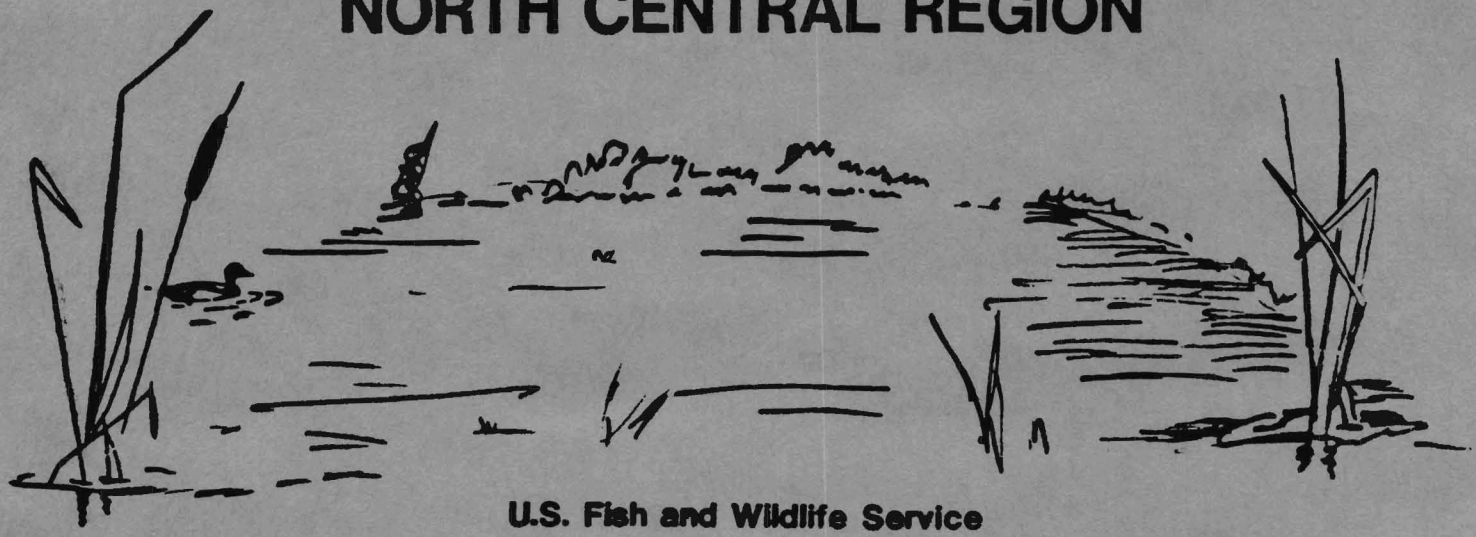
# NATIONAL WETLAND INVENTORY USER REPORT 1:100,000 MAP AREA

**MAP AREA:** HANCOCK NW

**1:100,000 NAME:** GRAND PORTAGE

**STATE:** MINNESOTA

## 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 [illegible] 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.

