

# NATIONAL WETLAND INVENTORY USER REPORT 1:100,000 MAP AREA

**MAP AREA:** MARQUETTE NW

**1:100,000 NAME:** MARQUETTE

**STATE:** MICHIGAN



## NORTH CENTRAL REGION



**U.S. Fish and Wildlife Service**

**Federal Building, Fort Snelling Twin Cities, Minnesota 55111**

**USER REPORT  
NATIONAL WETLAND INVENTORY  
U.S. FISH AND WILDLIFE SERVICE  
REGION 3**



PREPARED BY

RONALD E. ERICKSON  
REGIONAL WETLAND INVENTORY COORDINATOR  
U.S. FISH AND WILDLIFE SERVICE  
FEDERAL BUILDING, FORT SNELLING  
TWIN CITIES, MINNESOTA 55111

### USER CAUTION

Maps for this 1:100,000 scale map were prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography in accordance with Classification of Wetlands and Deepwater Habitats of the United States, Cowardin, et al., 1979. The aerial photographs reflect conditions during the specific year and season when they were taken. Some small wetlands and those obscured by dense forest cover may not be included on the map document. In addition, there is a margin of error inherent in the use and interpretation of aerial photographs. Thus a detailed on-the-ground and historical analysis of a single site may result in revision of the wetland boundaries established through photographic interpretation.

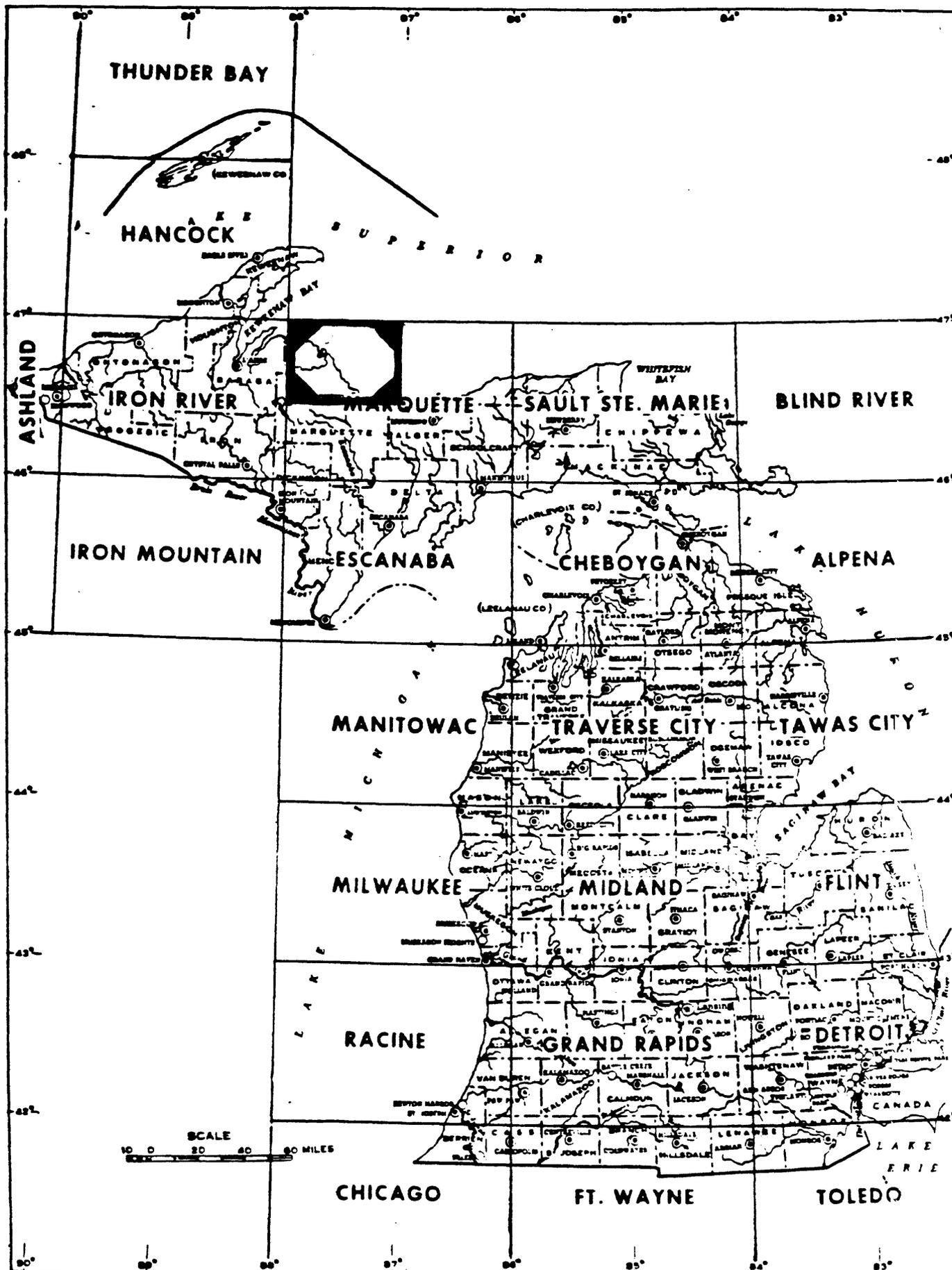
Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any local, State, or Federal government or to establish the geographical scope of regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State, or local agencies concerning specific agency regulatory programs and propriety jurisdictions that may affect such activities.

