DRAFT

# NATIONAL WETLANDS INVENTORY

## MAP REPORT

## CHICOTEAGUE SW, CHICOTEAGUE NW

## PHOTO INTERPRETATION

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MAP REPORT
FOR
CHINCOTEAGUE TASK ORDER
(Chincoteague SW, Chincoteague NW)

# I. INTRODUCTION

## A. Purpose

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 document used to define and classify wetlands. Photo interpretation 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 report 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 crosswalk from wetland codes on the map to common names and representative plant species; and (3) to explain local geography, climate and wetland communities.

# II. FIELD RECONNAISSANCE

Field reconnaissance of the work area is an integral part of the accurate interpretation of the aerial photography. Photographic signatures are compared to the wetland's appearance in the field by observing vegetation, soil and topography. This information is weighted for seasonality and conditions existing at the time of photography and at ground truthing.

## A. Project Area

1. The work area for the Chincoteague field trip focused on two 1:100,000 scale maps covering the Virginia portion of the Delmarva Peninsula. These two 1:100,000's, Chincoteague SW and Chincoteague NW, are approximately located between 76° 00' 00" and 77° 00' 00" longitude, and 37° 00' 00" and 38° 00' 00" latitude.

2. 1:100,000 Work Areas

   Chincoteague NW (Including a small portion of Somerset County, Maryland.)
   Chincoteague SW

## B. Personnel

B. Johnson - Photo Interpreter
Geonex North American Operations, Inc.

N. Thomas, III - Photo Interpreter
Geonex North American Operations, Inc.

C. Attardo - Photo Interpreter
Geonex North American Operations, Inc.

R. Tiner - Regional Wetland Coordinator
U.S. Fish and Wildlife Service

## C. Field Trip Dates

January 24-28, 1993

## D. Aerial Photography

Primary Source Data (100%)

Type: NAPP Color Infrared

Scale: 1:40,000

| 1:100,000 | Date of Photography | Percent Coverage |
|---|---|---|
| Chincoteague NW | 3/23/90 | 53.0% |
| | 4/12/89 | 16.0% |
| | 4/14/89 | 8.9% |
| | 4/13/90 | 7.8% |
| | 3/30/88 | 5.6% |
| | 4/03/91 | 4.4% |
| | 4/17/88 | 2.2% |
| | 4/17/89 | 1.1% |
| | 4/12/90 | 1.1% |
| Chincoteague SW | 3/23/90 | 100.0% |

E. Collateral Data

1. U.S.G.S. Topographic Maps

2. S.C.S. Soil Surveys for Accomack County and Northampton County, Virginia and Somerset County, Maryland.

3. Previous NWI mapping effort (1:24K drafts from 1:80K Black and White photography).

4. Photointerpretation Conventions for the National Wetlands Inventory, 1990.

5. Advance copy of a detailed map containing Eastern Shore Wildlife refuge soils, complements of the Eastern Shore Soil and Water Conservation District.

6. Hydric soils list for the State of Virginia.

7. Wetland plant list for the State of Virginia.

8. Virginia Institute of Marine Science Coastal Wetland Maps.

## III. PHYSICAL DESCRIPTION OF THE PROJECT AREA

### A. Geography

The project area is located in Bailey's (1980) Southeastern Mixed Forest Province, specifically between Virginia's Atlantic Coast and the Chesapeake Bay. This region is generally Coastal Plain with numerous sluggish streams and marshes, lakes and swamps. To the north is gently rolling hills with local relief less than 100 feet. This province lies in the Humid Temperate Domain.

### B. Climate

This province has mild winters and hot humid summers. Average temperatures range from 40°F in winter to 76°F in summer. Although temperatures are mild, precipitation is abundant, mostly in the form of rainfall. Total annual precipitation is approximately 48 inches, 60% of which falls between the months of April and September.

## C. Vegetation

The climax vegetation consists of medium tall to tall forests of broad-leaved deciduous and needleleaf evergreen trees. Understory is frequently inhabited by broadleaf evergreen shrubs and grassy emergents. Common broadleaf deciduous trees include maples, beeches, gums and oaks. These broadleaf deciduous species are usually accompanied by loblolly pine. Common shrubs include wax myrtle, greenbriar and holly.