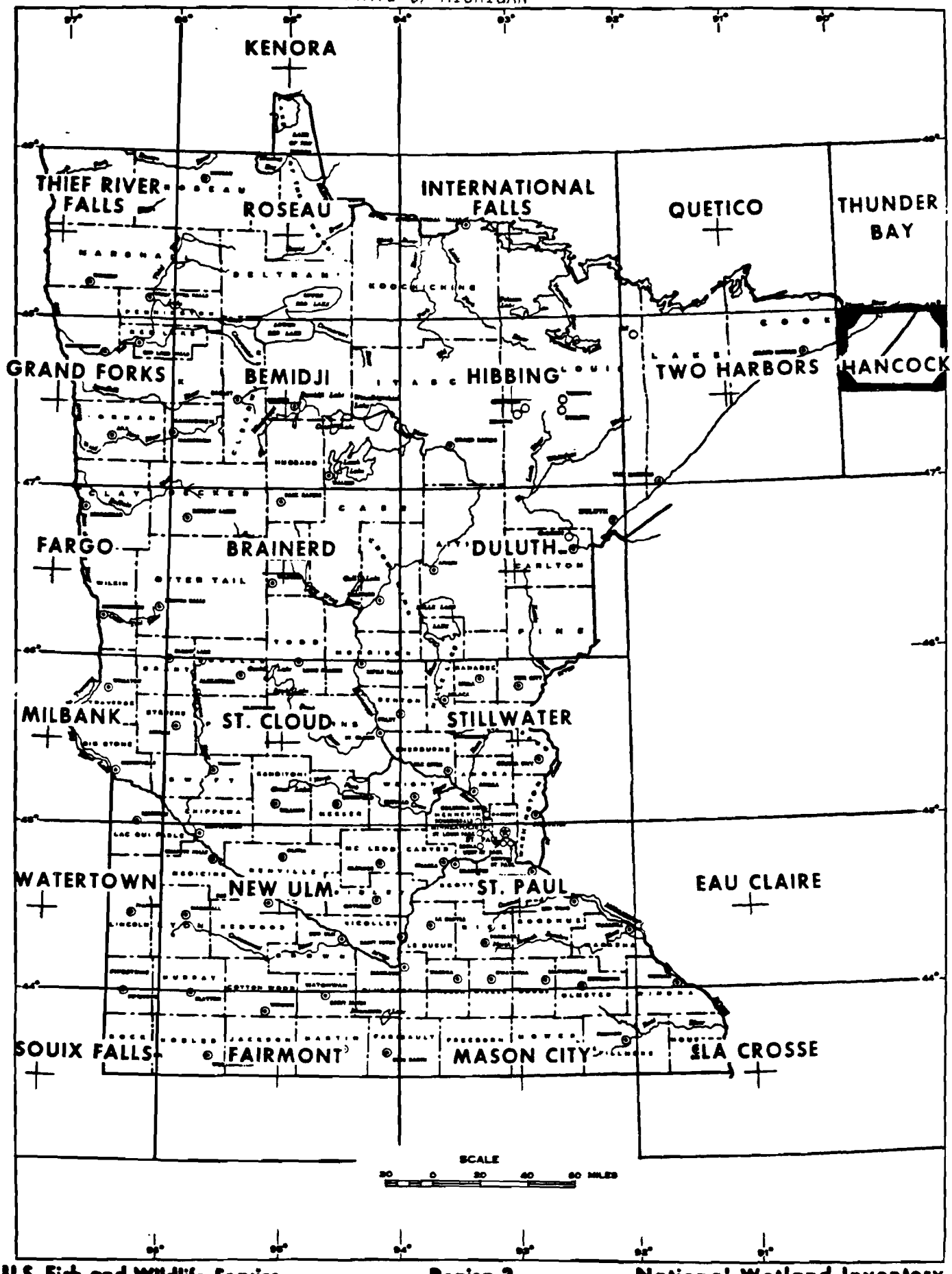
Additional information regarding this map or other National Wetland Inventory activities may be obtained by contacting:

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 AREA

STATE OF MINNESOTA
STATE OF MICHIGAN




U.S. Fish and Wildlife Service Region 3 National Wetland Inventory

DATE: December 1983

MAP PREPARATION

Basic Data

Photography Used:

| | Emulsion | Scale | Date | Percent Coverage |
|---|---|---|---|---|
| 1. | Black and white | 1:80,000 | October 1978 | 56% |
| 2. | Black and white | 1:80,000 | May 1979 | 44% |

Field Check Dates:

1. None

Contractor(s) for Photo Interpretation:

1. Michigan Dept. of Natural Resources (Michigan Portion)
2. University of Massachusetts (Minnesota Portion)

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: 89° 0' to 90° 0' West

Degrees Latitude : 47° 30' to 48° 0' North

Largest City : Grand Portage, Minnesota

The Minnesota portion of Hancock NW is located in the arrowhead region of the state and includes the "tip of the arrow." The Michigan portion of the map area covers the southwestern part of Isle Royale. The map area lies within the Lake Superior watershed and encompasses portions of Cook County in Minnesota and Keweenaw County in Michigan. Grand Portage Indian Reservation occurs within the Minnesota portion of the map. Isle Royale is a National Park.