Additional information regarding this map or other National Wetland Inventory activities may be obtained by contacting:

Regional Director, Region 3 (AH/TS)  
Attn: Regional Wetlands Coordinator  
United States Fish and Wildlife Service  
Federal Building, Fort Snelling  
Twin Cities, Minnesota 55111

Michigan Dept. of Natural Resources  
Land Resources Program  
Box 30028  
Lansing, Michigan 48909

LOCATION OF REPORT  
STATE OF MICHIGAN



DATE: December 1983

MAP PREPARATION

Basic Data

Photography Used:

<u>Emulsion</u>	<u>Scale</u>	<u>Date</u>	<u>Percent Coverage</u>
1. Black and white	1:80,000	October 1975	100%

Field Check Dates:

1. August 10 - 11, 1981

Contractor(s) for Photo Interpretation:

1. Michigan Dept. of Natural Resources

Collateral Data Used:

1. USGS topographic quad sheets
2. USDA Soil Surveys

Mapping Legend: (See Appendix D)

Farmed Wetlands

It is the policy of the Fish and Wildlife Service to not map farmed wetlands in the National Wetlands Inventory unless the wetland is a pothole-like depression, such as those found in the Prairie Pothole Region, intermittently flooded lake bottoms, cranberry bogs, or diked former tidelands in California. Therefore this map area may contain various amounts of non-depression type wetlands which were farmed on the date of the photography and intentionally not included in the inventory. Many of these omitted wetlands commonly occur in floodplains.

## GEOGRAPHY

### A. General Location

Degrees Longitude: 87° 0' to 88° 0' West

Degrees Latitude : 46° 30' to 47° 0' North

Largest City : Marquette, Michigan

Marquette NW is located in the north-central part of Michigan's upper peninsula and includes portions of Marquette and Alger Counties. The map is bordered on the east by Lake Superior. This map lies within the Lake Superior watershed and the Escanaba River drainage basin. Ottawa National Forest covers a portion of the map area.

### B. Ecoregion

#### Bailey's Ecoregion Classification and Description (Bailey 1978):

Code: 2112L

#### Humid Temperate Domain (2000)

The entire Marquette NW map is in this Domain.

The climate of this Domain has strong seasonal temperatures and precipitation cycles, and a distinctive winter season. The Humid Temperate Domain comprises the humid midlatitude forests of broadleaf deciduous and needleleaf evergreen trees.

#### Warm Continental Division (2100)

All of the Marquette NW map area lies within this Division.

This Division characteristically has warm summers and cold, snowy winters. The natural vegetation is needleleaf and mixed needleleaf-deciduous forest. The soils of this Division are Spodosols, which are strongly leached but have a top layer of humus. Spodosols are usually acidic and lack calcium, potassium and magnesium. Despite these deficiencies, Spodosols are very suitable for growing the conifers found in this Division.

