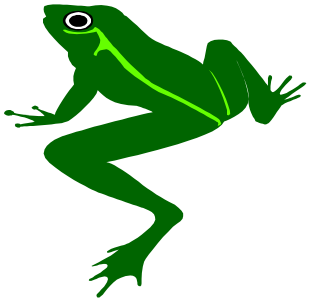
View From a Wetland

News and Technology for Riparian and Wetland Management



Interagency Riparian/Wetland Plant Development Project
Natural Resources Conservation Service
Plant Materials Center
Aberdeen, ID

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Project Leader
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Introduction

This newsletter is part of our continuing effort to provide useable information to the public on wetland and riparian management. This is the fourth issue since the project was established in 1991.

Riparian/wetland Project

Our project mission is to introduce performance-tested ecotypes to the public seed and plant market and document technical information for the establishment of wetland and riparian herbaceous and woody plants. The Project has collected several riparian and wetland plant species in four ecoregions within our Service Area in the arid and semi-arid West.

Herbaceous Plants

Nebraska Sedge *(Carex nebrascensis)*
Creeping Spikerush *(Eleocharis palustris)*
Baltic Rush *(Juncus balticus)*
Threesquare Bulrush *(Scirpus pungens)*
Alkali Bulrush *(Scirpus maritimus)*
Hardstem Bulrush *(Scirpus acutus)*
Water Smartweed *(Polygonum amphibium)*

Woody Plants

Coyote Willow *(Salix exigua)*
Geyers Willow *(Salix geyeriana)*
Booth Willow *(Salix boothii)*
Drummond Willow *(Salix drummondiana)*
Lemmon Willow *(Salix lemmonii)*
Yellow Willow *(Salix lutea)*
Pacific Willow *(Salix lucida ssp lasiandra)*
Peachleaf Willow *(Salix amygdaloides)*
Laurel Willow *(Salix pentandra)*
Narrowleaf Cottonwood *(Populus angustifolia)*
Black Cottonwood *(Populus balsamifera ssp trichocarpa)*

***Note**: Several of these herbaceous and woody species have recently gone through a taxonomic change. We have chosen to continue to use the old names for the sake of continuity.*

Algae – the green slime on your wetland

Algae can cause numerous problems in wetlands, ponds, and streams. Algae are a very old group of plants that are simple with no true leaves, stems, or root systems. Some types of Algae form mats of thick green threads, and some are single celled plants. They use sunlight to create food in many different environments.

Algae grow rapidly in warm water that has high levels of nutrients. Noxious odors can be generated from large mats of algae. The thick mats can block sunlight from reaching very deep into the water column that in turn affects fish and desirable plants. As algae die, they sink to the bottom of the wetland or pond and decompose which uses up oxygen in the water. This can cause fish die-off and destruction of healthy plant communities. It can also release stored nutrients, which can feed other plants and more algae. Algae seem to spread rapidly in the warm summer months mainly due to increased growth rates, higher nutrient levels, and higher water temperatures. They tend to respond to an increase in the nitrogen and phosphorous in the water. When the ratio of nitrogen to phosphorous is 10:1 or higher, algae will flourish. This combined with high summer temperatures will cause large mats of algae to grow on wetlands and ponds.

Control of algae is difficult. Cutting up the mats is usually impractical. Herbicides are available, but the application in open water is difficult and environmentally unsound. The best way to control algae is to reduce the nutrient input. Inputs include: lawn, golf course, farm, and greenhouse fertilizer runoff; animal waste from confined animal areas

such as feedlots, corrals, and pastures; septic tank leach fields; waterfowl and other water birds; sediment; and organic debris that occurs naturally. Many of these nutrient inputs can be reduced through proper management. (*Adapted from Sue Donaldson, UNR Cooperative Extension*)

Barley straw has been used successfully in many different water bodies to treat algae problems. As the barley straw breaks down, it releases a chemical that inhibits the growth of algae. Once the straw starts to release the chemical, it will remain active until the straw is almost completely decomposed, approximately six months. (From *Centre for Aquatic Plant Management)*

Remember: in a Constructed Wetland System, the presence of algae demonstrates that the system is working. Blue-green algae is one of the best ways to remove Ortho-phosphorous (soluble phosphorous).

Riparian Ecology and Restoration Workshops

As part of our technology transfer program, we have developed a two-day Riparian Ecology, Restoration, and Management Workshop. The first day is devoted to the classroom where we cover basic concepts, riparian zone vegetation, planning alternatives, plant acquisition, and bioengineering techniques. The second day is spent in the field where course participants classify the site and install a series of bioengineering structures on an eroding section of stream.

Each year we conduct several of these workshops in different parts of our service area. If you are interested in attending one of them, contact Pat at the PMC for the next scheduled workshop. We have tentatively scheduled two workshops in eastern Oregon (probably John Day and Baker City) for April 1999. We are also planning one workshop at Henry's Lake, Idaho probably late September 1999. If you would like us to put on a workshop in your area and you have about 30 people, who would attend the training, contact Chris and we will see what we can do.

