

MAP REPORT: COASTAL SOUTH CAROLINA UPDATE

Final

I. INTRODUCTION

The U.S. Fish and Wildlife Service's National Wetland Inventory is producing maps showing the location and classification of wetlands and deepwater habitats of the United States. The Classification of Wetlands and Deepwater Habitats of the United States by Cowardin et al is the classification system used to define and classify wetlands. Photointerpretation conventions, hydric soils lists, and wetland plant lists are also available to enhance the use and application of the classifications system.

The purpose of the notes to users is threefold: (1) to provide localized information regarding the production of NWI maps, including specific imagery and interpretation discussion; (2) to provide a descriptive cross-reference from wetland codes on the map to common terminology and representative plant species; and (3) to explain local geography, climate, and wetland communities.

II. FIELD RECONNAISSANCE

PROJECT AREA

1:100,000	Quad Name
Savannah SE	Hilton Head Bluffton Pritchardville Tybee Island North Fort Pulaski
Savannah SW	Limehouse

B. PERSONNEL

Charles Storrs - U.S. Fish and Wildlife Service, Region IV
Richard Eastlake - Greenhorne & O'Mara, Inc.

C. DATE OF FIELD TRIP

March 18-22, 2002

D. AERIAL PHOTOGRAPHY

Type: Color Infrared Transparencies NAPP
Scale: 1:40,000

Dates

03/04/99
03/16/99

E. COLLATERAL DATA

1. U.S.G.S. 1:24,000 Topographic Quads
2. Soil Surveys of the following counties:

Beaufort (South Carolina)
Jasper (South Carolina)
Chatham (Georgia)
3. U.S. Fish and Wildlife Service. National List of Plant Species That Occur in Wetlands: Georgia
4. Bailey, Robert G. Descriptions of the Ecoregions of the United States. U.S. Department of Agriculture, Forest Service, 1980.

III. DESCRIPTION OF PROJECT AREA

A. GEOGRAPHY

The project area is on the Atlantic Coastal Plain in Bailey's Southeastern Mixed Forest Province, Subtropical Division (1980). Most of the region is flat with little relief, rising slowly in a series of levels east to west to low rolling sandhills in the northwest section. Streams and rivers are slow and sluggish. The major rivers, the Ogeechee and the Savannah, have broad floodplains with braided diffuse streambeds and many meander scars. These rivers empty into the Atlantic through extensive saltmarsh estuaries formed behind an outer rim of barrier islands.

Unique elliptical depressions called Carolina bays are found in the northwest portion of the project area. These landforms are aligned northwest to southeast and have sandy rims around basins that are wet year round.

B. CLIMATE

The climate is subtropical with long warm humid summers and short mild winters. Precipitation (average 48-50 inches) occurs throughout the year, but is heaviest in July and August, and least from October to December.

C. VEGETATION

The original vegetation was mixed oak-hickory, hardwood forests and pine forests, but most have been cut over before 1900 and now the dominant vegetation is commercially managed loblolly, longleaf, slash, and pond pine forest and sweetgum, blackgum, and yellow poplar floodplain forest. The estuarine areas are dominated by *Spartina alterniflora* and *Juncus roemerianus* in the marshes and loblolly pine on upland islands and shores.

D. SOILS

The soils in the project area are derived from marine and fluvial deposits consisting of sand, silt, and clay in various proportions. Most soils are sandy or sandy loam with loamy, clayey or mucky soils in saturated depressional areas and alongside streambeds. The larger rivers and saltmarshes have mineral, alluvial soils.

Human activities have been intensive since the area was settled in the late 17th century. Agriculture is still the dominant activity and the major crops are cotton, soybeans, and corn. Silviculture is also an important land use, especially in the northwestern portions of the project area. Recreation and tourism is important on the Atlantic Coast in Savannah.

IV. DESCRIPTION OF WETLAND HABITATS IN PROJECT AREA

A. MARINE SYSTEM

This consists of the subtidal (M1UBL) and intertidal (M2US,M,N,P) zones seaward of the barrier islands.

B. ESTUARINE SYSTEM

The estuarine system consists of the saltwater brackish habitats from the barrier islands to the inland extent of brackish waters (less than .5% salts). This area contains extensive areas of saltmarsh and open water (E1UBL). The dominant species are smooth cordgrass (*Spartina alterniflora*, E2EM1N) and blackrush (*Juncus roemerianus*, E2EM1P). Occasional shrubs appear near the estuarine-palustrine interface.

