



Myxomycetes of the Big Thicket National Preserve, Texas, USA



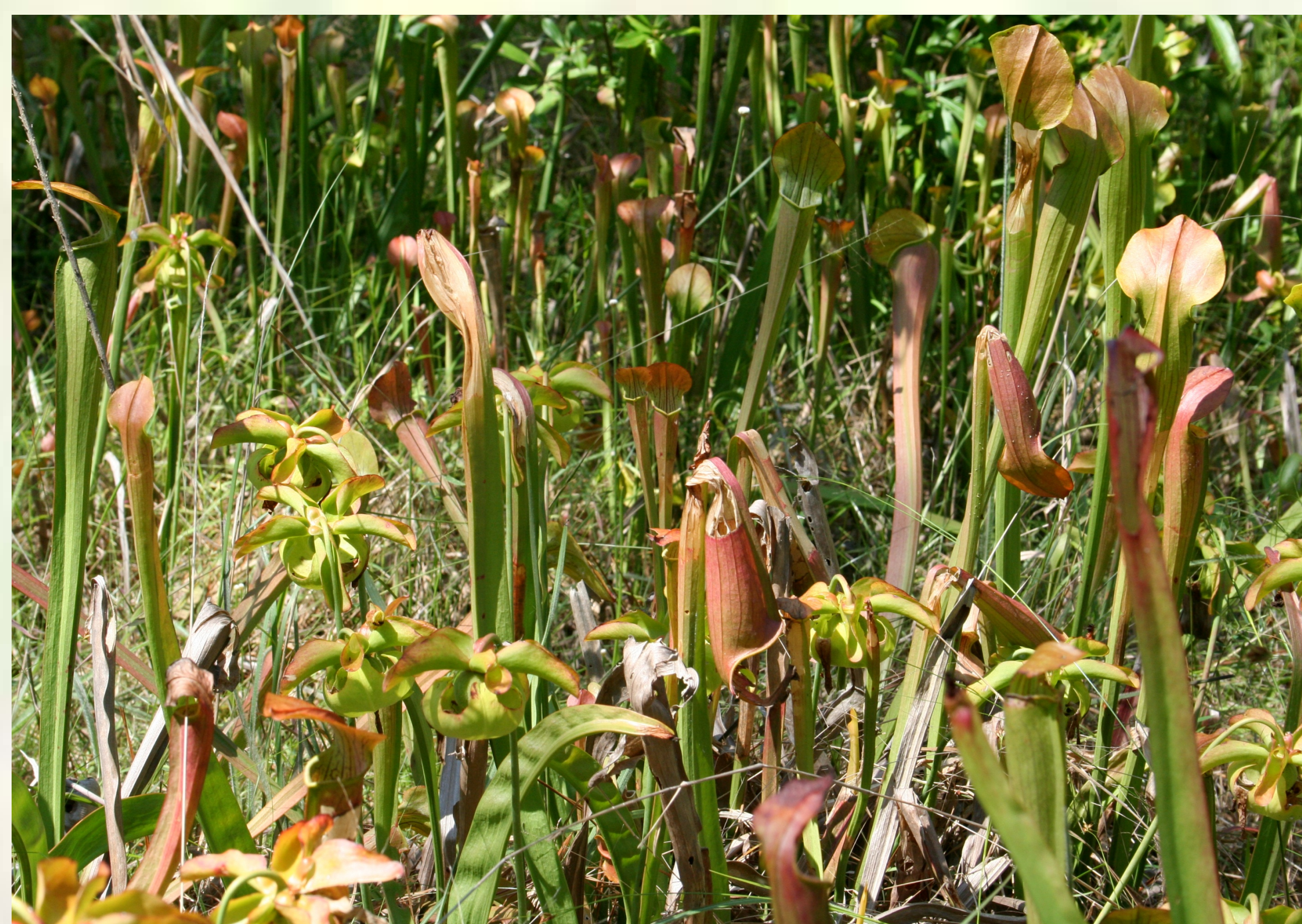
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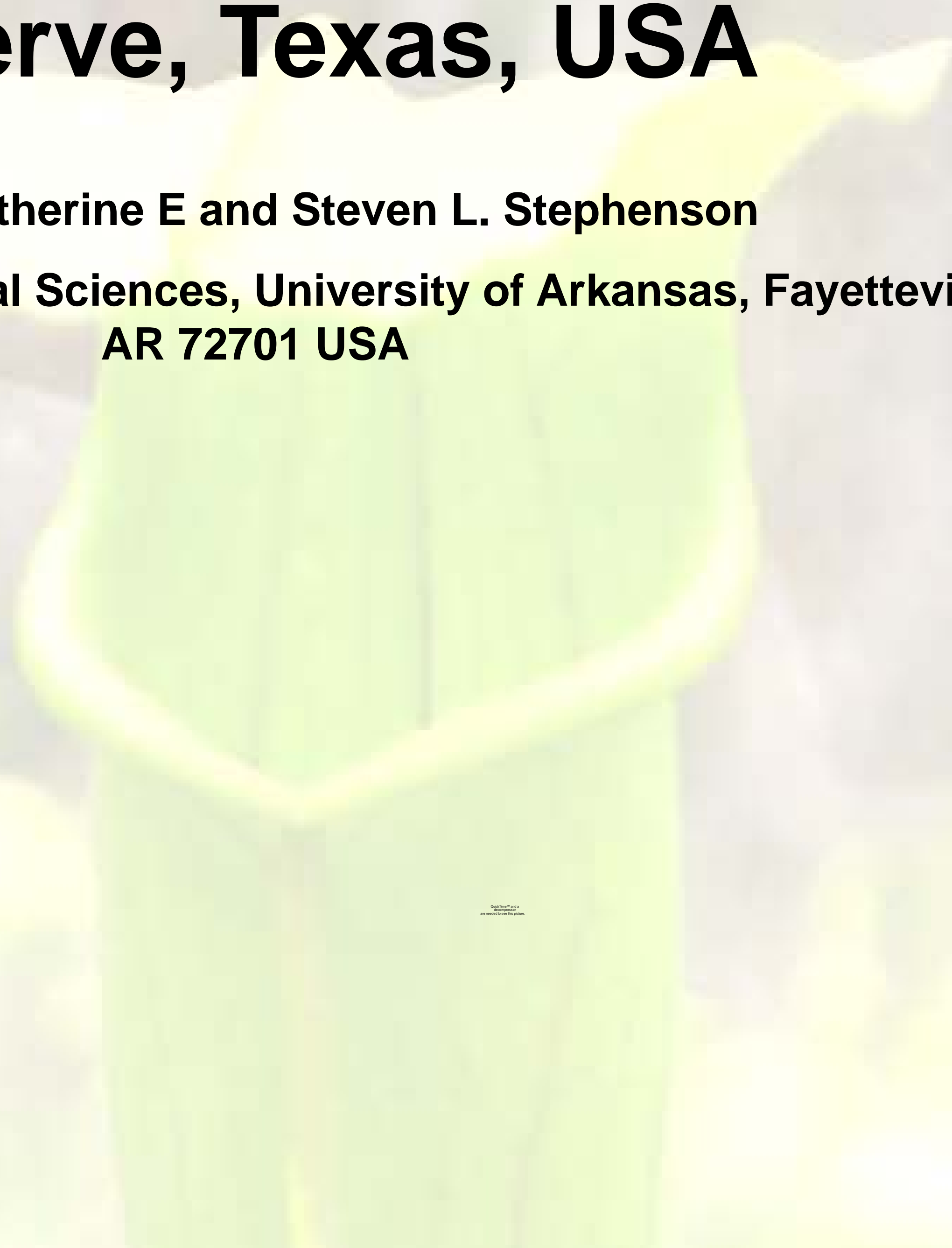