### B. Ecoregion

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

Code: 211lL

Humid Temperate Domain (2000)
The entire Hancock 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 Hancock 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 Hancock 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.

Spruce-Fir Forest Section (2111L)
This Section occurs in lowlands and includes all of the Hancock NW map area.

Spruces (Picea spp.) 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) B3b, (III-3) C4d, (III-3) C5d

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

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

Plains With Hills Class (B3b) - This Class covers 20% of Hancock NW, in the northwest corner of the Minnesota portion. Fifty to 80% of the land is in gentle slopes, of which 50 to 75% are found in lowlands. Local relief ranges from 300 to 500 feet.

Open High Hills Class (C4d) - This class includes the Isle Royal portion, or 40% of the Hancock NW map area. Twenty to 50% of the land is gently sloping, with over 75% of the slopes occurring in upland areas. Local relief ranges from 500 to 1000 feet.

Open Low Mountains Class (C5d) - This class comprises 40% of Hancock NW, in the Minnesota Portion along the Lake Superior shoreline. Twenty to 50% of the land is in gentle slopes, of which 75% or more are found in uplands. Local relief ranges from 1000 to 3000 feet.

RESOURCES

A. Wetlands

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

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

B. Wildlife and Fish

Several species of waterfowl occur in the Hancock NW map area. Some production of black ducks (Anas rubripes), common goldeneyes (Bucephala clangula), mallards (Anas platyrhynches) and mergansers (Mergus spp.) occurs in the area. Migrant waterfowl species include common goldeneyes, buffleheads (Bucephala albeola), scaups (Aythya spp.), ring-necked ducks (Aythya collaris), old squaws (Clangula hyemalis) and white-winged scoters (Melanitta deglandi). Habitat for waterfowl consists of inland lakes, beaver ponds, Lake Superior shoreline and Lake Superior itself (Great Lakes Basin Commisssion 1975b, Hansen et al. 1973, Herdendorf et al. 1981, Mann 1955, Panzner 1955).

Common mammals include moose (Alces alces), white-tailed deer (Odocoileus virginianus), beavers (Castor canadensis), snowshoe hares (Lepus americanus), squirrels (Sciurus spp.), red foxes (Vulpes vulpes) and coyotes (Canis latrans). Timber wolves (Canis lupus), on the Endangered and Threatened list, also inhabit the area.

Avian residents include ruffed grouse (Bonasa umbellus), American woodcocks (Philohela minor), spruce grouse (Canachites canadensis), downy and hairy woodpeckers (Dendrocopus spp.), blue jays (Cyanocitta cristata), gray jays (Perisoreus canadensis), black-capped ckickadees, (Parus atricopillus), red-breasted nuthatches (Sitta canadensis), warblers and shorebirds. The bald eagle (Haliaeetus leucocephalus), on the Endangered and Threatened list, also is found in the map area.

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 sport fish of the inland lakes and streams include rainbow trout (Salmo gairdneri), brown trout (S. trutta), brook trout (Salvelinus fontinalis), bass (Micropterus spp.), yellow perch (Perca flavescens), rainbow smelt (Osmerus mordax), suckers (Catostomus), walleyes (Stizostedion vitreum vitreum) and northern pike (Esox lucius). Lake Superior sport fish include lake trout (Salvelinus namaycusch), coho salmon (Oncorhynchus kisutch) and chinook salmon (Oncorhynchus tshawytsha). Lake herring (Coregonus artedii), lake whitefish (C. clupeaformis), chubs (Semotilus) and lake trout dominate the commercial catch (Great Lakes Basin Commission 1975a, Herdendorf et al. 1981).

## 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.

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----- 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.

Hansen, H.L., L.W. Krefting, and V.K. Kurmis. 1973. The Forest of Isle Royale in Relation to Fire History and Wildlife. Univ. of Minn., Agricultural Exp. Stations, Tech Bull. No. 294, Forest Series B. 43 p.

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. FWSOBS-81/02-v6. pp. 790-807.

