

A

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

MAP AREA: FLINT NW

1:100,000 NAME: BAY CITY

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.

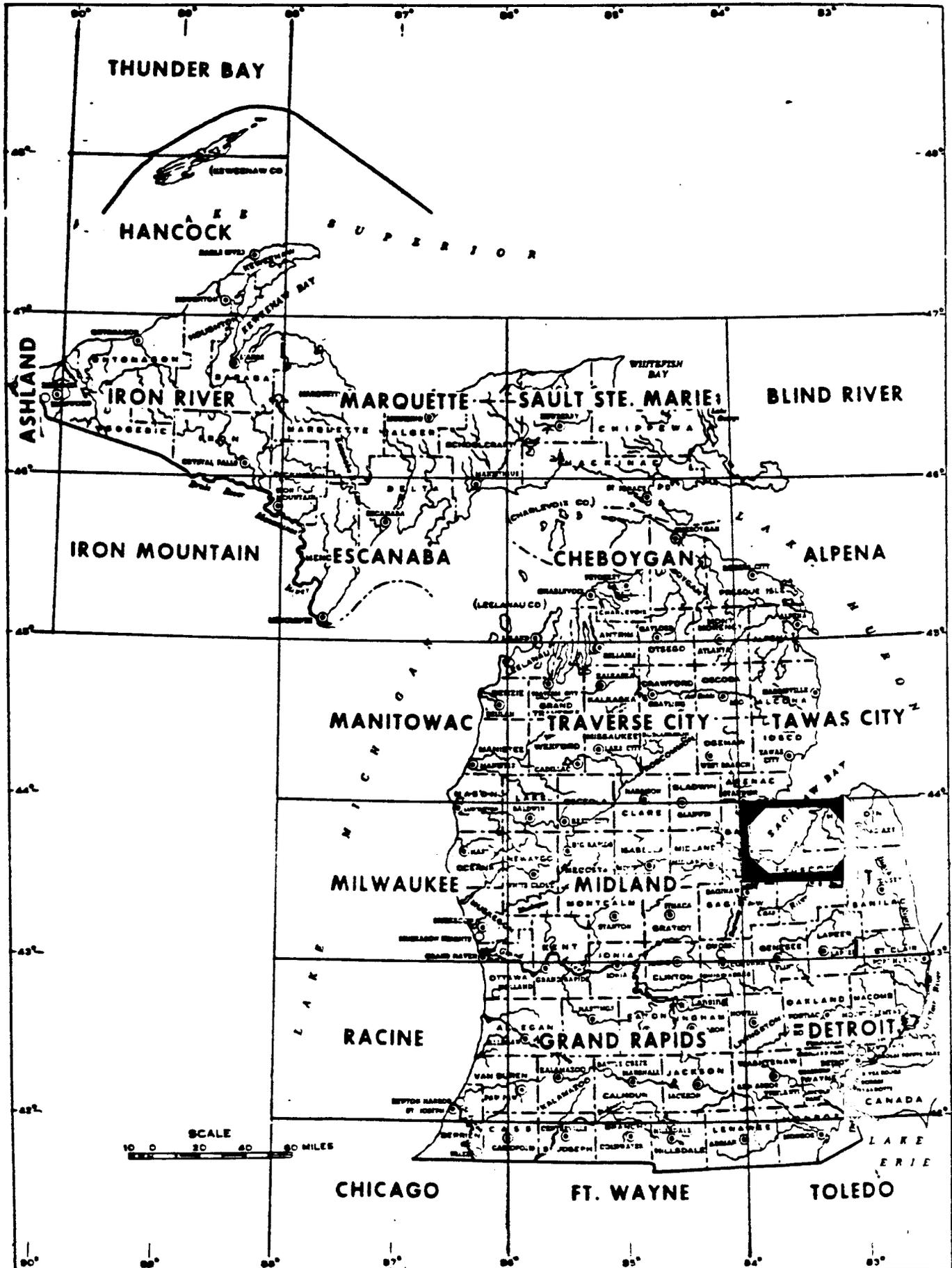
Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any local, State, 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	October 1978	82%
2. Black and white	1:80,000	November 1978	18%

