

20

Decline of Sweetgrass Spurs Restoration of Coastal Prairie Habitat (South Carolina)

Marianne K. Burke, Research Ecologist, USDA Forest Service, 2730 Savannah Highway, Charleston, SC, 29414, 843/766-0371 ext. 118, Fax: 843/766-8734, mburke@fs.fed.us; Angela C. Halfacre, Director of the Masters of Environmental Studies (MES) Program, College of Charleston Graduate School, Charleston, SC, 843/727-2017, Fax: 843/727-2012, halfacrea@cofc.edu; and Zachary Hart, Graduate Student, MES Program, College of Charleston Graduate School, Charleston, SC, 843/727-2017, Fax: 843/727-2012, density27@hotmail.com

A muhly grass, locally known as sweetgrass (*Muhlenbergia filipes* Curtis; Prinson and Batson 1971), is a culturally valued and historically important component of the coastal prairie ecosystems in the South Atlantic Coast Plain region of the United States. In the 18th century, enslaved Africans began collecting sweetgrass and other native plants to produce coiled seagrass baskets, a traditional African art form that they passed down to their children. Today this art form is an important part of the cultural history of the southeastern coast, where basket sales provide a major source of income to the African-American artisans. However, loss of sweetgrass habitat has resulted in scarce and, consequently, expensive raw material (Rosegarten 1987).

This species is restricted to the coast of the southeastern United States, where it is a species of concern but of unknown status in South Carolina. Urban sprawl, fire suppression and, possibly, changes in hydroperiods have dramatically reduced the extent of coastal prairies, which require high water tables and periodic fire to maintain their largely herbaceous composition. As a result, these communities are now dominated by woody species and have become urbanized, often with restricted access. These changes have produced landscapes with high fuel loads, poor-quality wildlife habitat, and reduced biodiversity (Wade and others 2000). In contrast, coastal prairie habitat provides protection from flooding, erosion, wildfire, and important nesting habitat for the prairie warbler (*Dendroica discolor*) and other native bird species.

To increase sustainable populations of this resource, the USDA Forest Service, the College of Charleston, South Carolina Sea Grant Consortium, and several community groups have formed a partnership to restore habitats containing sweetgrass. In 2001, we developed a restoration plan that consists of five components to be completed over a three-year period:

- 1) *Conduct a stakeholder survey.* As a part of a long-term sustainability plan, we are currently interviewing the African-American artisans who use sweetgrass in their work. We ask stakeholders a variety of questions about how they use sweetgrass, their knowledge of existing populations, and traditional methods for managing this resource. We also encourage them

to express any general or specific concerns they have and their perceptions of sweetgrass management. The data from the survey will provide guidelines for individuals, such as local natural resource managers, who are responsible for informing and encouraging stakeholders about environmental decision-making and participation. Preliminary results from 12 surveys indicate that basketry is the primary occupation of those making the baskets, that sweetgrass is increasingly difficult to obtain, and that most basketmakers buy sweetgrass from local salespeople who must travel out of state to collect the grass. Most of these artisans perceived a lack of available land for growing sweetgrass as the reason why it is not a sustainable resource.



Figure 1: A display of sweetgrass (*Muhlenbergia filipes*) baskets at one of the many artisan stands lining Highway 17 north of Charleston, South Carolina. Photo by Zachary Hart

- 2) *Determine historical extent.* We will attempt to estimate the historic extent of coastal prairie habitat by examining historical records and photographs, as well as the personal recollections documented during the stakeholder survey. This information will be integral in identifying appropriate study sites for restoration.
- 3) *Determine restoration and management strategies.* We are now conducting experiments to determine the importance of saltwater flooding, freshwater flooding, and fire on sweetgrass. In March 2001, we planted a 5-acre (2-ha) trial restoration site on the Francis Marion National Forest in upper Charleston County with 360 two-year-old, nursery-grown sweetgrass plants. One year later sweetgrass showed a high rate of survival (91 percent). However, vigorous growth of other plant species, including grasses and shrubs, threatened to crowd out the plantings. Currently, we are flooding half of 16 experimental plots with saltwater to determine the influence of tidal storm surges in maintaining sustainable populations of sweetgrass.
- 4) *Conduct large-scale restoration feasibility analysis.* Once we have identified potential habitat for coastal prairie restoration, we will evaluate the feasibility of restoring and managing tracts on federal, state and private lands. We will then develop a habitat model based on the processes that we have determined are important for successful restoration.
- 5) *Develop effective public outreach methods.* Once we have identified appropriate restoration and management methods, we will explore effective methods for involving stakeholders in

maintaining sustainable coastal prairie habitats. For example, we plan to develop a manual that can guide stakeholders in promoting sustainable use of sweetgrass.

ACKNOWLEDGMENTS

We thank South Carolina Sea Grant Consortium and the USDA Forest Service Conservation Education Field Funding Program for partially funding this study, the basketmakers who have helped with the survey, Boy Scout Packs and Troops 513 and 108 from the Carolina Coastal Council, Twin River District of South Carolina, Mr. Ernie Nelson and Mr. Dominick Giordano who have helped with the field experiments, Sweetgrass Growers Inc. for providing plants, staff of the Francis Marion and Sumter National Forests for their support, and Mr. Karl Ohlant for helpful discussions.

REFERENCES

- Prinson, J.N. and W.T. Batson. 1971. The status of *Muhlenbergia filipes* Curris (Ponceae). *Journal of the Mitchell Society* 87:188-191.
- Rosegarten, D. 1987. *Row upon row: Seagrass baskets of the South Carolina Lowcountry*. Columbia, South Carolina: McKissick Museum.
- Wade, D.D., B.L. Brock, P.H. Brose, J.B. Grace, G. A. Hoch and W.A. Patterson, III. 2000. Fire in eastern ecosystems. Pages 53-96 in J.K. Brown and J.K. Smith (eds.), *Wildland fire in ecosystems: Effects of fire on flora*. USDA Forest Service General Technical Report RMRS-GTR-42, Vol. 2.

SER/ESA 2002