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

- Provides current information on wetland and river corridor restoration projects
- Recognizes outstanding restoration projects
- Provides 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@tetratech-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 serves or has the appearance to serve as advocating or lobbying for any political, business, or commercial purposes.

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Restoration-Related Web Sites (Page 15) - This section enables you to check out other groups on the Web that are helping in the effort to restore wetlands and river corridors.

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Feature Article

Stilly-Snohomish Task Force Is Making Progress

Streamside buffers, salmon, and students are benefiting from restoration efforts in Washington's Stillaguamish and Snohomish watersheds. The nonprofit Stilly-Snohomish Fisheries Enhancement Task Force (Task Force) partners with many diverse organizations to restore streamside areas and salmon habitat throughout the Stillaguamish and Snohomish watersheds, which cover a combined land area of more than 2,400 square miles. Since its beginning in 1990, the Task Force has directed its resources and energy to the challenge of developing community partnerships and strategies to improve and restore the recreational and commercial fisheries of the Pacific Northwest.

Recently the Task Force worked with schools and private landowners to restore riparian areas in the Quilceda/Allen Creek and Jones Creek watersheds, which are located within the Snohomish watershed. Students from eighth grade science classes at Cedarcrest Middle School participated in the Salmon and Plants for Kids program, sponsored by the Saltwater Anglers of Mukilteo and Snohomish County Surface Water Management (SWM). This spring 80 plus students waded through mud and muck to help plant more than 300 trees and 200 live stakes on their school grounds along Allen Creek and on adjacent land owned by Ed and Eva Bovenkamp.

The Task Force was able to continue the streamside buffer even farther along Allen Creek, thanks to the cooperation of the Bovenkamps. Prior to the implementation of the Cedarcrest project, the Bovenkamps had been battling with invasive blackberry bushes along the creek. To educate herself, Eva Bovenkamp attended a riparian restoration class sponsored by SWM as part of a Quilceda/Allen Citizen Action Grant. She was applying what she learned by slowly clipping away at the blackberries that covered her property when the Task Force found out about the Bovenkamps' interest and offered to help restore the area. A volunteer crew helped clear the blackberry bushes and replant the riparian portion of the property. They planted a total of 470 trees and 200 live stakes, creating 12,450 square feet of new streamside buffer on the Bovenkamps' property, in addition to the what was already planted by the schoolchildren.

The Task Force is also working with two other enthusiastic landowners in the Quilceda/Allen watershed. Karen and Don Miller, who live on a tributary to Quilceda Creek, had a major erosion problem and wanted some help. Karen's first step was coming to a streambank bioengineering class, also sponsored by SWM and the Quilceda/Allen Citizen Action Grant, where she learned that planting vegetation on slopes could help prevent erosion. The Millers went home and planted a row of laurel bushes along the creek. Unfortunately, these bushes eroded into the creek. Karen then contacted the Task Force and the county for some assistance. The Millers were pleased to have a restoration project in their yard, creating habitat not only for salmon but for other wildlife as well. One hundred thirty native plants and shrubs now cover the back third of the Miller property.

To prevent erosion along the creeks, workers installed several erosion control measures. A wattle, a 20-foot-long bundle of willow and dogwood cuttings, was placed horizontally in the ground so that when they grow, the cuttings will create a root mass to hold the soil in place. To stabilize the banks, a small piece of wood debris was placed in the streambank and hundreds of live stakes were planted through the straw matting used to help the loose soil from slipping away.

Finally, the Task Force worked with fifth graders at Allen Creek Elementary School to begin restoration along 120 feet of Jones Creek, a tributary to Allen Creek. When Steve Malmstead, a fifth grade teacher at the school, approached the Task Force about having his class write a grant request for some funds to help save salmon on Allen Creek, the Task Force introduced him to their salmon habitat restoration curriculum. The curriculum takes classrooms through the restoration process from start to finish, including such topics as macroinvertebrates, salmon, water quality, mapping, budgeting, area calculations, vegetation monitoring, site maintenance, and planting. The teacher was happy to help the Task Force field-test the curriculum.

The Task Force is also involved in many other wetland and stream restoration projects throughout the watershed. For a complete list of its projects, see www.stillysnofish.org/activities/projects.html. For more information about the Task Force, see www.stillysnofish.org or contact the Stilly-Snohomish Stream Restoration Task Force at (425) 252-6686 or info@stillysnofish.org.