Field Check Dates:

1. November 27, 1979
2. January 10, 1980

Contractor(s) for Photo Interpretation:

1. Michigan Dept. of Natural Resources

Collateral Data Used:

1. USGS topographic quad sheets
2. USDA Soil Surveys
3. Inland Wetlands of the United States

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: 83° 0' to 84° 0' West

Degrees Latitude : 43° 30' to 44° 0' North

Largest City : Bay City, Michigan

Flint NW is located in the east-central part of Michigan's Lower Peninsula, and borders three sides of Lake Huron's Saginaw Bay. The map area encompasses portions of Tuscola, Bay, Huron and Sanilac Counties. This map lies within the Lake Huron and Saginaw River watersheds.

B. Ecoregion

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

Code: 2113L

Humid Temperate Domain (2000)

The entire Flint 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 Flint NW map area lies in 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 Flint 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 redcedar (Juniperus virginiana) also grow in this Province.

Northern Hardwood Forest Section (2113L)

This Section occurs in lowland areas and covers all of the Flint NW map area.

Hardwoods are the most common tree species of this Section.

C. Topography and Land Forms

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

Codes: (III-2) A1, (III-2) A2b

Interior Physical Division (III) - The entire Flint NW map area lies within this Physical Division.

East-Central Drift and Lake-bed Flats Subdivision (2) - This Subdivision covers all of the Flint NW map area.

Flat Plains Class (A1) - This class covers all but the southeast 20% of the map. Over 80% of the land is in gentle slopes of less than 100 feet.

Smooth Plains Class (A2b) - This Class comprises the southeast 20% of the map area. More than 80% of the land is in gentle slopes. Fifty to 75% of these slopes are found in lowlands. Local relief ranges from 100 to 300 feet.

RESOURCES

A. Wetlands

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

Heavy wetland losses in the Flint NW area have been attributed to agricultural drainage, and industrial and urban development (Panzner 1955). Wetland density is fairly low; wetlands are nearly absent along the southern and eastern edges of Saginaw Bay. The highest concentrations of wetlands occur in the southeastern part of the map area and to the west and northeast of Saginaw Bay.

Wetlands which remain in the Flint NW map are located mainly along river floodplains. Some of the most common flood plain wetlands include saturated to seasonally flooded forested, forested/scrub-shrub and emergent wetlands. Some of the forested wetlands remain as isolated woodlots.

Predominant trees species of the forested wetlands include red maple (Acer rubrum), silver maple (A. saccharinum), ash (Fraxinus sp.) and trembling aspen (Populus tremuloides). Alder (Alnus sp.), dogwood (Cornus sp.) and willow (Salix sp.) are important shrub species of the scrub-shrub wetlands. Common plants of the emergent wetlands include cattail (Typha latifolia), rush (Juncus spp.), sedge (Carex spp.) and bulrush (Scirpus spp.). A list of plant species for other wetland types can be found in Appendix C.

One wetland area of particular importance is Tobico Marsh, adjacent to Saginaw Bay in the western part of the map area. Tobico Marsh is included in the list of potential Natural Landmarks (Goodwin and Niering 1975). The wetland consists of a large lagoon surrounded by dense emergents, some of which are floating. Shrub thickets and wet forest, in turn, border this marsh.

B. Wildlife and Fish

The open waters of Saginaw Bay are used extensively by all forms of waterfowl (duck, geese and swans). Thousands of acres of prime marshland surround the open waters of the Bay, and extend inland up the Saginaw River system. Wood ducks (Aix sponsa), mallards (Anas platyrhynchos) and Canada geese (Branta canadensis) are the most common waterfowl species to nest in the area. Tobico Marsh is of particular importance to waterfowl in the Flint NW area.

