek.

Fall 2002 Canyon Day, held in September focused on the lawn in front of a dormitory on the north side of the canyon overlooking the lake. The original landscapers in this area had removed most of the natural vegetation and had extended the lawn almost to the edge of the lake. The resulting loss of the natural riparian zone had lowered water quality in the lake and decreased the amount of habitat for animals in the area.

By moving a trail away from the water's edge and recreating the natural plant community, the college used this Canyon Day to restore a healthy riparian buffer zone along the lake. About 60 people showed up on a Saturday morning to revegetate the area with more than 600 native plants including sword ferns, vine maples, and Douglas firs. Using mallets and hammers, volunteers also installed about 400 willow cuttings along the north edge of the lake, from the orchard west to the land bridge. Participants in this year's Canyon Day included students, faculty, staff, alumni, and neighbors of the college. For photos of the restoration work, see <http://web.reed.edu/canyon/cday/cd02/index.html>. For more information on the college's efforts to restore Reed Canyon and its waterbodies, see <http://web.reed.edu/canyon/rest/overview.html>.

If you'd like your project to appear as our next featured article, e-mail a short description to restorationupdate@tetrattech-ffx.com.

Five-Star Restoration Projects Update

The goal of EPA's Five-Star Restoration Program is to bring together citizen groups, corporations, youth conservation corps, students, landowners, and government agencies to undertake projects that restore streambanks and wetlands. The program provides challenge grants, technical support, and peer information exchange to enable community-based restoration projects. A few Five-Star Restoration projects are being revisited to see if the modest amount of funding (between \$5,000 and \$20,000) has helped the local restoration partners achieve their goals.

Project Title: R.E.S.T.O.R.E. Wetland Restoration and Outdoor Classroom
Five-Star Grant: \$7,634
Grant to: Riverdale School District
Project Location: Port Byron, Illinois
Grant Year: 2000

Original Project Description:

Sponsored by Riverdale School District and in partnership with the Golden Seed Company, the Riverdale Parent Teacher Association, and others, the RESTORE (Riverdale Environmental Schoolyard Teams for Outdoor Restoration Explorations) project is an innovative, collaborative conservation project that will enhance student academic performance and provide a greater understanding of local wildlife and environmental issues. The project partners will construct a wetland on the school property where students, teachers, and the community can participate in hands-on learning about water, wildlife, the environment, and conservation. In particular, teachers will use the wetland to integrate teaching across multiple disciplines, including science, math, social studies, and the arts.

Project Update:

The Five-Star grant was the first key step for Riverdale School District, Port Byron, Illinois to develop a complete outdoor education center. Riverdale also developed a wetland pond as the central feature of the site. A 3-acre area at the headwaters of Canoe Creek was cleared of undesirable vegetation and waste materials, and pond areas were excavated. Water was retained by a dam overfall. Excavation dirt was used to construct two berms surrounding an outdoor amphitheater that faces the ponds. Native forbs, grasses, trees, and shrubs were planted to enhance, restore, and provide habitat for wildlife. Bat, wood duck, purple Martin, bluebird, and songbird houses were placed throughout the site. Project partners were the Riverdale Parent Teacher Association, the Golden Seed Company, 3M, Boy Scout Troop 351, Moline Consumers, teachers, students, and the community.

This site has enabled K to 12 students to engage in hands-on environmental lessons throughout the year. High school science classes are monitoring water quality. The Department of Natural Resources stocked the pond with several species of fish in the fall of 2001. Project Wet and Wild Aquatic workshops were held on the site in the summer of 2001. The Rock Island Soil and Water Conservation District featured the site as a model for conservation of natural resources on its annual Conservation Day event in fall 2001. The site is open year-round to visitors so they can enjoy the natural setting and learn about natural resource management.

The progress of the outdoor education center can be seen at Riverdale's school Web site at www.riroe.k12.il.us/riroe/riverdale/middleschool/8th.htm/wetlands/wetlands.htm. [Updated June 2002.]

Project Title: Blister Swamp Restoration
Five-Star Grant: \$5,000
Grant to: The Mountain Institute
Location: Pocahontas County, West Virginia
Grant Year: 1999

Original Project Description:

In West Virginia a new partnership spearheaded by The Mountain Institute (TMI) will restore and protect 40 acres of Blister Swamp, a unique Balsam fir Red Spruce wetland degraded by cattle grazing and timbering. In this effort, TMI will work closely with the U.S. Fish and Wildlife Service (USFWS), private landowners, a local Habitat for Humanity chapter, The Nature Conservancy, and the University of West Virginia to restore the functions and values of the swamp. This project will serve as a model for other landowners in the region interested in protecting wetlands in a manner compatible with grazing and other economic activity.

