ECOLOGICAL STUDIES OF WILLOW (*SALIX CAROLINIANA*): MONTHLY STATUS REPORT #18

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Ecological Studies of Willow (*Salix caroliniana*): Monthly Status Report #16

Covering the time period from July 1-31, 2010

This status report summarizes progress made on the Ecological Studies of Willow project through July 31, 2010, with reference to the tasks and timeline outlined in the Scope of Work and presented in Table 1 below.

Table 1. Timeline of tasks to be accomplished in Year 2. Tasks initiated and underway in this reporting month are highlighted in blue, completed tasks in red.

YEAR 2

Quarter	Months	Tasks accomplished
1st	Oct – Dec, 2009	Initiate Task 2.3 (*Fire response*) Continue Task 2.4 (*Life history*) Continue Task 2.5 (*Spatial analysis of willow distribution*)
2nd	Jan – Mar, 2010	Continue Task 2.3 (*Fire response*) Continue Task 2.4 (*Life history*) Continue Task 2.5 (*Spatial analysis of willow distribution*)
3rd	Apr – Jun, 2010	Initiate Task 2.2 (2nd iteration, *Willow transplantation*) Continue Task 2.3 (*Fire response*) Continue Task 2.4 (*Life history*) Continue Task 2.5 (*Spatial analysis of willow distribution*)
4th	Jul – Sep, 2010	Complete Task 2.2 (2nd iteration, *Willow transplantation*) Continue Task 2.3 (*Fire response*) Continue Task 2.4 (*Life history*) Continue Task 2.5 (*Spatial analysis of willow distribution*) Complete Task 3.2 (*Data analysis and final report, Year 2*)

Progress on Task 2.1 – Germination and Early Survival and Growth Experiments
This task was completed in April, 2010.

Progress on Task 2.2 – Willow Transplantation
A. Competition Experiment – We continued to maintain the flooding and competition experiments. (We recorded survival and growth of sawgrass and willows on July 9, 2010.) We will summarize these data in the next monthly report.

B. Hydrology Experiment – We completed analysis of this experiment and are continuing to prepare a manuscript for publication.

Progress on Task 2.3 - Fire response
Together with District Personnel, we initiated the fire experiment on July 1, 2010. Despite low water and meteorological conditions favorable for a prescribed burn, we were unable to burn the willow plots. Burns in surrounding sawgrass (*Cladium*

jamacensis) did not carry into willow stands due to lack of fuel, both directly under the willows and in the buttonbush (*Cephalanthus occidentalis*) surrounding them (Fig. 1).

Fig. 1. Fire burned sawgrass (foreground) but stalled in buttonbush (middle), leaving the willow stands largely unscathed (background).

We even lit one willow directly and the fire was extinguished with little damage to the shrub itself (Fig. 2).

Fig. 2. District personnel directly lit this small willow but the fire went out, leaving most of the plant unharmed.

We noticed during our demography work that disks of willow removed for dendrochronology analysis were very heavy and wet, suggested that the plant has a high moisture content that makes burning difficult.

After failing to ignite willows inside 3 of the 10 designated burn plots, we halted this experiment. It was clear to both the UCF team and District personnel that there was insufficient fuel beneath willows to carry a fire. Buttonbush encircling the willows also did not carry the fire, making the small, isolated willow stands even more resistant. Using controlled burns to remove willows will be very difficult once the plants have reached shrub size and produced an open understory with little fuel beneath it.

Progress on Task 2.4 - Life History

During this reporting period, we sampled willows along the St. Johns River in the northern and southern regions. Combined with demographic plots sampled previously,

we have completed 75% of our life history sampling (Fig. 3). We expect to finish it this summer.

