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

MAP AREA: CHEBOYGAN NW

1:100,000 NAME: BEAVER 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

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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.

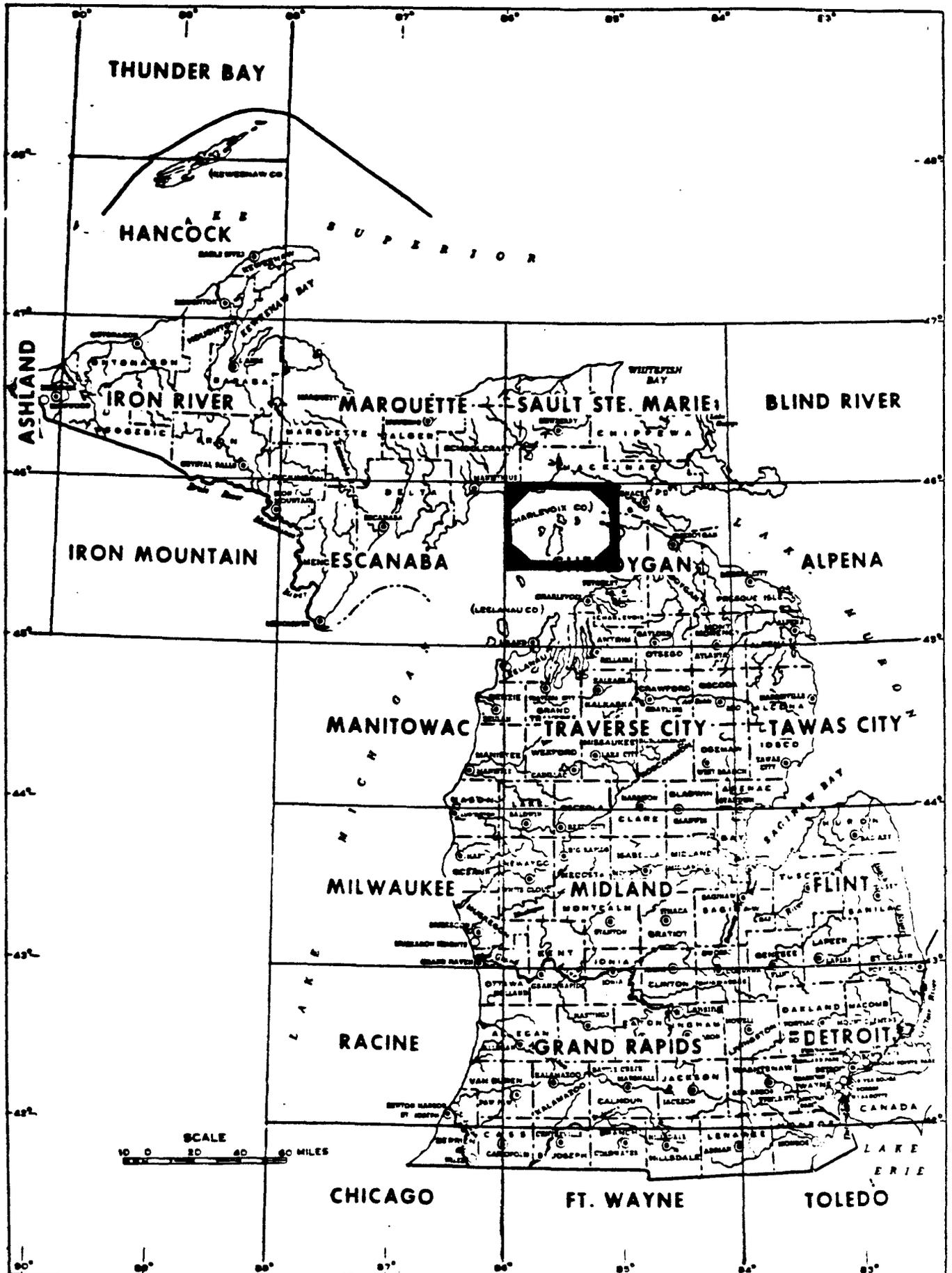
Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any local, State, 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 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	September 1974	64%
2. Black and white	1:80,000	May 1975	14%
3. Black and white	1:80,000	May 1980	22%

Field Check Dates

1. June 18 - 19, 1979

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° 30' to 46° 0' North

Largest Cities : Goodhart and Cross Village, Michigan

Cheboygan NW lies west of the city of Cheboygan, and includes a small portion of land in Michigan's upper and lower peninsulas. Most of the map area consists of Lake Michigan. Several Lake Michigan islands are located in the map area, including Beaver Island, Gull Island and Hog Island. This map encompasses portions of Charlevoix, Mackinac, Leelanau and Schoolcraft Counties, and lies within the Lake Michigan watershed. Michigan Islands National Wildlife Refuge and Wilderness is found in the map area.