Mann, G.E. 1955. Wetlands Inventory of Minnesota. U.S. Fish and Wildlife Service, Office of River Basin Studies. Minneapolis, Minn. 42 p.

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

Peter Jordan of the University of Minnesota has done much work on the vegetation, soils and wildlife of Isle Royale.

## Appendix B

### SPECIAL MAPPING PROBLEMS

Problem 1: Extreme water clarity (often to 20 feet) caused difficulty in mapping L2 zones around Isle Royale and numerous small islands in Lake Superior; in many cases the L2 zone was omitted.

Resolution: Use of NOAA Sounding Charts as collateral data.

Problem 2: It was often diffucult 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*

| MAP SYMBOLS | LOCAL NAME | DOMINANT VEGETATION | WATER REGIME |
|---|---|---|---|
| PFOB<br>PFOY | Swamp | Fraxinus nigra<br>Thuja occidentalis<br>Picea mariana<br>Abies balsamea | Saturated<br>Seasonal |
| PFO2B | Swamp | Larix laricina<br>Thuja occidentalis | Saturated |
| PFO4B<br>PFO4Y | Swamp<br>Bog | Thuja occidentalis<br>Ledum groenlandicum<br>Picea mariana<br>Chamaedaphe calyculata | Saturated<br>Seasonal |
| PFO4/2B | Swamp<br>Bog | Thuja occidentalis<br>Picea mariana<br>Larix laricina<br>Sphagnum spp. | Saturated |
| PFO/SSB<br>PFO/SSC<br>PFO/SSY | Swamp | Thuja occidentalis<br>Abies balsamea<br>Tsuga canadensis<br>Fraxinus nigra<br>Populus tremuloides<br>Alnus rugosa<br>Cornus spp.<br>Salix spp. | Saturated<br>Seasonal |
| PFO5/OWZb | Beaver flooding | Dead trees<br>Open water | Intermittently exposed<br>Permanent |
| PSSB | Bog | Chamaedaphne calyculata<br>Ledum groenlandicum<br>Myrica Gale | Saturated |
| PSSB<br>PSS1B<br>PSSC<br>PSSV<br>PSS1Y | Swamp | Alnus spp.<br>Salix spp.<br>Cornus spp.<br>Primus spp.<br>Corylus cornuta | Saturated<br>Seasonal |
| PSS/EMB<br>PSS/EME | Swamp | Alnus rugosa<br>Carex spp. | Saturated<br>Seasonal |
| PSS/EMB<br>PSS3/EMB<br>PSS/EME | Bog | Chamaedaphne calyculata<br>Myrica Gale<br>Sarracenia purpurea | Saturated<br>Seasonal |

| MAP SYMBOLS | LOCAL NAME | DOMINANT VEGETATION | WATER REGIME |
|---|---|---|---|
| PSS1/EMEb | Beaver flooding | Alnus rugosa<br>Carex spp. | Saturated<br>Seasonal |
| PEMB | Wet meadow | Carex spp.<br>Misc. grasses | Saturated |
| PEMEb | Beaver flooding | Carex spp.<br>Timcus spp.<br>Misc. grasses | Saturated<br>Seasonal |
| PEMF<br>PEMY | Marsh | Eriophorum sp.<br>Scirpus spp.<br>Carex spp.<br>Typha latifolia | Saturated<br>Seasonal<br>Semi-permanent |
| POWFb | Beaver flooding | Open water | Semi-permanent |
| POWZb | Beaver flooding | Open water | Intermittently exposed<br>Permanent |

*Some plant species listed here were found in adjacent 1:100,00 map areas and included here because of the similarity of the habitat.

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.