Approximately one-third of the project area is made up of salt marsh. Common emergents include cordgrass, black needlerush and distichlis. Shrubs found in the high marsh include marsh elder and groundsel tree.

## D. Soils

The soils in the Southeastern Mixed Forest Province are dominated by Ultisols, Vertisols, and Inceptisols. Specifically, on the Delmarva Peninsula there are four different soil units: Bojac-Munden-Molena, Nimmo-Munden-Dragston, Chincoteague-Magotha and Fisherman-Beaches-Camocca.

The Bojac-Munden-Molena soil unit consists of loamy and sandy soils that are moderately well drained to somewhat excessively drained. This unit occurs mainly along the necks of the Chesapeake Bay and provides a good substrate for cultivating agricultural crops and lumber. Most of the soil in this unit is unsuitable for wetland vegetation.

Another major soil unit is the Nimmo-Munden-Dragston soil. These loamy soils are moderately well drained to poorly drained. They are commonly found on broad flats and in depressions along the Occohannock neck, the Savage Neck and along the eastern edge of the mainland peninsula. Most of this soil has a seasonal high water table supporting various types of hydric vegetation. Although this unit is considered to contain many of the hydric soils, it is often drained to serve as pine plantation or cropland.

The expansive tidal marshes are made up of the Chincoteague-Magatha soil unit. The silty and loamy texture of these soils creates the very poorly drained and poorly drained environment conducive to marine and estuarine wetland vegetative growth. These soils lie between the mainland and the fragile barrier islands, and serve as a buffer against shoreline erosion and flooding.

The Fisherman-Beaches-Camocca soil unit is found on the barrier islands and at the southern tip of the mainland peninsula. The map unit is made up of sandy soil and beach sand which primarily serve as places of recreation.

## IV. DESCRIPTION OF WETLAND HABITATS IN THE PROJECT AREA

### A. Marine System

The Marine System, found just east of the barrier islands, falls into two classifications: subtidal deepwater habitat (M1UBL) and intertidal unconsolidated shore (M2USP, M2USN). Atlantic shore beaches, such as that on Assateague Island, fell into the M2US category.

### B. Estuarine System

About one-third of the project area falls within the Estuarine System. The tidal canals and deepwater tidal habitats are classified as E1UBL. Breaks between the Marine and Estuarine System were made with the aid of the previous NWI mapping effort. There are also tidal flats flooded daily by high tides that are classified as intertidal unconsolidated shore regularly flooded (E2USN). These flats give off a smooth light blue signature on the photography.

Some regularly flooded tidal flats contain oyster reefs, both natural and man-made. Using collateral data, a signature for natural oyster reefs was identified as light blue with a stippled or textured pattern. Man-made oyster reefs appear as a cluster of long narrow white mounds. Both natural and man-made oyster reefs are classified as E2RF2N.

Some areas of unconsolidated shore are exposed except during times of extreme high tides. These areas are classified E2USP. Beaches are classified E2US2P and appear as a bright white band along the shoreline on the photography. Following regional conventions, unvegetated pannes or tidal flats that are completely surrounded by salt marsh are classified E2US4P or E2US4N. This is based on the assumption that large amounts of organic matter is present. Most of the estuarine system was found to contain emergents (E2EM1P,U,N). Predominant vegetation includes Spartina spp. and Distichlis spicata. Other estuarine environments supported shrubs (E2SS1P). Shrubs such as Baccharis angustifolia, Myrica cerifra and Iva fructescens were commonly found in the extreme high marsh. Although there was evidence of salt stress, mature and young Pinus taeda were found in the project area within an estuarine environment (E2FO4P, E2SS4P). Also within the work area are some instances of emergents and shrubs thriving together in almost equal proportions. In these instances a split class was used (E2SS1/EM1P, E2EM1/SS1P).