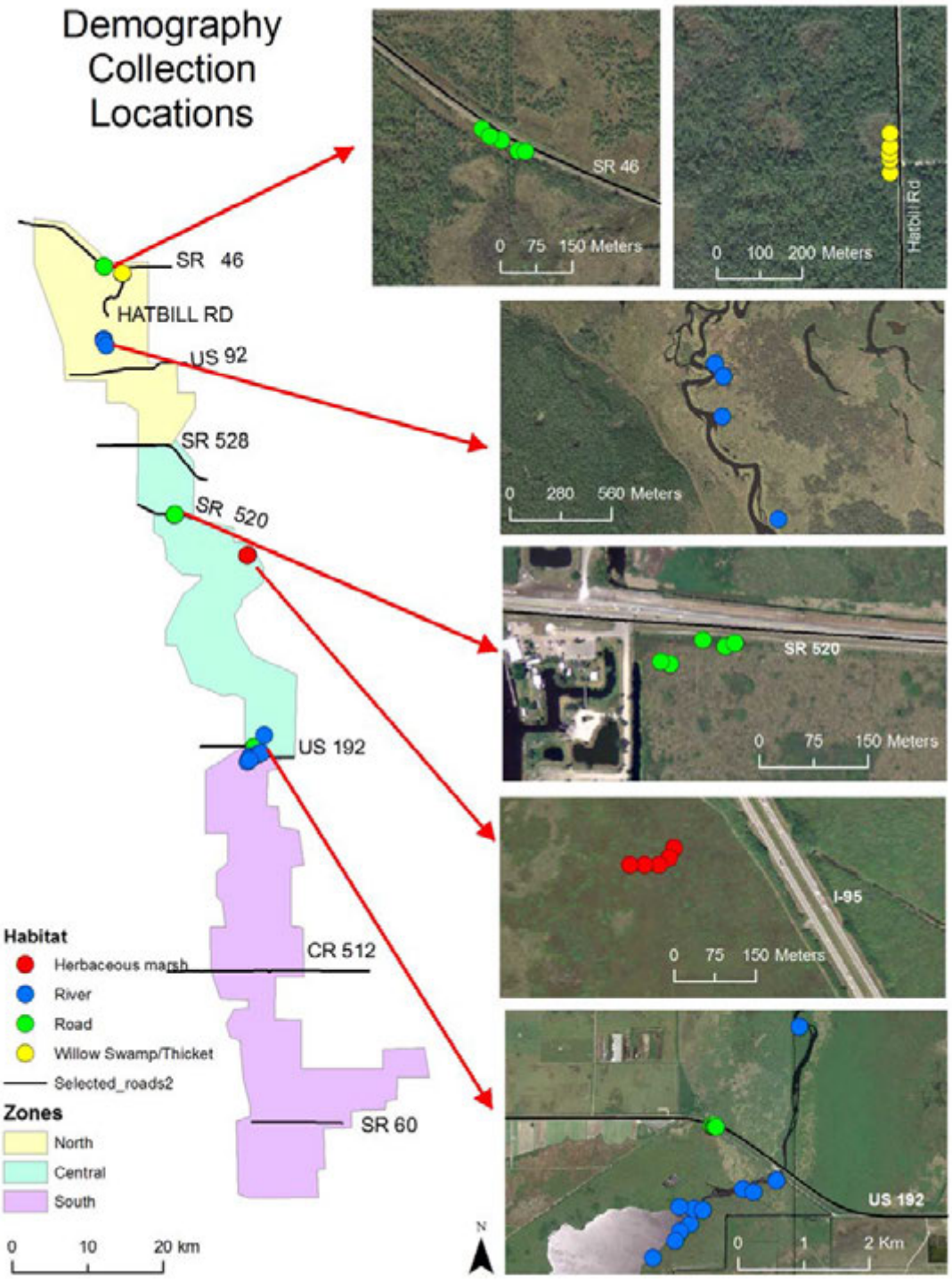

Fig. 3. Locations and habitats of willows sampled for demography data. At least five willows were sampled at each site, including individuals cored or sectioned for dendrochronology.

Progress on Task 2.5 – Spatial Analysis of Willow Distribution.

We continued to modify our existing spatial model to incorporate vulnerability of adjacent communities to willow invasion. For example, open herbaceous marsh is modeled as susceptible to willow invasion while oak hammock and other upland vegetation assemblages are modeled as resistant. We also began organizing our sampling of 100 randomly-selected points to refine and test the model.

Summary of Activity

During this reporting period, the UCF team completed the fire experiment; maintained the flooding and competition experiments; sampled >1/3rd of the life-history plots and continued modifying the GIS model.