

A Note on a Continuing Black Belt Prairie Restoration Effort at Noxubee National Wildlife Refuge

JoVonn G. Hill

Mississippi State University, University, MS 39762

As part of an ongoing effort to restore a Black Belt Prairie site located in Noxubee National Wildlife Refuge, small numbers of several target species of plants were introduced in May 2002. Bulbs, taproots, and seeds of several species of plants were recovered from a highway construction site along Highway 45 near Crawford, Mississippi February 2002. These plants were monitored until August 2002 for suitability for a larger scale introduction. A 90% survival rate of introduced plants was observed.

Most of the original Black Belt prairie has been lost to agriculture, development, the incursion of Eastern Red Cedar (*Juniperus virginiana* L.), and erosion. The soil is highly erodible, thus contributing to loss of this habitat. The majority of the prairie that still persists is restricted to small roadside relics. In recent years, several of these higher quality roadside relics have been lost to the expansion of Highway 45. Mississippi Natural Heritage Program gives Black Belt Prairies a ranking of S1, meaning they are "critically imperiled" within the state due to extreme rarity or factors making it vulnerable to extirpation (Mississippi Museum of Natural Science, 2002).

The Black Belt Prairie physiographic region of Mississippi and Alabama is a crescent shaped region of "heavy, tenacious, calcareous, loamy clay, dark

gray when dry, but almost black when wet (Lowe 1921). These soils originated from Selma chalk that was laid down while the Mississippi Embayment occupied the region during the Cretaceous (Logan, 1903). The Black Belt extends from McNairy County, Tennessee in an arc south through eastern Mississippi to Russell Co. Alabama (Lowe, 1913; Schauwecker, 1996; Schiefer, 1998).

In February 2002 part of a prairie remnant in Crawford, Mississippi was bulldozed in preparation for the expansion of Highway 45A. Immediately following the disturbance, this site was searched for any remaining plant material. Bulbs of *Liatris squarrosa* (L.) Michx., seeds of *Schizachyrium scoparium* (Michx.) Nash and 18 propagules from nine other plant species were recovered (Table 1).

Table 1. Plant list and survivorship of new introductions to Morgan Hill Prairie Noxubee National Wildlife Refuge. May–August 2002.

Species	Common name	Planted	Survived	% Survival
<i>Agave virginica</i> L.	American Aloe	3	3	100
<i>Asclepias viridis</i> Walt.	Green Milkweed	2	2	100
<i>Aster patens</i> Ait.	Late Purple Aster	1	1	100
<i>Chrysopsis camporum</i> Greene	False Goldenaster	2	2	100
<i>Dalea purpurea</i> Vent.	Purple Prairie Clover	1	1	100
<i>Eryngium yuccifolium</i> Michx.	Rattlesnake Master	3	3	100
<i>Liatris squarrosa</i> (L.) Michx.	Scaly Blazing Star	47	40	85
<i>Lobelia spicata</i> Lam.	Pale Spiked Lobelia	1	1	100
<i>Silphium laciniatum</i> L.	Compass Plant	4	2	50
<i>Silphium terebinthinaceum</i> Jacq.	Prairie Dock	1	1	100
<i>Schizachyrium scoparium</i> (Michx.) Nash	Little Bluestem	25	25	100
Totals		90	81	90

METHODS

Morgan Hill Prairie is located in the Noxubee National Wildlife Refuge, T16N R 15E Section 9, Noxubee County. The refuge is partly situated in Mississippi's Black Belt region in the east-central portion of the state. In the early 1990's refuge managers seeded several native grasses to the site such as *Sorghastrum nutans* (L.) Nash, *Andropogon gerardii* Vitman, and *Panicum virgatum* L. on portions of the area. Other plants found at the site included *Agalinis fasciculata* (Ell.) Raf., *Helianthus angustifolius* L., *Eupatorium rotundifolium* L., *Solidago altissima* L., *Passiflora incarnata* L., *Aster pilosus* Willd., *Lespedeza virginica* (L.) Britton. The site was burned every two to three years.

Since the clearance of Crawford Prairie took place during February, the plants were taken to a greenhouse and reared there until a suitable planting time. The plants were placed in plastic plots of various sizes and a topsoil potting mix was purchased from a local supplier for use as a growing medium. A fertilizer, Osmocote 14-14-14 (Scotts-Sierra Marysville, Ohio) was applied according to the manufacturer's recommendations. Water was applied to each plant on a daily basis. The greenhouse lights were set to extend the daylight hours (12 h photoperiod), and to help the plants recover more quickly.

Temperature and rainfall reached optimum levels for planting in early May. All propagules were planted over a five-day period. (7–13, May 2002) Ninety specimens were planted with eleven species represented. Three plots measuring 5 x 10 meters were established by mowing the existing vegetation leaving approximately 20% bare ground on plots to be planted based on visual estimation. Propagules were planted in three rows of ten plants, with spacing of one half meter on all sides amongst the existing vegetation. Rows were centered in the plots to reduce visual obscurity and increased competition from the surrounding native and uncut vegetation. The propagules were marked with wire flagging for

easier monitoring. Refuge managers watered the propagules bi-weekly for the first month. Plantings were monitored from May 18, through August 8, 2002. Plants were monitored for survivorship weekly for the first month, then twice a month over the next two months.

CONCLUSIONS

Out of the ninety propagules, 81 survived, resulting in a 90% survival rate. Seven *Liatris squarrosa* and two *Silphium laciniatum* suffered mortality. The two *Silphium* mortalities were likely due to their weak and severely damaged root systems after bulldozing. The preliminary success of this introduction effort has advanced interest in restoring prairie on site.

ACKNOWLEDGMENTS

I would like to thank Jeanne Jones for her guidance of this project, and input on the manuscript. I also would like to thank Dave Richardson and other employees of Noxubee National Wildlife Refuge for their interest in this study, site preparation, and watering. Additional thanks go to Jennifer Seltzer, Juanita Mobley, John Barone, and two anonymous reviewers.

LITERATURE CITED

- Logan, W.N. 1903. The Geology of Oktibbeha County. Geological and Industrial Survey of Mississippi, Report 1, Rand McNally and Co. Chicago. 67 pp.
- Lowe, E.N. 1913. Forest Conditions of Mississippi. Mississippi State Geological Survey Bulletin No.11. 166 pp.
- Lowe, E.N. 1921. Plants of Mississippi: A List of Flowering Plants and Ferns. Mississippi State Geological Survey Bulletin No.17. 292 pp.
- Mississippi Museum of Natural Science 2002. Natural Heritage Inventory: Global and State Rankings. <http://www.mdwfp.com/museum/html/research/ranking.asp>
- Schauwecker, Timothy, 1996. A Comparison of Blackland Prairie Relicts in Mississippi and Arkansas. Unpublished Masters Thesis. Mississippi State University. 42 pp.
- Schiefer, Terence. 1998. Disjunct distribution of Cerambycidae (Coleoptera) in the Black Belt and Jackson Prairie in Mississippi and Alabama. The Coleopterist Bulletin 52(3):278–284.