During field reconnaissance, a distinguishable signature for Juncus romerianus was recognized. Generally dark green in signature, Juncus romerianus is taller than the surrounding vegetation and usually grows in circular colonies. As per regional request, Juncus romerianus will be mapped as E2EM3P, although a rather conservative approach will be taken when mapping these areas.

There are three distinct marsh map units within the project area: 1) High Marsh (E2EM1P) - usually a fringe along the upland edge and isolated higher "islands" within larger marsh sections, 2) Mixed Marsh (E2EM1U) - extensive areas of marsh that consist of a complex mosaic of high and low marsh hydrology and species composition which would make actual delineations of high/low marsh overly complicated, and 3) Low Marsh (E2EM1N) - most commonly found between E1UBL (deep water) and E2EM1U zones and also may occur as pannes within larger marsh units. The high marsh signature is bright white/light green/tan while the mixed marsh signature is dark green/brown with many small creeks snaking throughout. The low marsh signature is often shiny, blue/grey with thin vegetation (green/brown) dispersed throughout.

## C. Riverine System

The Virginia portion of the Delmarva Peninsula has no visible drainages on the aerial photography that fall within the riverine system (R1 or R2) due to saltwater influence or vegetative cover. Much of the deep water habitat in the project area falls within the estuarine system due to the proximity of the Atlantic Ocean or Chesapeake Bay. Most rivers inland could not be seen on the photography because of the dense vegetative cover (trees) and are classified according to the dominant vegetation.

## D. Lacustrine System

Water bodies greater than twenty acres are uncommon in the project area and are classified in the limnetic subsystem as L1UBH. Vegetated (aquatic) lakes were even less common and are classified in the littoral subsystem as L2AB3H or L2AB4H.

All lacustrine bodies are considered to be permanently flooded.

## E. Palustrine System

Open water ponds less than twenty acres are more common than lakes in the project area and are classified either as permanently flooded (PUBH) or semipermanently flooded (PUBF) depending on signature. Most are classified as permanently flooded and appear dark blue to black on the photography. The ponds classified as semi-permanently flooded appear light blue on the photography. Vegetated (aquatics) ponds were uncommon and classified as either PAB3H (rooted vascular - Nuphar sp. or Nymphaea sp.) or PAB4H (floating vascular - Lemna sp.). Only two aquatic bed wetlands were discovered in the field; therefore, most aquatic bed wetlands were delineated by photosignature alone.

Freshwater emergents were less common than their brackish water counterparts and occur principally in swamps, along floodplains, behind impoundments and in clear-cuts. The semi-permanently flooded (PEM1F) and seasonally flooded/saturated (PEM1E) wetlands are dominated by Typha sp. (cattail) and Scirpus sp. (bulrush) with Juncus sp. (rushes) and Carex sp. (sedges) either co-dominant or common. Typical seasonally flooded (PEM1C) and temporarily flooded (PEM1A) emergent wetland vegetation includes Panicum sp. (panic grass), Juncus spp. (rushes) and Carex spp. (sedges). These emergent wetlands can also be tidally influenced and classified as semi-permanently flooded tidal (PEM1T), seasonally flooded tidal (PEM1R) or temporarily flooded tidal (PEM1S).

Pure stands of scrub-shrub wetlands were not common in the project area because of the abundance of forest. However, they did compromise a significant portion of the understory of the forested wetlands and were, at times, co-dominant with forested or emergent species. Many shrub species observed are the same as forested species, but less than six meters tall. These include young Pinus taeda (loblolly pine), Acer rubrum (red maple) and Fagus grandifolia (American beech). Common shrubs include Ilex opaca (American holly), Lindera benzoin (spicebush), Clethra alnifolia (sweetpepper bush) and Vaccinium caesariense (coastal highbush blueberry). In addition, some of the common vines found within the scrub-shrub wetlands include Smilax spp. (greenbriar), Lonicera japonica (Japanese honeysuckle), Parthenocissus quinquefolia (Virginia creeper) and Myrica cerifra (wax myrtle). Scrub-shrub wetlands may also be tidally influenced where the influx of tides "backs up" the flow of freshwater, thereby, creating tidally influenced freshwater wetlands. These wetlands are classified as seasonally flooded tidal (PSS1R or PSS4R) or temporarily flooded tidal (PSS1S or PSS4S).

