

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

MAP AREA: CHEBOYGAN SW

1:100,000 NAME: CHARLEVOIX

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**



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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.

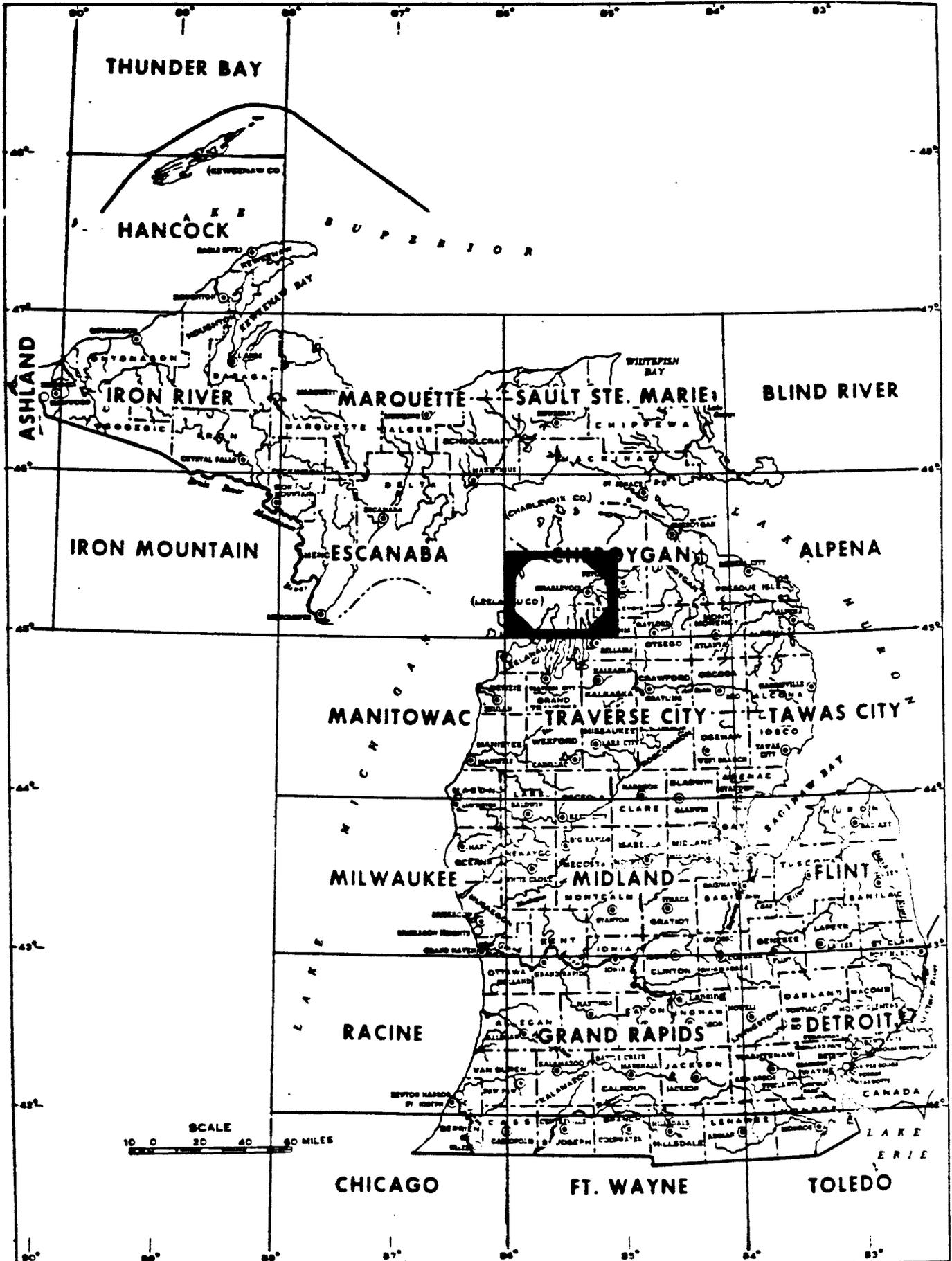
Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any local, State, 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 Department 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	September 1974	22%
2. Black and white	1:80,000	May 1975	78%

Field Check Dates

1. May 31 - June 1, 1979
2. June 22, 1980

Contractor(s) for Photo Interpretation

1. Michigan Department 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: 85° 0' to 86° 0' West

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

Largest Cities : Charlevoix, Michigan

Cheboygan SW is located in the extreme northwestern part of Michigan's lower peninsula and includes Fox Islands and the eastern portion of North Manitou Island. Much of the map area lies within Lake Michigan. The map area encompasses portions of Charlevoix, Emmet, Leelanau and Antrim Counties and is included in the Lake Michigan watershed. Sleeping Bear Dunes National Lakeshore covers a part of the map area.