Project Update:

Blister Swamp represents one of the last remaining Balsam Fir-Red Spruce Circumneutral Wetlands in unglaciated eastern North America. Sixteen rare plant species have now been reported, of which two are globally uncommon. The swamp is also a significant bird breeding site. All participants judged the project to be an exceptionally positive and productive experience.

Major events during 1999–2000 include (1) project start-up; (2) establishment of rare plant and plant community baseline data in July 1999; (3) installation of more than 6,000 feet of 8-foot fence posts at 10-foot intervals, surrounding approximately 35 acres of wetlands in two contiguous parcels; (4) successful germination of approximately 2,000 balsam fir seedlings from seeds collected in 1998; (5) development of a long-term monitoring and evaluation plan; (6) completion of the Blister Swamp Conservation Plan; and (7) signing of a 20-year management agreement between the Dalen family, TMI Mountain Institute, and The Nature Conservancy.

Accomplishments during 2000–2001 include (1) completion of an approximately 7,000-foot fence; (2) receipt of first-year monitoring results verifying positive ecological response; (3) completion of new plans for the deer-proof fencing; (4) ceremony in honor of the Dalen family and the project; and (5) receipt of awards, positive publicity, and educational benefits to students and teachers.

To date, the deer-proof extension and electric fence have been finished. USFS, with cofinancing from TMI, will extend the protected area onto more than 20 acres of Blister Swamp wetlands on their property immediately downstream of the private landowners. At least one other private landowner in Pendleton County protected his wetlands after seeing this project. **[Updated May 2002.]**

For more information on EPA's Five-Star grant program, visit www.epa.gov/owow/wetlands/restore/5star.

Community-Based Restoration Partnerships

Restoring Habitat Along Dogfish Creek

For Paula Suter it's important to bring salmon and wildlife back to Dogfish Creek, which flows along her family's farm in Poulsbo, Washington. She also wants to preserve the habitat for the future. So Suter, with the help of the Suquamish Tribe, the Mid-Puget Sound Fisheries Enhancement Group, and the Kitsap Conservation District, applied for and received a \$30,000 habitat restoration grant from the Washington Department of Fish and Wildlife. Plus, as part of the restoration project, Suter and the Great Peninsula Conservancy are seeking a conservation easement, which will permanently protect the habitat.

"We have about 2 acres of wetlands that we want to make sure stay undeveloped and a sanctuary for birds and other wildlife, especially salmon," said Suter. "But it was like a jungle down here and you couldn't really get to the water because of the invasive blackberries. We wanted to find the best way to bring the land back to its natural state and keep it that way. So we looked into the habitat restoration grant and the conservation easement."

While some improvements are already noticeable, such as chinook spawning in the newly formed pools throughout the meandering creek, other benefits will become apparent over time. Habitat improvement does not take place overnight, said Paul Dorn, Salmon Recovery Coordinator for the Suquamish Tribe. But to help speed up the process, Suter plans to plant native vegetation and, eventually, create a small pond with downstream access for an over wintering habitat for fish.

"All the recovery work and the work on Dogfish Creek is extremely important," said Rob Purser, Suquamish Tribal Fisheries Director. "These landowners who are willing to put in place certain stipulations, which future property owners will be bound to, helps a great deal. They have made a big difference in our improvement project, which will help salmon and all the other wildlife along the creek."

For more information see <http://www.nwifc.wa.gov/newsinfo/newsrelsdet.asp?ID> or contact Rob Purser at 360-598-3311; Paul Dorn at 360-598-3311; or Darren Friedel, Information Officer, Northwest Indian Fisheries Commission, at 360-297-6546.

Desert Riparian Area Flourishing

The Tucson Audubon Society, in cooperation with the city of Tucson, is pursuing revegetation and habitat restoration work along the Santa Cruz River in Marana, Arizona. During 2002 the project partners have worked to restore wildlife habitat on about 25 acres of riparian area, disturbed river berm, and former agricultural fields. The partners, with help from countless local volunteers, have planted over a thousand shrubs and trees and distributed hundreds of pounds of native seed. They have also dug water-harvesting swales and basins to collect monsoon and winter rains around new plants.