If you'd like your project to appear as our next Featured Article, e-mail a short description to restorationupdate@tetratech-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: Yampa River Restoration
Five-Star Grant: $10,000
Grant to: The Nature Conservancy of Colorado
Location: Hayden, Colorado
Grant Year: 2000

Original Project Description:
In the Yampa Valley, The Nature Conservancy of Colorado will conduct riparian restoration efforts in the Morgan Bottoms reach of the Yampa River between Mt. Harris and the Town of Hayden. The Yampa River Restoration Project, which will also involve the Rocky Mountain Youth Corps, the Yampa Valley Community Foundation, and others, will increase habitat for a diverse community of birds and mammals that breed, forage, and winter in the forests and shrublands along the river, including bald eagles, sandhill cranes, river otter, and mink. The bank protection afforded by the woody vegetation will also reduce the

amount of sediment in the channel, thus improving water quality and increasing agricultural productivity for local farmers and ranchers. Local community volunteers and students will participate in the on-the-ground restoration work, and a 4-day teacher workshop focusing on local river issues will be held.

Project Update:
From spring 2000 to spring 2001, The Nature Conservancy (TNC), with the help of many volunteers as well as private landowners, embarked on a project to restore woody vegetation to the grassy bare banks of the Yampa River. After 2 years, 4,466 volunteer hours, and several lessons, six banks and a portion of one tributary have been replanted with more than 3,480 native plants. Six of these sites are fenced and permanently protected from impacts by domestic livestock. The goal of revegetating these banks was to slow erosion rates and thus reduce the amount of sediment contributed by the banks to the river.

Since June 2001 TNC has focused its work on two areas: maintaining the restoration plantings of the past 2 years and developing an off-river water source for livestock on Carpenter Ranch (one of the sites where banks were restored). To boost survival of the plantings, TNC enlisted the help of The Rocky Mountain Youth Corps, the Community Youth Corps of Steamboat Springs, and students from Colorado Mountain College. The volunteers controlled weeds around the plantings and kept the plants watered. Currently, livestock kept in the corrals on the ranch have free access to a water gap that allows them to stand in the river and drink. To eliminate this practice, which is detrimental to both riverbank stability and water quality, TNC is developing a plan for an off-river water source. The remainder of the grant money will be spent on the off-river water source system. **[Updated March 2002.]**

Project Title: South Carolina Oyster Habitat Restoration
Five-Star Grant: $10,000
Grant to: South Carolina Department of Natural Resources
Location: Charleston, Beaufort, and Georgetown, South Carolina
Grant Year: 2000

Original Project Description:
The South Carolina Department of Natural Resources will partner with the University of South Carolina, the South Carolina Coastal Conservation League, and community volunteers to establish multiple demonstration projects to restore and enhance oyster habitat along the South Carolina coast. Through this effort, the partners hope to increase public awareness of the importance of oyster habitat for stabilizing shorelines, improving water quality, and enhancing critical fish and wildlife habitat, in addition to the oysters' commercial value. This project will establish and train a core group of teachers, students, and local citizens, who will assist others in expanding oyster habitat restoration efforts throughout the coastal zone. The National Marine Fisheries Service Community-Based Restoration Program is providing part of the funding for this grant.

Project Update:
This project involved volunteers of all ages in actual hands-on habitat restoration. To date, the partners have accomplished the following:

- Developed a new reef-building methodology, adapted from work in Virginia. The methodology consists of placing oyster shells in stretch mesh to produce a bag approximately 3 feet long.

- Involved more than 600 volunteers (school groups, community action groups, interested individuals) in reef-building activities. Volunteers filled more than 4,000 bags with shell to build reefs at 13 sites along the South Carolina coast.
- Established multiple demonstration sites to be used as research platforms to increase understanding of oyster habitat functioning and refine site selection and restoration methodology.
- Trained teachers to use oyster reefs as living classrooms. Lesson plans developed by teachers are used for field trips and will be published on the web site.
- Conducted several community meetings and workshops to educate the public. Several copies of informational brochures were distributed. The public has been made aware of the project through several newsletters and press coverage.
- Assisted in establishing and promoting a shell recycling program.
- Established a web site with NOAA's Coastal Services Center (http://www.csc.noaa.gov/scoysters).

The South Carolina Community-Based Oyster Restoration Program has received funding to operate through at least spring 2003 as a project of South Carolina's Department of Natural Resources. The Department is using the information being gathered from the pilot reefs to develop larger-scale restoration efforts. Other southern states are using this project as a model. **[Updated April 2002.]**

Project Title: Duwamish Waterway Park Estuary Habitat Restoration
Five-Star Grant: $10,000
Grant to: People for Puget Sound
Location: Seattle, Washington
Grant Year: 1999

Original Project Description:
Sponsored by People for Puget Sound, this restoration project is consistent with the organization's focus on developing innovative strategies to protect the wild chinook salmon. Through a broad partnership of local volunteer organizations, businesses, urban youth corps, the Student Conservation Association, the Army Corps of Engineers, the International Marine Association for Protection of Aquatic Life, and Boeing Corporation, People for Puget Sound will restore approximately half an acre of filled parkland to tidal influence. The end product of this restoration will provide mudflat and salt marsh habitat to wild chinook salmon and other estuary-dependent species. The project emphasizes community stewardship and maintenance activities conducted by all members of the community, including local high school-age urban youth.

