

Stump Gut ESA Management Activities 2002-2008
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The Stump Gut Ecologically Significant Area (ESA) is located along the Marshyhope Creek and consists of various significant natural areas supporting 6 state-tracked species. One of these communities, a sand ridge, was targeted for vegetation management in 2002. The sand ridge was targeted because of its relatively high initial quality, it directly supports a state-endangered species, and it could be used as a test case to determine ecological succession on this particular habitat type.

In spring 2002 a series of 5-meter plots were established randomly to quantify the existing vegetation condition. These plots were marked with GPS and staked with rebar to ensure they could be accurately resampled. These data show the sand ridge to be largely dominated by loblolly pine (*Pinus taeda*), with few scattered oaks (*Q. nigra* & *Q. falcata*) and hickories (*Carya pallida*). The understory was largely absent and consisted of few scattered clumps of broom sedge (*Andropogon virginiana*), bracken fern (*Pteridium aquilinum*) and various sedges (*Carex albicans* & *C. tonsa*).

In fall of 2002 a select harvest occurred focusing on the removal of the loblolly pines, which historically would not have been the dominant species in this community, while retaining the scattered sub-canopy and understory oaks and hickories. During the subsequent growing seasons (2002-2005) the vegetation response was monitored using permanent plots as mentioned above. Over these next three seasons a drastic change in the vegetation of the site was documented. Most notably saplings of various oak species, the dominant tree of this community type, were documented. These include willow oak (*Quercus phellos*), southern red oak (*Q. falcata*), white oak (*Q. alba*), and water oak (*Q. nigra*). The understory drastically increased in species richness and percent cover being dominated by various native grasses and sedges. These include a stark increase in the cover of broom sedge, an abundance of sedges (*C. albicans*, *C. tonsa*, *C. pennsylvanica* & *Cyperus retrorsus*), and various sand ridge panic grasses (*Dichanthelium depauperatum*, & *D. commonsianum*). A dramatic increase was also noticed in the shrub layer in the huckleberries (*Gaylussacia frondosa*) and low bush blueberries (*Vaccinium stamineum*).

In the winter of 2006 a prescribed burn was conducted in the management area. This burn was conducted to remove slash debris remaining from the timber harvest, reduce the number of sweet gum (*Liquidambar styraciflua*) and red maple (*Acer rubrum*) seedlings recruiting into the management area and to study the vegetative response of sand ridge species to fire. In the past two years of post-fire sampling an increase in the state-endangered shining nutrush (*Scleria nitida*) has been documented. Additionally, various species have shown vigorous growth namely, broom sedge and many oak species (*Q. nigra* & *Q. velutina*). The populations of red maple and sweet gum have showed an initial decline, but have not seen much mortality. The lack of mortality is probably due to the sparse fuel load at the time of the burn which left many large patches of vegetation unburned. These unburned areas are refugia for the maples and gums.

