

Date: December 19, 1994

## **INTERAGENCY RIPARIAN/WETLAND PLANT DEVELOPMENT PROJECT**

### **SEMI-ANNUAL JULY, 1994 - DECEMBER, 1994 PROGRESS REPORT**

#### **Project Staff**

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#### **Introduction**

This is the first of the new semi-annual progress reports that we will be sending out. It was decided on April 21, 1994, that we would go from quarterly reports to semi-annual reports. In addition, we would produce an annual newsletter that would be sent out to people who call or write to the Project requesting information. This progress report covers from July 1, 1994 through December 31, 1994.

#### **SCS becomes Natural Resources Conservation Service**

In case you are not aware of it, the Soil Conservation Service has been abolished!!! We are now called the Natural Resources Conservation Service. The name change will better describe what we do. We are involved with the conservation of all natural resources, not just soil. We are also being reorganized along with other agencies in USDA as part of the Government Reinvention process, in addition to USDA downsizing. Some of the changes in USDA are quite drastic, but in the end it should provide our customers with a much better service. We have all the specifics of the changes if you are interested.

#### **Calender Note - April Business Meeting**

Next year's business meeting will be April 13, 1995 at 8:30 am at the SCS State Office conference room in Boise (on Elder Street). Please write this on your calender and plan to attend. We need your input.

#### **Riparian/Wetland Project Business Meeting and Tour**

The annual fall business meeting and tour included stops at FT. Boise WMA and a discussion with Clair Kofoed, Manager and Habitat Biologist, about some of the work he has been doing with created wetland ponds and planting various species of wetland plants. We also toured the Nature Conservancy 1000 springs CWS near Hagerman, ID and our riparian planting site at Trout Creek, Nevada. The meetings was fairly well attended with several sponsors dropping out at the last minute for a variety of reasons. We do appreciate all those that took the time to attend the business meeting and go along on the tour.

#### **Interagency Riparian/Wetland Plant Development Project Brochure**

We finally produced a color brochure about the Interagency Riparian/Wetland Plant Development Project. Everyone should have received several copies. Copies were also sent to all the NRCS Field Offices in our service area. I was pleased with what we produced for the price.

We do have plenty of copies if you would like to get more to pass out. Please contact us and we will send as many as you want.

### **Corvallis PMC Wetland Coordinated Study**

We are working on a wetland coordinated study with the Corvallis PMC in which we are comparing collection techniques, establishment techniques, maintenance criteria, and accessions of ELPA3 from the Corvallis and Aberdeen area. Two accessions of ELPA3 from the Corvallis PMC and three from the Aberdeen PMC have been propagated in greenhouses at both sites and were transplanted into one of the created wetland ponds at the end of July. The second half of the study was to compare live transplants collected in the fall after dormancy was initiated. Here we are trying to compare wetland plants with normal transplanting procedures that show the highest establishment success if transplanted when the plants are dormant. Our initial work indicated a high transplant success with the wetland plants occurs when they are transplanted in the middle of the summer.

### **Id Transportation Department**

A planting demonstration/training session using "The Stinger" was conducted on Beaver Creek, in the Centennial range, near the Montana border in May, 1994. As of September 15, 1994, out of the 57 cuttings that were planted, 49 or 86% were still alive and growing well. Average leader length was 69.3 cm (27.3 in) and the maximum leader length recorded was 152.4 cm (60 in). Several cuttings had been grazed by moose, but were still leafing out and showed no visible signs of stress. This establishment success rate occurred even though Beaver Creek has had some of the lowest water years in a long time. Lower establishment percentages are expected the second year, but not as low as we might expect at other sites.

### **Wetland Plant Collections**

Last fall, 37 wetland plant seed collections from the top 5 selected performance tested accessions were collected from the original collection sites. 123% of the collection sites were visited by October 1. Seven of those collections were made during the collection trips to improve our stock of seed for germination tests. All collections were documented. They will be cleaned this winter and used in germination tests and production this winter and spring.

### **USBR H-Drain Project, Paul, ID**

The H-Drain Constructed Wetland System is in cooperation with the Minidoka Project, USBR, Burley, Idaho. This project deals with the planting of both wetland and woody riparian plants in a CWS designed and constructed by the USBR. This project is designed to provide research opportunities into how to plant wetland plants and maintain the community. We are gaining information on establishment procedures, competition, community dynamics, water quality, and survival.