B. Ecoregion

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

Code: 2113L

Humid Temperate Domain (2000)

The entire Cheboygan SW 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 Cheboygan SW map 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 Cheboygan SW map is covered by 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 red cedar (Juniperus virginiana) also grow in this Province.

Northern Hardwoods Forest Section (2113L)

This Section occurs in lowlands and covers all of the Cheboygan SW map area.

The principal tree species of this Section are hardwoods.

C. Topography and Land Forms

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

Codes: (III-3) B3b

Interior Physical Division (III) - This Physical Division covers all of the Cheboygan SW map area.

North Central Lake-Swamp-Moraine Plains Subdivision (3) - All of the map area is included within this Subdivision.

Plains With High Hills Class (B3b) - This Class includes all of the Cheboygan SW map area. Fifty to 80% of the land is in gentle slopes. Fifty to 75% of these slopes occur in lowlands. Local relief ranges from 300 to 500 feet.

RESOURCES

A. Wetlands*

No wetland acreage figure is available for the Cheboygan SW area at the present time.

Steep topography has precluded extensive wetland formation over much of Cheboygan SW. Wetlands are virtually absent in the Fox and Manitou Island portions of the map and in the area just north of Little Traverse Bay. The highest wetland concentration occurs to the southwest of Charlevoix Lake, where several linear wetlands are found. Wetlands in other areas of the map are located primarily in river flood plains.

Saturated to seasonally flooded forests are the predominant wetland type occurring in the Cheboygan SW map area. Some saturated to seasonally flooded scrub-shrub/emergent and seasonally to semi-permanently flooded emergent wetlands also occur.

Black spruce (Picea mariana) and northern white cedar (Thuja occidentalis) are the predominant tree species of the evergreen forested wetlands. Ash (Fraxinus sp.), red maple (Acer rubrum), dogwood (Cornus spp.) and alder (Alnus sp.) commonly occur in the

deciduous forest and scrub-shrub wetlands. Common plant species of the emergent wetlands include cattail (Typha latifolia), bulrush (Scirpus sp.) and sedges (Carex sp.). A list of plant species for wetland types can be found in Appendix C.

B. Wildlife and Fish

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

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).

While some species in the map area have maintained relatively stable populations, other species are included on the Endangered and Threatened list. Kirtland's warblers (Dendroica kirtlandii), for instance, 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 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.

Other wildlife species of Cheboygan SW include white-tailed deer (Odocoileus virginianus), black bears (Ursus americanus), woodchucks (Marmota monax), opossums (Didelphis marsupialis), porcupines (Erethizon dorsatum) and ring-necked pheasants (Phasianus colchicus).

Sport fishing opportunities are available in many inland lakes and rivers, and in Lake Michigan and its immediate tributaries. Commercial fishing is limited to Lake Michigan.

Common fish of inland lakes, where most sport fishing occurs, include walleyes (Stizostedion vitreum vitreum), largemouth bass (Micropterus salmoides), smallmouth bass (M. dolomieu), northern pike (Esox lucius), muskellunge (E. masquinongy), suckers (Catostomus), rainbow smelt (Osmerus mordax), lake trout (Salvelinus namaycusch), whitefish (Coregonus clupeaformis), yellow perch (Perca flavescens), bluegills (Lepomis macrochirus), and other panfish (Lepomis spp., Pomoxis spp.).

Inland rivers and Lake Michigan tributaries provide some of the best sport fishing opportunities in the Cheboygan SW area. Northern pike, walleyes, bass and panfish are found in impounded backwater areas of rivers; brook trout (Salvelinus fontinalis) and brown trout (Salmo trutta) are prevalent in cold, headwater areas. Brown and brook trout, walleyes, smallmouth bass and panfish are also fished in Lake Michigan tributaries, as are rainbow trout (steelheads - Salmo gairdneri), suckers (Catostomus), coho salmon (Oncorhynchus kisutch) and chinook salmon (O. tshawytscha).

Common sport fish of Lake Michigan include yellow perch, smelt, northern pike, walleyes, suckers, smallmouth bass, panfish, coho and chinook salmon and lake, rainbow, brook and brown trout. Lake whitefish and chubs (Semotilus) are the most important commercial species; however, alewife (Alosa pseudoharengus) and smelt have increased in importance (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.
- Panzner, 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 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: Some upland may have been labeled as wetland.

Resolution: Due to the scale of the photography, some small islands of upland may be included in larger wetland delineations.