The project site is located at the northern extent of 23,000 acres of farmland owned by the city of Tucson in northern Pima County. The property was purchased by the city of Tucson in the 1970s and 1980s for associated groundwater rights. This land has been retired from farming and is in various stages of natural recovery. Work on portions of the restoration site is serving as a model to the city to show how recovery

could be implemented on other retired farmland. Improving ecological connectivity to these nearby habitats is an important goal of the long-term work at the site.

The Tucson Audubon Society has a 99-year, right-of-entry agreement with the city to restore habitat and monitor wildlife on 1,700 acres. The work is funded with in-lieu mitigation money for Section 404 of the Clean Water Act and by grants from the Arizona Water Protection Fund and U.S. Fish & Wildlife Service. Tucson Audubon currently has funding for restoration on about 60 acres—work that will be completed during the next 2 years. Restoration will proceed on additional acres as more funding becomes available. Monitoring the success of the project will continue beyond the restoration work. Tucson Audubon has a long-term commitment to recovery of this land, as does the city of Tucson, which has provided extensive in-kind assistance in the form of fencing, equipment, and water for irrigation. For more information see www.tucsonaudubon.org/conservation/scriver.htm or contact Kendall Kroesen at kkroesen@qwest.net.

If you are part of an innovative community-based partnership that is working to restore river corridors or wetlands, we'd like to hear from you. Please send a short description of your partnership to restorationupdate@tetrattech-ffx.com.

Achieving Restoration Results

Land Trust Works to Restore Idaho Creek

The Wood River Land Trust is working to restore a degraded section of Elkhorn Creek in Idaho's southern Sun Valley. This collaborative, multiyear restoration effort is dramatically improving the wildlife and aquatic habitat along Elkhorn Creek as it flows between Sunrise and Lane Ranch Ponds.

Decades ago, a portion of the creek was diverted and channelized to move water faster to downstream water users. The Trust's restoration project entails returning the creek to its historic meandering stream course, installing two fish passages to relink the stream with the Big Wood River and allow trout to migrate to historic spawning grounds, cleaning up the algae-ridden Sunrise Pond, restoring wetlands along the creek, and removing invasive weeds and replacing them with native vegetation.

Much work has already been accomplished. On December 9, 2000, Elkhorn Creek trickled down its original streambed above the Lane Ranch Pond for the first time in over 40 years. Since that time, beaver activity has increased dramatically, resulting in the creation of several ponds that serve as excellent habitat for waterfowl, river otters, and many other species. In 2001, the Trust reduced the size of Sunrise Pond to speed water flow into the new channel, and dredged the pond to improve its winter aquatic habitat.

In 2002, beavers built a dam at the outlet of Sunrise Pond, causing the water to back up into the pond and threaten to drown a nearby restored wetland area. To protect the wetland without impacting the beavers, the Trust recently installed a 3-inch diameter pipe through the beaver dam to allow some water to flow unimpeded from Sunrise Pond down into Elkhorn Creek. For more information see the 10/02/2002 article

Nature finds its course: Land trust works to restore Elkhorn Creek by Gregory Foley in the Idaho Mountain Express (www.mtexpress.com/2002/02-10-02/02-10-02svcreek.htm), or see the Trust's Elkhorn Creek Restoration Project page at www.woodriverlandtrust.org/projects/elkhorn.html.

If You Weed It, They Should Come

Aquatic weeds and dams may not seem to have that much in common. But, in Washington's Muck Lake they might as well be the same thing. For over half a century, reed canary grass and other weeds have cut salmon off from two creeks that flow into Muck Lake. "There is plenty of great habitat below Muck Lake, and salmon can easily reach that," said Jeanette Dorner, Salmon Restoration Coordinator for the Nisqually Indian Tribe. "But, once they reach the lake, they're shut out from all the great habitat above there."

The tribe—with the help of several volunteer groups, landowners and the tribe's Stream Stewards program—is restoring salmon habitat in the lake, including removing weeds that are choking Muck Lake. After the weeds are removed, local volunteers will plant native trees and shrubs on the lakeshore to prevent reed canary grass from reinvading. "Reed canary grass will only grow in places where there is enough sunlight," said Dorner. "Shade is required to keep it from coming back. We would have to redo this project every 6 years if we didn't plant trees."