B. Ecoregion

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

Code: 2112L, 2113L

Humid Temperate Domain (2000)

The entire Cheboygan 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 Cheboygan NW 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 NW map area 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 red cedar (Juniperus virginiana) also grow in this Province.

Northern Hardwoods-Fir Forest Section (2112L)

This section occurs in lowlands and includes 30% of Cheboygan NW, or the upper peninsula mainland portion in the northwest part of the map.

The principal tree species of this Section are firs (Abies spp.) and hardwoods.

Northern Hardwoods Forest Section (2113L)

This Section occurs in lowlands and covers 70% of Cheboygan NW, all but the upper peninsula mainland portion in the northwest part of the map.

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, (III-3) B3b

Interior Physical Division (III) - All of the Cheboygan NW map area is included within this Physical Division.

North Central Lake-Swamp-Moraine Plains Subdivision (3) - This Subdivision covers all of the Cheboygan NW map area.

Irregular Plains Class (B2b) - This Class covers 70% of Cheboygan NW, all but the lower peninsula mainland portion in the southeastern part of the map. Fifty to 80% of the land is in gentle slopes. Fifty to 75% of these slopes occur in lowlands.

Plains With High Hills Class (B3b) - This Class includes 30% of Cheboygan NW, or the lower peninsula mainland portion in the southeastern part of the map. 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 NW area at the present time.

Steep topography has precluded extensive wetland formation in the lower peninsula portion of Cheboygan NW. A diversity of wetland types can be found in other portions of the map area, of which saturated to seasonally flooded forested wetlands are the most common. Other common types include saturated to seasonally flooded scrub-shrub wetlands and saturated to semi-permanently flooded emergents.

Predominant trees and shrubs of the forested wetlands include black spruce (Picea mariana), northern white cedar (Thuja occidentalis), ash (Fraxinus sp.), balsam fir (Abies balsamea), hemlock (Tsuga canadensis), dogwood (Cornus sp.) and alder (Alnus sp.). Alder is also common in the shrub/emergent wetlands, as is willow (Salix sp.).

Important plant species of the emergent wetlands include sedge (Carex sp.), bulrush (Scirpus sp.), reed canarygrass (Phalaris arundinacea) and cattail (Typha latifolia). 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 also present in the Cheboygan NW map area.

B. Wildlife and Fish

Many wildlife species inhabit the Cheboygan NW map area. Small game, including ruffed grouse (Bonasa umbellus), American woodcocks (Philahela minor), eastern cottontails (Sylvilagus floridanus) and squirrels (Sciurus spp.), have maintained stable populations or have increased. Furbearers, including beavers, (Castor canadensis), raccoons (Procyon lotor), weasels (Mustela spp.), mink (M. vison) and river otters (Lutra canadensis), have also done well, except in areas of marsh drainage or other disturbance. White-tailed deer (Odocoileus virginianus) are common.

Other wildlife species of Cheboygan NW include black bears (Ursus americanus), woodchucks (Marmota monax), opossums (Didelphis marsupialis) and porcupines (Erethizon dorsatum). Herons, gulls (Larus spp.) and terns (Sterna spp.) are the primary users of the Michigan Islands National Wildlife Refuge.

Several species of waterfowl inhabit the area, particularly in the vicinity of the lakes on Beaver Island. These species include 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).

Some wildlife species in the map area are on the Endangered and Threatened list. 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 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.

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 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 namaycush), whitefish, 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 NW area. Northern, 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, walleyes, suckers, smallmouth bass, panfish, coho and chinook salmon and lake, rainbow, brook and brown trout. Lake whitefish (Coregonus clupeaformis) 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: Dense linear wetlands on old beach ridges were difficult to delineate separately.