The Practical Streambank Bioengineering Guide

The Interagency Riparian/Wetland Plant Development Project has published **The Practical Streambank Bioengineering Guide:** ***A user's guide for natural streambank stabilization techniques in the arid and semi-arid Great Basin and Intermountain West***. This Guide is written for the professional conservationist to use when working with the landowner. It includes a general ecology section, self-guided technique sheets on various alternative bioengineering structures, and plant datasheets with illustrations. The Guide was printed in a 3-ring binder format so that it can easily be updated and the technique sheets or the plant datasheets can be removed, photocopied, and handed directly to the landowner.

The Guide has been printed and we have a limited number of copies available to professionals. Call PMC and ask for a copy if you think you can use it. The Guide is also available on the Internet at **http://www.nhq.nrcs.usda.gov/BCS/links/sbg.html**. By clicking on the title, it can be downloaded with Adobe Acrobat. It will take the average user about 8 minutes to download the entire Guide.

Anyone who has a copy of the Guide is welcome to reproduce as many copies as they need. We do ask that if portions of the Guide are reproduced, that an appropriate citation be included with the reproduced sections.

Vertical Bundles vs. Wattles or Fascines

Many questions are asked about when to use a vertical bundle versus a Wattle or Fascine. One of the biggest problems with a Wattle is that the normal hydrology must be exactly right for it to survive. In the western climate, except for spring-fed streams, free running streams are referred to as "flashy" because they fluctuate very dramatically from floods down to nearly dry or totally dry conditions. When you get this kind of fluctuation, placing the wattle at the proper water level is nearly impossible because it is installed horizontally. If the water is too high after installation, the willows will drown and if the water is too low, the wattle will die from the droughty conditions.

Vertical bundles, on the other hand, are installed vertically up the bank so the fluctuating water level does not affect the survival of the willows because some part of the bundle will always be in the water. The key to vertical bundle installation is to ensure that 8-12 inches of the bundle is in the lowest water level. This usually entails digging down into the streambed during installation. Next a trench should be dug into the bank so the bundle lays at a slight angle up the bank. Cut a trench in the top of the bank so the top of the vertical bundle can stick out at least 1 foot. A bank slope of 2:1, 3:1, or greater angle is best. Cover the bundle with a light covering of soil and wash it into the bundle with water. The final product should be a mosaic of soil and exposed branches. Do not cover all of the branches in the bundle with soil or no sprouting will occur except at the top of the bank. When water levels fluctuate wildly during the growing season, consider planting vertical bundles for woody plant establishment on streambanks.

Publications of Note

Stream Corridor Restoration Manual: Principles, Processes, and Practices

This new interagency publication describes the rapidly expanding body of knowledge related to stream corridors and their restoration. It includes information on: stream corridor ecology and physical structure; process characteristics and functions; types of disturbances; developing a restoration plan; and applying restoration principles. It would probably be the most helpful to professional planners who have more than a basic understanding of riparian zones and river processes. It is available on the Internet at **http://www.usda.gov/stream_restoration**. It can be downloaded with Adobe Acrobat.

Conservation Corridor Planning at the Landscape Level: Managing Wildlife Habitat

Another publication that might be of interest is the *Conservation Corridor Planning at the Landscape Level: Managing Wildlife Habitat* Manual. This manual has just recently been completed and provides the user with information on habitat fragmentation and conservation corridors. It provides step-by-step information on corridor planning for farmsteads and watersheds. It is being sent to the NRCS field offices nationwide.

The Riparian Zone: important, diverse, and limited

This brochure, produced by the Utah Riparian Management Coalition, provides a better understanding of riparian areas and the need to be more aware of their importance to Utah. It includes a color picture of Utah and describes what riparian areas look like in different parts of the state. It also describes the functions and values of riparian areas and gives specific examples. This is a colorful resource that does an excellent job of describing Utah's riparian areas. (Contact Mark Petersen 801-524-4570)

Proceeding of the *ASCE Wetlands Engineering And River Restoration Conference For 1998*, Denver, CO

Engineering Approaches To Ecosystem Restoration is the title of the American Society of Civil Engineers annual meeting. This meeting was well organized and it brought engineers and biologists together in one "room" to discuss their needs when it comes to wetland and river construction, enhancement, or restoration. The proceedings are on a CD that can be read with Adobe Acrobat. It includes some fascinating articles that will provide the reader with state-of-the-art research results that will help with future restoration or enhancement projects on wetlands or riparian zones. I found that engineers for the most part do not object to including vegetation in their structures, however, they feel that they need more facts on what the vegetation will do once it is established. Right now they do not have facts and figures that they can refer to when the project fails and they are sued by the landowner, government, or interested parties. Information on where to obtain a copy of the proceedings can be obtained from the ASCE website – **http://www.asce.org/**.