A few years ago a lower section of Muck Creek went through a similar weed and seed process, which resulted in an historic salmon run. Weeds and grass were removed from the creekbed and trees and native shrubs were planted on the shore. "Because of that work, the salmon were able to swim upstream again and the city of Roy saw its first run of salmon in more than 50 years," said Dorner. "When we take these weeds out of the lake, it will reestablish a connection to the upper watersheds of Lacamas and Muck Creeks that had been missing for a long time."

"Muck Creek is one of the most important tributaries for chum salmon in the Nisqually River," said Dorner. "Reestablishing a connection to upstream habitat will do a lot for salmon in the entire watershed." Muck Creek below the lake supports about a third of the Nisqually River's chum population. In addition to chum, Muck Creek also supports coho salmon, and steelhead and sea-run cutthroat trout.

In addition to weeding the lake, the tribe will also create enhanced spawning and rearing habitat for salmon in the lower portion of Lacamas Creek. In addition, a partial fish-blocking culvert on Lacamas will also be replaced with a small bridge. The tribe's Muck Lake project is in cooperation with the South Puget Sound Salmon Enhancement Group, the Pierce Conservation District, the Natural Resources Conservation Service, local landowners and the Muck Creek Council, a group of local residents working to protect and restore Muck Creek. Funding for the project was provided by the National Oceanic and Atmospheric Administration Community Based Habitat Restoration Grant program and Stewardship Partners, a local non-profit group that supports assisting private landowners in salmon recovery work.

"It is very important for these kinds of projects to have the kind of local support we've found here," said Dorner. "We would never have gotten so far without the support of local landowners and residents."

For more information, see www.nwifc.wa.gov/newsinfo/newsrelsdet.asp?ID=92, or contact either Jeanette Dorner, Nisqually Indian Tribe, Salmon Restoration Coordinator, 360-438-8687, or Emmett O'Connell, Northwest Indian Fisheries Commission, information officer, 360-438-1181, ext. 392, eoconnell@nwifc.org.

If you are part of an innovative restoration project that has had positive results, we'd like to hear from you. Please send a short description of your project to restorationupdate@tetrattech-ffx.com.

Funding for Restoration Projects

Private Stewardship Grants Program

To help individuals and groups who are willing to support voluntary conservation efforts on their private lands for the benefit of imperiled species, the U.S. Fish and Wildlife Service announces a request for project proposals to be considered for funding through the Private Stewardship Grants Program (PSGP).

The Service will award approximately \$10 million in federal grants on a competitive basis to landowners, both individuals and groups, to protect and restore imperiled species and their habitats. The PSGP is open to a wide variety of projects, excluding land acquisition. Example projects include managing nonnative, competing species; restoring streams that support imperiled species; or planting native vegetation to restore a rare plant community.

To be considered for funding, project proposals must include: 1) only voluntary conservation efforts on private lands; 2) benefits to species listed, proposed or candidate for listing under the Endangered Species Act or other at-risk species native to the U.S.; 3) cost-share of at least 10% of total project cost (may be met by in-kind contributions including time, equipment, materials, operations or maintenance costs); 4) landowner participation information; 5) budget information; and 6) measures to evaluate the project. For a detailed description of the eligibility and other program requirements, visit the Web site at <http://endangered.fws.gov/grants/> and click on the link to the Private Stewardship Program. Deadline for applications is January 15, 2003.

California Department of Water Resources Flood Protection Corridor Program

The Department of Water Resources is soliciting grant applications for the 2002-2003 competitive funding cycle. Projects must provide for agricultural land preservation or wildlife habitat protection and enhancement, as well as reducing peak flood flows, flood stage, flood risk, or potential flood damage. Although this grant is directed at flood reduction, wetland restoration or stream channel restoration projects that would reduce flood damage and improve wildlife habitat would also be eligible. Up to \$30 million is available in grant funds with a grant cap of \$5 million per project. Local agencies or nonprofit organizations with interest in flood management issues are eligible to apply. Proposals are due February 14, 2003. For more information, contact Earl Nelson at 916-654-3620 or by e-mail at enelson@water.ca.gov.

Please send any news you have on funding mechanisms available to local community organizations to restorationupdate@tetrattech-ffx.com.

