View From a Wetland

News and Technology for Riparian and Wetland Management

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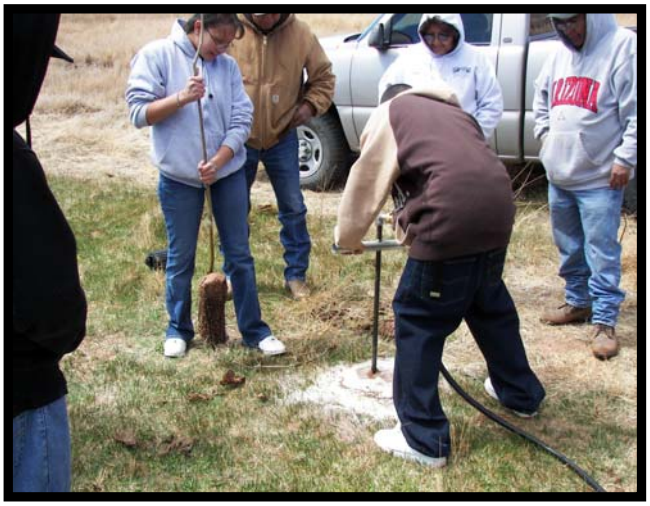
"Lettin' the cat outta the bag is a whole lot easier'n puttin' it back."
- Will Rodgers

Introduction

This newsletter is part of the Aberdeen Plant Materials Center's continuing effort to provide technical information to the public on wetland and riparian plants, plant establishment, and their management. This newsletter is the twelfth issue published since the Interagency Riparian/Wetland Plant Development Project was established in 1991.

Riparian Ecology and Restoration Workshops



As part of the Project's technology transfer efforts, a three-day Streambank Soil Bioengineering Technical Training Session was developed. The first day of the course is devoted to the classroom where basic riparian dynamics, riparian zone vegetation, plant acquisition, and bioengineering techniques are discussed. The second day of the course is half in the classroom discussing local topics and half in the field where participants classify a riparian site and develop a restoration plan based on resources and problems at the site. On the third day, the participants get in the stream and install a series of bioengineering structures along the eroding section of the stream.

Each year several workshops are conducted in different parts of the western United States. If you are interested in attending this course, contact Pat Blaker at the PMC for the next scheduled workshop. If you are interested in having a workshop in your area and you have about 30 people that would attend the training, contact Chris Hoag and we will try to schedule a course in your area.

Water depth limits for various wetland plants

Wetland vegetation is primarily limited by hydrology. Water limits the diffusion of oxygen to buried seeds and root zones, which restricts germination and growth of most species. Wetland plants differ from upland terrestrial plants by having vigorous morphological and physiological mechanisms that enable them to tolerate inundation of their roots. Some species tolerate longer inundation periods than others. Too much water, especially during the growing season, will stress the plants which will limit growth and establishment. Complete inundation of most plant species, even wetland plant species, can be lethal. Therefore, it is very important to ensure that the site will have enough water in the right place at the right time of year to support the plant species targeted for the planting area.

It should be noted that young plants that are just developing from seed or plant fragments do not have the same inundation or flood-tolerance as mature plants of the same species. Young plants are very susceptible to death with complete inundation, particularly during the growing season. Establishment success of herbaceous emergents, shrubs and trees is often increased if water levels are

controlled for the first one or two years to allow only short flooding periods and saturated substrates.

The plant species themselves are good indicators of conditions at the site. They can help you determine the frequency and duration of inundation by identifying the hydrologic zone they are in. They can also help you determine soil conditions and potential planting plans by mapping the plant distribution. It is important to note that the different plant growth forms indicate hydrologic conditions over time. As one would assume, tree life spans are longer than herbaceous species. Often conditions under which a tree species was established may have changed over time where as short-lived species are more likely to reflect recent conditions.

Water quality is another factor that determines where different wetland plant species will establish. Water quality factors, such as nutrients, pH, alkalinity, turbidity, salinity, and toxins are important to consider when deciding your planting plan. Since most wetland plants acquire their nutrients from the soil, water quality is very important when considering wetland submergents.

