

# 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**

**Number 6 (2000)**

### Project Leader

J. Chris Hoag, Wetland Plant Ecologist

*"Never test the depth of a stream with both feet." – African Proverb*

### Introduction

This newsletter is part of our continuing effort to provide useable information to the public on wetland and riparian management. This is the fifth 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 to 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. The Project has released 24 performance tested wetland plant ecotypes of six different herbaceous species.

### Riparian Ecology and Restoration Workshops

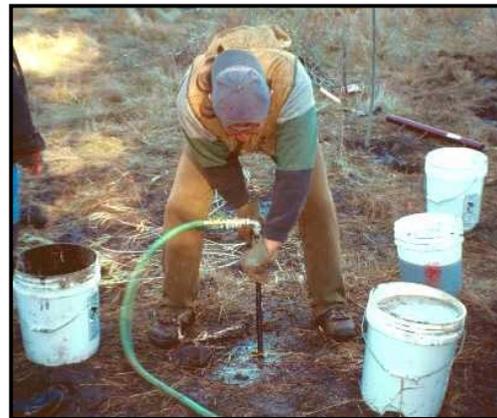
As part of our technology transfer program a two-day Riparian Ecology, Restoration, and Management Workshop was developed. The first day is devoted to the classroom where basic riparian concepts, riparian zone vegetation, planning alternatives, plant acquisition, and bioengineering techniques are discussed.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

Each year the Project conducts several workshops in different parts of our service area. If you are interested in attending this course, contact Pat Blaker at the PMC for the next scheduled workshop. If you are interested in a workshop in your area and you have about 30 people, who would attend the

training, contact Chris and we will try to schedule a course in your area.

### **Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species**

The Waterjet Stinger takes water right from the stream and uses it to hydrodrill planting holes for unrooted cuttings. The waterjet stinger is small enough to be moved on an ATV and it can hydrodrill holes about 6-8 feet deep with very little effort by the operator. Information Series 17 details how to build and use the waterjet stinger. The publication provides pictures, a list of materials, and the associated costs to build one yourself. Field testing indicates this is one of the best tools for planting dormant cuttings that we have ever used.



### **Wetland Plugs versus Direct Seeding**

To the restorationist, both project cost and potential success drive vegetation decisions. The decision to install a planting will increase project costs over changes in management alone. Not installing a

planting may result in a failure to meet the objectives of the project. If it can be determined that establishing vegetation by changes in management alone will meet your project objectives and that planting or seeding can be minimized, while at the same time being relatively sure success criteria and targeted functions will be established, then project costs can be saved or redirected. When confronted with the final decision, 'to plant or not to plant', it is important that the choice is made based on factors that influence the ability of vegetation to produce the desired outcome over the expected time frame. Once the decision to install a planting has been determined, then the choice to use seed or greenhouse grown plugs must be made.

Most wetland plants are very difficult to seed in the wild. Wetland plant seeds need three things to germinate: 1) heat, 2) water, and 3) light. The need for light means that wetland plant seeds should be seeded on the soil surface and they should not be covered with soil. Drilling the seed will cover the seed especially if packer wheels or drag chains are used.

Many wetland species have a very hard seed coat that may take up to one year or longer to break down enough for the embryo to germinate. Many species require special stratification treatments to prepare the seed for planting. These treatments include everything from acid wash to mechanical scarification, from pre-chilling to extremely high temperature soil conditions. Occasionally, depending on species, dormant seeding (seeding during the late fall or early winter after the plants have gone dormant) can be successful.

Not having absolute control of the water going into the wetland or riparian area is the most common mistake that occurs when seeding wetland plants. Without good water control, as water enters the system the newly planted seeds may float to the water surface and move to the water's edge where wave action deposits the seed in a very narrow zone. The seed will germinate and the stand will generally be successful as long as the hydrologic conditions are maintained for the deposited species. With good water control, the seeds should stay in place and the stand will cover the entire wetland bottom instead of just around the fringe.

Some species seeded in a greenhouse setting need a cold-hot stratification environment for successful germination. This requires that the seeds be placed in cold storage at 32-36° F for 30-60 days and then planted in moist soil containers at air temperatures of about 100° F. Heat is an essential requirement for germination and growth of wetland plant species.

Using direct seeding of herbaceous wetland plants as the primary means of revegetating a site requires

more attention to planning and control of site hydrology during the establishment period to ensure success. In addition, it is important to understand the specific germination/stratification requirements of the targeted species. Successful establishment of herbaceous vegetation by direct seeding is possible. Examples include the establishment of Tufted hairgrass (*Deschampsia caespitosa*) wetlands in Oregon and multiple species herbaceous depression wetlands in Delaware. However, direct seeding of herbaceous species is not typically used as the primary means of revegetation. It is a good method to increase the overall species diversity in a wetland, particularly around the perimeter and to establish populations of specific target species.