News and Announcements

2003 National Wetlands Awards—Nomination Forms Now Available

Nomination forms are now available for the 2003 National Wetlands Awards. Since 1989, the Environmental Law Institute and the U.S. Environmental Protection Agency have cosponsored the National Wetlands Awards Program. Since the 1998 awards program, cosponsorship has expanded to include the Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the US Forest Service.

The awards program recognizes individuals from across the country who have demonstrated extraordinary effort; innovation; and excellence at the regional, state, or local level. Award categories are Education/Outreach, Science Research, Volunteer Leadership, Land Stewardship and Development, and Outstanding Wetlands Program Development. Organizations and federal employees are not eligible.

National Wetlands awardees show how individuals can and do make a difference. Their efforts educate the public and surrounding communities about the value of wetlands; the programs that are available to protect and restore wetlands; and the value of cooperation among grassroots organizations, educational organizations, private landowners, and federal, state, and local government agencies to protect wetland resources. For more information, and to download a nomination form, see www.eli.org/nwa/nwaprogram.htm. For additional National Wetland Award information contact Erica Pencak, Wetlands Program, at 202-939-3822.

Study Finds Dramatic Increase in Use of Mitigation Banks and In-lieu-fees

Environmental Law Institute Press Release, October 16, 2002

The face of mitigation banking has changed substantially over the past 10 years, according to a report released by the Environmental Law Institute (ELI). Based on a 2-year study of off-site compensatory mitigation, ELI found that wetland mitigation banking has evolved from a small industry dominated by state and local governments to a growing nationwide commercial enterprise dominated by entrepreneurs. Building on ELI's 1993 study of wetland mitigation banking, *Banks and Fees: The Status of Off-Site Wetland Mitigation in the United States* describes and analyzes wetland mitigation banks, in-lieu-fee mitigation, and umbrella banks; and makes recommendations for improving their effectiveness.

Since the early 1990s, federal agency guidance and legislation, and state policies and legislation have promoted the use of wetland mitigation banking, which allows developers to compensate for the negative impacts of their development projects on existing wetlands by paying for the restoration or conservation of an off-site wetland. In turn, the practice has thrived, as has the use of in-lieu-fees, in which a developer pays a sponsor to restore or conserve wetlands at a future date. Yet, in the past 10 years, no study has documented all of the banks and in-lieu fee programs in the country.

“Without this information, federal, state, and local policymakers; conservationists; the regulated community, and the public lack the ability to assess the impacts of these compensatory mitigation approaches on wetlands resources,” said Jessica Wilkinson, Director of ELI’s Wetlands Program.

The 2002 study documents 219 approved banks—a 376 percent increase of banks in the country since 1992. At least another 95 banks are pending approval. In the early 1990s, nearly 75 percent of the nation’s existing banks were single-user banks sponsored by state or local governments with only one private commercial bank in operation. Today, of the 214 approved banks analyzed, 135 are private commercial banks and 61 are single-user banks. In addition, there are currently 87 active in-lieu-fee programs in 27 states administered by the U.S. Army Corps of Engineers, or by state or local government. However, a significant number of in-lieu-fee programs fail to adequately document their activities.

Wetland mitigation banking, in-lieu-fee mitigation, and mitigation banking approved under umbrella agreements, which incorporate multiple wetland sites under a single sponsor, all hold great promise for improving the effectiveness of compensatory mitigation. The study makes available to the public information on the location and character of these sites with the hope that the data will help local groups get involved in incorporating local concerns into mitigation siting and design. Funding for this study was provided by the David and Lucile Packard Foundation and the U.S. Environmental Protection Agency.

Banks and Fees: The Status of Off-Site Wetland Mitigation in the United States may be ordered from ELI for \$24.99 plus shipping by calling 800-433-5120, or ordering online at <http://www.eli.org>. For more information about ELI’s Wetlands Program or the Environmental Law Institute, please contact Jessica Wilkinson at 609-818-0518 or e-mail Pressrequest@eli.org.

New NWRA Report Examines How Invasive Species are Jeopardizing Wildlife Refuges

At a Capitol Hill press conference on October 10, 2002, the National Wildlife Refuge Association (NWRA) joined a bipartisan coalition of senators, representatives, and the Bush Administration on the eve of the 100th anniversary of the Refuge System, to release *Silent Invasion*, a new report that examines how invasive species are wreaking havoc on National Wildlife Refuges across the country. Senators Bob Graham (D-FL), Jim Jeffords (I-VT); Congressmen Wayne Gilchrest (R-MD), Nick Rahall (D-WV), and Norman Dicks (D-WA); and Jim Tate, Science Advisor to the Secretary of the Interior all called for new efforts to stop the invasives.