Understanding the soils at a wetland site is crucial to the success of a planting project. Determine if there is a stable rooting layer to an adequate depth for the target plant species. Soil texture interacts with the hydrology and ground surface slope to determine the drainage capacities of the site. This will affect the period of inundation. The soils also provide the nutrients necessary for growth and maintenance.

To determine the root penetration depth, identify if an impenetrable layer (i.e. clay, calcic, gravel, or rock) is under the soil layer. Remember, rooting depths differ by plant species. Generally, most fine roots that absorb nutrients are in the top foot of soil. If the layer is deeper than one foot, rooting depth is not a problem for most herbaceous species and most shrubs. Trees, however, require soils that are much deeper for increased stability against wind and stream currents.

An impenetrable layer will also affect drainage on the site. It can help in some cases because the layer will maintain the wetland conditions. However, the layer may create undesirable standing water conditions and may need to be broken to improve drainage so the desired plant species can survive. If that doesn't work the plantings need to be moved to a more appropriate location.

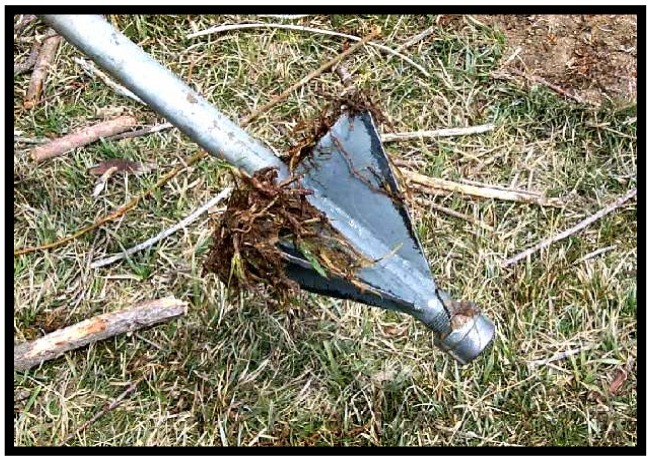
Determining whether to plant or not

One question that is often asked when putting together a wetland restoration plan is: should you plant the site or let it re-established naturally? To

make this decision, species dominance and/or quantities should be determined for all plant community layers or strata (herbaceous, shrub, and tree). Compare the naturally occurring species that should be found on the site to the projected community. If the species are not present in adequate amounts that meet the project goals and that can tolerate the projected water, soil, and nutrient conditions, appropriate plant species will have to be acquired and planted.

Waterjet Stinger Pot Planter

In 2006, one of the most interesting and useable tools that was developed at the PMC is the pot planter attachment for the Waterjet Stinger.



The Waterjet Stinger is a tool for outplanting dormant unrooted cuttings of willows (*Salix ssp.*), cottonwoods (*Populus ssp.*]), and dogwoods (*Cornus sericea)* (See Tech Note 39). The Waterjet Stinger uses water to hydrodrill a hole in the soil large enough to insert a 0.75- to 1.5-in diameter, dormant, unrooted cutting. The original concept worked so well that we adapted a probe that allows the waterjet to be used to plant larger rooted container plants. We think this will increase the survival of container stock, especially in dry areas of the US, because plants would be outplanted into a wet hole rather than a dry hole-mitigating loss of moisture from the container medium to the soil. Plants would have fewer air pockets

around their roots, yielding better root-to-soil contact. The water from the hydrodrilling creates a zone of moisture, a “water bulb,” around the roots that would extend the time the root system has contact with favorable soil moisture.

The pot planter probe is similar to the original waterjet probe but includes larger vanes on the sides of the probe to create the larger hole needed for container plants. The vanes are 3-in wide, taper toward the nozzle, and are welded to the probe pipe at right angles to each other.

In addition, because of less wear to the nozzle tip, the tip is not stainless steel and a standard pipe cap can be used, reducing overall cost.