Forested wetlands are extensive in the project area. A vast majority of the forested wetlands are found on flat broad expanses, particularly on the peninsular shaped land forms commonly called a "neck". These wetlands predominantly occur on Nimmo sandy loam and have a seasonal high water table. Pinus taeda (loblolly pine) grows exceptionally well in Nimmo sandy loams, therefore, a majority of these wetlands are palustrine, forested, needle-leaved evergreen, saturated wetlands (PFO4B). In some instances, broadleaved deciduous trees were found as either the dominant (PFO1B) or co-dominant (PFO1/4B, PFO4/1B) species. Deciduous species observed include Acer rubrum (red maple), Liquidambar styraciflua (sweet gum), and Fagus grandifolia (American beech). Common understory species include Smilax spp. (greenbriar), Ilex opaca (American holly), and Myrica cerifra (wax myrtle).

Saturated wetlands, with a seasonal high water table and little or no standing water present throughout the year, give off little or no "signature" on the aerial photography. In these instances, the soil surveys will be relied on heavily to identify these wetlands that occur within the Nimmo map units. According to Rodney Lewis, District Conservationist Accomack field office, S.C.S., the Nimmo map unit is very accurately delineated in the Accomack County Soil Survey and 95% of the Nimmo map units meet the definition of wetland as defined in the Food Security Act of 1985. However, areas where there appears to be a change in hydrology, generally noted by larger crowns or a denser tree canopy and typically found at the interface between Nimmo and Dragston may units, photo signature will be followed closely as this is where the non-hydric inclusions are likely to occur within the Nimmo map units. Also, other extenuating circumstances that appear to have a permanent effect on the hydrology (extensive drainage system, water retention ponds, etc.) will be looked at closely to determine whether or not the area is still functioning as a wetland.

All other forested wetlands are associated with floodplains, depressional areas or swamps. These range in "wetness" from temporarily flooded (A) to seasonally flooded (C), seasonally flooded-saturated (E) and semi-permanently flooded (F). Common species include Pinus taeda (loblolly pine), Acer rubrum (red maple), Nyssa sylvatica (black gum) and Quercus michauxii (swamp chestnut oak). Common understory species generally found in "wetter" conditions include Magnolia virginian (sweet bay), Smilax spp. (greenbriar), and Carex spp. Other common understory species include Ilex opaca (American holly) and Myrica cerifra (wax myrtle).

Like their scrub-shrub counterparts, forested wetlands may also be tidally influenced and classified as either seasonally flooded-tidal (PFO1R, PFO4R) or temporarily flooded-tidal (PFO1S, PFO4S).

## F. WETLAND CLASSIFICATION CODES

| NWI CODE (Water Regime) | NWI DESCRIPTION | COMMON DESCRIPTION | VEGETATION/ SUBSTRATE |
|---|---|---|---|
| M1UB (L) | Marine, subtidal, unconsolidated bottom | Open ocean | Sand, mud, cobble |
| M2US2 (N,P) | Marine, intertidal, unconsolidated shore, sand | Beach | Sand |
| E1UB (L) | Estuarine, subtidal, unconsolidated bottom | Intracoastal waterways, tidal creeks, bays, inlets | Sand, mud |
| E2US (N,P) | Estuarine, intertidal, unconsolidated shore | Sand bar, mud flat | Sand, mud |
| E2FO4 (P) | Estuarine, intertidal, forested, needle-leaved evergreen | Tidally flooded shrubs | Pinus taeda (loblolly pine) |
| E2SS1 (P) | Estuarine, intertidal, scrub-shrub, broad-leaved deciduous | Tidally flooded shrubs | Baccharis angustifolia (groundsel-tree) Iva fructescens (marsh elder) |
| E2SS3 (P) | Estuarine, intertidal, scrub-shrub, broad-leaved evergreen | Tidally flooded shrubs | Myrica cerifra (wax myrtle) |
| E2SS4 (P) | Estuarine, intertidal, scrub-shrub, needle-leaved evergreen | Tidally flooded shrubs | Pinus taeda (loblolly pine) |
| E2EM1 (N,P,U) | Estuarine, intertidal, emergent, persistent | Salt marsh | Phragmites australis (common reed) Distichlis spicata (salt grass) Spartina alterniflora (smooth cordgrass) Typha angustifolia (narrowleaf cattail) Spartina patens (saltmeadow cordgrass) Limonium carolinianum (Carolina sea lavender) Salicornia virginica (perennial glasswort) |