Invasive species—foreign insects, plants, and animals that wreak havoc on native ecosystems—cause more than \$100 billion damage annually. Invasive plants alone have invaded more than 100 million acres of land nationwide. Nearly 8 million of those acres are in wildlife refuges, areas created to protect the most important examples of biological diversity across the country. NWRA urges Congress and the Administration to provide \$150 million over 5 years to protect these natural treasures against the advancement of invasives.

“America’s wildlife is under siege by a relentless force that respects neither geographic nor political boundaries,” said Evan Hirsche, President of the NWRA. “*Silent Invasion* makes it crystal clear that we

have to act now before it is too late. To stop the Refuge invaders, we need a three-part strategy—educating and mobilizing volunteers; deploying rapid response strike teams across the nation and implementing the strategic management plan of the National Invasive Species Council, a presidentially mandated commission.”

The release of *Silent Invasion* marked the beginning of National Wildlife Refuge Week and NWRA’s campaign to stop the advancement of invasive species before the problem spirals out of control and spoils some of America’s most important natural treasures. “Utilizing volunteers and mobile strike teams is a practical and affordable use of taxpayer funds to solve a problem that could effect 37 million refuge visitors annually,” added Hirsche. “Recognizing the problem early on and responding rapidly are a crucial elements to this campaign. We need to catch the invasives and work to eradicate them before they swell to uncontrollable proportions.”

Silent Invasion profiles the “Dirty Dozen” invasive species and shows how 12 diverse refuges in as many states are working to address this ecological crisis. These refuges include Silvio O. Conte in New England, Blackwater in Maryland, Loxahatchee in Florida, Attwater Prairie Chicken in Texas, the Upper Mississippi, Lacreek in South Dakota, Red Rock Lakes in Montana, Willapa in Washington, the San Diego National Wildlife Refuge, Ellicott Slough in California, Hakalau Forest in Hawaii, and the Alaska Maritime Refuge. For more information about *Silent Invasion* see www.refugenet.org/default-2.htm.

Nature Conservancy and North Florida Land Trust Protect Islands and Saltmarsh

In mid-November 2002, the Nature Conservancy announced that they have partnered with the North Florida Land Trust to protect three coastal islands and more than 670 acres of estuarine saltmarsh in Duval County. The protected acreage—a total of 708 acres of marsh, maritime hammock and tidal creeks known as the Kennedy tract—is adjacent to the Pumpkin Hill Creek State Buffer Preserve and the Timucuan Ecological and Historic Preserve. The purchase is part of the Conservancy’s Islands Initiative, a landscape scale protection project encompassing much of the existing state and federal conservation land. The initiative aims to preserve the health and integrity of several larger biological systems.

The new land, purchased from a private owner, is a healthy tidal marsh area frequently used by numerous species of wading birds, including imperiled species such as Florida clapper rail, wood stork and roseate spoonbill, and is vital to the region’s important commercial and recreational fisheries. The tidal creeks that feed the St. Johns River are havens for West Indian manatee. The three islands are made up of more than 37 acres of undisturbed maritime hammock, which are crucial feeding areas for songbirds migrating on the Atlantic flyway.

“We are working to keep these fragile estuarine saltmarsh communities from becoming fragmented and damaged by development,” said Hallie Stevens, director of The Nature Conservancy’s Northeast Florida Program. “We are pleased to protect this piece of outstanding coastal natural system that is relatively undisturbed by human activity.” For more information, see <http://nature.org/wherework/northamerica/states/florida/press/press857.html>.

Upcoming Conferences and Events

New Listings

The Practice of Restoring Native Ecosystems

October 21-23, 2003

Nebraska City, Nebraska

The practice of restoring native ecosystems is not only becoming more common, it is becoming a more crucial element in the effort to preserve the quality of our environment, and our quality of life. In cooperation with *Land & Water Magazine*, the fourth national conference on The Practice of Restoring Native Ecosystems provides a forum for sharing information among the various professions involved in the emerging discipline of restoration ecology, and gives practitioners access to the latest information gathered by ecologists and other scientists studying restoration issues. Cost per person: \$295. For more information see www.arborday.org/programs/conferencereg28.html or contact National Arbor Day Conference Services at 402-474-5655 or by e-mail at conferences@arborday.org.