Project Update:
The work in the Duwamish River Estuary during 2000 was a great success for People for Puget Sound. The organization was instrumental in completing a major new estuarine restoration project. It also organized major stewardship projects at four other sites and created a citizen stewardship team that gathers important monitoring data on the sites.

Throughout the year People for Puget Sound organized and carried out multiple volunteer plantings. At the Hamm Creek Estuary project, at least 600 volunteers participated in planting more than 12,000 plants. Altogether at the Hamm Creek site, the restoration team restored some 2,000 feet of streambed, 2 acres of

freshwater marsh, and 1 acre of salt marsh. The organization also carried out plantings at two sites restored through the Coastal America program in the mid-1990s that were in need of supplemental planting. In addition, restoration volunteers constructed exclusion devices for geese at several of the restoration sites to prevent resident Canada geese from walking, flying, or swimming into the project areas and impeding plant growth. Among the participants who showed up for the community planting days were the King County project manager and the Army Corps of Engineers project manager for the Hamm Creek site.

To ensure the future survival of the restored sites, People for Puget Sound organized citizen stewardship teams to monitor the sites. Volunteers gathered vegetation data at eight sites in Turning Basin, Hamm Creek, and Puget Creek. Information gathered included vegetative cover, presence of native and invasive species, and vegetation density. The organization also developed a database to facilitate data entry. In addition, volunteers are part of an ongoing stewardship program in which they file monthly reports about potential problems at the restoration sites. Volunteers flag dead or dying plants so that they can be replaced the following spring, and they perform watering and weeding tasks during each site visit.

The restoration team has led several field trips to the Duwamish restoration project. Field trip participants included a group from Indian Heritage High School, a plant identification class from the Native Plant Society, the Seattle Mayor's Endangered Species Act Sounding Board, and participants from the Forest Products Association's regional conference.

People for Puget Sound has been very successful in building functioning forage, refuge, and acclimation habitat for Chinook salmon and other threatened species in the heart of Seattle's industrial waterway. Juvenile salmon were spotted entering the salt marsh during the April 22, 2000, community planting day, and adult salmon were documented spawning in the newly restored streambed the following fall. This restoration project has become a showcase of success for People for Puget Sound and proves what can be accomplished through teamwork. **[Updated April 2002.]**

For more information on EPA's Five-Star Grant Program, visit
http://www.epa.gov/owow/wetlands/restore/5star.

Community-Based Restoration Partnerships

Students Research and Restore Creeks

A collaborative project started more than 6 years ago continues to grow and benefit streams in the French Creek watershed and beyond. In 1995, the French Creek Environmental Education Project (FCEEP) was founded by two Allegheny College professors with the hopes of building a successful collaboration between Allegheny College in northwestern Pennsylvania and local public schools. Dr. James Palmer, Department of Environmental Science and Biology, and Dr. Mark Lord, Department of Geology, decided to use the environmentally important French Creek and its surrounding watershed for this investigative, environmental education project. With initial funding from the Toyota USA Foundation and Palmiero Toyota, Inc. of Meadville, Pennsylvania, the project began with 5 schools. In the second year, 15 schools conducted water monitoring programs on different sections of the French Creek Watershed. By the 1998-1999 school year, 22 schools and 28 teachers were involved, 6 of which were Pittsburgh area schools.

Building upon the success and transferability of FCEEP's watershed education model, the leaders decided to expand the project for the 1999-2000 school year to include 14 additional schools in the Pittsburgh area, and a few more teachers in the French Creek Watershed. With the total of 33 schools and 44 teachers in two different corners of Pennsylvania and New York, the project outgrew its name and was renamed Creek Connections in August 1999. However, what has not changed is the project's mission of bringing regional public schools an authentic natural science research experience and an appreciation for local waterways. Today, more than 40 secondary schools and the classes of about 50 teachers participate in Creek Connections. Many of these schools have broadened their Creek Connections experience—instead of just researching creeks, the students are also restoring them.

A good example is the partnership between Creek Connections and Maplewood High School. For the third year in a row, Maplewood students learned about land and water interactions as well as the factors that influence water quality and aquatic life. They then took their knowledge straight to the banks of a local waterway. The students worked closely with government agencies and environmental groups to stabilize a stream channel, plant a streamside forest, and improve a farmer's land. Agencies and organizations involved in the restoration project included the Crawford County Conservation District, Natural Resources Conservation Service, French Creek Project, Pennsylvania Bureau of Forestry, and Ducks Unlimited Streambank Fencing Program.