The following is a list of species which were planted:

#### **Canal**

<b><u>Date Planted</u></b>	<b><u>Species</u></b>	<b><u>Accession</u></b>	<b><u>Number Planted</u></b>
7/7/94	CANE2	Malheur NWR, OR	12
	JUBA	Stillwater NWR, NV	12

ELPA3Ruby Lk. NWR, NV	12
SCPU3 Market Lk. WMA, ID	12
SCMA Bear Lk. NWR, ID	12
SCAC Ft. Boise WMA, ID	12
PODE PMC IEP, ID	4
SAAM Twin Falls, ID	6
SALA Sawtooth NF, ID	4

**Pumping Pond**

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
7/7/94	CANE2	Malheur NWR, OR	16
	JUBA	Stillwater NWR, NV	16
	ELPA3Ruby Lk. NWR, NV		16
	SCPU3	Market Lk. WMA, ID	16
	SCMA	Bear Lk. NWR, ID	16
	SCAC	Ft. Boise WMA, ID	16
	SALU	Sawtooth NF, ID	20
	SAGE	Sawtooth NF, ID	40
	SAEX	NA	60
	SAPE	PMC IEP, ID	3

**Overflow Pond 1**

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
7/7/94	CANE2	Malheur NWR, OR	12
	JUBA	Stillwater NWR, NV	12
	ELPA3Ruby Lk. NWR, NV		12
	SCPU3	Market Lk. WMA, ID	12
	SCMA	Bear Lk. NWR, ID	12
	SCAC	Ft. Boise WMA, ID	12

**Overflow Pond 2**

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
10/25/94	SCAC	9057597	40
	SCMA	9067512	40
	SCPU3	9057635	40
	ELPA3	9057607	40
	CANE2	9057592	40
	JUBA	9057609	40

**Survival Rates**

Generally, the 1994 herbaceous plantings had a 90% to 100% survival as of October 31, 1994. The SCMA, ELPA3, and JUBA which were planted along the water edge near the sediment basin outlet were spreading, flowering, and generally in very good shape. Many of the SCMA and SCAC plantings have already spread two to three feet! SCPU3 did not seem to establish well earlier this summer, but by September they were spreading very well. CANE2 was doing well also, however, it didn't seem to be spreading as fast as the other species. SAEX had 94% survival. The other woody species had 59% survival. Overall, the plantings are doing extremely well.

## H-Drain Seeding Progress

**Note:** Seeding is defined as planting both stratified and unstratified seed of various herbaceous wetland species which were collected in 1991, 1992, and 1993. Stratification was used to enhance the germination rate of the seed. Dry sand was mixed with the seed to aid in its distribution when using the cyclone seeder.

The following is a list of what was seeded:

### Sediment Basin

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Amount</u>
6/30/94	CANE2	Malheur NWR, OR	2 ounces
	CANE2	Chesterfield RES., ID	2 ounces
	CAHY	L. Salmon Dam, ID	2 ounces
	JUBA	Modoc NWR, CA	4 ounces
	ELPA3	Sterling WMA, ID	2 ounces
	SCPU3	Sterling WMA, ID.	2 ounces
	SCPU3	Camas NWR, ID	2 ounces
	SCMA	Bear River NWR, UT	2 ounces
	SCAC	Sterling WMA, ID	2 ounces
	SCAC	Great Salt Lk., UT	2 ounces

### Overflow Pond 2

<u>Date Seeded</u>	<u>Species</u>	<u>Accession</u>	<u>Amount</u>
10/25/94	JUBA	Modoc NWR, CA	1/2 ounce
	JUBA	Jackpot, NV	1/2 ounce
	JUBA	Maki, ID	1/2 ounce
	JUBA	Locomotive sp., UT	1/2 ounce
	JUBA	Wayne Kirch WMA, NV	1/2 ounce
	JUBA	Railroad Valley, NV	1/2 ounce
	ELPA3	Jackpot, NV	2 ounces
	ELPA3	Blackfoot Res., ID	2 ounces
	SCPU3	Fernley, NV	5 ounces
	SCPU3	Reno, NV	5 ounces

### Seeding Survival

As of October 31, 1994, no seed germination was noticed. Due to the seeds germination requirements, sprouting is not expected until the spring and early summer of 1995.

### Summary

During FY93 and FY94, we planted a diverse wetland community with ecotypes from a wide variety of locations. By doing this, we are well on our way to ensuring a healthy wetland community which will maintain itself through time. Given favorable germination conditions, the seed which was planted is expected to sprout during the spring and early summer of 1995. This should help to fill in many of the areas which did not have sufficient soil to transplant the greenhouse grown plants as well as increase the overall genetic diversity. In addition to meeting our goals for a diverse vegetated community, the site is providing quality wildlife habitat. Numerous species of waterfowl and shore birds were seen using the wetland all summer.