#### Laurentian Mixed Forest Province (2110)

The entire Marquette NW map falls within this Province.

The vegetation of this Province is representative of the transitional zone in which it lies, between the boreal and deciduous forest zones. Forests consist either of mixed conifer-deciduous stands or mosaic-like arrangements with pure stands of deciduous forest growing on good soil sites and pure stands of conifers growing on poor soil sites.

Pines (Pinus spp.) are the most representative conifers of the mixed forest stands, with white pine (P. strobus) dominating in the Great

Lakes region. Pines are often a pioneer woody species following forest fires. Eastern hemlock (Tsuga canadensis) and eastern redcedar (Juniperus virginiana) also grow in this Province.

Northern Hardwoods-Fir Forest Section (2112L)

This Section occurs in lowlands and includes all of the Marquette NW map area.

Hardwoods and firs (Abies spp.) are the predominant tree species of this Section.

C. Topography and Land Forms

Hammond's Land Surface Form and Physical Subdivision (Hammond 1965, 1969):

Codes: (III-3) B2b, (III-3) B4b

Interior Physical Division (III) - This Physical Division includes the entire Marquette NW map area.

North-Central Lake-Swamp-Moraine Plains Subdivision (3) - All of Marquette NW map lies within this Subdivision.

Irregular Plains Class (B2b) - The Class comprises less than 5% of Marquette NW in the extreme southwest corner. Fifty to 80% of the land is in gentle slopes. Fifty to 75% of these slopes occur in lowlands. Local relief ranges from 100 to 300 feet.

Plains With High Hills Class (B4b) - This Class covers over 95% of the Marquette NW map area, all but the extreme southwest corner. Fifty to 80% of the land is in gentle slopes. Fifty to 75% of the slopes are found in lowlands. Local relief ranges from 500 to 1000 feet.

RESOURCES

A. Wetlands

No wetland acreage figure is available for the Marquette NW area at the present time.

A list of wetland plant communities, local names, typical water regimes and associate mapping symbols is included in Appendix C.

B. Wildlife and Fish

Several species of waterfowl inhabit the area, particularly in the vicinities of Lake Independence and Lake Michigamme. Wooded wetlands flooded by beavers also provide good nesting habitat. Species include scaups (Aythya spp.), canvasbacks (A. valisineria), redheads (A. americana), ring-necked ducks (A. collaris), mallards (Anas playrnychos), black ducks (Anas rubripes), wood ducks (Aix sponsa),

goldeneyes (Bucephala clangula), buffleheads (B. albeola), old squaws (Clangula hyemalis), Canada geese (Branta canadensis) and whistling swans (Olor columbianus) (Great Lakes Basin Commission 1975b, Panzner 1955, Rounds 1956).

Several wildlife species on the Engdangered and Threatened list occur in Marquette NW. Habitat loss and competition for nest usage by the brown-headed cowbird (Molothrus ater) have been the reasons for the decline of Kirtland's warblers (Dendroica kirtlandii). Bald eagles (Haliaeetus leucocephalus) and peregrine falcons (Falso peregrinus) have also decreased in numbers, primarily because of reproductive failure attributed to the use of pesticides. However, Madsen et al. 1982 report that bald eagle production in Michigan showed an overall increase during the period 1973 - 1981.

While some forest wildlife species in the map area have declined due to decreasing habitat diversity, furbearers, including beavers (Castor canadensis), muskrats (Ondatra zibethica), raccoons (Procyon lotor), weasles (Mustela spp.) and mink (M. vison), have maintained relatively stable populations. Pine martens (Martes americana) and fishers (Martes pennanti), which were once wiped out by overharvesting and logging, have been reintroduced into Michigan's upper peninsula. Canada lynx (Lynx canadensis) are also making a comeback.

Other wildlife species of Marquette NW include black bears (Ursus americanus), snowshoe hares (Lepus americanus), eastern cottontails (Sylvilagus floridanus), squirrels (Sciurus sp.) and ruffed grouse (Bonasa umbellus).

