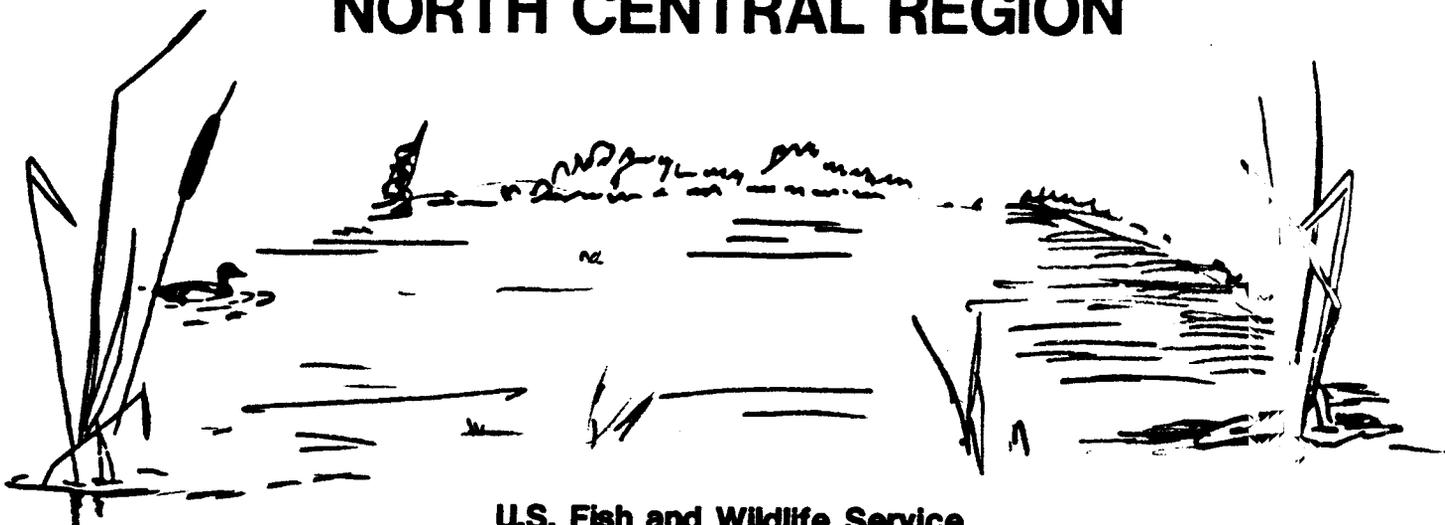


NATIONAL WETLAND INVENTORY USER REPORT 1:100,000 MAP AREA

MAP AREA: ESCANABA SE
1:100,000 NAME: WASHINGTON ISLAND
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.