Problem 2: 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	Swamp	<u>Populus tremuloides</u> <u>Fraxinus spp.</u>	Saturated
PFO/SSY	Swamp	<u>Populus spp.</u> <u>Acer rubrum</u> <u>Thuja occidentalis</u> <u>Alnus spp.</u> <u>Cornus spp.</u>	Saturated
PSSY	Swamp	<u>Alnus spp.</u> <u>Salix spp.</u>	Saturated Seasonal Semi-permanent
PSS/EMY	Swamp	<u>Alnus spp.</u> <u>Salix spp.</u> <u>Cornus spp.</u> <u>Carex spp.</u> <u>Juncus spp.</u>	Saturated Seasonal
PEMY	Wet meadow	<u>Carex spp.</u> <u>Scirpus spp.</u> <u>Phalaris arundinacea</u>	Saturated Semi-permanent
PEMF PEMY	Marsh	<u>Typha latifolia</u> <u>Scirpus 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.

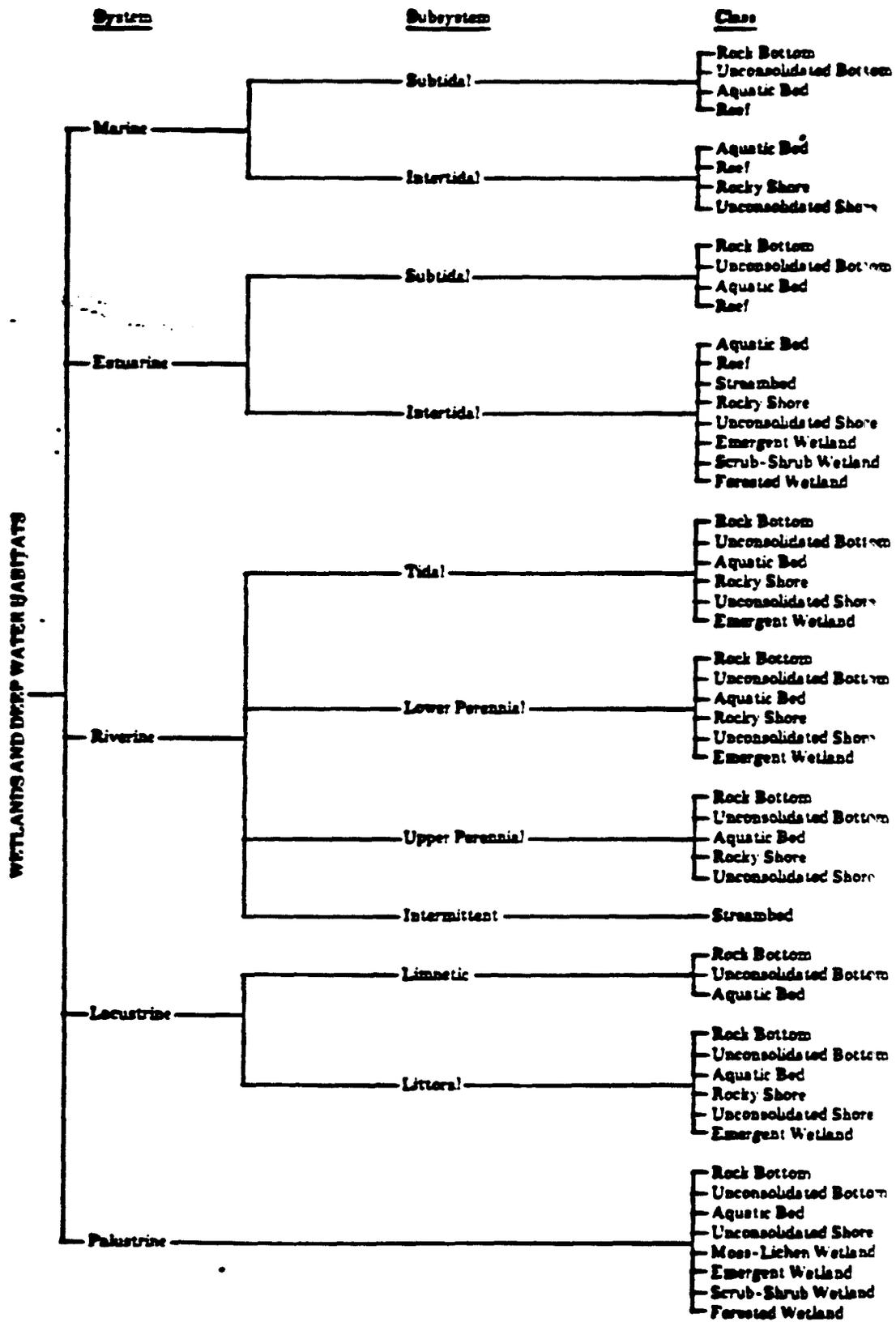


Fig 1. Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes. The Palustrine System does not include deepwater habitats.

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

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

D	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
1	Alkaline

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