Sport fishing opportunities are available in many inland lakes and streams and in Lake Superior and its immediate tributaries. Commercial fishing is limited to Lake Superior.

Common fish of inland lakes and mainstream portions of rivers include smallmouth bass (Micropterus dolomieu), rock bass (Ambloplites rupestris), yellow perch (Perca flavescens), northern pike (Esox lucius), muskellunge (E. masquiongy) and walleyes (Stizostedion vitreum vitreum). Largemouth bass (M. salmoides) and bluegills (Lepomis macrochirus) are found in impounded backwater areas of streams; brook trout (Salvelinus fontinalis) and brown trout (Salmo trutta) are prevalent in cold, headwater areas.

The primary sport fish of Lake Superior are lake trout (Salvelinus namaycusch), rainbow trout (Salmo gairdneri), coho salmon (Oncorhynchus kisutch) and chinook salmon (O. tshawytscha). Rainbow trout, coho and chinook salmon are also fished in Lake Superior tributaries as are brook and brown trout, suckers (Catostomus), rainbow smelt (Osmerus mordax), walleyes, northern pike, panfish (Lepomis spp., Pomoxis spp.) and bass.

Lake herring (Coregonus artedii), chubs (Semotilus) and lake whitefish (C. clupeaformis) dominate the commercial fish catch out of Lake Superior. Lake trout are of minor importance commercially; sea

lamprey (Petromyzon marinus) have prevented this species from establishing a self-sustaining population (Great Lakes Basin Commission 1975a).

Appendix A

REFERENCES

Bailey, R. G. 1978. Descriptions of the Ecoregions of the United States. USDA For. Serv. Intermtn. Reg. Ogden, Utah. 77 p.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U. S. Fish and Wildlife Service, Washington, D. C. FWS/OBS-79/31. 103 p.

Great Lakes Basin Commission. 1975a. Fish: Great Lakes Basin Comm. Great Lakes Basin Framework Study, App. 8. Ann Arbor, Mich. 290 p.

----- 1975b. Wildlife: Great Lakes Basin Comm. Great Lakes Basin Framework Study App. 17. Ann Arbor, Mich. 140 p.

Hammond, E.H. 1965. 1:17,000,000 scale Physical Subdivisions. 1 map. p. 61. In Gerlach, A.C., ed. 1970. National Atlas of the United States of America. USDI Geol. Surv. Washington, D.C. 417 p.

----- 1969. 1:7,500,000 scale Classes of Land Surface Form. USDI Geol. Surv. 1 map. p. 62-63. In Gerlach, A.C., ed. 1970. National Atlas of the United States of America. USDI Geol. Surv. Washington, D.C. 417 p.

Madsen, C.R., T.J. Sheldrake, and J.T. Leach, eds. 1982. Bald Eagle Production in the Great Lakes States 1973 - 1981. U.S. Fish and Wildlife Service, Reg. 3. Twin Cities, Minn. p.

Panzer, E.R. 1955. Wetlands Inventory of Michigan. U.S. Fish and Wildlife Service, Office of River Basin Studies. Minneapolis, Minn. 19 p.

Rounds, B.W. 1956. Inventory of Permanent Water Habitat Significant to Waterfowl in Michigan. U.S. Fish and Wildlife Service, Office of River Basin Studies. Minneapolis, Minn. 10 p.

ADDITIONAL INFORMATION

The purpose of this report is to provide general information regarding the production of the map and the wetlands found within the area of this map. It does not include descriptions of all wetlands found in the area nor complete species information. For additional information, the following references are recommended:

Hammond, E. H. 1964. Analysis of Properties in Land Form Geography: An Application to Broad-scale Land Form Mapping. Annals, Assoc. Amer. Geog. v. 54. pp. 11-23.

Herdendorf, C.E., S.M. Hartley, and M.D. Barnes, eds. 1981. Fish and Wildlife Resources of the Great Lakes Coastal Wetlands Within the United States. Volume six: Lake Superior. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-81/02-v6. 846 p.

Appendix B

SPECIAL MAPPING PROBLEMS

Problem 1: PFO4 wetlands may contain some broad-leaved and/or needle-leaved (tamarack) deciduous trees.