## F. WETLAND CLASSIFICATION CODES

| NWI CODE (Water Regime) | NWI DESCRIPTION | COMMON DESCRIPTION | VEGETATION/ SUBSTRATE |
|---|---|---|---|
| E2EM3 (P) | Estuarine, intertidal, emergent, persistent | Salt marsh | Juncus romerianus (black needlerush) |
| L1UB (H) | Lacustrine, limnetic, unconsolidated bottom | Lake | Sand, mud |
| L2AB3 (F) | Lacustrine, littoral, aquatic bed, rooted vascular | Lake | Nymphaea sp. (waterlily) |
| L2AB4 (F) | Lacustrine, littoral, aquatic bed, floating vascular | Lake | Lemna sp. (duckweed) |
| PUB (F,H) | Palustrine, unconsolidated bottom | Pond | Sand, mud |
| PUS (C,A) | Palustrine, unconsolidated shore | Pond shores | Sand, mud |
| PAB3 (H) | Palustrine, aquatic bed, rooted vascular | Pond | Nymphaea sp. (water lily) |
| PAB4 (H) | Palustrine, aquatic bed, floating vascular | Pond | Lemna sp. (duckweed) |
| PEM1 (A,B,C,E, F,S,R,T) | Palustrine, emergent, persistent | Swamps, marshes, floodplains | Juncus sp. (rushes) Carex sp. (sedges) Scirpus sp. (bulrushes) Panicum sp. (panic grass) Typha sp. (cattail) |

## F. WETLAND CLASSIFICATION CODES

| NWI CODE (Water Regime) | NWI DESCRIPTION | COMMON DESCRIPTION | VEGETATION/ SUBSTRATE |
|---|---|---|---|
| PSS1 (A,B,C,E, F,S,R,T) | Palustrine, scrub shrub, broad-leaved deciduous | Swamps, marshes, floodplains, "necks" | Leucothoe racemosa (fetterbush)<br>Clethra alnifolia (sweetpepper bush)<br>Smilax rotundifolia (common greenbriar)<br>Ilex glabra (ink berry)<br>Vaccinium corymbosum (high bush blueberry)<br>Nyssa biflora (water tupelo)<br>Betula nigra (river birch)<br>Cephalanthus occidentalis (buttonbush)<br>Celtis laevigata (sugarbush)<br>Aralia spinosa (devils walking stick)<br>Lindera benzoin (common spicebush)<br>Vitis spp. (grape) |
| PSS3 (S,R) | Palustrine, scrub-shrub, broad-leaved evergreen | Floodplains, marshes, swamps | Myrica cerifra (wax myrtle) |

## F. WETLAND CLASSIFICATION CODES

| NWI CODE (Water Regime) | NWI DESCRIPTION | COMMON DESCRIPTION | VEGETATION/ SUBSTRATE |
|---|---|---|---|
| PFO1 (A,B,C,E, F,S,R) | Palustrine, forested, broad-leaved deciduous | Swamps, marshes, floodplains, "necks" | Nyssa sylvatica (blackgum)<br>Liquidambar styraciflua (sweetgum)<br>Acer rubrum (red maple)<br>Persea borbonia (red bay)<br>Quercus nigra (water oak)<br>Nyssa biflora (water tupelo)<br>Quercus falcata (southern red oak)<br>Quercus laurifolia (laurel oak)<br>Liriodendron tulipifera (tulip poplar)<br>Magnolia virginiana (sweet bay)<br>Chamaecyparis thyoides (Atlantic white cedar)<br>Quercus michauxii (basket oak)<br>Platanus occidentalis (sycamore)<br>Quercus alba (white oak)<br>Fagus grandifolia (beech)<br>Fraxinus pennsylvanicus (green ash) |
| PFO3 (A,C) | Palustrine, forested, broad-leaved evergreen | Floodplains, marshes, swamps | Ilex opaca (American holly) |
| PFO4 (A,B,C, E,R,S) | Palustrine, forested, needle-leaved evergreen | Pine forests, "necks" | Pinus taeda (loblolly pine) |
| PFO5 (F) | Palustrine, forested, dead | Snags | Various |