On May 2, 2002, approximately 110 students from Maplewood worked on a portion of Muddy Creek that flows through a dairy farm near Townville in Crawford County. A Maplewood student led his school group, using the work as a senior project. The student leader located the site and worked closely with landowners and various agencies on designs, permits, and overall project coordination. Key to the day's success was the Maplewood students' enthusiastic energy. “It is amazing the efforts that have been going on, the willingness to help each other and to see how much can get done when the knowledge and tools are supplied,” claimed the student leader. “It is very impressive how well everyone is working together.”

The Maplewood students accomplished a lot that day. They planted more than 200 tree saplings and 700 live willow stakes along the banks. They also helped grade and seed various banks with native grasses, planted some tree cuttings into a wetland area, and removed invasive species like Multiflora rose. To top it off, the students helped to install 3,000 feet of fencing to keep cattle out of the stream, thereby reducing erosion, eliminating direct deposition of manure into the creek, and protecting the newly planted streambanks. For more information, see http://creekconnections.allegheny.edu/Newsletters/May 20-2002.html.

Monitoring Restored Areas May Help Projects Succeed

In 1999 People for Puget Sound developed a program called Sound Restoration Stewardship to work toward maintaining habitat restoration projects to produce long-term restoration successes. People for Puget Sound, a regional citizens’ organization, works with partners such as the U.S. Army Corps of Engineers, EarthCorps, and local governments to restore native vegetation on land surrounding the sound. People for Puget Sound volunteers then monitor plant growth to determine how well restoration sites function as habitat for native species.

People for Puget Sound trains community stewards to identify native and invasive plants and track their growth. The stewards analyze the collected data and respond to the needs of the restored areas by organizing weeding teams and coordinating with People for Puget Sound partners to ensure that the sites receive ample water, protection from resident Canadian geese, and additional native plants.

To date, restoration efforts have focused on the Duwamish River Estuary, which has lost approximately 97 percent of its intertidal wetland habitat. Even in its degraded state, the estuary is home to the endangered chinook salmon, which depend on this estuarine habitat as a vital nursery area. "Our hope is that the Sound Stewardship program will demonstrate its value as a model for use at other Pacific Northwest estuary restoration sites," says Jacques White, People for Puget Sound's Director of Science and Habitat Restoration.

A recent Washington Department of Ecology study supports the concept of stewardship, identifying ongoing monitoring and adaptive management as keys to restoration site success (see www.ecy.wa.gov/programs/sea/mit-study). According to Restoration Coordinator Tom Dean, "In 2002, People for Puget Sound will respond to the two main challenges identified in the Department of Ecology's report, invasive plants and geese predation, by increasing efforts to identify problems and then rapidly organizing weeding parties and goose excluder repairs." Additionally, People for Puget Sound will combine measures of plant growth, bird counts, and data on salmon use to evaluate how well each site is functioning as a wildlife habitat. Additional information on People for Puget Sound's estuarine restoration sites and copies of the full 2001 Sound Stewardship report can be obtained at www.pugetsound.org/vshrmp/King/index.html. For more information, see the box titled "Stewardship Helps Restoration" by Lisa Markovchick-Nicholls in the May 2002 issue of the People for Puget Sound's newsletter, *Sounds and Straights* (http://www.pugetsound.org/newsletter/n0502/ss_v12n1.pdf).

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@tetratech-ffx.com.

Achieving Restoration Results

California State Parks Benefit from Local Company's Generosity

Thanks to Pacific Gas and Electric Company (PG&E), many of California's state parks are looking and functioning better. PG&E partnered with the California State Parks Foundation to sponsor the restoration and cleanup of nine California state parks on Earth Day, April 20th. On behalf of Pacific Gas and Electric Company, the PG&E Corporation Foundation granted $50,000 to the Parks Foundation's Earth Day 2002 Restoration and Cleanup program.

In addition to the $50,000, which was used to purchase supplies for these environmental improvements, hundreds of PG&E employees from the communities surrounding each of these nine parks volunteered their time to the restoration work. Projects included beach cleanup and debris removal at Eastshore State Park, trail and streambank stabilization at Samuel P. Taylor State Park, plant restoration and beach cleanup at Fort Funston Beach, nonnative invasive plant removal at San Bruno Mt. State and County Park, and restoration and replacement of garter snake habitat along Pine Creek at Bidwell-Sacramento River State Park.

The California State Parks Foundation developed its Earth Day Restoration and Cleanup program in 1998 to encourage California residents to actively participate in environmental improvement projects in their communities. Each year thousands of volunteers install recycling bins, plant trees and community gardens, restore trails and wildlife habitats, and clean up beaches and parklands. During the last 5 years, grants totaling $450,000 have been distributed to 357 project sites.