Human disturbances of wetlands, including industrial, agricultural and urban development, have decreased populations of water dependent wildlife in the Saginaw Bay area. Although the remaining wetlands are still highly productive, there has been a decrease in total numbers of various species, particularly herons, bitterns, rails, sandhill cranes (Grus canadensis), and shorebirds. Draining activities have also decreased populations of American woodcocks (Philobela minor) by eliminating their food source, and ruffed grouse (Bonasa umbellus) by eliminating stream bottom habitat.

Populations of farm species, such as ring-necked pheasants (Phasianus colchicus), have declined largely with changes in agricultural practices toward clean cultivation and larger equipment. Reversion of former agricultural land to brushland near cities has increased the productivity of white-tailed deer (Odocoileus virginianus) and other woodland game species (Great Lakes Basin Commission 1975b, Panzner 1955, Rounds 1956).

Species on the Endangered and Threatened list in the map area include the bald eagle (Haliaeetus leucocephalus) and Kirtland's warblers (Dendroica kirtlandii).

Sport fishing opportunities are available in many inland lakes and streams. Both sport and commercial fishing opportunities are available in Saginaw Bay and Lake Huron.

Yellow perch (Perca flavescens) and bluegills (Lepomis macrochirus) are the most common fish species of inland lakes. Stream species include northern pike (Esox lucius), smallmouth bass (Micropterus dolomieu), rock bass (Ambloplites rupestris), salmon (Oncorhynchus sp.), carp (Cyprinus carpio), and suckers (Catostomus). Municipal and industrial pollution has degraded water quality in many streams to the point that only rough fish remain. Channelization for flood control and drainage improvement, and erosion from urban construction and agricultural practices have also destroyed many stream fisheries.

Predominant sport fish of Lake Huron and Saginaw Bay include rainbow smelt (Osmerus mordax), walleyes (Stizostedion vitreum vitreum), yellow perch, northern pike, and smallmouth bass. Other sport fish include panfish (Lepomis spp., Pomoxis spp.), suckers, muskellunge (E. masquinoner), catfish (Ictalurus sp.), coho salmon (Oncorhynchus kisutch), chinook salmon (Oncorhynchus tshawytscha), steelhead trout (Salmo gairdneri), and lake trout (Salvelinus namaycush). Commercial fish species include lake whitefish (Coregonus clupeaformis), lake herring (C. artedii), chubs (Semotilus), catfish, carp, and yellow perch; however, commercial fishing for yellow perch (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.
- Goodwin, R.H., and W.H. Niering. 1975. Inland Wetlands of the United States. USDI National Park Service. Natural History Theme Studies No. 2. Connecticut College, New London. 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.
- Panzner, E.R. 1955. Wetlands Inventory of Michigan. U.S. Fish and Wildlife Service, Office of River Basin Studies. Minneapolis, MN 19 p.
- Rounds, B.W. 1955. Wetlands Inventory of Ohio. U.S. Fish and Wildlife Serv., Office of River Basin Studies, Minneapolis, Minn. 23 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 four: Lake Huron. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-81/02-v4. 792 p.

Appendix B

SPECIAL MAPPING PROBLEMS

Problem 1: Numerous R4's and field ditches in the area were difficult to map. Fields in or near Lake-bed Flats (Saginaw Bay) are diked, tilled and pumped to remove water.

Resolution: Specific field checks were made in Lake-bed Flats area to aid in the delineation.

Problem 2: Extensive drainage in the area made it difficult to distinguish upland from wetland forests.

Resolution: USDA Soil Surveys were used as collateral data. Field checking done when possible.

Problem 3: Some regrowth woodlots appeared wet on the photos.

Resolution: USDA Soil Surveys were used. Field checking revealed that not all of these woodlots were wetlands.

Problem 4: Much of the area is undergoing rapid development. Many wetlands are being filled for housing and industry.

Resolution: Because of extensive drainage and the dynamic nature of the area, some areas shown as wetland on USGS topos are not visible on the photos. User should be aware of changing wetland conditions.

Problem 5: Waterfowl management areas can easily be incorrectly classified.

Resolution: Knowledge of artificial water level changes and land use activities on these areas is necessary to classify properly.

Problem 6: In the Albert Sleeper State Park area, cluttered linear wetlands on old beach ridges were impossible to delineate separately at this scale.