C. PALUSTRINE SYSTEM

Freshwater wetlands are extensive in the project area and are primarily forested floodplains, swamps and saturated depressions. Shrub-scrub and emergents occur where the original forest has been cut and removed and will, in time, progress to the forest

category. There are extensive areas of managed freshwater marsh along tidal rivers that were formerly old rice lands.

Temporarily wet forest communities (A) are dominated by a hardwood mixture of sweetgum (Liquidambar styraciflua), laurel oak (Quercus laurifolia), water oak (Quercus nigra), red maple (Acer rubrum), sweet hickory (Carya glabra) and pine plantations, loblolly pine (Pinus Taeda). The temporary hardwood forests have a understory of small shrubs and ferns. The pine forests often have a thick understory of sedges, wax myrtle (Myrica cerifera), fetterbush (Lyonia spp.) and herbaceous plants.

Seasonally flooded forested wetlands are composed of blackgum (Nyssa sylvatica), sweetgum (Liquidambar styraciflua), red maple (Acer rubrum) and willow oak (Quercus phellos) . The understory is sparse and includes red bay (Persea borbonia), sweet bay (Magnolia virginiana), loblolly bay (Gordonia lasianthus) and wax myrtle (Myrica cerifera). Small seasonal gumponds occur throughout the pine forests.

There are two types of saturated (B) forested wetlands. One where the water table stays at or near the surface and the soil rarely dries out and the other where the soil is saturated early in the growing season and is dry at the end of the growing season. Such areas include the distinctive Carolina bays, seepage slopes and drainages in the sandhill regions, and areas with slowly permeable clay soils. Common species are sweetgum, blackgum, water oak, loblolly and pond pine. Understory plants include red bay, sweetbay, loblolly bay, pepperbush (Clethra alnifolia), wax myrtle, fetterbush, gallberry (Ilex glabra), netted chain fern (Spaghnum sp.) and dog hobble (Leucothoe axillaris).

The dominant species in the semipermanently flooded (F) forests are blackgum, bald cypress (Taxodium distichum), red maple and tupelo (Nyssa aquatica). These swamps occurred mainly in the lower floodplains of the major rivers and the deeper meander scars.

Palustrine emergent areas were rare and usually occurred in powerline cuts, wet pastures or in impounded wetlands. The most extensive areas of freshwater emergents occur in the old abandoned rice fields along the Combahee River. Maidencane (Panicum hemitomon), bulrush (Scirpus sp.), cattail (Typha sp.), alligator flag (Thalia geniculator) and pickerel weed (Pontederia cordata) are found in semipermanently-flooded wetlands. Sedges and rushes are prevalent in seasonal wetlands as well as smartweed (Polygonum sp.), lizard's tail (Saururus cernuus) and arowgum (Peltandra virginica). Although not dominant, pitcher plants (Sarracenia spp.) are common in saturated emergent wetlands.

Scrub-shrub areas are not common and usually are an early successional stage of the dominant forest type. Natural shrub communities occur in marsh communities near the palustrine estuarine interface. Common species are Bacchhris halmifolia, wax myrtle, willow and Atlantic white cedar (Chamaecyparis thyoides).

D. RIVERINE SYSTEM

Permanently flowing rivers and streams are labeled R2UBH or if they receive some influence from the tides, R1UBV. Channelized rivers and ditches are indicated with an 'x' modifier.

E. LACUSTRINE SYSTEM

There are no naturally occurring lakes in the project area. Impounded rivers or streams that cover more than 20 acres are labeled L1UBHh.

TABLE 1

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
E1UBL	Estuarine, subtidal unconsolidated bottom including bays, inlets	Intracoastal waterways	Sand, mud
E2USN	Estuarine, intertidal, unconsolidated shore	Sand bar	Sand, mud
E2USP	Estuarine, intertidal, unconsolidated shore	Salt flat	<u>Salicornia</u> sp. <u>Borrichia frutescens</u>
E2SS1P	Estuarine shrubs	Shrubs	<u>Baccharis</u> sp. <u>Iva frutescens</u> (marsh elder) <u>Chamaecyparis thyoides</u> (Atlantic white cedar) <u>Myrica cerifera</u> (wax myrtle) <u>Juniperus silicicola</u> (Southern red cedar)
E2EM1N,P	Estuarine, intertidal	Salt marsh	<u>Spartina altinernflora</u> (saltmarsh cord grass) <u>Juncus roemerianus</u> (black rush) <u>Distichlis spicata</u> (salt grass)
R1UBV	Riverine, tidal, perennial, unconsolidated bottom	River, canal	Sand, mud
R1USN	Riverine, tidal,	Sand bar	Sand, gravel

unconsolidated shore

R1AB4

Riverine, tidal

River, canal

Lemna sp.
(duckweed)