## V. WATER REGIME DESCRIPTIONS AND SPECIAL MODIFIERS

### 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.

(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.

**Tidally Influenced Freshwater Areas** - Lacustrine, Palustrine and Riverine Systems.

(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) Diked/Impounded - Created or modified by a barrier or dam which purposefully or unintentionally obstructs the outflow of water.

(d) Partially Drained/Ditched - The water level has been artificially lowered, but the area is still classified as wetland because soil moisture is sufficient to support hydrophytes. This modifier is often used to indicate extensive ditch networks within wetlands.

## VI. IMAGERY

The color tones on the photography are sharp and distinguishable and allow the differentiation of different vegetation types. However, some of the photography is darker in the southeastern corner which causes areas to look "wetter" than they actually are. This was taken into consideration when deciding on water regimes. Glare on the photography was a minor problem in some of the estuarine areas but overlap from the surrounding photography was used to delineate these areas. Resolution and clarity on the photography was good.

## VII. MAP PREPARATION

Field checks of areas found within Chincoteague, Virginia photography were made prior to the actual delineation of wetlands. Field check sites were selected to clarify various signatures found on the photography. These photographic signatures were then identified in the field using vegetation and soil types, as well as additional input from field personnel.

Collateral data included USGS topographic maps, SCS soil surveys, local climate, vegetation, and ecological information.

The classification and delineation of wetlands is in accordance with Cowardin et al (1979). Delineations are produced through stereoscopic interpretation of 1:40,000 scale color infrared photography.

The user of the map is cautioned that, due to the limitation of mapping primarily through aerial photointerpretation, a small percentage of wetlands may have gone unidentified. Since the photography was taken during a particular time and season, there may be discrepancies between the map and current field conditions. Changes in landscape which occurred after the photography was taken would result in such discrepancies.

Aerial photointerpretation and drafting were completed by Geonex, Inc., St. Petersburg, Florida.

## VIII. MAP ACQUISITION

To discuss any questions concerning these maps, please contact:

Ralph Tiner
Regional Wetland Coordinator
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Route 2 and 116 North
Hadley, MA 01035

(413)253-8200

To order maps only, contact:

Earth Science Information Center (ESIC)
National Cartographic Information Center
U.S. Geological Survey
507 National Center
Reston, VA 22092

1-(800)-USA-MAPS

Maps are identified by the name of the corresponding U.S. Geological Survey (U.S.G.S.) 1:24,000 scale topographic quadrangle name. Topographic map indices are available from the U.S.G.S.

va2chnco.rpt
CA/drs.nwi

## IX. REFERENCES


Bailey, Robert G., 1980. Description of the Ecoregions of the United States; United States Department of Agriculture Forest Service. Miscellaneous Publications No. 1391.

Cowardin, L.M.; V. Carter; F.C. Golet and E.T. LaRoe, 1979. The Classification of Wetlands and Deepwater Habitats of the United States. United States Department of the Interior, United States Fish and Wildlife Service. Biological Services Program, Washington, D.C.

