

## USER NOTES

### Sea Island Study Area of South Carolina and Georgia

#### Introduction

Wetland mapping of the coastal zones of South Carolina and Georgia was one of the initial mapping efforts conducted by the National Wetland Inventory Project (NWI). The following 1:100,000 scale maps were included in the study area:

Beaufort (Savannah SE)	Kingstree (Georgetown NW)
Brunswick (Brunswick SW)	Myrtle Beach (Georgetown NE)
Fernandina Beach (Jacksonville NW)	Saint George (Augusta SE)
Georgetown (Georgetown SW)	Savannah (Savannah SW)
James Island (James Island NW)	Sylvania (Savannah NW)
Jessup (Brunswick NW)	Walterboro (Savannah NE)
Wassaw Sound (Brunswick NE)	

#### Map Production

The maps were produced through stereoscopic photo-interpretation of high altitude aerial photography. Scale, emulsion, and quality of the photography varied throughout the study area. Photography used included color-infrared (CIR) at an approximate scale of 1:130,000 taken in 1972 and 1974; limited quantities of CIR at 1:80,000 scale taken in 1974; and black and white at a scale of 1:80,000 taken in 1977. Interpretation of photography and field checking was conducted from 1977 through 1979. The South Carolina

portion of the work was performed by the South Carolina Wildlife and Marine Resources Department, Marine Resources Division at Charleston; the Georgia portion by the Georgia Department of Natural Resources, Game and Fish Division, Marshland Protection Section at Brunswick.

### Location

The mapped area extends from Nassau County, Florida, northward to the southern border of North Carolina and from the coast inland for approximately 30 miles.

### Ecoregion Classification

The Georgia portion is located in the Subtropical Division, Outer Coastal Plain Forest Province, Beech-Sweetgum-Magnolia-Pine Oak Forest. The South Carolina area is in the Subtropical Division, Southeastern Mixed Forest Province (Bailey, Robert G. 1978. Description of the ecoregions of the United States. USDA Forest Service. Internatn. Reg. Ogden, Utah. 77p.)

### Climate

The climate is generally pleasant with short, mild winters and warm, humid summers. Average annual temperature is 60<sup>o</sup> to 70<sup>o</sup>F (15<sup>o</sup> to 21<sup>o</sup>C). Rainfall is normally well distributed throughout the year with an average of approximately .50 inches (127cm). The growing season is long and the area is freeze free from 250 to 300 days.

## Wetland Classifications

The following is listing of regularly used alphanumeric codes shown on the wetland maps along with the local names of the habitat types to which they correspond. Wetland classifications were made in accordance with Cowardin et al. 1977. Classification of Wetlands and Deepwater Habitats of the United States (An Operational Draft). The wetland classifications shown on the maps are the class level of detail only and therefore provide very general information. Local habitat names were taken from Sandifer, P.A., J.V. Miglarese, D.R. Calder et al. 1980. Ecological characterization of the Sea Island coastal region of South Carolina and Georgia. Volume III: Biological features of the characterization area. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C. FWS/OBS - 79/42. 620pp. It is suggested that the above reference be consulted if detailed wetland community information is required.

### Map Symbols

M10W Marine, subtidal, open water

Permanently submerged area of the open ocean.

M2BB Marine, intertidal, beaches or bars

Unvegetated beaches and bars of the nearshore Atlantic which are exposed periodically by the tides.

E10W Estuarine, subtidal, open water

to 10 parts per thousand. Both regularly and irregularly flooded zones are present. Many plant species occurring in the high salt marsh can be found along with salt marsh bulrush (Scirpus robustus) and salt marsh aster (Aster tenuifolius). As salinities lessen upstream there is often a transition from giant cordgrass (Spartina cynosuroides) to giant cutgrass (Zizaniopsis miliacea), wild rice (Zizania aquatica) and other species less tolerant of high salinities:

E2RF Estuarine, intertidal, reef

Oyster reefs or "rocks." Intertidal mounds formed primarily from the shells of American oysters (Crassostrea virginica).

E2SS Estuarine, intertidal, scrub-shrub

Usually high salt marsh areas dominated by false willow (Baccharis angustifolia), sea myrtle (Baccharis halimifolia), marsh elder (Iva frutescens), and wax myrtle (Myrica cerifera).