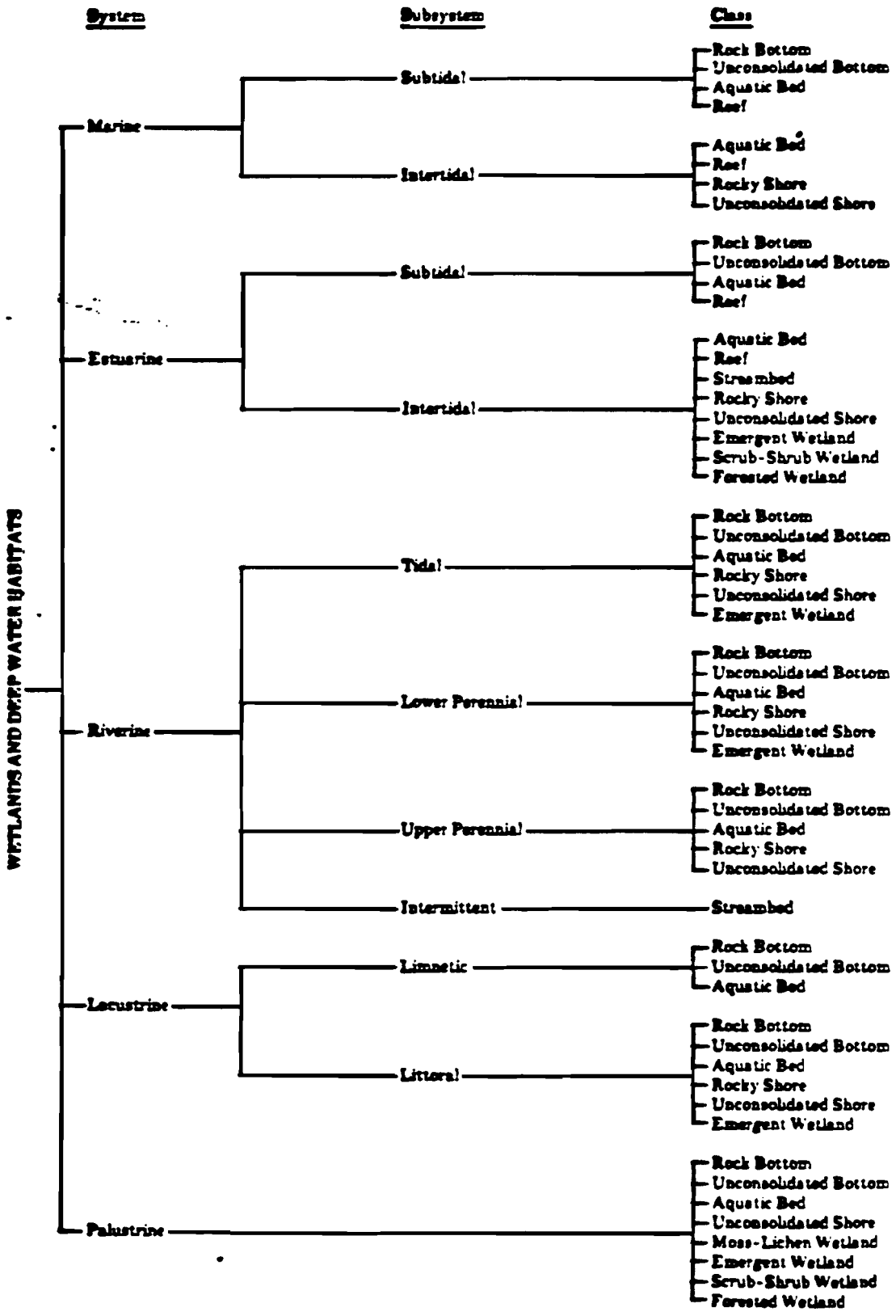


**Fig 1.** Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes The Palustrine System does not include deepwater habitats.

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).

WETLAND LEGEND*

- [ ] System
- [ ] Subsystem
- [M] Marine
  - [1] Subtidal
  - [2] Intertidal
- [E] Estuarine
  - [1] Subtidal
  - [2] Intertidal
- [P] Palustrine
  - [ ] No Subsystem
- [R] Riverine
  - [1] Tidal
  - [2] Lower Perennial
  - [3] Upper Perennial
  - [4] Intermittent
  - [5] Unknown Perennial**
- [L] Lacustrine
  - [1] Limnetic
  - [2] Littoral
- [U] Upland

*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.

## OTHER MODIFIERS

**Special**

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

**Soils**

| | |
|---|---|
| q | 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 additon, 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 additon, 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 descirbe 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.