Abstract

In conjunction with the start of the All Taxa Biodiversity Inventory (ATBI) at the Big Thicket National Preserve (Texas, USA), a survey of the park unit was undertaken to collect myxomycetes and material for laboratory culture of these organisms. The Big Thicket is an important and unique site for biodiversity study because of the natural ecological diversity. This area is termed a "biological crossroads"; the preserve boasts ecotonal associations with flora and fauna associated with eastern deciduous forests, western xeric habitat, and southern Florida subtropical habitat. In the Big Thicket, these communities form unique associations found in close proximity. For this initial survey of the preserve for myxomycetes, care was taken to select pairs of sites that represent the different ecological communities: Longleaf Pine Uplands, Floodplain Hardwood Forest, Mid-slope Hardwood Pine Forest, Palmetto Hardwood Flats, Wetland Pine Savannah, Cypress Slough, and Baygall. Samples for moist chamber were collected in 7 of the 9 park units, and six of the nine major habitat types were represented in the collecting sites. Twenty-four species of myxomycete were collected in the field, and material for moist chamber culture was collected from each site from the dominant vegetation of the site



The Hickory Creek Savannah Unit, a Wetland Longleaf Pine Savannah, has several significant pitcher plant bogs mostly populated with *Sarracenia alata*. Six species, *Arcyria cinerea*, *Collaria pulchella*, *Cribraria microcarpa*, *Echinostelium minutm* and *Physarum galbeum*, were observed in moist chambers of aerial litter from this carnivorous plant species.



Sabal minor, the dwarf palmetto, is a common plant in the understory of the Palmetto Hardwood Flats, a lowland forest type in which we collected samples in Lance Rosier and Loblolly Units. This habitat type was the most productive in this first round of data collection. Three species of *Cribraria*, *C. aurantiaca* and *C. intricata* and *C. vulgaris* were found only in this low, wet habitat. *Physarum globuliferum*, *P. nucleatum*, *P. tenerum* and *Stemonitopsis typhina* were also found only in the Palmetto Hardwood Flats.



The Jack Gore Baygall Unit of the Preserve is a Baygall habitat, marked by low, wet floodplain forests. Four species of myxomycete were found only in this habitat: *Arcyria pomiformis*, *Cribraria minutissima*, *Licea kleistobolus* and *Physarum crateriforme*.