Resolution: Field checking revealed this mixture of subclasses. Users should be aware that spatially small subclasses were not always delineated within larger subclasses.

Problem 2: Silver Lake is an impoundment. The wetlands adjacent to the shoreline are probably influenced by lake drawdown.

Resolution: Wetland adjacent to the shoreline of Silver Lake were classified with a "K" water regime. Areas lacking vegetation were reclassified as L2FLKY.

Problem 3: It was difficult to accurately identify specific water regimes from the 1:80,000 black and white photography.

Resolution: Combined water regimes (Z, W, Y) were used where necessary.

Appendix C

## WETLAND COMMUNITIES

<u>MAP SYMBOLS</u>	<u>LOCAL NAME</u>	<u>DOMINANT VEGETATION</u>	<u>WATER REGIME</u>
PFO4B PFO4Y	Cedar swamp	<u>Thuja occidentalis</u> <u>Picea mariana</u>	Saturated
PFOB PFOY	Swamp	<u>Tsuga canadensis</u> <u>Betula papyrifera</u> <u>Abies balsamea</u>	Saturated Seasonal
PFO4/1B PFO4/1Y	Swamp	<u>Thuja occidentalis</u> <u>Picea mariana</u> <u>Fraxinus spp.</u> <u>Populus tremuloides</u>	Saturated Seasonal
PFO/SSY	Swamp	<u>Fraxinus spp.</u> <u>Populus tremuloides</u> <u>Cornus spp.</u> <u>Alnus spp.</u>	Saturated Seasonal
PSSB PSS3B	Bog	<u>Chamaedaphne calyculata</u>	Saturated
PSSB PSS1B PSSY PSS1Y	Swamp	<u>Alnus spp.</u> <u>Cornus stolonifera</u> <u>Salix spp.</u>	Saturated Seasonal
PSS/EMB PSS/EMY	Swamp	<u>Salix spp.</u> <u>Alnus spp.</u> <u>Carex spp.</u> <u>Juncus spp.</u>	Saturated Seasonal
PEMB PEMY	Wet meadow	<u>Carex spp.</u> <u>Phalaris arundinacea</u> <u>Spiraea sp.</u>	Saturated
PEMY	Marsh	<u>Typha latifolia</u> <u>Phragmites spp.</u>	Seasonal Semi-permanent

Appendix D

NATIONAL WETLAND INVENTORY  
Information and Legend  
For Map Products

Classification System: The U.S. Fish and Wildlife Service uses the "Classification of Wetlands and Deepwater Habitats of the United States", December, 1979, by L. M. Cowardin, et al., to delineate and identify wetlands. This system is hierarchical and structured around a combination of ecological, biological, hydrological and substrate characteristics which permits universal use across the United States, its territories and possessions. It consists of five systems: Marine, Estuarine, Riverine, Lacustrine (lake) and Palustrine (swamps, bogs, marshes) and proceeds in a hierarchical manner through subsystem, class, and subclass. It also contains provisions to use water regime, water chemistry, soil, and special modifiers to provide additional levels of detail.

Figure 1 is an illustration of the classification system to the class level.

