



Resource Reporter

Native Grass and Forb Planting and Seed Production at Stones River National Battlefield

The National Park Service dedicated Stones River National Battlefield (STRI) in Murfreesboro, Tennessee in commemoration of a crucial Civil War battle. The battlefield encompassed approximately 4000 acres of farmland. Today the 650 acres of the original battlefield protected within the boundary of the park has become an oasis of green in the midst of residential areas, businesses, and new construction. The battlefield's natural landscape harbors xeric limestone prairies, mesic woodlands, cedar glades, floodplains, wetlands, and associated communities. Biological inventories in the park found endemic plants of cedar glades, a rare amphibian, and diverse bird and fish populations. There are also invasive plant species in need of management including *Ligustrum sinense* (privet), *Lonicera* spp. (Japanese & bush honeysuckle), and *Sorghum halepense* (Johnson-grass).



Ecologist Terri Hogan plants native seed on newly cleared land using a straw blower.

Because native warm season grass and forb plantings provide an aesthetically



Biological Technician Nathan Singer evaluates a first year native grass field.

pleasing landscape, increased biodiversity, and benefits for wildlife while requiring little maintenance, park staff began planting natives in areas cleared of invasive plants and on newly acquired lands. Difficulties of establishing natives at STRI include: a small supply of locally adapted seed, commercial seed cost, lack of specialized planting equipment, difficulty in preparing the soil for planting, and a limited natural resources staff.

- The park chose to develop its own increase fields in an effort to decrease seed costs and increase the supply of local genotype seed. In 2000, the first sites chosen for increase fields were handplanted with native grass plugs. Five species of seed, collected within the park, were grown into plugs by an eastern Tennessee nursery. Site preparation included 2% Accord

application and light disking. In the months following planting, weeds that invaded these sites required cutting or pulling. The mature native grasses were handcut and spread to suppress weeds, with the added benefit of incorporating seed into the soil. This method was successful, but labor intensive.

- The park contracted with the Natural Resources Conservation Service (NRCS) to use STRI seed to grow plugs at their greenhouse in Alderson, West Virginia. In June, 2004, 23,000 plugs were planted using a tobacco plug planter (NRCS). Species planted were *Andropogon ternarius* (splitbeard bluestem), *A. gyrans* (bluestem), *Schizachyrium scoparium* (little bluestem), *Chasmanthium latifolium* (river oats), *Eragrostis spectabilis* (purple lovegrass), *Aster drummondii* (Drummond aster),



A lawnsweeper is used to collect native seed.

Solidago nemoralis (old-field goldenrod), *Rudbeckia* spp. (blackeyed Susan), and *Eupatorium* spp. (thoroughwort). The new increase plots included an agricultural field farmed in 2003 and homesites covered in *Festuca arundinacea* (tall fescue). Site preparations included planting with *Trifolium incarnatum* (crimson clover) to build the soil and disking 6-8 inches deep, a necessary step for using a plug planter. Prior to planting, early in 2004, 4 oz/acre Plateau was applied to weedy areas containing natives and 2% Accord was applied to fescue. A post-planting, mid-summer application of 8 oz/acre Plateau to *Setaria* spp. (foxtail) in native grasses and 0.75% Select to foxtail in Drummond aster and thoroughwort was necessary.

- Due to ideal growing conditions a limited seed collection was possible. A lawnsweeper was found to be a quick, inexpensive, and efficient method of collecting seed. Little bluestem seed, collected from Couchville State Natural Area (with permit) required attachment of the

lawnsweeper's basket to the front of the park's Polaris Ranger to minimize seed loss.

- Land recently acquired by STRI will require extensive cleanup of debris, old roadbeds, structures, fences, and removal of non-native or invasive plant species. In 2004, such a cleanup resulted in a 4-acre area of bare soil containing calcareous limestone outcroppings and stumps of numerous small



Biological Technicians use a tobacco planter to plant native plugs.

trees cut at ground level. When such conditions make disking or drilling seed difficult to impossible, a straw blower is used to spread straw, supplemented with small scoops of *Elymus virginicus* (Virginia wild rye) and collected native seed. This method provides a way to use collected seed that has not been cleaned. Clean, weed-free straw is obtained from broomsedge dominated fields, baled in late October, or early November when undesirable weedy species have lost their seed.

- In May 2004, a Truax native warm season grass drill provided by Tennessee Wildlife Resources Agency (TWRA) and a Plotmaster, available through NRCS, were both used to plant over 16 acres of mostly field sites that were cropped in 2003. With V. wild rye seed as an extender, a native grass and forb seed mixture was drilled at the rate of 6 pounds/



Biological Technician Dwayne Coleman using a seed drill.

acre. Before planting, 8 oz/acre Plateau was applied to weedy species and fescue and 2% Accord was used to control *Cynodon dactylon* (Bermuda grass). A post-planting application of 4 oz/acre Plateau targeted invasive weeds. *Lespedeza cuneata* (sericea lespedeza) and honeysuckle was spot treated with 2% Garlon 4.

New increase fields are already being prepared for plug planting in 2005. More agricultural fields within the park are becoming available for conversion to natives. Imagination and innovation will give Stones River National Battlefield added advantage in developing a landscape that enhances the commemoration of an historical event.