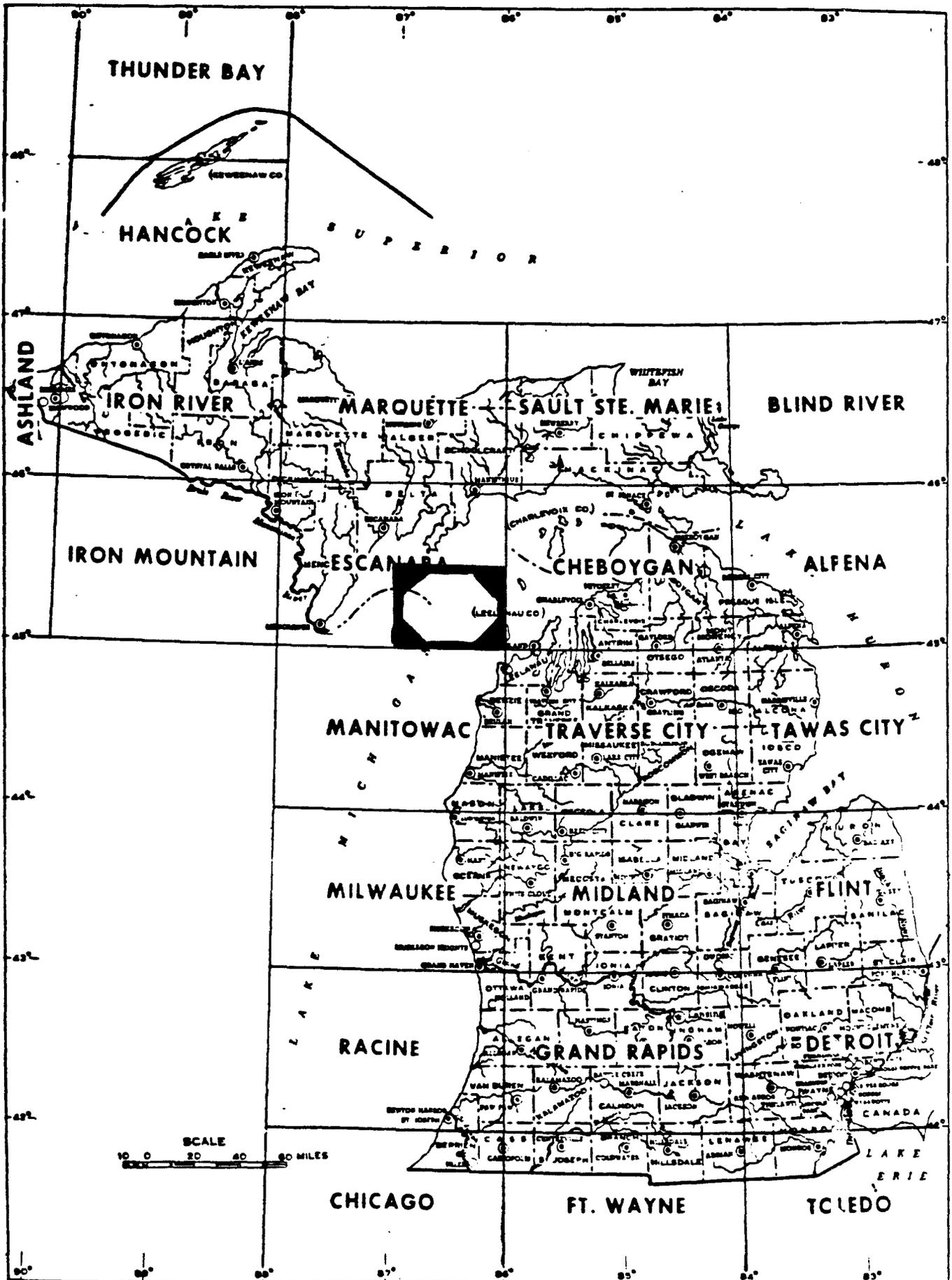
Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any local, State, 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 proprietary 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	May 1975	100%

Field Check Dates:

1. None

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 or 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: 86° 0' to 87° 0' West

Degrees Latitude : 45° 0' to 45° 30' North

Largest City : Whitefish Point, Michigan

Most of the Escanaba SE lies within Lake Michigan. The Michigan portion includes the western half of North Manitou Island, and nearly all of South Manitou Island. The map area lies within the Lake Michigan watershed and encompasses a portion of Leelanau County. The Manitou Islands are considered a part of the Sleeping Bear Dunes National Lakeshore.

B. Ecoregion

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

Code: 2113L

Humid Temperate Domain (2000)

The entire Escanaba SE 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 Escanaba SE 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 Escanaba SE 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 Forest Section (2113L)

This Section occurs in lowland, and includes all of the Escanaba SE map area.

Hardwoods 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

Interior Physical Division (III) - This Physical Division covers the entire Escanaba SE map area.

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

Irregular Plains Class (B2b) - This Class includes the entire Escanaba SE map area, where 50 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.

RESOURCES

A. Wetlands*

No wetland acreage figure is available for the Escanaba SE area at the present time.

Most of the map area contains Deepwater Habitat of Lake Michigan. Wetlands which occur on the islands are primarily saturated to seasonally flooded forested wetlands. Predominant coniferous species include northern white cedar (Thuja occidentalis), and black spruce (Picea mariana). Quaking aspen (Populus tremuloides) and ash (Fraxinus sp.) are common tree species of the deciduous forested wetlands. A list of plant species for wetland types can be found in Appendix C.

*Plant species named here were found in adjacent 1:100,000 map areas and are believed to be representative of species present in the Escanaba SE map area.

B. Wildlife

Many wildlife species inhabit the Escanaba SE map area. Small game, including ruffed grouse (Bonasa umbellus), American woodcocks (Philahela minor), eastern cottontails (Sylvilagus floridanus) and squirrels (Sciurus spp.), are common. Furbearers, including beavers (Castor canadensis), raccoons (Procyon lotor), weasles (Mustela spp.), mink (M. vison) and river otters (Lutra canadensis), are also common, except in areas of marsh drainage or other disturbance.

Wildlife species on the Endangered and Threatened list may occur in Escanaba SE. Kirtland's warblers (Dendroica kirtlandii) have declined because of habitat loss and competition for nest usage by brown-headed cowbirds (Molothrus ater). Bald eagles (Haliaeetus leucocephalus) and peregrine falcons (Falco 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.