For many years, PG&E employees have contributed thousands of hours to environmental stewardship projects such as cleaning up rivers and beaches, replanting trees, and restoring native habitat in partnership with local environmental nonprofit organizations. The PG&E Corporation Foundation was created in 2000 as an independent corporate foundation to support educational, environmental, and other community nonprofit organizations. For more information about PG&E, see www.pge.com/environment or call (415) 973-5930. For more information about the state park restoration projects, see www.pge.com/006_news/006a_news_rel/020416.shtml.

Federal and State Partners Restore Wetland at New Hampshire Superfund Site

In April 2002 EPA New England and the New Hampshire Department of Environmental Services completed restoration of a 6-acre wetland that had been damaged by contamination from the Ottati and Goss/Kingston Steel Drum Superfund Site in Kingston, New Hampshire. EPA and the U.S. Army Corps of Engineers excavated and properly disposed of more than 9,600 tons of contaminated soils and sediments from a 6-acre portion of the wetland east of Route 125 and adjacent to County Pond in Kingston. Working under the direction of the Army Corps of Engineers and EPA, Environmental Chemical Corporation, Inc. constructed a thermal desorption unit to treat soils contaminated with volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs).

The restored wetland now contains new organic material and young trees. Workers imported more than 20,000 cubic yards of wetland material to re-create the marsh area and constructed 261 hummocks, (small rounded hills) approximately 10 hummocks for every 10,000 square feet of restored area. Workers planted more than 1000 trees and shrubs including red maple, yellow birch, swamp white oak, silky dogwood, elderberry, highbush blueberry, winterberry, pussy willow, serviceberry, and red chokeberry.

EPA placed the 35-acre Ottati and Goss/Kingston Steel Drum Site on its National Priorities List in 1983, making it eligible for federal funding to address site contamination. In the early 1980s approximately 4,000 drums of waste were removed from the site. The site is the former location of the Great Lakes Container Corporation, which conducted a drum reconditioning operation from the late 1950s through July 1980. For more information, see www.epa.gov/region1/pr/2002/apr/020409.html or contact Alice Kaufman, EPA Community Affairs Office, at (617) 918-1064.

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@tetratech-ffx.com.

Funding for Restoration Projects

New Listings:

River Network's Watershed Assistance Grants

Beginning in 1999, to serve the funding needs of locally driven watershed partnerships, River Network teamed up with EPA to institute the Watershed Assistance Grants program. The primary purpose of the program is to support the growth and sustainability of local watershed partnerships in the United States. To be eligible for funding, watershed groups must describe how participants from a specific watershed community will work together to develop lasting solutions to watershed challenges, demonstrate the actions that will be taken to increase the sustainability of the partnership, and evaluate the immediate and long-term effects of the project. Examples of previously funded projects can be found on the River Network web site. In 2002 River Network will distribute a total of $200,000 in grants, ranging from $1,500 to $30,000. Applications must be postmarked by July 19, 2002. For more information, visit www.rivernetwork.org/howwecanhelp/howwag_2002cri.cfm.

National Fish and Wildlife Foundation's Native Plant Conservation Initiative

The Native Plant Conservation Initiative supports on-the-ground conservation projects that protect, enhance, or restore native plant communities on public and private lands. Preference is given to projects that benefit multiple species, reduce the causes of habitat degradation, demonstrate critical conservation need, involve multiple partners, and benefit fish and wildlife on federal land or land that directly affects federal land. Full proposals must be received by July 15, 2002. For more information, visit www.nfwf.org/programs/grant_apply.htm and look for the link for the Native Plant Conservation Initiative.

Upcoming Deadlines:

American Sportfishing Association's FishAmerica Restoration Grants

The FishAmerica Foundation is the conservation and research projects arm of the American Sportfishing Association. The National Oceanic and Atmospheric Administration (NOAA)/FishAmerica Restoration Partnership supports habitat restoration projects designed to benefit recreational fish and their prey species, including the removal of fish passage blockages and the restoration of riparian and mangrove vegetation. Projects are usually funded for between $5,000 and $30,000. Proposals are accepted twice a year with an upcoming deadline of July 24, 2002. For more information, contact Mike Nussman or Tom Marshall at (703) 519-9691 or visit the web site www.nmfs.noaa.gov/habitat/restoration/funding.html.

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

News and Announcements

Researchers Develop Wetland Restoration Technique

Restoring prairie wetlands can be a difficult task for biologists, who encounter such challenges as plants that are extraordinarily finicky about where they grow. Two University of Kansas researchers recently found that elevation differences as short as the length of a pen can affect the success of transplanted pieces of prairie sod.

Kelly Kindscher, an associate scientist with the Kansas Biological Survey at KU, and Alexandra Fraser, a graduate student in KU's Department of Ecology and Evolutionary Biology, are pioneering a transplantation technique. In a study published late last year in the journal *Aquatic Botany*, Kindscher and Fraser described their effort to increase the plant diversity at a 17-acre restored prairie wetland south of Lawrence.