## Willow Studies

A storage length combined with a rooting trial is underway. Cuttings that were collected are in cold storage to investigate the length of time cuttings are able to be stored without detrimental effects. Coinciding with this, we will be looking at ways to increase and stimulate root growth of these stored cuttings.

All cuttings were collected in March and April of 1994 and stored at 3-5°C. The first data was collected from cuttings directly planted from the field. The rest of the cuttings have been planted and documented several ways. We have found that viability drops at about 5-6 months. We have observed that cuttings stored for nearly 6 months and then planted take much longer to establish. We are also looking at cuttings that have been stored longer and then planted in the late fall/early winter. We have seen fair survival and root growth, but at a slower rate than fresh cut plantings. Hopefully we will find something that will work efficiently enough so we can cut down on time spent in the field collecting cuttings.

## USBR Smith/Sterling Created Wetlands

### Sterling Created Wetland (diked arm of American Falls Reservoir)

The planting site was very dry during planting. Bee Waldo (BOR) agreed to put the flash boards in place on October 17, 1994 and raise the water to the appropriate level. The following is a list of what was planted:

### Island I

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
8/24/94	SCAC	Ft. Boise WMA, ID	120
	SCMA	Bear Lake NWR, ID	120
	SCPU3	Market Lake WMA, ID	120
	ELPA3	Malheur NWR, OR	120
	CANE2	Malheur NWR, OR	120

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
10/8/94	CANE2	Jackpot, NV	120
	ELPA3	Ruby Lake, NV	120

### Island II

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
8/24/94	SCAC	Hagerman WMA, ID	120
	SCMA	Bear River MBR, UT	120
	SCPU3	Mahala Slough, NV	120
	ELPA3	Mud Lake WMA, ID	120
	CANE2	Blackburn Ranch, UT	120

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
10/8/94	CANE2	Jackpot, NV	120
	ELPA3	Ruby Lake NWR, NV	120
	SCPU3	Market Lake WMA, ID	80
	JUBA	Stillwater NWR, NV	120

## Island IV

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
10/8/94	SCAC	Ft. Boise WMA, ID	120
	SCPU3	Market Lake WMA, ID 40	

## Summary

Three of the five islands at this site were planted during the fall of 1994. The remaining islands will be planted during the spring of 1995. Six species of wetland plants from 15 accessions were planted thus far. We have planted a diverse wetland community which will function and maintain itself through time.

Smith Drain Created Wetland (impoundment of a section of irrigation drain and partial diking of an arm of American Falls Reservoir)

## Objectives

The objective of planting the Smith wetland site near American Falls Reservoir is to establish a diverse wetland community that maintains itself through time and provide valuable food and cover to migrating waterfowl and other birds.

## Planting Progress

The island was planted on October 8, 1994 with the following species:

<u>Date Planted</u>	<u>Species</u>	<u>Accession</u>	<u>Number Planted</u>
10/8/94	SCAC	Malheur NWR, OR	120
	SCMA	Bear Lake NWR, ID	120
	SCPU3	Malheur NWR, OR	120
	ELPA3	Ruby Lake NWR, NV	120
	CANE2	Jackpot, NV	120
	JUBA	Stillwater NWR, NV	120
	SAEX	NA	120
	SAGE	NA	20

## Summary

The island at this site has been planted with six herbaceous wetland species and two woody species. Wetland plant seed and upland grasses and forbs will be planted in the spring of 1995. By planting a diverse community we have assured a long lasting and viable wetland which will provide food and cover for migrating birds as well as enhance the water and aesthetic quality of the area through time.

**Nature Conservancy Constructed Wetland System, Hagerman, ID**

Our work this past summer concentrated on plant establishment. Because there was no control on amount of water turned into the system during the critical time of plant establishment, many of the plantings have died, mainly because they had drowned. Plugs which were planted in shallow areas and the SCAC rhizome transplants are doing very well. We collected forage samples this fall from the various CWS components and all of the plant species we are working with. These are being analyzed by the ARS lab in Kimberly, ID. Northside Canal Co is presently deepening the deep water pond, constructing the final filter, and installing water control structures. We are contemplating further plantings in the shallow wetland. Dieoff, slow rhizome spread, and water delivery problems have all contributed to less vegetative cover than is desirable. Further plantings would occur this spring.