Resolution: These linear wetlands were grouped and delineated into larger polygons. Although these polygons may include some upland on the high part of the ridges, they better represent the wetlands than do confusing tangles of linears.

Problem 7: 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	Lowland	<u>Acer rubrum</u>	Saturated
PFO1B	hardwoods	<u>Acer saccharinum</u>	Seasonal
PFOY	Swamp	<u>Fraxinus spp.</u>	
PFO1Y		<u>Populus tremuloides</u>	
PFO/SSY	Swamp	<u>Acer rubrum</u>	Saturated
		<u>Alnus spp.</u>	Seasonal
		<u>Populus tremuloides</u>	
		<u>Salix spp.</u>	
PFO1Z	Swamp	<u>Alnus spp.</u>	Saturated
		<u>Cornus spp.</u>	Seasonal
		<u>Salix spp.</u>	Semi-permanent
PSS/EMY	Swamp	<u>Alnus spp.</u>	Saturated
		<u>Cornus spp.</u>	Seasonal
		<u>Salix spp.</u>	Semi-permanent
		<u>Typha latifolia</u>	
		<u>Carex spp.</u>	
		<u>Juncus spp.</u>	
PEMY	Wet meadow	<u>Juncus spp.</u>	Saturated
		<u>Carex spp.</u>	Seasonal
		<u>Scirpus spp.</u>	
		<u>Phalaris arundinacea</u>	
PEMY	Marsh	<u>Typha latifolia</u>	Seasonal
		<u>Phragmites spp.</u>	Semi-permanent
		<u>Scirpus spp.</u>	

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.