In their study, Kindscher and Fraser transplanted manhole-size plugs of turf. On some, the grass species spikerush predominated; on others, eastern cordgrass. Ninety percent of the plugs were still alive 4 years after transplanting. The two picked these grasses because neither species reproduces well by seed and both need transplantation to succeed in a restoration. All the plugs ended up at virtually the same elevation because the restoration is in a flat floodplain. If a person stood on the lowest plug, the highest would be just beneath the knee.

Nonetheless, these subtle variations in elevation were enough to dramatically affect how the two species fared, Kindscher said. He attributed the effect to differences in how much the species like standing water. Both grasses live in wetlands, but spikerush likes wetter conditions. Despite the modest elevation differences in this experiment, plants at lower elevations spent much more time in standing water than plants at higher elevations. As a consequence, the water-loving spikerush flourished at the lower, wetter elevations but struggled when left high and comparatively dry.

Cordgrass, on the other hand, preferred the less soggy high ground. According to Kindscher, these results show how little we know about restoring natural areas. He said, "It's actually tricky to figure out what plants to put where. Really, we're pretty crude. For most restorations, we just scatter seeds and hope things sort themselves out."

A number of factors besides water can influence a wetland restoration's success. Kindscher mentioned shade, the direction a slope faces, and the amount of clay, organic matter, and other constituents in the soil. To move the transplants, Kindscher and Fraser hit upon the novel idea of using tree spades, those big truck-mounted claws used to transport trees. They believed that the spade's ability to dig deep holes would improve the transplant's chances for survival.

Previously, people attempting to move prairie plants cut long strips of turf, a practice used in transplanting sod. Unfortunately, this technique often damages a plant's roots, which can extend down 4 feet or more in wetland species. "We think tree spades are better because they dig a little deeper and get more root," Kindscher said. "The transplant success is very high." To review an on-line copy of this March 26, 2002, article, see www.ur.ku.edu/News/02N/MarNews/Mar26/wetlands.html.

Wisconsin Governor Announces Funding for Coastal Projects Along Lake Michigan

On April 24, 2002, Wisconsin Governor Scott McCallum announced that Kenosha and Racine counties will benefit from grants totaling $714,779 for coastal projects along Lake Michigan. The grants are part of the $6,585,153 awarded through the Wisconsin Coastal Management Program (WCMP) for activities in the coastal areas of Lake Michigan and Lake Superior.

"The health of Lake Michigan is critical to our lakeshore communities and all of Wisconsin," Gov. McCallum said. "Wisconsin's coastline will be preserved and protected by the outstanding local projects supported by Wisconsin Coastal Management Program grants."

"WCMP has a long and successful history of balancing coastal management with sustainable development," said Jack Culley, chairman of the Wisconsin Coastal Management Council. "The projects selected for funding will enhance Great Lakes water quality, create public access opportunities and improve awareness of coastal issues."

The awards include both WCMP grants and the new Great Lakes Coastal Restoration grants. WCMP grants promote wetland protection, land use and community planning, waterfront renovation, and public access. Great Lakes Coastal Restoration grants assist in contaminated site cleanup, stormwater controls, wetland restoration, acquisition of greenways and buffers, and other projects designed to protect and restore coastal resources. The Office of Ocean and Coastal Resource Management (OCRM), U.S. Department of Commerce, funds each program.

The restoration projects include the following:

- The Wisconsin Department of Natural Resources received $100,000 to fund acquisition of permanent easements to protect approximately 10 acres of land in the Chiwaukee Prairie State Natural Area (SNA) in Kenosha County. Chiwaukee Prairie is one of the largest prairie complexes in the state and the most intact coastal wetland in southeastern Wisconsin.

- The Wisconsin Department of Natural Resources received $202,404 to restore 332 acres of degraded wetlands at 10 coastal state natural areas in Bayfield, Door, Kenosha, Ozaukee and Sheboygan counties. Restoration will focus on removal of invasive plants.

- The Mount Pleasant Storm Water Utility District received $387,375 to fund a wetland restoration as part of a comprehensive, watershed-based stream restoration and storm water control project.
- The Mount Pleasant Storm Water Utility District also received a $25,000 grant to implement mapping of the Pike River.

For more information, see www.wisgov.state.wi.us/news_detail.asp?prid=890 or contact Tim Roby, Governor's Communications Director, at (608) 266-8110.

Diverse Projects to Improve Great Lakes Water Quality

Water quality and soil conservation in the Great Lakes states are getting a boost from a wide range of local projects that will promote erosion control, clearer streams and lakes, and sound land-use practices. In May 2002 The Great Lakes Commission announced that it had selected 34 projects to share more than $715,000 in grants under its Great Lakes Basin Program for Soil Erosion and Sediment Control. Funding is provided through a cooperative agreement with the U.S. Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS).