Several species of waterfowl inhabit the area, including scaups (Aythya spp.), canvasbacks (A. valisineria), redheads (A. americana), ring-necked ducks (A. collaris), mallards (Anas platyrhynchos), 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).

Other wildlife species of Escanaba SE include white-tailed deer (Odocoileus virginianus), black bears (Ursus americanus), woodchucks (Marmota monax), opossums (Didelphis marsupialis) and porcupines (Erethizon dorsatum).

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 five: Lake Michigan. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-81/02-v5. 1592 p.

Appendix B

SPECIAL MAPPING PROBLEMS

Problem 1: It was often 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>
PFOY	Cedar swamp	<u>Thuja occidentalis</u> <u>Picea mariana</u>	Saturated
PFOY PFO1Y	Swamp	<u>Populus tremuloides</u> <u>Fraxinus spp.</u>	Saturated Seasonal
PSS/EMY		<u>Alnus spp.</u> <u>Cornus stolonifera</u> <u>Juncus spp.</u> <u>Carex spp.</u> <u>Salix spp.</u>	Saturated Seasonal
PEMZ	Marsh	Misc. grasses and Sedges	Intermittently exposed Permanent
POWZ	Pond	Open water	Intermittently exposed Permanent

*Plant species listed here were found in adjacent 1:100,000 map areas and are believed to be representative of species present in the Escanaba SE map area.

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.