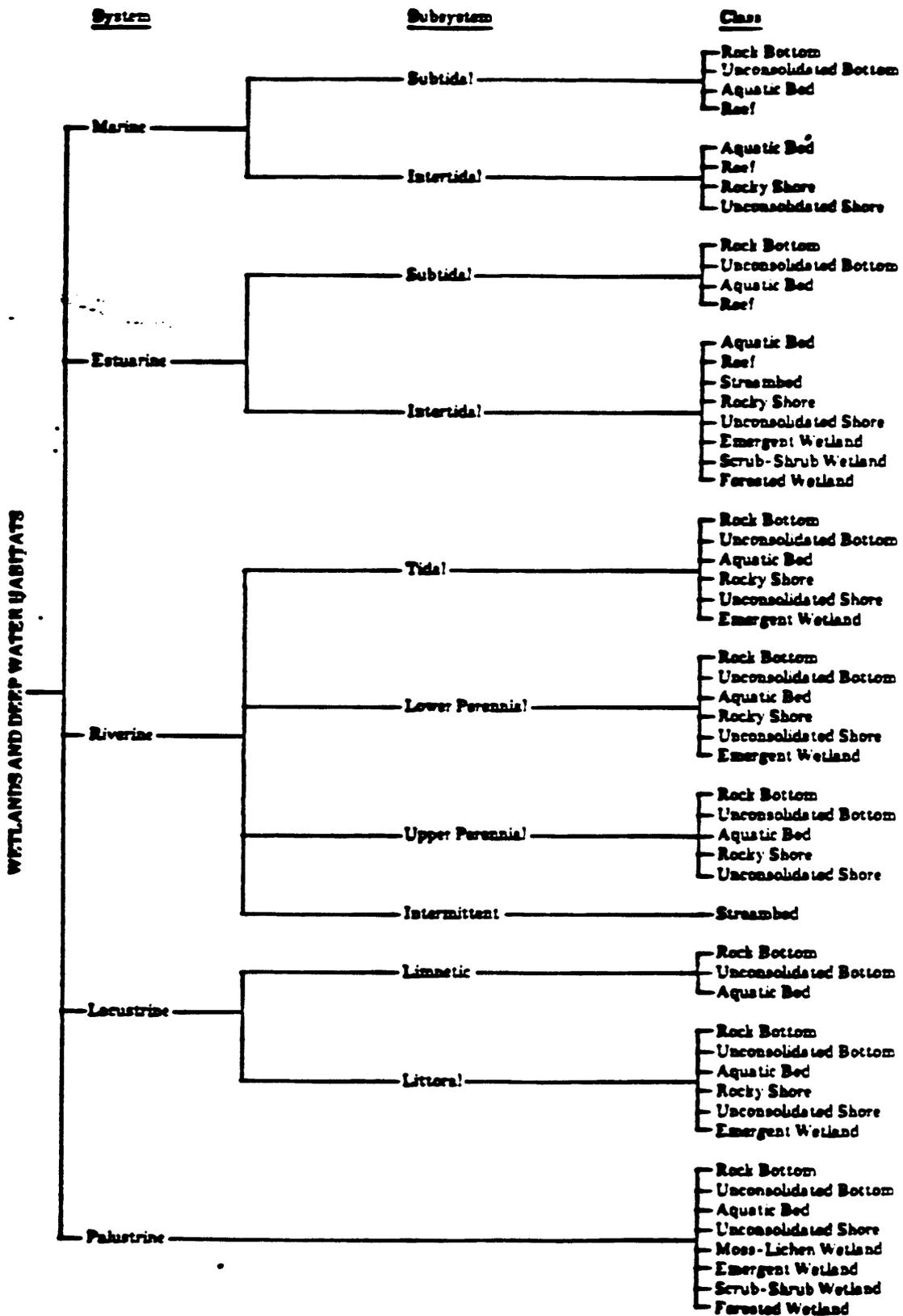


Fig 1. Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes. The Palustrine System does not include deepwater habitats

Wetland Legend (continued)

   Class

   Subclass

CLASSES AND SUBCLASSES

**AB** Aquatic Bed

- 1 Algal
- 2 Aquatic Moss
- 3 Rooted Vascular
- 4 Floating Vascular
- 5 Unknown Submergent\*\*
- 6 Unknown Surface\*\*

**EM** Emergent

- 1 Persistent
- 2 Nonpersistent

**FO** Forested

- 1 Broad-Leaved Deciduous
- 2 Needle-Leaved Deciduous
- 3 Broad-Leaved Evergreen
- 4 Needle-Leaved Evergreen
- 5 Dead
- 6 Deciduous\*\*
- 7 Evergreen\*\*

**ML** Moss/Lichen

- 1 Moss
- 2 Lichen

**OW** Open Water/  
Unknown Bottom\*\*

**RB** Rock Bottom

- 1 Bedrock
- 2 Rubble

**RF** Reef

- 1 Coral
- 2 Mollusk
- 3 Worm

**RS** Rocky Shore

- 1 Bedrock
- 2 Rubble

**SB** Streambed

- 1 Bedrock
- 2 Rubble
- 3 Cobble/Gravel
- 4 Sand
- 5 Mud
- 6 Organic
- 7 Vegetated