PEM Palustrine, emergent wetland

Freshwater wetlands dominated by erect, rooted herbaceous hydrophytes. Water regimes vary greatly as does plant species composition. Areas identified by this classification include tidal impoundments for waterfowl management, tidal fresh marshes, deep marshes, fern-sedge bogs, and savannahs.

Tidally influenced inshore open water of variable salinity with at least 0.5 parts per thousand ocean derived salts.

E2BB Estuarine, intertidal, beach or bar

Tidally flooded inshore beaches or bars; ocean derived salts exceed 0.5 parts per thousand.

E2FL Estuarine, intertidal, flat

Tidally flooded "salt flats" or "barrens." The substrate is usually sand or mud with an encrustation of salt.

E2EM Estuarine, intertidal, emergents

Regularly flooded salt marsh. Dominant vegetation is smooth cordgrass (Spartina alterniflora). Salinities range from 10 to 70 parts per thousand. Tidal overwash occurs daily.

Irregularly flooded or high salt marsh. Salinities approximate those of regularly flooded salt marsh. Commonly occurring species are smooth cordgrass, black needlerush (Juncus roemerianus), salt grass (Distichlis spicata), salt meadow cordgrass (Spartina patens), and glasswort (Salicornia spp.).

Brackish marsh. Emergent wetlands occurring between salt marshes and tidal fresh marshes. Salinities range from 0.5

Except for the somewhat drier savannahs, common species include smartweeds (Polygonum spp.), spikerushes (Eleocharis spp.), red root (Lachnanthes caroliniana), wild millet (Echinochloa crusgalli), giant cutgrass, panic grass (Panicum spp.), arrow heads (Sagittaria spp.), cattails (Typha spp.), wild rice, bulrushes (Scirpus spp.), beakrushes (Rhynchospora spp.), rushes (Juncus spp.), arrow-arum (Peltandra virginica), sedges (Cyperus spp. and Carex spp.), Virginia chain fern (Woodwardia virginica), and blue flag (Iris virginica).

Vegetation of the savannahs is strikingly different. The areas include many plants which tolerate acid conditions as well as extended periods of saturated soil conditions. Among the prevalent species are toothache grass (Oenanthia aromaticum), meadow beauties (Rhexia spp.), gentians (Gentiana spp.), white bracted sedge (Dichromena latifolia), orchids (Habenaria spp.), pitcher plants (Sarracenia spp.), milkworts (Polygala grandiflora), club mosses (Lycopodium spp.), yellow-eyed grass (Xyris spp.), pipeworts (Eriocaulon spp.), beakrushes and others.

PAB Palustrine aquatic beds

These are wetlands or deep water areas dominated by obligate aquatic plants that grow at or below the water surface. These plants may be rooted or float freely.

Typical species are pondweeds (Potamogeton spp.), coontails (Ceratophyllum spp.), bladderworts (Utricularia spp.), fanwort (Cabomba caroliniana), duckweed (Lemna spp.), water-shield (Brasenia schreberi), water-lily (Nuphar advena), white water-lily (Nymphaea odorata), frog's-bit (Limnobium spongia), pennyworts (Hydrocotyle spp.) and alligator-weed (Alternanthera philoxeroides).

PFO Palustrine, forested wetlands

Areas dominated by woody vegetation greater than 6 meters in height. The variety of habitats within this category include tidal swamps, nontidal swamps, bayheads, bogs, and bottomland hardwoods. Major species constituents of the swamps include bald cypress (Taxodium distichum), pond cypress (Taxodium ascendens), water tupelo (Nyssa aquatic), black gum (Nyssa sylvatica), swamp tupelo (Nyssa sylvatica var. biflora), ogeechee plum (Nyssa ogeche), overcup oak (Quercus lyrata), water oak (Quercus nigra), laurel oak (Quercus laurifolia), Green ash (Fraxinus pennsylvanica), water ash (Fraxinus caroliniana), white ash (Fraxinus americana), red maple (Acer rubrum), sweet bay (Magnolia virginiana), red bay (Persea borbonia), sweet gum (Liquidambar styraciflua), dwarf palmetto (Sabal minor), wax myrtle (Myrica cerifera), titi (Cyrilla racemiflora), longleaf pine (Pinus palustris), and pond pine (Pinus serotina).