The Wetland Pine Savannah is a fire-dependent habitat. The image to the left is pre-burn, on the right post-burn. Fire management is used to reduce understory fuel thus opening the area for native flowering plants, ferns and grasses. This habitat boasts 3 different carnivorous plant types: the pitcher plant, bladderwort (*Utricularia* sp), and sundew (*Drosera* sp). Five species of myxomycetes were found exclusively in the pine savannah: *Collaria lurida*, *Diachea leucopodia*, *Didymium iridis*, *Fuligo septica*, and *Metatrichia vesparia*.



The Longleaf Pine Uplands are the upland dry counterpart to the Wetland Pine Savannah. In many areas of the park, the longleaf pine habitat is undergoing restoration from fire suppression and hurricane damage. To date only one species, *Perichaena chrysosperma*, has been found only in this habitat.

Methods

In June 2007, substrate material and field collections were made in 6 of the 9 preserve units: Beech Creek, Big Sandy Creek, Hickory Creek Savannah, Jack Gore Baygall, Lance Rosier, and Loblolly Units. Six of the 9 major habitat types were sampled during 2 weeks: Longleaf Pine Uplands, Floodplain Hardwood Forest, Palmetto Hardwood flats, Wetland Pine Savannah, Cypress Slough. Substrate materials (bark, aerial and ground litter) were collected from the dominant plant species of each site.

Results

To date, 50 species have been catalogued for the All Taxa Biodiversity Inventory in the Big Thicket National Preserve. Twenty-two species have been added to the total inventory of species, which now stands at 74. Two hundred thirty-seven moist chamber cultures were set up from 25 collecting sites within the Preserve. Approximately 80% of these were positive for myxomycete presence either by fruiting bodies or observation of a plasmodium. In June 2007, approximately 100 field collections were collected at 13 of the 25 collecting sites. Fifteen species were collected in the field but not in moist chamber culture.

The three most commonly found species were *Arcyria cinerea*, *Cribraria confusa*, and *C. microcarpa*. *Arcyria cinerea* was found in all 6 of the park units collected for this data-set, *Cribraria confusa* in 5 of the 6 park units, and *C. microcarpa* in 4 of the 6 park units. Four species, *Comatricha pulchella*, *Diachea leucopodia*, *Diderma hemisphaericum* and *Physarum galbeum*, were found only on aerial litter. One species, *Cribraria confusa* was found only on pine bark.

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| <i>Arcyria cinerea</i> | <i>Echinostelium minutum</i> |
| <i>Arcyria dentata</i> | <i>Enerthenema papillatum</i> |
| <i>Arcyria denudata</i> | <i>Fuligo septica</i> |
| <i>Arcyria pomiformis</i> | <i>Hemitrichia calyculata</i> |
| <i>Ceratiomyxa fruticulosa</i> | <i>Hemitrichia clavata</i> |
| <i>Clastoderma debaryanum</i> | <i>Lamproderma arcyrionema</i> |
| <i>Collaria lurida</i> | <i>Lycogala epidendrum</i> |
| <i>Comatricha nigra</i> | <i>Metatrichia vesparia</i> |
| <i>Comatricha pulchella</i> | <i>Perichaena chrysosperma</i> |
| <i>Cribraria aurantiaca</i> | <i>Perichaena depressa</i> |
| <i>Cribraria cancellata</i> | <i>Physarum album</i> |
| <i>Cribraria confusa</i> | <i>Physarum galbeum</i> |
| <i>Cribraria intricata</i> | <i>Physarum globuliferum</i> |
| <i>Cribraria languescens</i> | <i>Physarum nucleatum</i> |
| <i>Cribraria microcarpa</i> | <i>Physarum pusillum</i> |
| <i>Cribraria minutissima</i> | <i>Physarum tenerum</i> |
| <i>Cribraria tenella</i> | <i>Physarum viride</i> |
| <i>Cribraria vulgaris</i> | <i>Stemonitis axifera</i> |
| <i>Diachea leucopodia</i> | <i>Stemonitis fusca</i> |
| <i>Diderma effusum</i> | <i>Stemonitis herbatia</i> |
| <i>Diderma hemisphaericum</i> | <i>Stemonitis splendens</i> |
| <i>Didymium cf nigripes</i> | <i>Stemonitopsis typhina</i> |
| <i>Didymium iridis</i> | <i>Trichia favoginea</i> |
| | <i>Licea kleistobolus</i> |
| | <i>Physarum crateriforme</i> |

Species found to date through the All Taxa Biodiversity Inventory of the slime molds.

Literature Cited

Watson, G.E. 2006. Big Thicket Plant Ecology: an Introduction. 3rd ed. Denton, TX: University of North Texas Press.

Marks, P.L. and P.A. Harcombe. 1981. Forest vegetation of the Big Thicket, Southeast Texas. Ecological Monographs, 51(3): 287-305.

Acknowledgements

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