**SS** Scrub/Shrub

- 1 Broad-Leaved Deciduous
- 2 Needle-Leaved Deciduous
- 3 Broad-Leaved Evergreen
- 4 Needle-Leaved Evergreen
- 5 Dead
- 6 Deciduous\*\*
- 7 Evergreen\*\*

**UB** Unconsolidated Bottom

- 1 Cobble/Gravel
- 2 Sand
- 3 Mud
- 4 Organic

**US** Unconsolidated Shore

- 1 Cobble/Gravel
- 2 Sand
- 3 Mud
- 4 Organic
- 5 Vegetated

\*\*Not included in "Classification of Wetlands and Deepwater Habitats of the United States." Created specifically for National Wetland Inventory mapping efforts.

## MODIFIERS TO WETLAND CLASSIFICATION

### WATER REGIME MODIFIERS

#### Nontidal

<b>A</b>	Temporary
<b>B</b>	Saturated
<b>C</b>	Seasonal
<b>D</b>	Seasonally Flooded-Well Drained
<b>E</b>	Seasonally Flooded-Saturated
<b>F</b>	Semipermanent
<b>G</b>	Intermittently Exposed
<b>H</b>	Permanent
<b>J</b>	Intermittently Flooded

#### Nontidal Combined

<b>Z</b>	Intermittently Exposed/ Permanent (G,H above)**
<b>W</b>	Intermittently Flooded/ Temporary (A,J above)**
<b>Y</b>	Saturated Semipermanent/ All Seasonals (B,C,D,E F above)**

#### Nontidal and Tidal

<b>D</b>	Unknown**
<b>K</b>	Artificial

#### Tidal

<b>L</b>	Subtidal
<b>M</b>	Irregularly Exposed
<b>N</b>	Regularly Flooded
<b>P</b>	Irregularly Flooded
<b>R</b>	Seasonal - Tidal
<b>S</b>	Temporary - Tidal
<b>T</b>	Semipermanent - Tidal
<b>V</b>	Permanent - Tidal

### WATER CHEMISTRY MODIFIERS

#### Coastal Salinity

<b>1</b>	Hyperhaline
<b>2</b>	Euhaline
<b>3</b>	Mixohaline (Brackish)
<b>4</b>	Polyhaline
<b>5</b>	Mesohaline
<b>6</b>	Oligohaline
<b>0</b>	Fresh

#### Inland Salinity

<b>7</b>	Hypersaline
<b>8</b>	Eusaline
<b>9</b>	Mixosaline
<b>0</b>	Fresh

#### pH Freshwater

<b>a</b>	Acid
<b>t</b>	Circumneutral
<b>1</b>	Alkaline

\*\*Not included in "Classification of Wetlands and Deepwater Habitats of the United States." Created specifically for National Wetland Inventory mapping effort.

## OTHER MODIFIERS

### Special

b	Beaver
d	Partially Drained/ Ditched
f	Farmed
h	Diked/Impounded
r	Artificial
s	Spoil
x	Excavated

### Soils

o	Organic
n	Mineral

**Statement to Users:** The overlays/maps were prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography in accordance with "Classification of Wetlands and Deepwater Habitats of the United States." The aerial photographs typically reflect conditions during the specific year and season when they were taken. In addition, there is a margin of error inherent in the use of aerial photographs. Thus, a detailed on-the-ground and historical analysis of a single site may result in a revision of the wetland boundaries established through photographic interpretation. In addition, some small wetlands and those obscured by dense forest cover may not be included on this map. Federal, State, and local regulatory agencies with jurisdictions over wetlands may define and describe wetlands in a different manner than that used in this Inventory. There is no attempt, in either the design or products of this Inventory, to define the limits of proprietary jurisdiction of any Federal, State, or local government or to establish the geographical scope of the regulatory programs and proprietary jurisdictions that may affect such activities.

**To Order NWI Topical Wetland Overlays/Maps:** A National Wetland Inventory Order Form is required and can be obtained by writing to the address on the letterhead.

