

Tipularia

A close-up photograph of a flowering plant, likely a species of Tipularia. The image shows several white flowers with long, slender petals and numerous stamens with yellowish tips. Some flowers are in full bloom, while others are still in bud form, appearing as small, rounded, light-colored structures. The background is a soft-focus green, suggesting a natural outdoor setting.

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Richard Carter

Table 1. Species found during survey of Camden County flora and their status on the list of Protected Plants of Georgia (Patrick et al. 1995).

| Scientific Name | Common Name | Status |
|--|------------------------|------------|
| <i>Carex dasycarpa</i> | Velvet Sedge | Rare |
| <i>Coreopsis integrifolia</i> | Floodplain Tickseed | Threatened |
| <i>Epidendrum magnoliae</i> [= <i>E. conopseum</i>] | Green-fly Orchid | Unusual |
| <i>Litsea aestivalis</i> | Pond Spice | Rare |
| <i>Pteroglossaspis ecristata</i> | Crestless Plume Orchid | Threatened |
| <i>Sageretia minutiflora</i> | Climbing Buckthorn | Threatened |
| <i>Sapindus marginatus</i> | Soapberry | Rare |
| <i>Sarracenia minor</i> | Hooded Pitcherplant | Unusual |

Floristic Highlights from Camden County

Richard Carter

This project began in 1996 when I was contracted by the Georgia Department of Natural Resources to inventory the rare flora and plant communities of Kings Bay Submarine Base. Until that time I had only sporadically botanized Camden County. Subsequent to the Kings Bay project, I made trips to Camden County whenever possible but never on a regular, sustained basis. In 2006, through the generosity of a Georgia Botanical Society Marie Mellinger Field Botany Research Grant, floristic work in Camden County was revitalized.

The survey has resulted in a vouchered list of approximately 1,200 vascular plant species for Camden County, including populations of eight species on Georgia's list of Protected Plants (Table 1) and 49 taxa on the lists of Special Concern and Watched Plants (Table 2). The results of this field research will provide the basis for recommendations to the Georgia Department of Natural Resources Natural Heritage Program about the status of certain species on the lists of Special Concern and Watched Plants. Additionally, numerous new state records and other significant range extensions have been documented (Table 3). The sedge genus *Carex* is notable in yielding more than 30 species in the county, including a number of rarities (Tables 1-3) and range extensions. Notable among rare and unusual *Carex* species are velvet sedge (*C. dasycarpa*), cypress-knee sedge (*C. decomposita*), and Godfrey's sedge (*C. godfreyi*), and significant range extensions include



Closeup, *Tillandsia bartramii* (Bartram's air-plant)
Richard Carter

yellow-fruit sedge (*C. annectens*), Chapman's sedge (*C. chapmanii*), and Gholson's sedge (*C. gholsonii*). Following are brief descriptions of selected plant communities in Camden County with emphasis on rare flora. The community classification system of NatureServe (2008) is used.

The Southern Coastal Plain Mesic Slope Forest along the Satilla River bluffs in western Camden County harbors populations of the epiphytic green-fly orchid (*Epidendrum magnoliae*) and Bartram's air-plant (*Tillandsia bartramii*), as well as the rare three-birds orchid (*Triphora trianthophora*), and the inconspicuous nodding nixie (*Apteris aphylla*). Populations of the rare service-berry holly (*Ilex amelanchier*) and cypress-knee sedge (*Carex decomposita*) were found in the Satilla River floodplain at the edges of these bluffs. Several pockets of American beech (*Fagus grandifolia*), previously not reported from the southeastern sector of Geor-

Table 2. Species found during survey of Camden County flora and their status on the lists of Special Concern and Watched plants of Georgia (Anonymous 2008).