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
R2UBH	Riverine, lower perennial, unconsolidated bottom	River, canal	Sand, mud
R2AB4H	Riverine, lower perennial, floating aquatic bed	River, canal	<u>Lemna</u> sp. (duckweed)
R2USA,C	Riverine, lower perennial, unconsolidated shore	Sand bar	Sand, gravel
R4SBC,F	Riverine, intermittent stream bed	Stream, canal	Sand, mud, gravel
L1UBH,V	Lacustrine, limnetic, unconsolidated bottom	Lake	Sand, mud
L2AB4H,G,V	Lacustrine, littoral, aquatic bed, floating vascular	Lake	<u>Lemna</u> sp. (duckweed) <u>Azolla caroliniana</u> (mosquito fern)
L2AB3G,H,V	Rooted vascular	Lake	<u>Nymphaea</u> sp. (water lily)
PUBG,H,V	Palustrine, unconsolidated bottom	Pond	Sand, mud
PAB3H,G,V	Palustrine, aquatic bed, rooted vascular	Pond	<u>Nymphaea</u> sp. (water lily)
PAB4H,G,V	Palustrine, aquatic bed, floating vascular	Pond	<u>Lemna</u> sp. (duckweed) <u>Azolla caroliniana</u> (mosquito fern)

PEM1A,B

Palustrine, emergent,
persistent, temporarily
flooded

Wet prairies

Juncus sp.
(rush)
Cyperus sp.
(flat sedge)
Carex sp.
(sedges)
Setaria sp.
(foxtail)
Sarracenia Minor
(hooded pitcher plant)
Iris sp.
Rhexia sp.
(meadow beauty)

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PEM1C,F,G,H,R,T,V	Palustrine, emergent seasonally to permanently flooded	Wet prairies, marshes	<u>Panicum hemitomon</u> (maidencane) <u>Sagittaria latifolia</u> (duck potato) <u>Typha</u> sp. (cattail) <u>Polygonum</u> sp. (smartweed) <u>Zizaniopsis miliaceae</u> (giant cutgrass) <u>Cladium jamaicense</u> (saw grass) <u>Iris</u> sp. (blue flag) <u>Thalia geniculata</u> (alligator flag) <u>Pontederia cordata</u> (pickeralweed) <u>Carex</u> sp. (sedges)
PSS1A	Palustrine, scrub shrub, broad-leaved deciduous	Scrub, shrub forest	<u>Acer rubrum</u> (red maple) <u>Nyssa sylvatica</u> (blackgum)
PSS1/4A	Mixed broad-leaved deciduous and pine		<u>Hypericum</u> sp. (St. Johnswort) <u>Salix</u> sp. (willow) <u>Rubus</u> sp. (blackberry) <u>Pinus elliotii</u> (slash pine) <u>Pinus taeda</u> (loblolly pine) <u>Myrica cerifera</u>

(wax myrtle)

Rhexia sp.

(meadow beauty)

Liriodendron tulipifera

(yellow poplar)

Magnolia virginiana

(sweet bay)

Nyssa sylvatica

(blackgum)

Acer rubrum

(red maple)

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PSS1B	Palustrine, scrub shrub,broad-leaved deciduous	Seeps, bays, bottomland	<u>Nyssa sylvatica</u> (blackgum) <u>Ilex glabra</u> (inkberry) <u>Clethera alnifolia</u> (pepperbush) <u>Osmunda cinnamomea</u> (cinnamon fern) <u>Liriodendron tulipifera</u> (yellow poplar) <u>Arundinaria gigantea</u> (giant cane)
PSS1/3B	mixed broad-leaved deciduous and broad-leaved evergreen		<u>Acer rubrum</u> (red maple) <u>Liquidambar styraciflua</u> (sweetgum) <u>Persea borbonia</u> (redbay)
PSS3B	broad-leaved evergreen		<u>Magnolia virginiana</u> (sweet bay) <u>Persea borbonia</u> (redbay) <u>Cyrilla racemiflora</u> (titi) <u>Myrica cerifera</u> (wax myrtle)
PSS4/3B	mixed needle-leaved and broad-leaved evergreen		<u>Pinus taeda</u> (loblolly pine) <u>Persea borbonia</u> (redbay)

