

VASCULAR PLANT INVENTORY OF MCINTOSH RESERVE, CARROLL COUNTY GEORGIA

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OBJECTIVES AND METHODS

The original objectives of the project were to: a) produce an inventory of all the plant species occurring in McIntosh Reserve, and b) determine what kinds of habitats these plants occurred in. To accomplish these objectives we conducted regular collecting trips to the park (one per week) during the growing season of 2009, beginning in March. The flood prevented completion of the project because the park was closed during the last month (October) of the 2009 season. Therefore, the project was extended into 2010. In addition to returning in September and October we also surveyed the park from March to September. This additional fieldwork emphasized the areas that had been flooded, and added a third objective to the original two: to determine what short-term effects the flood had on the flora. Some additional fieldwork was also conducted during the 2011 growing season.

RESULTS AND DISCUSSION

Habitats. Topographically, McIntosh Reserve is dominated by two ridges oriented north to south, one along the eastern boundary of the park and one along the western boundary. Both ridges end in bluffs at the Chattahoochee River where there are areas of exposed rock. The valley between the ridges is drained by a stream emptying into the Chattahoochee River; the point at which the stream joins the river is the lowest elevation in the park. These topographical features result in a number of different habitats, including wetlands, granite outcrops, grasslands, and several types of woodlands. There are also riverbank habitats along the river and on an island in the river. Among the woodlands, some are dominated by loblolly pine (*Pinus taeda*) while others are dominated by deciduous hardwoods. The hardwood-dominated forests occur in moist lowland habitats as well as drier areas on slopes and ridgetops, while the pine-dominated forests occur almost entirely on ridgetops.

Flora. The total number of plant species found was 664; 605 were found in 2009, 48 in 2010, and 11 in 2011. There were 14 ferns, 2 club mosses, 4 gymnosperms, and 644 flowering plants. In the flowering plants there were 103 families represented: 90 dicot and 13 monocot. The family that had the most species was the sunflower family (Asteraceae) with 95 species, followed by the grass family (Poaceae) with 86 species, the legume family (Fabaceae) with 48 species, and the sedge family (Cyperaceae) with 47 species. The genus with the largest number of species was the sedge genus *Carex* (Cyperaceae), with 26 species. There were 62 different tree species, including 9 oaks, 3 maples, 3 pines, 3 dogwoods, 3 elms, 3 magnolias, 2 hickories, and 2 hollies.

Rare plants. There were two rare plants in McIntosh Reserve: southern twayblade orchid (*Listera australis*) and Gray's sedge (*Carex grayi*). Both are classified S2 by the Georgia Department of Natural Resources (6 to 20 occurrences in the state).

Invasive plant species. The Georgia Exotic Pest Plant Council (GAEPPC) maintains lists of exotic plants that are current or potential threats to native plants and natural areas. Of the 20 plants on the GAEPPC's category 1 list (the most significant current threats), 11 occurred in McIntosh Reserve: tree of heaven (*Ailanthus altissima*), mimosa (*Albizia julibrissin*), alligator weed (*Alternanthera philoxeroides*), sericea lespedeza (*Lespedeza cuneata*), Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), Japanese climbing fern (*Lygodium japonicum*), chinaberry (*Melia azedarach*), marsh dayflower (*Murdannia keisak*), kudzu (*Pueraria lobata*), and multiflora rose (*Rosa multiflora*). The most abundant category 1 plants in the park were sericea lespedeza, Chinese privet, and Japanese honeysuckle. Some of the remaining eight invasive plants were so infrequent that it may be possible to eliminate them completely.

The GAEPPC also maintains a "category 1 alert" list of exotic plants that have the potential to become serious pests in the state. Two species on this list occur in McIntosh Reserve: small carpetgrass (*Arthraxon hispidus*) and Japanese chaff flower (*Achyranthes japonica*). Japanese chaff flower was first found in Ohio in 1985, and has spread rapidly in the Midwest since then. This is the first report of it occurring in Georgia.

A third potentially serious exotic plant found in the park was Japanese hops (*Humulus japonicus*). In Georgia this plant was previously known only from Fulton County, but it was found in McIntosh Reserve starting in 2010; it occurred along the Chattahoochee River, so was most likely introduced by the flood of 2009.

Effects of the 2009 flood. The Chattahoochee River flood in September 2009 caused two significant changes that could potentially result in changes in the flora. First, a significant amount of soil was lost from the island in the river and from some parts of the riverbank. Second, a large amount of sand was deposited on the ground along the river. Despite these changes, most plants that occurred in the affected areas in 2009 were still present in 2010 because they occurred in other places in the park. One of the few missing plants was Gray's sedge. The one location in which it was found in 2009 was covered by several feet of sand in 2010.

The flood also brought plants into the park; of the 48 species found for the first time in 2010, roughly half were likely introduced by floodwaters because they occurred on the newly washed in sand or on the eroded riverbanks. Japanese hops was one of these; it covered large areas of the sand in 2010 and 2011.