| Scientific Name | Common Name | Status |
|--|--------------------------|---------|
| <i>Aeschynomene viscidula</i> | Sticky Joint-vetch | S(S?) |
| <i>Agalinis filifolia</i> | Seminole Purple Foxglove | S(S1S2) |
| <i>Amaranthus cannabinus</i> | Tidalmarsh Pigweed | W(SU) |
| <i>Amphicarpum mühlenbergianum</i> | Blue Maidencane | W(S3?) |
| <i>Apteria aphylla</i> | Nodding Nixie | W(S3) |
| <i>Asclepias cinerea</i> | Lavender Milkweed | W(S3?) |
| <i>Asclepias connivens</i> | Large-flower Milkweed | W(S3?) |
| <i>Asimina pygmaea</i> | Dwarf Pawpaw | S(S1?) |
| <i>Baptisia lecontei</i> | Leconte Wild Indigo | S(S1) |
| <i>Befaria racemosa</i> | Tarflower | W(S3) |
| <i>Carex debilis</i> | Weak Sedge | W(SU) |
| <i>Carex decomposita</i> | Cypress-knee Sedge | S(S2?) |
| <i>Carex fissa</i> var. <i>aristata</i> | Hammock Sedge | S(S1) |
| <i>Carex floridana</i> | Florida Sedge | S(S3) |
| <i>Carex godfreyi</i> | Godfrey's Sedge | W(S3?) |
| <i>Carex lonchocarpa</i> | Sedge | W(S3) |
| <i>Ctenium floridanum</i> | Florida Orange-grass | S(S1) |
| <i>Cyperus polystachyos</i> var. <i>filicinus</i> | Fern-like Flatsedge | W(SU) |
| <i>Cyperus polystachyos</i> var. <i>polystachyos</i> | Texas Flatsedge | W(SU) |
| <i>Cyperus tetragonus</i> | Four-angled Flatsedge | W(S3?) |
| <i>Cyperus virens</i> var. <i>drummondii</i> | Drummond's Flatsedge | W(S3?) |
| <i>Cyperus virens</i> var. <i>virens</i> | Green Flatsedge | W(S3?) |
| <i>Eleocharis albida</i> | White Spikerush | S(S2S3) |
| <i>Eleocharis cellulosa</i> | Gulf Coast Spikerush | W(SNR) |
| <i>Eleocharis melanocarpa</i> | Black-fruit Spikerush | W(S3) |
| <i>Eleocharis montana</i> | Nodose Spikerush | S(SH) |
| <i>Eleocharis montevidensis</i> | Sand Spikerush | S(S1) |
| <i>Eupatorium jucundum</i> | Hammock Boneset | W(SU) |
| <i>Forestiera segregata</i> | Florida Wild Privet | S(S2) |
| <i>Fuirena scirpoidea</i> | Southern Umbrella Sedge | S(S1?) |
| <i>Ilex amelanchier</i> | Serviceberry Holly | S(S2) |
| <i>Iris tridentata</i> | Savanna Iris | S(S2?) |

| | | |
|--|---------------------------|---------|
| <i>Palafoxia integrifolia</i> | Palafoxia | S(S2?) |
| <i>Physostegia leptophylla</i> | Narrowleaf Obedient Plant | S(S2S3) |
| <i>Plantago sparsiflora</i> | Pineland Plantain | S(S2) |
| <i>Platanthera nivea</i> | Snowy Orchid | S(S2S3) |
| <i>Quercus austrina</i> | Bluff White Oak | S(S3?) |
| <i>Quercus chapmanii</i> | Chapman's Oak | S(S2) |
| <i>Rhexia nuttallii</i> | Nuttall's Meadowbeauty | S(S1?) |
| <i>Sagittaria graminea</i> subsp. <i>chapmanii</i> | Chapman's Arrowhead | W(S3?) |
| <i>Schizachyrium stoloniferum</i> | Creeping Bluestem | W(S2S3) |
| <i>Sida elliptica</i> | Elliott's Fanpetals | S(S2?) |
| <i>Thalia dealbata</i> | Powdery Alligator-flag | S(S1) |
| <i>Tillandsia bartramii</i> | Bartram's Air-plant | S(S2) |
| <i>Tillandsia recurvata</i> | Ball-moss | S(S1) |
| <i>Triphora trianthophora</i> | Three-birds Orchid | S(S2?) |
| <i>Vicia minutiflora</i> | Pygmy-flower Vetch | S(S1?) |
| <i>Vigna luteola</i> | Wild Yellow Cowpea | S(S2?) |
| <i>Zephyranthes simpsonii</i> | Simpson's Rain Lily | S(S1) |