PSS1C,F

Palustrine, scrub
shrub, broad-leaved
deciduous, seasonally
or semi-permanently
flooded

Thicket, swamp

Salix sp.
(willow)

Acer rubrum
(red maple)

Nyssa sylvatica
(blackgum)

Forestiera acuminata
(swamp privet)

Cephalanthus occidentalis
(buttonbush)

Taxodium distichum
(baldcypress)

Myrica cerifera
(wax myrtle)

Baccharis sp.
(saltbush)

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO1A	Palustrine, forested	Bottom-land	<u>Quercus nigra</u> (water oak) <u>Q. phellos</u> (willow oak) <u>Liquidambar styraciflua</u> (sweetgum) <u>Fraxinus pennsylvanica</u> (green ash) <u>Q. falcata</u> (S. red oak) <u>Salix</u> sp. (willow) <u>Celtus laevigata</u> (sugarberry) <u>Sapium sebiferum</u> (Chinese tallow) <u>Carya glabra</u> (pignut hickory) <u>Acer rubrum</u> (red maple) <u>Ulnus</u> sp. (elm) <u>Ostrya virginiana</u> (ironwood) <u>Serenoa repens</u> (palmetto) <u>Nyssa sylvatica</u> (blackgum) <u>Liriodendron tulipifera</u> (yellow poplar) <u>Q. laurifolia</u> (laurel oak) <u>Vaccinium</u> sp. (blueberry) <u>Q. michauxii</u> (sw chestnut oak)

Q. prinus
(chestnut oak)
Vitis sp.
(grapevine)
Ilex opaca
(American holly)

WETLAND CLASSIFICATION CODES

NW CODE (Water Regime)	NW DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO1B	Palustrine,forested, broad-leaved deciduous,saturated	Seeps, Carolina bays, bottomland	<u>Quercus nigra</u> (water oak) <u>Clethera alnifolia</u> (pepperbush) <u>Osmundia cinnomonea</u> (cinnamon fern) <u>Liquidamber styraciflua</u> (sweetgum) <u>Acer rubrum</u> (red maple) <u>Nyssa sylvatica</u> (blackgum) <u>Woodwardia virginica</u> (virginia chain fern) <u>Leucothoe axillaris</u> (dog hobble) <u>Liriodendron tulipifera</u> (yellow poplar) <u>Quercus laurifolia</u> (laurel oak) <u>Spagnum</u> sp <u>Lyonia lucida</u> (fetterbush) <u>Ostrya virginiana</u> (ironwood)
PFO1/3B	Palustrine,forested, broad-leaved deciduous, broad-leaved evergreen, saturated.	Bottomland, bayhead	<u>Liquidamber styraciflua</u> (sweetgum) <u>Magnolia virginiana</u> (sweetbay)
PFO3B	Palustrine,forested, broad-leaved evergreen, saturated.	Bayhead bottomland	<u>Magnolia virginiana</u> (sweetbay) <u>Persea borbonica</u> (redbay)

			<u>Gordonia lasianthus</u> (loblolly bay) <u>Liquidamber styraciflua</u> (sweetgum) <u>Acer rubrum</u> (red maple) <u>Nyssa sylvatica</u> (blackgum)
PFO4B	Palustrine,forested, pine,saturated	Pine forests, pine plantation	<u>Pinus taeda</u> (loblolly pine) <u>Pinus elliotii</u> (slash pine)
PFO4A	Palustrine, forested, pine,temporarily flooded	Pine forests, pine plantation	<u>Pinus taeda</u> (loblolly pine) <u>Pinus elliotii</u> (slash pine)
PFO1/4A	Palustrine, forested, broad- leaved deciduous-pine temporarily flooded		<u>Nyssa sylvatica</u> (blackgum) <u>Pinus taeda</u> (loblolly pine)
PFO4/1A	Palustrine, forested, pine-broadleaved deciduous mixed,temporarily flooded		<u>Pinus elliotii</u> (slash pine) <u>Clethra alnifolia</u> (sweet pepperbush)