Previous Listings

Society for Ecological Restoration, Northwest – 2003 Regional Conference

“The Restoration Toolbox”

March 24–28, 2003

Oregon Convention Center, Oregon

Restoration ecology is a rapidly growing field with broad participation from diverse technical and cultural groups. This conference brings ecologists together to share their questions and learn from each other’s experience in this complex, but essential endeavor. Conference sessions will include weed management, native plants, soils, fish and wildlife, and cultural restoration. For more information see www.fisheries.org/wd/news/2002/Ecological_Restoration_Northwest_2003_Regional_Conference_CFP.htm.

Bogs, Playas, Pools: Protect America’s Unique Wetlands – 2003 American Wetlands Campaign Bi-Annual Conference

May 1–4, 2003

Minneapolis, Minnesota

The Izaak Walton League’s biennial American Wetlands Conference is a national training and networking opportunity for wetland stewards. The purpose of the conference is to educate and inspire people to initiate and sustain on-the-ground wetland conservation and education projects. This year, the conference will include three tracks: education and outreach, wetland science, and wetland conservation policy. In addition to providing the latest information on wetland issues, participants will receive training to further their wetland conservation and education activities. The conference will also include sessions related to the 2003 American Wetlands Campaign theme—Bogs, Playas, Pools: Protect America’s

Unique Wetlands. Each participant will be asked to conduct at least one wetland conservation or education project in the year following the conference. The league will provide assistance and follow-up. The conference is targeted to volunteer and professional wetland stewards interested in learning more about wetlands and how to conserve them. Participants include volunteers, landowners, members and staff of nonprofit organizations, students and educators, government agency staff, business professionals and anyone interested in coordinating or participating in wetlands conservation and education. For more information see www.iwla.org/SOS/awm/conference/ or contact Leah Miller at 301-548-0150 x219 or by e-mail at awm@iwla.org.

To post your restoration news and announcements, please send information to restorationupdate@tetrattech-ffx.com.

Restoration-Related Web Sites

<http://cwest.orst.edu/streamflow/mainpage/hydro.htm>

Streamflow Research. The purpose of this site is to provide guidance on how to perform basic hydrologic evaluations, especially for ungauged sites on small and moderate-size streams. The hydrologic methods explained on this site include Annual Analysis, Monthly Analysis, Flow-Duration Curves, and Flood Frequency Analysis. The site provides definitions of various hydrologic terms, a detailed explanation for each method, step-by-step examples and tutorials, links to data sources, and some tips for manipulating and managing data. Information provided has been geared toward the coast of Oregon, but can be applied to other regions. *This site would be useful for anyone interested in the hydrological aspects of stream restoration.*

www.darp.noaa.gov/national.htm

NOAA's Damage Assessment and Restoration Program (DARP)—Restoration Sites across the Nation. The National Oceanographic and Atmospheric Administration's DARP program conducts natural resource damage assessments and restoration of coastal and marine resources injured as a result of oil spills, releases of hazardous materials, and ship groundings. This site provides links to descriptions of restoration projects undertaken by the DARP program across the country. Many of the descriptions are supplemented by pictures of restoration efforts, including culvert construction, excavation, and replanting. *This site would be useful for anyone seeking examples of large-scale restoration projects.*

www.fs.fed.us/r4/boise/mgmt/watershed/SilverCreek/

Silver Creek Restoration Homepage. The U.S. Forest Service's Emmett Ranger District completed restoration of Silver Creek in 2000. This site provides links to information about, and pictures and videos of, five restoration sites along Silver Creek. Volunteers' contributions are also highlighted through text and pictures. *The site would be useful for someone seeking pictures of restoration projects in various stages of completion.*

www.mrc.com/CurrentRestoration.html

Mendocino Redwood Company (MRC) Restoration Projects. MRC has been actively working with numerous groups and individuals to initiate and facilitate restoration work on its lands. This site lists

brief descriptions of project components, partners, and timelines. Some projects include links to restoration pictures. *This site would be useful for someone seeking examples and pictures of restoration projects in forested areas of the Pacific Northwest.*