Tapered Cottonwood Poles

I recently heard from Jeff Braatne, University of Washington, who is well known for his expertise on cottonwoods. He suggested some changes to the way cottonwood poles are planted. He recommends that cottonwood poles be harvested so they are tapered from a large base to a smaller top. The tapered shape will allow the pole to exhibit more of a tree shape rather than a "shrub" shape. He still recommends that the top be cut off so that more energy is directed to the root buds. He also suggests that 4-5 buds be left at the top of the pole and that buds lower down on the pole be rubbed off with a pair of gloves. Again this will encourage tree form rather than "shrub" form. It is also important to ensure that the bottom of the pole is in the mid-summer watertable. Always ensure that good soil to stem contact occurs up and down the entire stem.

Angle the cuttings when planting

When planting pole cuttings into a streambank, try angling the cuttings out over the water at a 45° angle rather than straight up. The cuttings can grow at almost any angle from horizontal to vertical. By planting the cuttings at a 45° angle, they will begin to provide more shade, water quality, and wildlife habitat benefits faster than if they were planted vertically. In addition, if you are planting into a vertical or near vertical cut bank, by planting the cuttings at a 45° angle, there will be less chance of the cutting breaking off if the upper bank sloughs off. On steep banks, you will get more stem to soil contact if the cutting is planted at a 45° angle rather than vertically. The down side of the angled planting is that the cuttings need to be longer in order to reach the low water table. Sometimes, it's harder to plant the cuttings at an angle rather than vertically, although it is usually a mental imagining problem rather than a physical one.

Wetland Plant Plugs: leave the soil on vs. washing the soil off

Should the soil be left on the roots of a wetland plant plug that is collected from a wild location? Yes! Generally, leaving the soil on the plug will increase the establishment success by about 30%. Beneficial organisms that are typically found on the roots of the wetland plants that are important in the nitrogen and

phosphorous cycles can be moved to the new site which often will not have the organisms if it has never been a wetland before. However, there will be an increase in the volume of material that needs to be transported. In addition, if collections are made from a weed infested area, there is a good chance that weed seeds could be transported in the soil. Washed plugs can be inoculated with mycorrhizae purchased from dealers if the project objectives call for it. The collection location will also help determine whether the soil should be left on the plugs or washed off.

Fairview Constructed Wetland System

We are currently working with Idaho State University on a new CWS research project in southern Idaho near American Falls Reservoir. This project will treat irrigation wastewater from a single farm before it returns to the Snake River. The project has replicated ponds and numerous possible combinations of treatment that will demonstrate the best combination of components necessary to treat loading rates generated from agricultural operations. We hope to complete the construction and planting this year and start water quality data collection next year. Baseline data from surrounding areas has been collected for the last 2 years so we will have something to compare against.

Additional Information

Bioengineering Information

The Practical Streambank Bioengineering Guide: A user's guide for natural streambank stabilization techniques in the arid and semi-arid Great Basin and Intermountain West. (See Page 2)

Individual Wetland Plant Fact Sheets – description, ecology, collection, propagation, management, and uses of:

Nebraska Sedge *(Carex nebrascensis)*
Creeping Spikerush *(Eleocharis palustris)*
Baltic Rush *(Juncus balticus)*
Threesquare Bulrush *(Scirpus pungens)*
Alkali Bulrush *(Scirpus maritimus)*
Hardstem Bulrush *(Scirpus acutus)*

Riparian/Wetland Project Information Series

No. 2 - Selection and Acquisition of Woody Plant Species and Materials for Riparian Corridors and Shorelines.

No. 3 - Use of Willow and Cottonwood Cuttings for Vegetating Shorelines and Riparian Areas.

No. 6 - Seed and Live Transplant Collection Procedures for 7 Wetland Plant Species.

No. 7 - Use of Greenhouse Propagated Wetland Plants Versus Live Transplants to Vegetate Constructed or Created Wetlands.

No. 8 - Constructed Wetland System For Water Quality Improvement of Irrigation Wastewater.

No. 9 - Design Criteria for Revegetation in Riparian Zones of the Intermountain Area.

No. 11 - Getting "Bang for your Buck" on your next Wetland Project.

No. 12 - Guidelines for Planting, Establishment, Maintenance of Constructed Wetland Systems.

No. 13 – A Reference Guide for the Collection and Use of Ten Common Wetland Plants of the Great Basin and Intermountain West.

Idaho NRCS PM Technical Notes

No. 6 - The Stinger, a tool to plant unrooted hardwood cuttings of willow and cottonwood species for riparian or shoreline erosion control or rehabilitation.

No. 23 - How to Plant Willows and Cottonwoods for Riparian Rehabilitation.

No. 32 – User's Guide to Propagation and Establishment of Native Shrubs and Trees for Riparian Areas. (available in June, 1999)

For a copy, write or call:

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