Key to status abbreviations: S=listed among Georgia's Special Concern plant species; W=listed among Georgia's Watched plant species; S1=critically imperiled in state because of extreme rarity (5 or fewer occurrences); S2=imperiled in state because of rarity (6 to 20 occurrences); S3=rare or uncommon in state (21 to 100 occurrences); SH=of historical occurrence in the state, perhaps not verified in past 20 years, but suspected to be extant; SU=possibly in peril in state but status uncertain, need more information on threats or distribution; SNR=state not ranked.

gia, were observed along the Satilla River bluffs and, in one case, in a remnant mixed pine and hardwood forest surrounded by pine plantation on a gently sloping, expansive flat some distance away from the river. Efforts to locate beechdrops (*Epifagus virginiana*), parasitic on American beech, were futile.

Several small, isolated remnants of the fire-dependent *Pinus palustris* / *Ilex glabra* / *Aristida stricta* Woodland were identified in the county. These areas unfortunately had not been subject to fire for years. Nevertheless, specialties such as green silky scale (*Anthaenantia villosa*), Florida orange grass (*Ctenium floridanum*), large-flower milkweed (*Asclepias connivens*), and Nuttall's meadowbeauty (*Rhexia nuttallii*) were found. Searching these areas for other plants of special

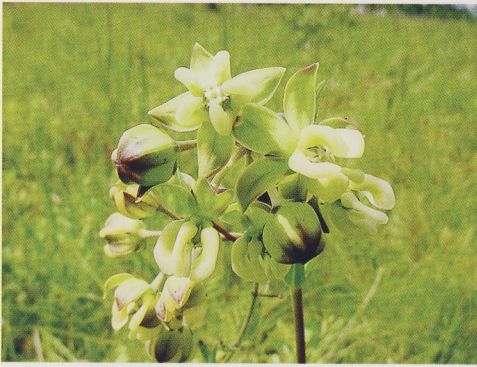
interest, after they have been burned, is eagerly anticipated.

The Southern Atlantic Coastal Plain Maritime Forest, found mostly along the coastal fringe, is dominated by live oak (*Quercus virginiana*), water oak (*Q. nigra*), laurel oak (*Q. hemisphaerica*), bullbay magnolia (*Magnolia grandiflora*), pignut hickory (*Carya glabra*), loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), southern basswood (*Tilia americana* var. *caroliniana*), cabbage palm (*Sabal palmetto*), red mulberry (*Morus rubra*), Carolina cherry-laurel (*Prunus caroliniana*), blackcherry (*P. serotina*), and southern red cedar (*Juniperus silicicola*), with an understory of American holly (*Ilex opaca*), pawpaw (*Asimina parviflora*), saw palmetto (*Serenoa repens*), wax

Table 3. Other noteworthy plant species found during survey of Camden County flora.