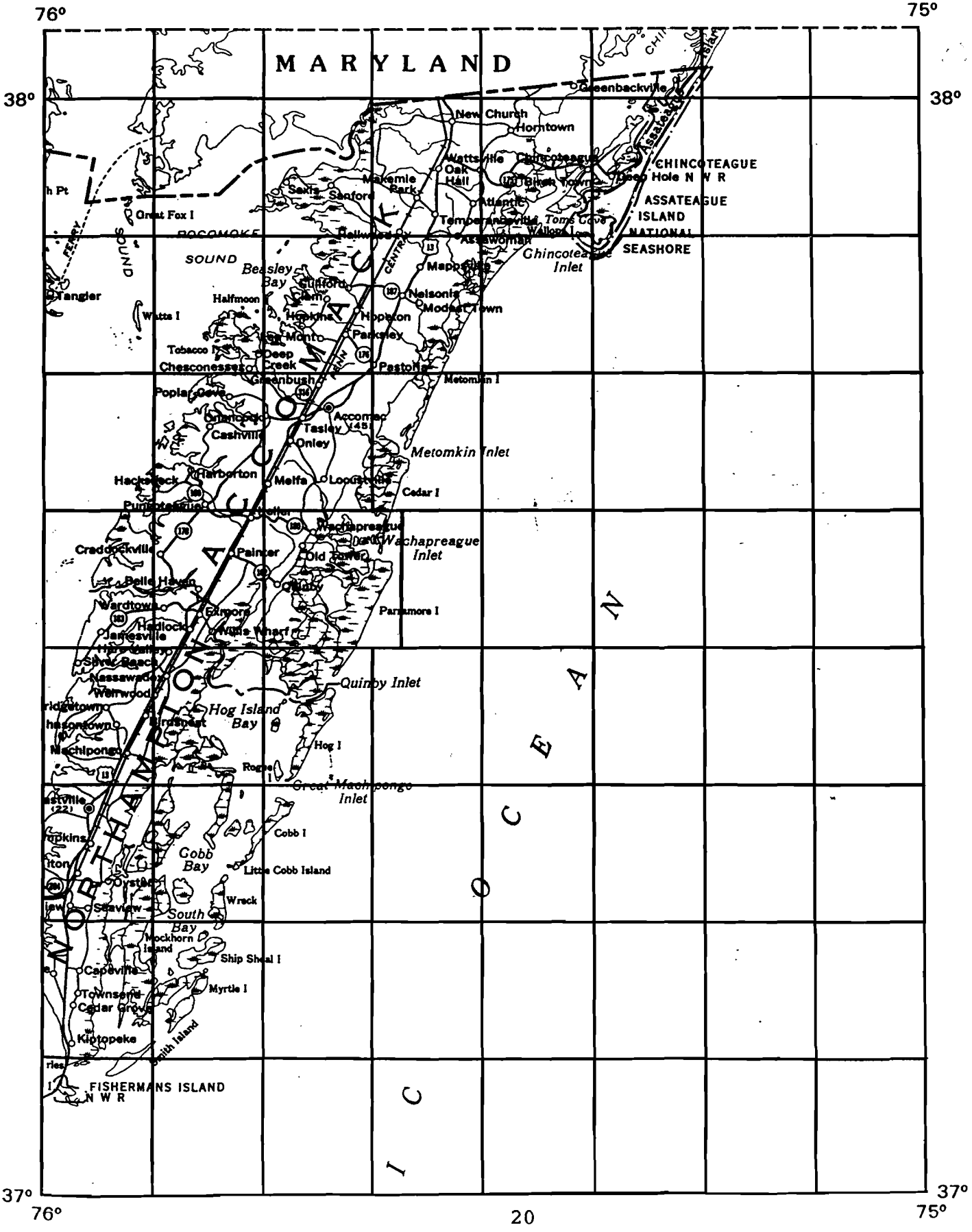
Gosner, Kenneth L., 1978. Atlantic Seashore. Twenty-four in a series of Peterson Field Guides.

Tiner, Ralph W., 1988. Field Guide to Non-tidal Wetland Identification.

TABLE 1.

Topographic Index to Checksites

| 1:100,000 | 7.5' Topo | Checksite Number |
|---|---|---|
| Chincoteague SW | Townsend | 1,2,3 |
| | Nassawadox | 4 |
| Chincoteague NW | Chincoteague West | 5,6,7,8b |
| | Chincoteague East | 8a |
| | Hallwood | 9 |
| | Saxis | 10,16,17 |
| | Accomack | 11,12 |
| | Bloxom | 13,14,15 |

TABLE 2.

Locator Map