"The Great Lakes Basin Program is a decade-long success story in state/federal/local partnership," said Nat Robinson, chairman of the Great Lakes Commission. "It's a great example of how we can improve water quality by promoting innovative land-use practices."

The projects selected by the Commission range from information/education programs to physical measures designed to reduce erosion and improve water quality. Among them are the creation of buffer zones (grasses, shrubs, and trees) to slow and filter stormwater runoff, prescribed grazing areas to protect grasses and other vegetation along streambanks, assistance for citizens and local officials in instituting stormwater and urban erosion controls, erosion control on rural construction sites, and stream channel restoration and "soft engineering" installations along rivers and shorelines (i.e., covering shorelines with vegetation, matting, or other material to hold soil in place).

"Improving Great Lakes water quality begins with sound land-use practices in our agricultural and urban areas," Robinson said. "It's projects like these that help improve and preserve the health of the entire Great Lakes ecosystem."

Since its creation in 1991, the Great Lakes Basin Program has supported 216 projects and invested more than $5.9 million in water quality improvement efforts, with an additional $3 million of nonfederal matching funds applied to the projects. The Basin Program has placed well over 60,000 acres of land under some form of erosion and sediment control. In the process, the program has involved hundreds of community volunteers in watershed restoration projects, improved local ecosystems, and built support for ongoing environmental restoration efforts.

Successful applicants for this highly competitive grants program are chosen by the Commission's Soil Erosion and Sedimentation Task Force, composed of state and federal officials. To view a complete list of funded projects, see http://www.glc.org/announce/02/02-05basingrants.html.
Visit www.glc.org/basin/projects.html for information on previously funded projects. For more information, contact Gary Overmier, Project Manager, at garyo@glc.org or (734) 665-9135.

Upcoming Conferences and Events

New Listings

Vegetation Management Conference
Bloomington, Minnesota
July 29BAugust 1

The North American Weed Management Association is working with the Vegetation Management Association of Minnesota to host this conference addressing the topics of weed growth and control. Session topics will include controlling noxious weeds in wetland areas, the role of seed banks in reestablishing native vegetation, and the relationships between vegetation and other organisms in an ecosystem. For more information or to register for the conference, visit www.nawma.org.

Soil and Water Conservation Society: 2002 Annual Meeting
Indianapolis, Indiana
July 13B17, 2002

The 2002 annual conference of the Soil and Water Conservation Society will be an opportunity for integrated learning and sharing across key natural resource topic areas. The conference will focus on how conservation of natural resources is linked to local, regional, national, and global concerns. Three topic areas will be explored in-depth: land use—in terms of reconciling economics, ethics, and ecology; managing nonpoint source water pollution; and measuring conservation progress. For more information, see www.swcs.org/t_what2002conffrontpage.htm or e-mail Pat Mulligan at patm@swcs.org.

Rocky Mountain Summit: Sustaining Ecosystems and Their People
Whitefish, Montana
September 22B25, 2002

The Rocky Mountain Summit celebrates 2002 as the International Year of Mountains. This summit will bring together community leaders, resource managers, policy makers, scientists, educators, and the general public for the purpose of increasing awareness and understanding of the social, cultural, economic, and ecological significance of mountain ecosystems. Major themes of the summit include human dimensions of mountain cultures and ecosystems, sustainable mountain development, and mountain ecosystems and resources. For more information, see www.cares.missouri.edu/rms2002 or call Julia Rodriguez at (573) 882-7458.

Previous Listings

Riparian and Aquatic Ecosystem Monitoring
Two sessions: July 29BAugust 2, 2002 and August 5B9, 2002
Forest Grove, Oregon

This 5-day intensive technical training workshop includes both lab and field components. Participants work with scientists and Student Watershed Research Project (SWRP) staff to learn programmatic and technical methodologies for teaching and conducting stream and watershed monitoring. The workshop is designed for anyone with a reasonable science background interested in technical aquatic and riparian ecosystem monitoring programs, including educators, agency resource professionals, volunteer monitoring coordinators, watershed council representatives, and representatives from environmental organizations. For more information, see www.swrp.org or contact SWRP at (503) 748-1363 or renfro@pdx.edu.