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO1C (R)	Palustrine, forested, broad-leaved deciduous, seasonally flooded	Swamp	<u>Quercus nigra</u> (water oak) <u>Q. phellos</u> (willow oak) <u>Nyssa sylvatica</u> (blackgum) <u>Q. falcata</u> (s. red oak) <u>Salix sp.</u> (willow) <u>Clethera alnifolia</u> (pepperbush) <u>Sapium sebiferum</u> (chinese tallow) <u>Acer rubrum</u> (red maple) <u>Taxodium distichum</u> (baldcypress) <u>Q. laurifolia</u> (laurel oak) <u>Woodwardia areolata</u> (netted chain fern) <u>Saururus cernuus</u> (lizardtail) <u>Peltandra virginica</u> (arrow arum) <u>Myrica cerifera</u> (wax myrtle) <u>Osmunda regalis</u> (royal fern)

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO2F (C,R,T)	Palustrine, forested, needle-leaved deciduous	Cypress swamp	<u>Taxodium distichum</u> (baldcypress)
PFO2/1F (C,R,T)	needle- leaved/ broad-leaved deciduous mixed	Cypress-tupelo swamp, slough	<u>Taxodium distichum</u> (baldcypress) <u>Nyssa aquatica</u> (water tupelo) <u>Nyssa sylvatica</u> (blackgum)
PFO1/2F (C,R,T)	broad-leaved/ needle- leaved deciduous mixed	Tupelo-cypress swamp, slough	<u>Nyssa sylvatica</u> (blackgum) <u>Nyssa aquatica</u> (water tupelo) <u>Taxodium distichum</u> (baldcypress)
PFO1F	broad-leaved deciduous	swamp,slough	<u>Nyssa aquatica</u> (water tupelo) <u>Nyssa aquatica</u> (water tupelo) <u>Acer rubrum</u> (red maple) <u>Liquidamber styraciflua</u> (sweetgum) <u>Cephalanthus occidentalis</u> (buttonbush) <u>Salix</u> sp. (willow)
PFO1/3 (A,C)	Palustrine, forested, broad-leaved deciduous/broad-	Bottomland hardwoods, bayhead	<u>Nyssa sylvatica</u> (blackgum) <u>Acer rubrum</u>

	leaved evergreen mixed		(red maple) <u>Cyrilla racemiflora</u> (titi) <u>Persea borbonia</u> (red bay)
PFO3/1 (A,C)	Palustrine, forested, broad-leaved evergreen/broad-leaved deciduous mixed	Bayhead, bottomland hardwoods	<u>Persea borbonia</u> (red bay) <u>Cyrilla racemiflora</u> (titi) <u>Magnolia virginiana</u> (sweetbay) <u>Acer rubrum</u> (red maple) <u>Q. nigra</u> (water oak)

V. WATER REGIME DESCRIPTION

TIDAL

Salt and Brackish Areas - Marine and Estuarine Systems

- (L) Subtidal - The substrate is permanently flooded with tidal water.
 - (M) Irregularly Exposed - Land surface is exposed by tides less often than daily. This corresponds to the area on NOS charts from seaward edge of light green tone (mean low water) to depth contour approximating extreme low water.
 - (N) Regularly Flooded - Tidal water alternately floods and exposes the land surface at least once daily.
 - (P) Irregularly Flooded - Tidal water floods land surface less often than daily. The area must flood by tide at least once yeraly as a result of extreme high
-

spring tide.

Freshwater Tidal Areas - Lacustrine, Palustrine and Riverine Systems

- (N) Regularly Flooded - Fresh tidal water alternately floods and exposes the land surface at least once daily.
- (R) Seasonally Flooded - Tidal
- (S) Temporarily Flooded - Tidal
- (T) Semi-permanently Flooded - Tidal
- (V) Permanently Flooded - Tidal

NON-TIDAL

- (A) Temporarily Flooded - Surface water present for brief periods during growing season, but water table usually lies well below soil surface. Plants that grow both in uplands and wetlands are characteristic of this water regime.
- (B) Saturated - The substrate is saturated to surface for extended periods during the growing season, but surface water is seldom present.
- (C) Seasonally Flooded - Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is extremely variable, extending from saturated to a water table well below the ground surface.
- (F) Semi-permanently Flooded - Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.
- (G) Intermittently Exposed - Surface water is present throughout the year except in years of extreme drought.
- (H) Permanently Flooded - Water covers land surface throughout the year in all years.
- (K) Artificially Flooded - The amount and duration of flooding is controlled by means of pumps or siphons in combination with dikes or dams.

SPECIAL MODIFIERS

- (x) Excavated - Water lies in or flows through a basin or channel dug by man.
- (h) Impounded - The normal flow of water is impeded by a manmade dike or barrier.
- (s) Spoil - Formed from sediments deposited by dredging operations.