Resolution: These wetland were grouped into polygons which may include some upland on the high part of the ridges. We believe that these polygons better represent the wetlands than do confusing tangles of linears.

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>
PFOB PFOY PFO4/1B PFO4B	Swamp	<u>Abies balsamea</u> <u>Tsuga canadensis</u> <u>Betula papyrifera</u> <u>Thuja occidentalis</u> <u>Picea mariana</u> <u>Populus tremuloides</u> <u>Fraxinus spp.</u>	Saturated Seasonal
PFO/SSB PFO/SSC PFO/SSY	Swamp	<u>Populus tremuloides</u> <u>Betula papyrifera</u> <u>Thuja occidentalis</u> <u>Alnus spp.</u> <u>Cornus spp.</u>	Saturated Seasonal
PSSB	Bog	<u>Chamaedaphne calyculata</u>	Saturated
PSSY	Swamp	<u>Alnus spp.</u> <u>Salix spp.</u>	Saturated Seasonal
PSS/EMY	Swamp	<u>Alnus spp.</u> <u>Salix spp.</u> <u>Carex spp.</u> <u>Juncus spp.</u>	Saturated Seasonal
PEMB PEMY	Wet meadow	<u>Carex spp.</u> <u>Scirpus spp.</u> <u>Phalaris arundinacea</u> <u>Misc. grasses</u>	Saturated Semi-permanent
PEMF PEMY	Marsh	<u>Typha latifolia</u> <u>Scirpus spp.</u>	Seasonal Semi-permanent
PABH	Pond	<u>Nuphar spp.</u> <u>Lemna spp.</u>	Permanent
POWH	Pond	Open water	Permanent

*Plant species listed here were found in adjacent 1:100,000 areas and therefore may not be representative of species present in the Cheboygan NW 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.