<http://nas.er.usgs.gov/>

U.S. Geological Survey's (USGS) Nonindigenous Aquatic Species Homepage. The USGS has established this site as a central repository for accurate and spatially referenced biogeographic accounts of nonindigenous aquatic species. The site provides scientific reports, online/realtime queries, spatial data sets, regional contact lists, and general information. *This site would be useful for anyone seeking information on nonnative plants and animals.*

www.hpl.umces.edu/meerc/

Multiscale Experimentation Ecosystem Research Center (MEERC). Scientists at MEERC study ecosystem-level responses of estuarine areas to human related contaminants and disturbances. The center also seeks to help ecosystem managers to develop comprehensive strategies to mitigate human effects on the environment, especially with regard to contaminant material. This Web site contains information on current research studies taking place at the center as well as recently published material. *This Web site would be useful to anyone developing strategies to mitigate human effects on the environment.*

http://wetlands.fws.gov/mapper_tool.htm

Wetlands Interactive Mapper. The Wetlands Interactive Mapper displays national coverage of spatial wetlands data, high-resolution hydrology and transportation information, and U.S. Fish and Wildlife refuges. The mapper tool can zoom into an area by county, city, zip code, refuge, or latitude/longitude query; view wetlands for areas of various sizes by zooming in and out and by recentering the map; and save the image for later inclusion into presentations or for printing. *This tool would be helpful to anyone looking for maps of wetland areas recorded in the National Wetlands Inventory.*

<http://wildlife.state.co.us/habitat/wetlands>

Colorado Wetlands Program. The purpose of the Colorado Wetlands Program is to protect wetlands and wetland-dependant wildlife through incentives and other voluntary means. This Web site provides information on the wetland restoration and protection programs available in Colorado as well as information about recent accomplishments. *This Web site would be useful for anyone seeking assistance in restoring Colorado's wetlands.*

www.des.state.nh.us/wetlands/

New Hampshire Wetlands Bureau. The mission of the New Hampshire Wetlands Bureau is to protect, maintain, and enhance the environmental quality in New Hampshire; and to regulate impacts to those areas "wherever the tide ebbs and flows" or to "freshwater flows or stands." This Web site contains links to rules and regulations involving New Hampshire wetlands and also to a series of fact sheets providing information on wetland identification and commonly asked questions. *This Web site provides specific information on a variety of wetlands-related questions including identification, forested wetlands, and restoration.*

Let us know about your restoration-related Web site. Please send relevant URLs to restorationupdate@tetrattech-ffx.com.

Information Resources

Permitting an End to Pollution: How to scrutinize and strengthen water pollution permits in your watershed.

by Prairie Rivers Network, Clean Water Network, and River Network

This handbook, available for download at www.cwn.org/docs/publications/permit/permithandbook.htm, guides citizens through the process of reviewing and commenting on proposed permits with a focus on common sense and action. *Permitting an End to Pollution* is based heavily on an Illinois-specific guide created by Rob Moore of Prairie Rivers Network. He created the guide to help his organization engage citizens in substantive review of National Pollutant Discharge Elimination System (NPDES) permits. This handbook is part of the Clean Water Network's TMDL Watershed Cleanup Toolkit.

Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances

By Seth J. Wenger and Laurie Fowler (2000)

The foundation of *Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances* is a set of buffer-width guidelines that are based upon a comprehensive scientific review. This scientific basis is designed to ensure that buffer ordinances established in accordance with the recommendations will meet water quality goals and be defensible. Guidelines are also provided for minimizing the possibility of infringing on the rights of property owners, which is often a concern in the introduction of new land-use ordinances. A model ordinance specifically designed for Georgia counties and municipalities is included.

As part of this effort, *Protecting Stream and River Corridors* is targeted at elected officials who are considering establishing or improving their riparian buffer ordinances, along with planning and zoning officials who will implement and enforce such ordinances. Property owners, developers, and other citizens may also find the contents informative.

Despite their importance, several barriers stand in the way of effective buffer ordinances. For one, the riparian buffer requirements imposed by state laws do not provide a uniform and effective system of protection. For another, concerns over property rights have led many local officials to shy away from ordinances, however beneficial, due to fears of "takings" lawsuits. This paper is intended to help local governments develop effective, comprehensive riparian buffer ordinances that, properly administered, will not generate takings claims. This document is available online at www.cviog.uga.edu/pprs/paper-streams.pdf. Hard copies may be ordered for \$9.75—see www.cviog.uga.edu/catalog/pprs.html for an order form.

If you'd like to publicize the availability of relevant information resources, please send information to restorationupdate@tetrattech-ffx.com.