| Scientific Name | Common Name | Status |
|---|--------------------------|----------|
| † <i>Asparagus setaceus</i> | Common Asparagus Fern | SR |
| † <i>Boerhavia diffusa</i> | Red Spiderling | SR |
| † <i>Bothriochloa ischaemum</i> | Yellow Bluestem | SR |
| <i>Callitriche pedunculosa</i> | Nuttall's Water-starwort | SR |
| <i>Carex annectens</i> | Yellow-fruit Sedge | SR |
| <i>Carex chapmanii</i> | Chapman's Sedge | seGA |
| <i>Carex comosa</i> | Longhair Sedge | seGA |
| <i>Carex gholsonii</i> | Gholson's Sedge | seGA |
| † <i>Ceratopteris pteridoides</i> | Water Horn Fern | SR |
| <i>Cinna arundinacea</i> | Sweet Woodreed | seGA |
| † <i>Cyperus digitatus</i> | Finger Flatsedge | SR |
| † <i>Dioscorea bulbifera</i> | Air Yam | SR, EPPC |
| † <i>Dichondra micrantha</i> | Asian Ponsyfoot | SR |
| † <i>Eleocharis montana</i> | Nodose Spikerush | seGA |
| <i>Fagus grandifolia</i> | American beech | seGA |
| † <i>Hypochaeris microcephala</i> var. <i>albiflora</i> | Smallhead Cat's Ear | SR |
| † <i>Indigofera spicata</i> | Trailing Indigo | SR |
| † <i>Kyllinga squamulata</i> | Asian Spikesedge | SR |
| † <i>Panicum repens</i> | Torpedo Grass | SR |
| † <i>Pectis prostrata</i> | Spreading Chinchweed | SR |
| <i>Pedicularis canadensis</i> | Lousewort | seGA |
| <i>Penthorum sedoides</i> | Ditch Stonecrop | seGA |
| † <i>Pseudognaphalium luteoalbum</i> | Jersey Cudweed | SR |
| † <i>Rottboellia cochinchinensis</i> | Itchgrass | FNW |
| † <i>Solanum chenopodioides</i> | Black Nightshade | SR |
| <i>Solidago rugosa</i> var. <i>celtidifolia</i> | Wrinkle-leaf Goldenrod | seGA |
| † <i>Sporobolus indicus</i> var. <i>pyramidalis</i> | West Indian Dropseed | SR |
| <i>Thalia geniculata</i> | Alligator-flag | SR |
| † <i>Tradescantia fluminensis</i> | Small-leaf Spiderwort | SR, EPPC |
| † <i>Verbascum virgatum</i> | Wand Mullein | SR |
| † <i>Vicia ludoviciana</i> subsp. <i>leavenworthii</i> | Leavenworth's Vetch | SR |
| <i>Vicia minutiflora</i> | Pygmy-flower Vetch | SR |

Key to symbols and abbreviations: †=introduced species; SR=putative state record; seGA=range extension into south-eastern Georgia; EPPC=on Florida Exotic Pest Plant Council's 2007 List of Invasive Plant Species (FLEPPC 2007); FNW=Federal Noxious Weed (Anonymous 2006). Range extensions based on information in Kral (1983), Jones and Coile (1988), Sweeney and Giannasi (2000), and Chafin (2007).



Asclepias connivens (large flower milkweed)
Richard Carter



Asclepias humistrata (pinewoods milkweed)
Richard Carter

myrtle (*Morella cerifera*), red buckeye (*Aesculus pavia*), rusty lyonia (*Lyonia ferruginea*), sparkleberry (*Vaccinium arboreum*), redbay (*Persea borbonia*), yaupon (*Ilex vomitoria*), and tough bully (*Sideroxylon tenax*). The moderating influence of the ocean waters on temperature and humidity is especially evident here in the presence of species with tropical affinities, particularly the epiphytic green-fly orchid (*Epidendrum magnoliae*), ball-moss (*Tillandsia recurvata*), and Bartram's air-plant (*Tillandsia bartramii*).

Midden sites—refuse piles of oyster shells left by Native American inhabitants during their seasonal occupation of the coast when oysters and other food items were abundant in the adjacent estuary—are found along the marsh edge within the Maritime Forest. The calcareous soils of the middens are habitat for specially adapted plants such as southern red cedar (*Juniperus silicicola*), rough-leaf dogwood (*Cornus asperifolia*), Carolina buckthorn (*Rhamnus caroliniana*), snow square-stem (*Melanthera nivea*), and rarities such as climbing buckthorn (*Sageretia minutiflora*) and Florida wild privet (*Forestiera segregata*).