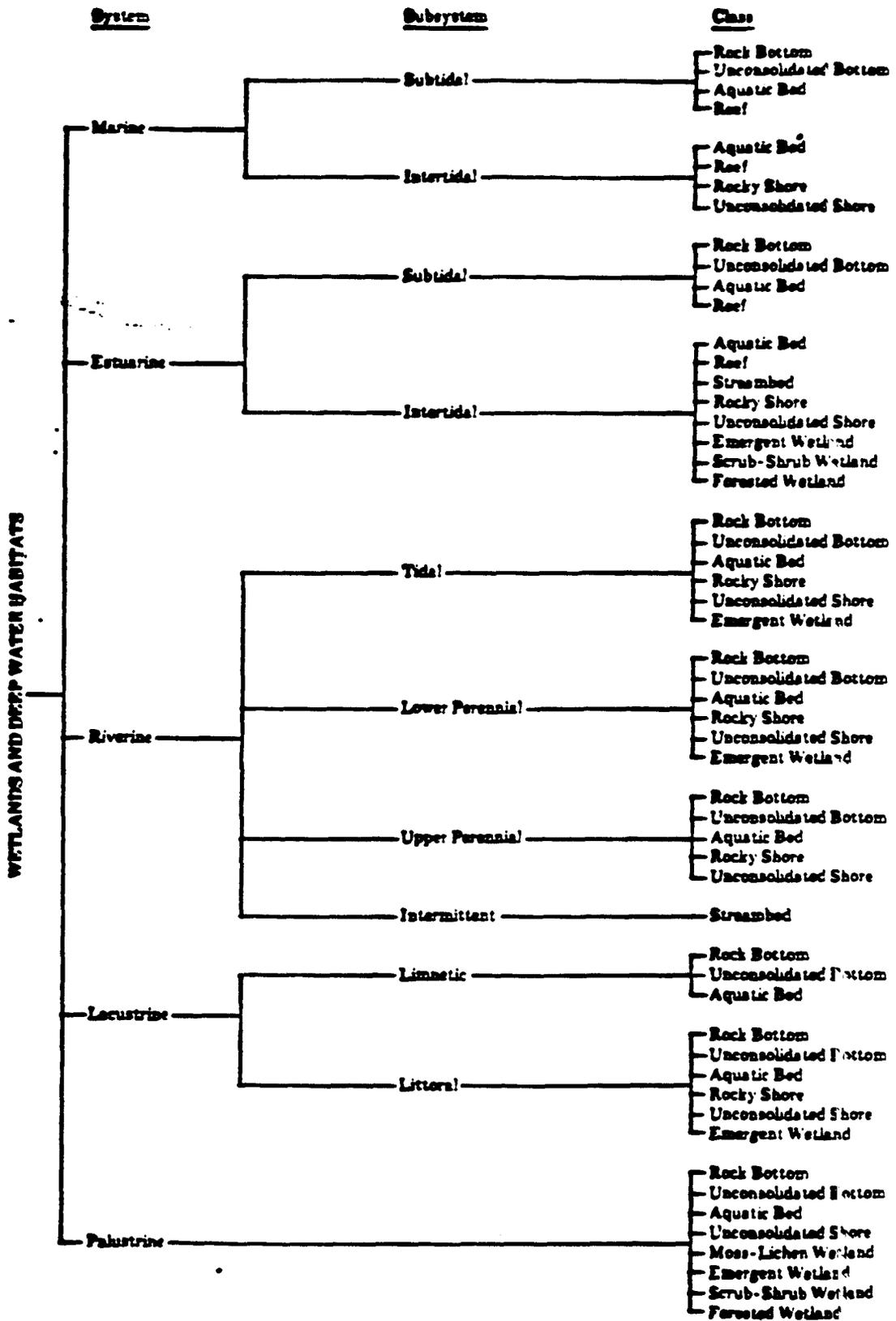


Fig. 1. Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes. The Palustrine System does not include deepwater habitats.

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

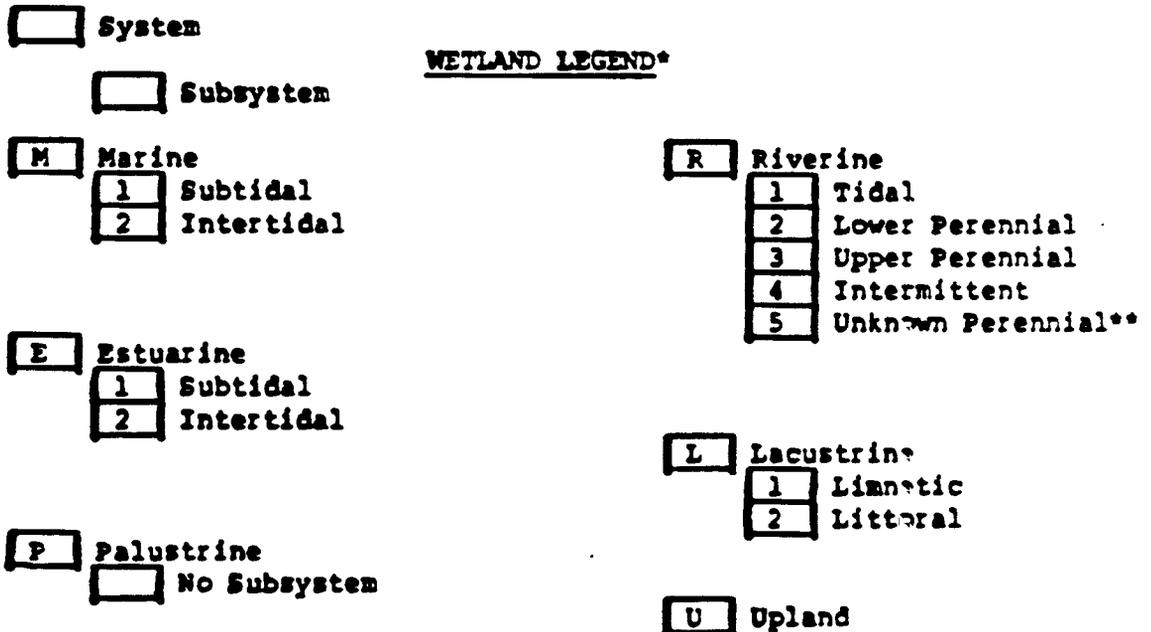
a. Classification of wetlands to water regime and special modifier:

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/EM1P = Palustrine, Forested, Needle-leaved deciduous (PFO2) mixed with Palustrine, Emergent, Persistent (PEM1) with semipermanent water regime (P).



*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

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
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
i	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.