### **Presentations (posters, papers, talks)**

We presented a number of talks, papers, and poster sessions this past quarter. Below is a list of our presentations.

Hoag, J. Chris and Michael Sellers. 1994. *Constructed Wetland System for Water Quality Improvement*. Utah 5th Annual Non-point Source Pollution Conference, Park City, UT. September 21-23, 1994. (Presented by Michael Sellers)

Hoag, J. Chris. 1994. How to plant willows and cottonwood dormant pole cuttings for riparian rehabilitation. Streambank Protection and Restoration Conference, Portland, OR. Sept 22-24, 1994.

Hoag, J. Chris. 1994. Selection and Acquisition of plants for riparian projects and dormant pole planting techniques for riparian improvements. Streambank Stabilization and Riparian Enhancement Workshop. USU, Logan, UT, Oct 11-12, 1994.

Hoag, J. Chris and Michael E. Sellers. 1994. *Constructed Wetland Systems for Water Quality Improvement of Surface Flow Irrigation Wastewater*. Northwest Riparian Symposia, Boise, ID, Dec. 7-9, 1994.

### **Germination Studies**

We are presently involved with isolating and studying the various factors which influence CANE2 germination rates. In a recent study, we investigated the effects of cold stratification and perigynia removal on germination. We tested the four following treatments: 1) no stratification, perigynia intact; 2) no stratification, perigynia removed; 3) 32 day stratification, perigynia intact; 4) 32 day stratification, perigynia removed. Each treatment consisted of four replications of 60 seeds. The seeds were placed in petri dishes and kept moist with distilled water. Seeds were illuminated 24 hours a day with a 60 watt incandescent bulb placed 24 cm above the petri dishes. Seeds were then observed for 30 days. All of the seeds used in this experiment were harvested at the Trout Creek Off-Center Test Site near Jackpot, NV.

None of the seeds which were in the first treatment (no stratification, perigynia intact) germinated. Treatment 2 (no stratification, perigynia removed) had an average of 1.5 seeds (SD=1.29) germinate in each replication. Treatment 3 (32 day stratification, perigynia intact) had an average of 3 seeds (SD=1.41) germinate per replication. Treatment 4 (32 day stratification, perigynia removed) had an average of 10.5 seeds (SD=3.32) germinate per replication.

From this study, it is clear that there is some germination inhibiting factor involved with the perigynia. Cold stratification helps to increase the germination rate. The highest germination rates (Fig. 1) were seen in seeds which had their perigynia removed and were stratified for 32 days.

This study will be expanded this winter. We will be investigating the effects of various nutrients on germination rates, as well as the effects of mechanical and chemical scarification, temperature, and accessional differences.

### **Outdoor Idaho Wetland Special Video**

Copies of the 1/2 hour special on Wetlands produced by PBS on Outdoor Idaho that featured the Interagency Riparian/Wetland Plant Development Project were sent to those cooperators who expressed an interest in obtaining a copy to use for training and information transfer to their organizations. The special was on wetlands in Idaho and what different parts of the state were doing in wetlands research and management. Wes Green, USBR Regional Office, provided the tapes and duping facilities to make all of the copies. Thanks WES!!!! Anyone who did not get a copy can contact us. We also have a couple of loaner copies.

### **Arimo Ranch**

This project involves a 4.6 mile section of Marsh Creek located on the Arimo Ranch. Marsh Creek is a 44 mile long stream that drains into the Portneuf River. The ranch owner is interested in improving the quality of his part of the stream and has contacted several federal, state, and local agencies and groups. The riparian areas have been extremely overgrazed and have very low production. Each agency involved will have a specific task in the project. Our responsibility is to select the plant species, supervise the collections of local vegetation to be used for transplant, and finally monitor and document the vegetative developments. The intent is to improve the habitat for wildlife, increase riparian production for controlled grazing, improve water quality, and to influence the surrounding ranchers to follow the footsteps of the Arimo Ranch. All grants and plans have the go-ahead and is scheduled for spring of 1995.

### **Animal Waste CWS**

We are cooperating with Utah SCS to set up 2 Constructed Wetland Systems to treat animal waste from dairies in the Logan Valley. We met again in Logan in October to firm up design criteria for the 5 components for the Parker CWS. This System is designed to treat just the milkhouse wastewater for the Parker dairy. It will be quite small, but it will have sample points on each of the components for water quality and flow measurements. A second CWS is planned on the Cain Dairy, a Utah State University research dairy. Steve Poe, USU, has applied for an EPA grant to install the system. This system would treat not only the milkhouse waste, but also barn and corral wastewater. We are shooting to get at least the Parker CWS built this Spring. We will be putting in some of the wetland plant accessions we are testing.