The Southern Coastal Plain Hydric Hammock is one of the most diverse and impressive of plant communities in Camden County, and, fortunately, it is one of the least altered by human activity. Excellent examples are along tributary creeks and drains of the Satilla River

in the vicinity of Woodbine and Whiteoak. This community is gently sloping to nearly flat, with an abundance of broadleaf evergreen trees forming a dense canopy. Overstory species include diamond-leaf oak (*Quercus laurifolia*), swamp chestnut-oak (*Q. michauxii*), water oak (*Q. nigra*), live oak (*Q. virginiana*), cabbage palm (*Sabal palmetto*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), persimmon (*Diospyros virginiana*), sweetgum (*Liquidambar styraciflua*), bullbay magnolia (*Magnolia grandiflora*), red mulberry (*Morus rubra*), black gum (*Nyssa sylvatica*), sugarberry (*Celtis laevigata*), and American elm (*Ulmus americana*). Understory shrubs such as American holly (*Ilex opaca*), pawpaw (*Asimina parviflora*), swamp dogwood (*Cornus stricta*), bluebeech (*Carpinus caroliniana*), fetterbush (*Lyonia lucida*), waxmyrtle (*Morella cerifera*), wild olive (*Osmanthus americanus*), swampbay (*Persea palustris*), bluestem palmetto (*Sabal minor*), saw palmetto (*Serenoa repens*), and highbush blueberry (*Vaccinium corymbosum*) are common. A variety of herbs is found here, including Jack-in-the-pulpit (*Arisaema triphyllum*), cardinal flower (*Lobelia cardinalis*), woodoats (*Chasmanthium* spp.), false nettle (*Boehmeria cylindrica*), and millet beaksedge (*Rhynchospora miliacea*). Large populations of the unusual needle palm (*Rhapidophyllum hystrix*) and epi-



Asclepias viridis (spider milkweed) Richard Carter



Befaria racemosa (tarflower) Richard Carter

phytic green-fly orchid (*Epidendrum magnoliae*) may be found in the Hydric Hammock as well as specialties such as Florida Keys hempvine (*Mikania cordifolia*), Chapman's sedge (*Carex chapmanii*), Godfrey's sedge (*C. godfreyi*), and Gholson's sedge (*C. gholsonii*).

The Georgia Botanical Society Marie Melinger Field Botany Research Grant funded thirteen trips to Camden County, enabling 29 days of field research from mid-March through late October 2006. Subsequently, the Faculty Research Fund and the Biology Department of Valdosta State University have supported additional field work during 2007-2008. In all, I have made 29 field trips to Camden County since March 2006, which have involved more than fifty days in the field there. Fortuitously, Wilson Baker—colleague and friend—accompanied me on most of these trips, and through his considerable network of associates we were able to gain access to some of the highest quality natural habitat remaining in the county. Access to rich slope forests along the Satilla River in western Camden County was kindly provided by Ms. Nell McClure of Magnolia Bluff, Mr. Jim Bailey of Woodbine, Mr. Alan Bailey of Savannah, and Mr. David Dockery and Ms. Rosemary Grigg of St. Simons. Others kindly allowing access to property in Camden County were Mr. Albert Flannigan to the Great Satilla Preserve, Mr. Walter Merck to

his property at Clarks Bluff, and Mr. Robert Smith to Cabin Bluff. Additionally, Mr. William Dopson of McRae graciously hosted me for several days of superb botanizing on Little Cumberland Island, and Mr. Gordon Rogers, Satilla Riverkeeper, of Waynesville contributed the names of contacts in Camden County, and he and Mr. John Carswell generously provided for an excellent and memorable day botanizing along the Satilla by boat. ❁

References

- Anonymous. 2006. Federal Noxious Weed List (30 June 2006). United States Department of Agriculture, Animal and Plant Health Inspection Service. http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/weedlist2006.pdf (last accessed 09 March 2008).
- Anonymous. 2008. Georgia Rare Species and Natural Community Information—Protected Plants, Special Concern Plants, Watched Plants (27 May 2008). Georgia Department of Natural Resources, Natural Heritage Program. Social Circle, Georgia. <http://georgiawildlife.dnr.state.ga.us> (last accessed 16 June 2008).



Clematis socialis (Alabama leather flower)
Henning von Schmeling



Tiarella cordifolia (foamflower)
Richard & Teresa Ware



Ilex vomitoria (yaupon holly)
Hugh & Carol Nourse



Mimosa strigillosa (powderpuff)
Richard Carter



Verbascum virgatum (wand mullein)
Richard Carter