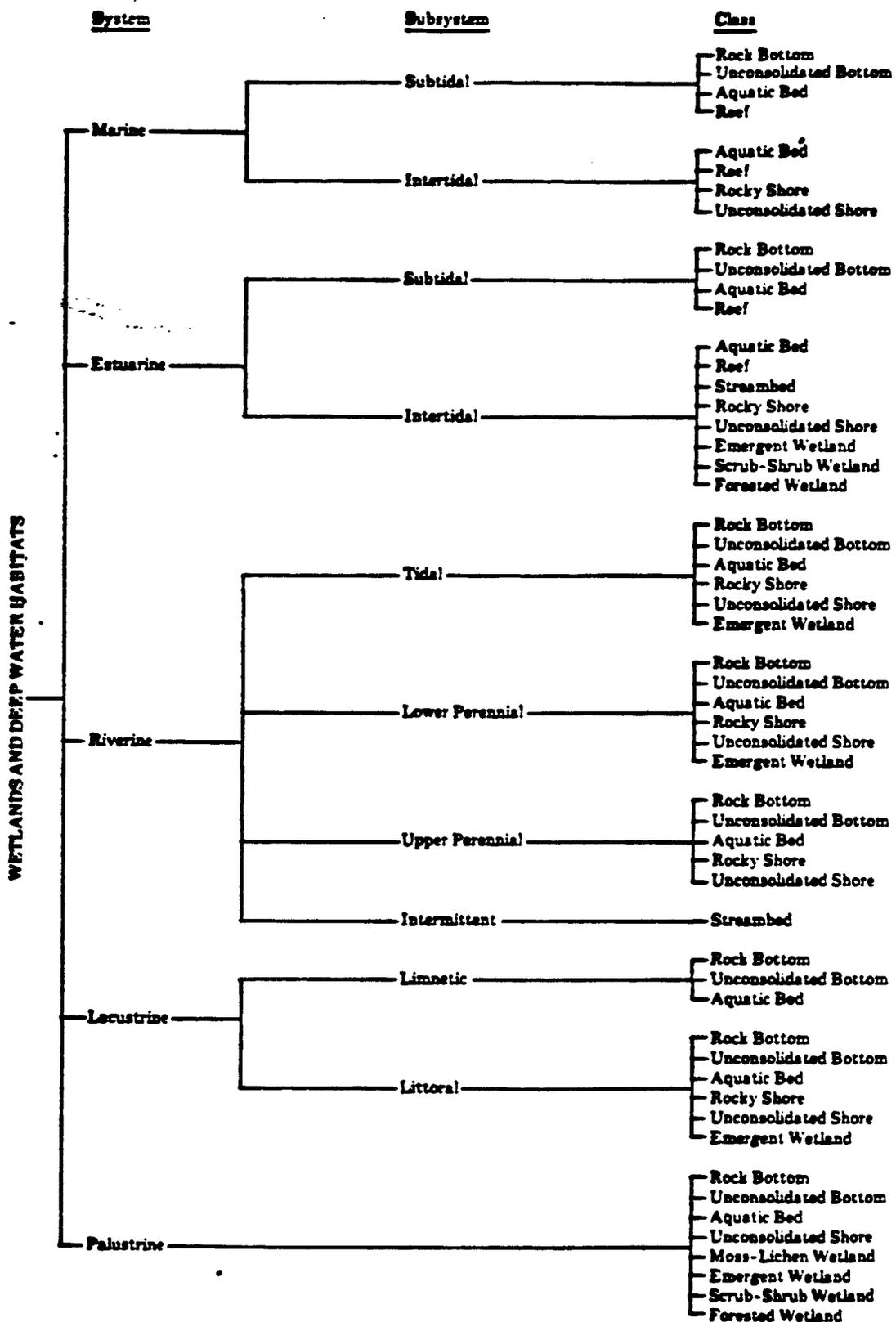


Fig. 1. Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes. The Palustrine System does not include deepwater habitats.

Use of Wetland Legend: Wetland data are displayed on overlays or maps by a series of letters and numbers (alpha numerics) with the first letter representing the system and subsequent alpha numerics representing, in a sequential manner, the subordinate levels of detail down to the modifiers. Where classes and subclasses have been mixed, they are separated by a diagonal line.

Examples

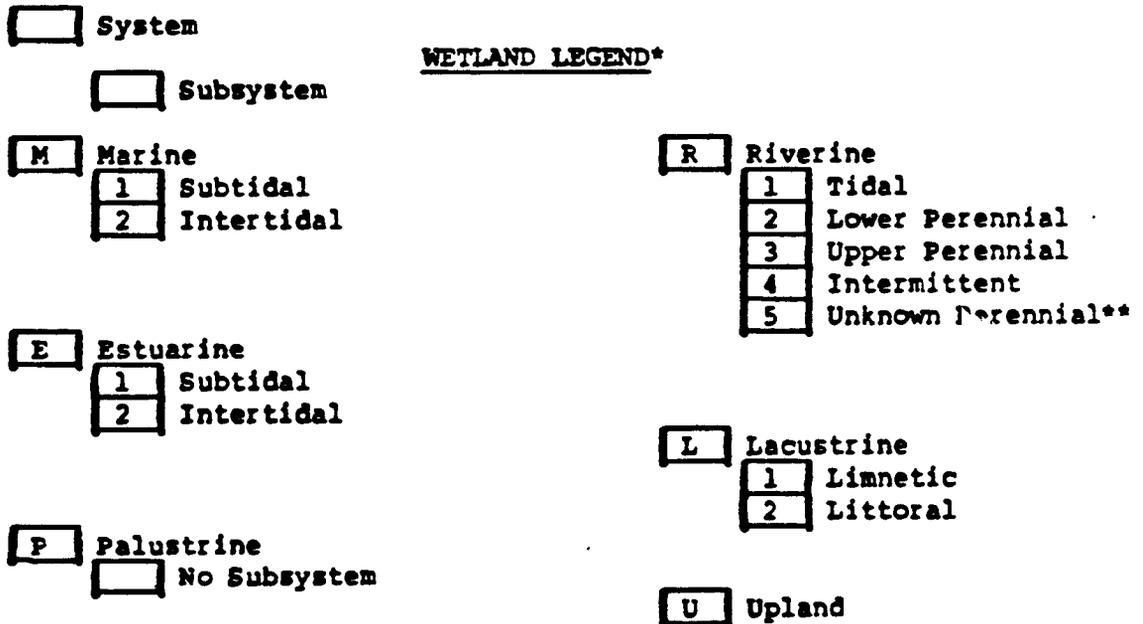
a. Classification of wetlands to water regime and special modifier:

System:	Lacustrine
Subsystem:	Limnetic
Class:	Unconsolidated Bottom
Subclass:	Mud
Water Regime:	Intermittently Exposed
Special Modifier:	Diked/Impounded

L 1 UB 3 G h

b. Mixing of wetland classes and subclasses:

PFO2/EM1F = Palustrine, Forested, Needle-leaved deciduous (PFO2) mixed with Palustrine, Emergent, Persistent (PEM1) with semipermanent water regime (F).



*Should be used in conjunction with "Classification of Wetlands and Deepwater Habitats of the United States," by L. M. Cowardin et al.

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

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

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

Nontidal Combined

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

Nontidal and Tidal

U	Unknown**
K	Artificial

Tidal

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

WATER CHEMISTRY MODIFIERS

Coastal Salinity

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

Inland Salinity

7	Hypersaline
8	Eusaline
9	Mixosaline
0	Fresh

pH Freshwater

a	Acid
t	Circumneutral
l	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

g	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.