Bottomland hardwood wetlands include many of the species listed above, however composition favors those species which are less tolerant of prolonged flooding. Also included are water hickory (Carya aquatica), American elm (Ulmus americana), swamp chestnut oak (Quercus michauxii), river birch (Betula nigra), loblolly pine (Pinus taeda), beech (Fagus grandifolia), willows (Salix spp.).

Bayheads are primarily evergreen in character and are vegetated by red bay, sweet bay, loblolly bay (Gordonia lasianthus), red maple, highbush blueberry (Vaccinium corymbosum), Fetter-bush (Lyonia lucida), Virginia willow (Itea virginica), bamboo brier (Smilax laurifolia), swamp tupelo, pond cypress, and pond pine, Pinus serotina.

#### PSS

Palustrine, scrub-shrub wetlands

These wetlands are generally of two types (1) new regrowth bottomland forest and (2) pocosins. In the bottomland areas vegetation will be the same as for bottomland hardwood forest wetland, but the trees will not yet have reached a height of 6 meters. Pocosins are evergreen shrub communities vegetated by titi, fetter-bush, zenobia (Zenobia pulverulenta), sweet gallberry (Ilex coriacea), sweetbay, red bay, leather-leaf (Cassandra calyculata), sweet pepperbush (Clethra alnifolia), pond pine, bamboo brier, smooth winterberry (Ilex laevigata), lambkill (Kalmia angustifolia var. carolina), male-berry

(Lyonia ligustrina), and virginia willow.

L1AB and L2AB Lacustrine limnetic and littoral aquatic beds

Aquatic beds in shallow and deepwater of lakes and ponds. Species include pondweeds, coontails, water milfoils (Myriophyllum spp.), bushy-pondweeds (Najas spp.), water-lily, floating hearts (Nymphoides spp.) frog's bit, duckweeds, eastern wolfiella (Wolfiella floridana), bladderworts, mosquito fern (Azolla caroliniana), fanwort, pennywort, and alligator-weed.

L10W - Lacustrine, limnetic, open water

Water bodies greater than 8 hectares in size and generally deeper than 2 meters.

L20W - Lacustrine, littoral, open water

Water bodies greater than 8 hectares in size but generally less than 2 meters depth.

R10W - Riverine, tidal, open water

Tidally influenced waters found within a defined channel.

R1EM Riverine, tidal, emergent wetlands

Tidally influenced freshwater wetlands found within river channels and dominated by nonpersistent emergent vegetation. Typical vegetation includes water-hemp (Amaranthus cannabinus), water hemlock (Cicuta maculata), leather flower (Clematis crispa), spider-lily (Hymenocallis crassifolia), eastern lilaeopsis (Lilaeopsis chinensis), water primroses (Ludwigia spp.), arrow-arum (Peltandra virginica), marsh fleabanes (Pluchea spp.), tear thumb (Polygonum arifolium), pickerelweed (Pontederia cordata), mock-bishopweed (Ptilimnium spp.), saccolepis (Sacciolepis sriata), arrowheads (Sagittaria spp.) and lizards tail (Saururus cernuus).

R1AB Riverine, tidal, aquatic bed

Floating or submergent vegetation found within fresh tidal river channels. Representative dominants are alligator-weed, mosquito fern (Azolla caroliniana), water-weed (Elodea canadensis), pennyworts, duckweeds, parrot-feather (Myriophyllum brasiliense), yellow pond-lilly (Nyphar luteum), golden club (Orontium aquaticum), pondweeds, and big duckweed (Spirodela polyrrhiza).

#### SPECIAL MAPPING PROBLEMS

1. Poor photography. In many instances the available photography was taken at times which were not optimum for vegetation mapping. Certain wetland types such as "savannahs" and "bayheads" were very difficult to identify. Throughout the mapping project

reliance was placed on topographic indicators and soils information where available.

2. Separation between Estuarine and Riverine Systems. Because this location is generally reflected by a transition from salt tolerant to freshwater plant species, the break between these systems shown on the maps should be considered a best approximation.
3. Classification of spoil disposal areas. Many of the diked dredged disposal areas especially in the Charleston Harbor area become vegetated by halophytic wetland vegetation between periods of use. To indicate the presence of this vegetation, the disposal sites were identified as "E2EM." These areas are readily differentiated from natural salt marsh by the presence of high dikes enclosing the area.