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

Restoration-Related Web Sites

www.mde.state.md.us/enpa/2001_enpa/goal07.html
Environmental Partnership Agreement: Ensuring Adequate Protection and Restoration of Maryland's Wetland Resources. This site describes the components of Maryland's plan to protect and restore wetlands. Key areas of discussion include the state's strong regulatory and planning programs aimed at protecting tidal and nontidal wetlands and the Governor's Wetlands Restoration Initiative that sets a goal to increase the state's wetland acreage by 10 percent. *This site would be useful for anyone looking for information on states with established successful wetland protection programs.*

www.fb-net.org/index.html
Farm Bill Network. This web site describes the programs available through the 2002 Farm Bill, including those that will fund wetland and riparian restoration and protection. The Farm Bill Network (FB-Net) is supported by the Wildlife Management Institute, the International Association of Fish and Wildlife Agencies, several state wildlife agencies, the National Association of Conservation Districts, and other private organizations. *This site would be useful for anyone looking for funding information.*

http://h2o.enr.state.nc.us/wrp/
The North Carolina Wetlands Restoration Program. This innovative, nonregulatory program was established by the North Carolina General Assembly in 1996 to restore wetlands, streams, and riparian areas throughout the state. The site offers detailed information about the necessity of watershed planning as a key component in restoration efforts. It also provides information about past and present restoration projects throughout North Carolina. *This site would be useful for anyone looking for examples of how to successfully plan and implement restoration projects.*

www.nps.gov/plants/index.htm
Plant Conservation Alliance. PCA is a consortium of 10 federal government agencies and more than 145 nonfederal cooperators representing various disciplines within the conservation field. PCA members and cooperators work together to prevent native plant extinction and restore native habitats. The site offers the Restoration Working Group's Virtual Library (www.nps.gov/plants/restore/library/index.htm) and includes information on federal policies and guidelines, funding, research, resources, prevention, and public outreach. *This site offers multiple resources including publications, landscaping guidance, and funding options related to the restoration of native species.*

www.acnatsci.org/research/anserc/research.html
The Academy of Natural Sciences' Estuarine Research Center (ANSERC). The Estuarine Research Center is a private, nonprofit research laboratory dedicated to increasing understanding of marine and coastal ecosystems and studying how ecosystems react to human-induced stressors. The web site provides links to current research projects as well as a staff directory. *This site would be useful for anyone looking for current research being conducted on the effects that humans can have on marine environments.*

www.chesapeake.org
Chesapeake Research Consortium. The Chesapeake Research Consortium, Inc. (CRC), a nonprofit corporation chartered by the State of Maryland, is an association of six institutions—the Johns Hopkins University, the University System of Maryland, the Smithsonian Institution, the College of William and Mary, the Academy of Natural Sciences, and Old Dominion University. CRC provides a means by which the six institutions can work together to research the problems affecting the Chesapeake Bay. The web site contains links to research programs and recent publications. *This site would be useful for anyone seeking current research on issues presently facing coastal communities.*

www.salemsound.org
Salem Sound 2000. Salem Sound 2000 is a nonprofit coastal watershed association that works with government agencies, businesses, nonprofit organizations, and citizens from the communities around Salem Sound in Massachusetts. The goal of Salem Sound 2000 is to take cooperative action to protect and enhance the environmental quality of the Sound. The web site contains information on the association's Adopt-A-Tidepool and Salt Marsh Biomonitoring programs. *This site would be useful for anyone wishing to get involved in protecting the environmental quality of the Salem Sound, or anyone interested in setting up an organization to protect the health of any coastal waterbody.*

www.nawma.org
North American Weed Managers Association. This association seeks to foster cooperation among noxious weed managers in the exchange of information, education, training, weed management practices, programs, and technologies. The web site contains links to multiple invasive species and weed identification database sites. *This site would be useful for anyone seeking help with identification and elimination of invasive species.*

www.nhq.nrcs.usda.gov/CCS/Buffers.html
Buffer Strips: Common Sense Conservation. The Natural Resources Conservation Service maintains this web site with information about the importance of buffer strips to water quality and stream health. This site includes fact sheets on buffer strips, buffer initiatives contacts for each state, and links to buffer technology information. *This site would be useful for anyone seeking to implement streamside buffers or promote community awareness of the need for buffer strips.*

www.vernalpool.org/vern.htm
The Vernal Pool Association. This association works to educate Massachusetts residents about the importance of vernal pools and the need to preserve and restore them. The web site contains links to vernal pool resources, including publications on native plants and animals, the Massachusetts vernal pool certification program, and numerous educator resources. *This web site contains information that would be useful in helping to educate local communities about the importance of vernal pools.*

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

Information Resources

Stewards of the Stream: Riparian Buffer Systems
by Iowa State University, April 1996

Available at www.extension.iastate.edu/Publications/PM1626A/homepage.html, this publication provides an overview of riparian systems and explains the ongoing loss of riparian zones and associated water pollution and soil and habitat loss. It then explains the benefits of healthy riparian areas and details ways to restore them. The publication offers pictures and detailed descriptions of different types of riparian buffer systems.

Wetlands and Stream Restoration Bibliographies
North Carolina State University's Center for Transportation and the Environment Information Services

North Carolina State University's Center for Transportation and the Environment (CTE) offers quarterly Wetlands and Stream Restoration bibliographies on its web site (http://itre.ncsu.edu/cte/ctepubs.htm#bibliographies). Bibliographies are available through November 2000.

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