### **Plant Attribute Database**

After nearly 5 years in operation, the project has acquired 121 accession of our own collections for woody riparian species. It was becoming increasingly difficult to look up a specific collection in a pile papers, so we have created a database of our collections. The database includes the following: Species, state, county, land owner, township/range, section, quarter, latitude, longitude, elevation, specific site, description of site, and Universal Transverse Mercator (UTM)



coordinates. Some data were excluded because they were not available, but all collections do include enough information to find a site with a Forest Service map. It will be much easier to send out information to our customers in any order for a specific collection. We can also use the database to look for performance trends by cross references with our research and evaluation data. Later this winter we will produce the same style database for the wetland plant collections.

### **Wetland and Riparian Plant Species Description Brochure**

We have created a plant species description brochure that includes a variety of wetland and riparian plants. It contains information on the plants, habitats, uses, and collection methods. At the last business meeting, the sponsors reviewed it and suggested that it be expanded to include more species and then printed up for distribution. Wes Green, USBR Regional Office, again indicated that he might be able to get laser copies printed up of the brochure.

### **Riparian Evaluations**

This year's evaluations took place in July and August. The Trout Creek Riparian section established in 1992 showed no significant drop in survival except with Imperial and Norway Poplars. These had very low production previously because of planting location. The section of creek that was planted in 1993 showed about a 25% drop in overall survival in 1994.

This year's Initial Evaluation Plots of native willows planted on the PMC Fish & Game Farm had an overall survival of 86%. This year we planted directly into weed barrier to cut down on weed maintenance and irrigation. We also installed weed barrier over last year's planting, which caused some loss due to physical damage.

Stinger planting this year started out great, but due to a fast drop in the reservoir water level, only about 25% of the cuttings survived. Hopefully the cuttings that survived in 1994 will have enough stored energy to sprout again next year.

All these evaluations will be looked at more closely over the winter to analyze the data collected. We will be able to give a more detailed report in the next progress update.

### **USFWS National Fish Hatchery, Hagerman, ID**

We are presently involved with a potential CWS project at the fish hatchery near Hagerman, ID. The system would be constructed on USFWS hatchery land. This site is similar to the Nature Conservancy site in that it will treat the Northside Canal Company tailwater return flows before they re-enter the Snake River. This project will provide us with additional opportunities to study the attributes of the five component CWS system as well as the wetland plants currently under development at the Aberdeen PMC. Another main focus for all of the parties involved is to use the site as an outdoor class room for Buhl area schools.

### **Crestview CWS, Paul, ID**

The replacement CWS for the Poulson CWS is called the Crestview CWS. It is located just east of Crest View Road about 10 miles west of Burley. The site is actually 1 mile inside of Jerome County. The Jerome Co. SCD is very interested in the project.

The proposed site is located on drain DD1 of the A & B Irrigation District. It takes the wastewater from a couple of furrow irrigated farms and dumps it out into the sagebrush. Chris Ketchum suggested this site because of its location and the volume of water it drains. The design

will be a linear design with each of the components in line down the old drain channel. Flows should be in the neighborhood of about 2 cfs. The structures will be designed to hold 2 cfs and the components will be designed for 1 cfs. We hope to be able to use this site to help field test our sizing guidelines in addition to monitoring nutrient uptake and flow through each of the components.

We have had a couple of meetings on the project. NRCS has completed a channel survey and will do an engineering design this winter. The A & B Irrigation District and the USBR will help build the system. A soil survey of the site was completed and it indicated that a couple of the components will have to be sealed to keep the water from moving into the soil profile.

Brad King, Irrigation Engineer from the University of Idaho, and the Burley USDA Water Quality Demonstration Project have both agreed to help with the water quality monitoring and design suggestions. Brad has also applied for a large grant to help with the lab analysis costs.

We are moving along on the Crestview CWS and hope to have it planted this summer.

***The Interagency Riparian/Wetland Plant Development Project is sponsored and funded by: USDA Natural Resources Conservation Service (Idaho & Utah), USDI Bureau of Land Management, USDI Bureau of Reclamation, US Fish and Wildlife Service, US Forest Service, Idaho Fish and Game, Idaho Dept. of Transportation, and Idaho Power Co.***

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