Revegetating a site with herbaceous species plugs of greenhouse-grown material has a much higher establishment rate than seeding or collections of wildlings (plugs collected from wild populations)

### Wetland Plug Size

Large wetland plug stock is becoming more popular in revegetation projects because they handle the changing water table and erosive effects of floods better than smaller plants. Large stock has better developed aerenchyma than the smaller stock. This means that if water levels rise unexpectedly, they will have a better chance of survival. The smaller stock has a lower chance of handling that kind of inundation.



With either large stock or small stock, ensure that the root to shoot ratio is as close to equal as possible.

The Project has determined the plugs that are about 21 in<sup>3</sup> are about right to handle most uncontrolled situations. Rarely do we recommend 12 in<sup>3</sup> or less. It is just not worth the money to

plant these small plants in uncontrolled water regimes because plant failure is common.

The best recommendation we can give is to buy the largest plugs you can afford. Some growers are only growing the smaller plugs, but "will grow the large sizes upon request." This means, if you plan far enough ahead and involve the grower in the process you can ensure you get the plant materials you want and need for your project.

## Small Shrub and Tree Revetment Material

We are often asked what species of woody plant material should be used for revetment material. First, you should try to use material that is close to the project site. Second, the materials should be small enough to be moved by hand (generally about 10-15 feet tall and 4-6 inches in diameter). Third, the material should not take up more than 20% of the bankfull width of the stream. The smaller the stream, the smaller the material you will need for your project.

From our experience and that of other researchers in the field, the following woody species have the density of needles that result in long term sediment deposition and velocity reduction (species are listed in order of best to worst).

- 1) Juniper – juniper has small multiple branched stems that persist for an extremely long time.
- 2) Spruce – again lots of fine needles and branched stems that do not fall off readily.
- 3) Fir- fine needles and small branches that persist a long time.
- 4) Christmas trees – these work well and are abundant after Christmas. Stay away from very small trees and the trees that have tinsel.
- 5) Broadleaf species – these are hard to use because the leaves fall off resulting in very little mass to reduce velocities and cause sediment deposition. They will work best in areas without evergreen species. More trees be necessary to fill in the gaps.
- 6) Pine – never use pine species unless there is nothing else because the needles fall off quickly and they have very few fine branches.

## New Publications

Five new Riparian/Wetland Information Series papers and one Technical Note are now available on the website.

Information Series 10 - ***Perigynium removal and cold-moist stratification improve germination of Carex nebrascensis (Nebraska sedge).***

Information Series 14 -***Harvesting, Propagating, and Planting Wetland Plants.***

Information Series 15 - ***Costs and Considerations of Streambank Bioengineering Treatments.***

Information Series 16 - ***Riparian Planting Zones.***

Information Series 17 - ***Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species. This was also released as Idaho Plant Materials Technical Note 39.***

Idaho Plant Materials Technical Note 38 is ***User's guide to description, propagation and establishment of wetland plant species and grasses for riparian areas in the Intermountain West.***

*Perigynium removal and cold-moist stratification improve germination of Carex nebrascensis (Nebraska sedge)* is from some research that Mike Sellers and I did a few years ago on perigynium removal and the resulting increase in germination for Nebraska Sedge. This article will be published in [Native Plants Journal](#) this fall.

*Harvesting, Propagating, and Planting Wetland Plants* was written to try and describe from start to finish how to plant wetland plants. It describes direct seeding problems, greenhouse propagation, wildling collection, transplant planting techniques, and general recommendations.

*Costs and Considerations of Streambank Bioengineering Treatments* was taken from a paper written by Craig Fischenich and Hollis Allen on the what various bioengineering treatments cost to install. I updated the information and applied more current cost information. The paper is written based on staff hours so you can apply the hourly wage from your area to the estimate.

*Riparian Planting Zones* is a more detailed explanation of the planting zones that were introduced in *View from a Wetland*, No. 5. This paper defines the zones and provides information on a variety of different wetland and woody plant species and which zones they occur in.

*Waterjet Stinger: A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species* is a paper with the complete plans for building the Waterjet Stinger. See article on page 1.

*User's Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas in the Intermountain West.* This paper is similar to Tech Note 32, *User's Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas of the Intermountain West* except that it covers wetland plants and grasses used for seeded the upland zones of wetland projects.

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## **Additional Information**

All publications are now available on the Internet in Adobe Acrobat format. You can download each of the papers by going to <http://www.nhq.nrcs.usda.gov/BCS/PMC/pubs/IDPMCpubs-wet.html>. If you do not have access to the Internet or would like to receive a hard copy, please contact us.

## **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.* – Available on the Internet at <http://www.nhq.nrcs.usda.gov/BCS/PMC/pubs/IDPMCpubs-wet.html>. The Internet version of the Bioengineering Guide is in 4 files written in Adobe Acrobat format.

## **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. 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

## **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 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.

For a copy, write or call:  
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