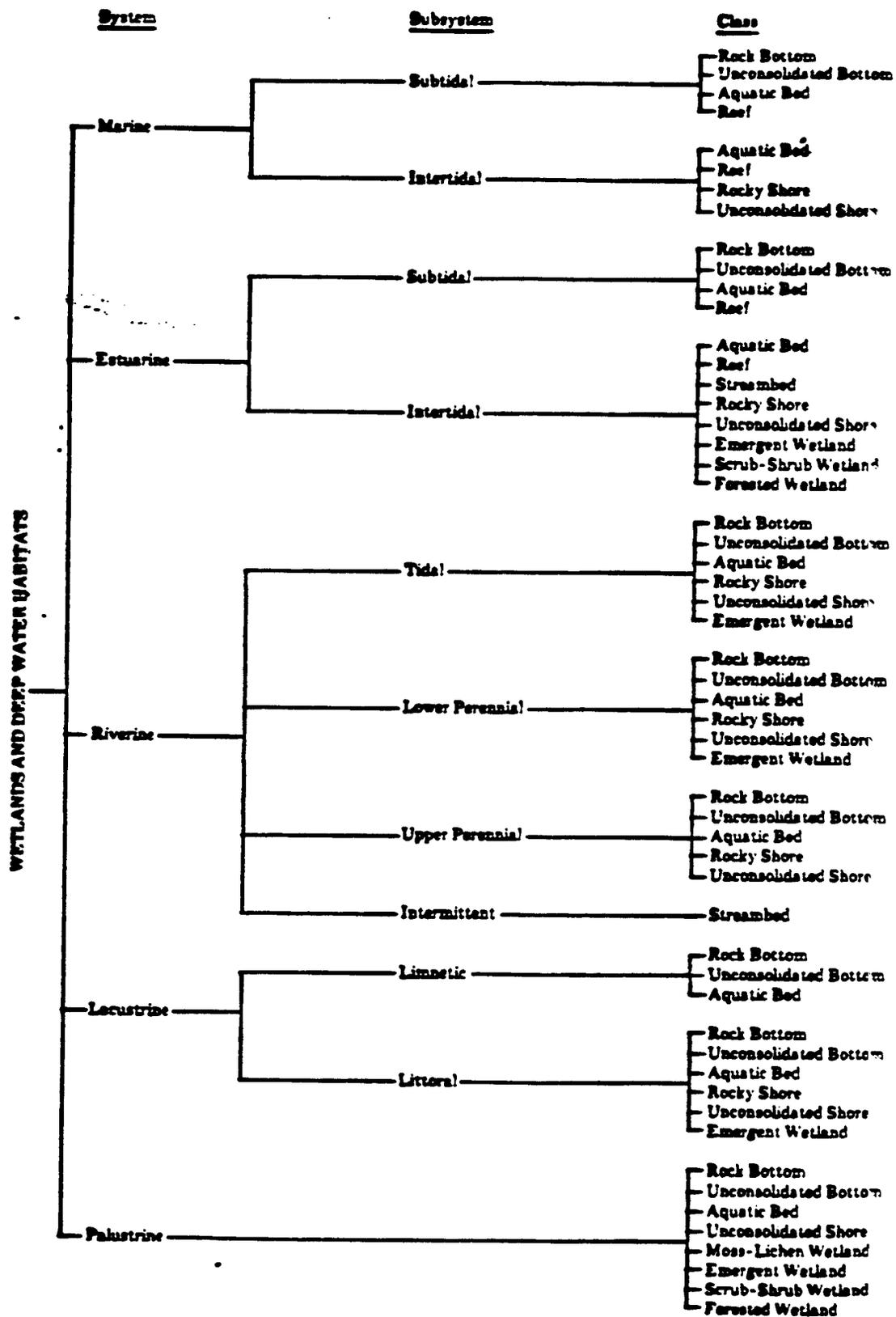


Fig 1. Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes. The Palustrine System does not include deepwater habitats.

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

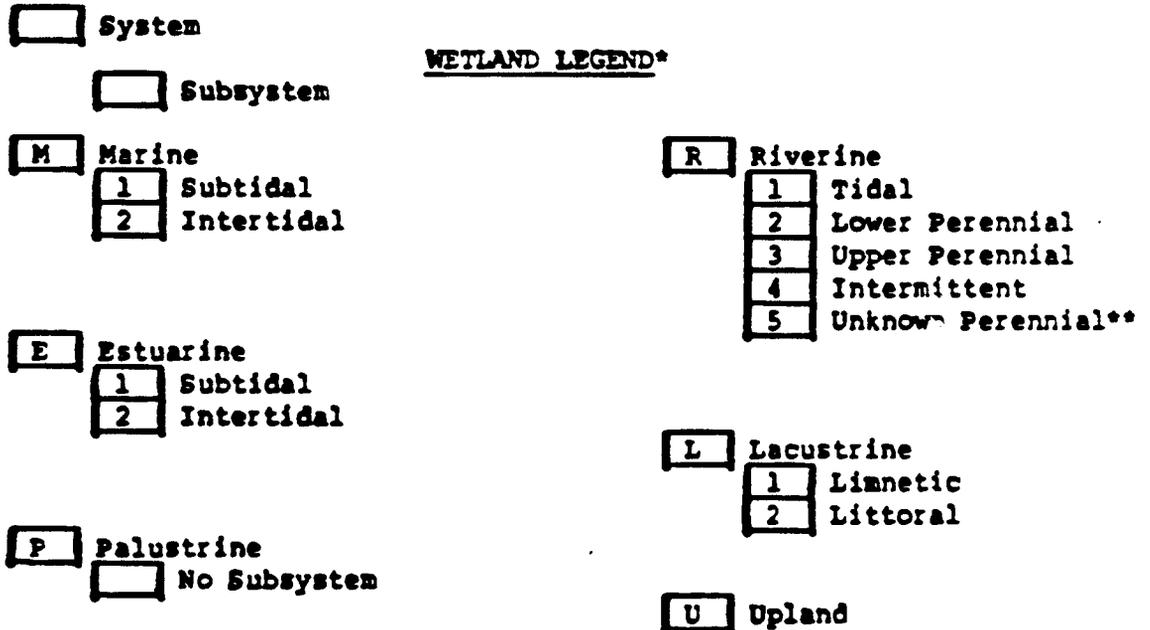
a. Classification of wetlands to water regime and special modifier:

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.