Aberdeen PMC Grows Rare Plants for WRP Site

Derek J. Tilley

In 2006 the Aberdeen Plant Materials Center (PMC) accepted a request to propagate 300 plants of Indian Valley sedge (*Carex aboriginum* M.E. Jones) as part of a project to reestablish populations in its native habitat at the “Jewel Wetland” in southwestern Idaho.

This unique species was first collected in the Weiser valley by Marcus E. Jones on July 12, 1899, at Indian Valley, ID and wasn’t seen again for 100 years. The species was thought to be extinct, until 1999, when a population was discovered south of Council, in Adams County, ID. As a result, Indian Valley sedge was moved from the Idaho Native Plant Society’s Taxa Believed to be Globally Extinct category to the Global Priority 1 category.

This project is being coordinated by the NRCS Payette Field Office on a Wetland Reserve Program (WRP) site in cooperation with land owners Jon and Mary Trail, with support from the Land Trust of the Treasure Valley. The project involves several interested parties, including the USDA Forest Service Rocky Mountain Research Station and Idaho Department of Fish and Game. Volunteers from these agencies have assisted in seed collection and will be on hand to transplant greenhouse grown plants at the WRP site.

Seeds are presently undergoing stratification at the PMC and will be planted into blocks of greenhouse root trainers later this winter to be ready for transplanting in April 2007.

Technical Assistance to Afghanistan

In May 2006, Chris Hoag traveled to Kabul, Afghanistan to provide advanced training to employees of the Ministry of Agriculture, Animal Husbandry, and Forestry. Chris and Jon Fripp from the NRCS National Design, Construction and Soil Mechanics Center developed a 10 day class in Watershed Assessment, Management, and Rehabilitation and presented the course to 62 Ministry employees who have positions similar to Cooperative Extension Agents in the US. The Watershed training included classroom presentations and field trips to demonstrate watershed assessment techniques.

The students were taught rangeland management techniques and principles, how to design and plant a windbreak, how to use a seed drill to plant grass seed, how to set up a drip irrigation system, how to use micro-sprinklers, how to use a soil pit, plant identification, how to build simple water purification systems, how to use a hand level and a compass, and more.

Additional Information

All publications are now available on the Internet in Adobe Acrobat format. You can download each of the papers below by going to http://www.Plant-Materials.nrcs.usda.gov/idpmc/riparian.html. Idaho PM Technical Notes can also be downloaded from: http://www.id.nrcs.usda.gov/programs/plant.html. If you do not have access to the Internet or would like to receive a hard copy of a publication, please contact us.

Bioengineering Information

1) *The Practical Streambank Bioengineering Guide*
2) *Streambank Soil Bioengineering Field Guide for Low Precipitation Areas*

Individual Wetland Plant Fact Sheets – Description, ecology, collection, propagation, management, and uses of 6 different wetland species.

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. 10** - Perigynium removal and cold-moist stratification improve germination of *Carex nebrascensis* (Nebraska sedge).
- **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.
- **No. 14** - Harvesting, Propagating and Planting Wetland Plants.
- **No. 15** - Costs and considerations of streambank bioengineering treatments.
- **No. 16 –** Riparian Planting Zones.
- **No. 17 –** Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species.
- **No. 18** - Streambank Soil Bioengineering Considerations for Semi-Arid Climates.
- **No. 19** - Simple Identification Key to Common Willows, Cottonwoods, Alder, Birch, and Dogwood of the Intermountain West.

Idaho NRCS PM Technical Notes

- **No. 4** - Reading Seed Packaging Labels and Calculating Seed Mixtures.
- **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. 13 -** Harvesting, Propagating and Planting Wetland Plants.
- **No. 23** - How to Plant Willows and Cottonwoods for Riparian Rehabilitation.
- **No. 32** – User's Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas of the Intermountain West.
- **No. 38 -** User's Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas in the Intermountain West.
- **No. 39 -** Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species.
- **No. 40** - Biology, history and suppression of Reed canarygrass (Phalaris arundinacea L.).
- **No. 42** – Willow Clump Plantings.
- **No. 43** - Tree Planting, Care and Management

For a copy, write or call:

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