

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

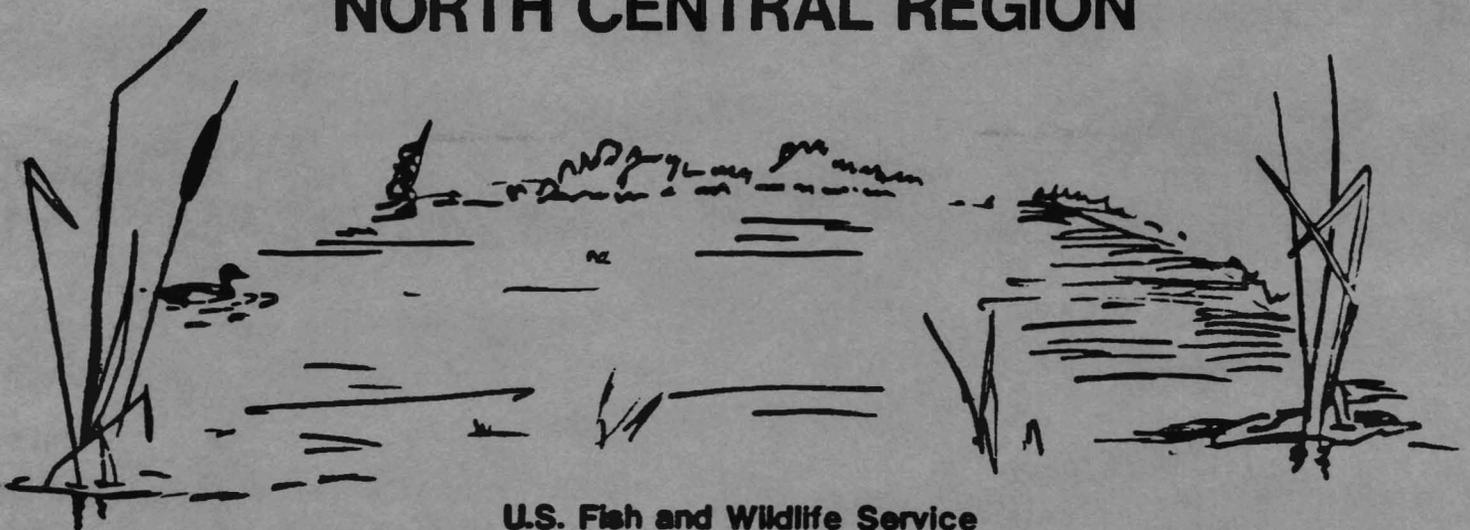
**MAP AREA:** TOLEDO NE

**1:100,000 NAME:** PUT-IN-BAY

**STATE:** OHIO



## 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

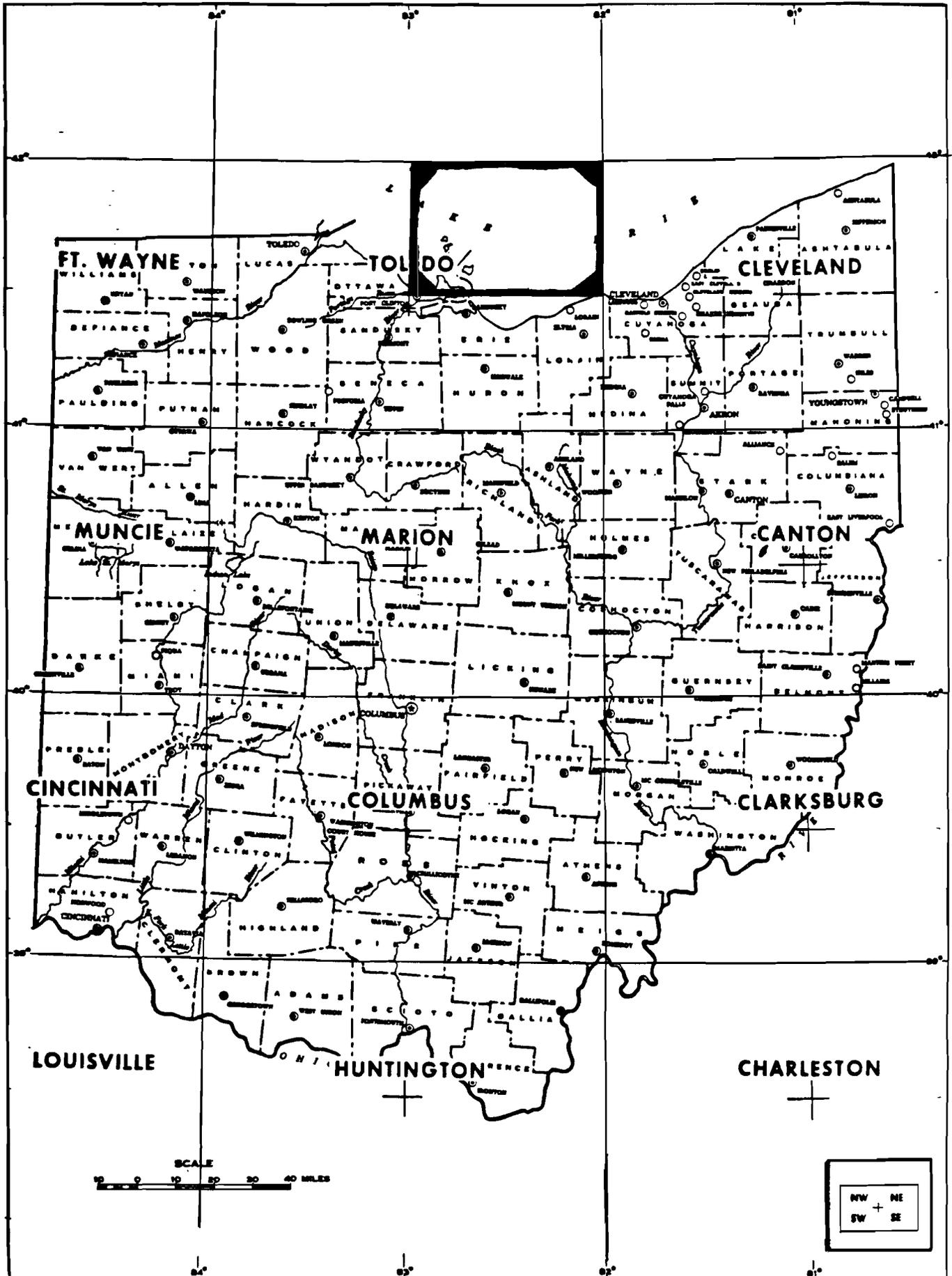
Maps for this 1:100,000 scale map were prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography in accordance with Classification of Wetlands and Deepwater Habitats of the United 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

LOCATION OF REPORT  
STATE OF OHIO



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	April 1977	100%

Field Check Dates:

1. January 22 - 26, 1979
2. April 30 - May 4, 1979
3. April 20 - May 2, 1980

Contractor(s) for Photo Interpretation:

1. Earth Satellite Corporation
2. Revised in-house (FWS)

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: 82° 0' to 83° 0' West

Degrees Latitude : 41° 30' to 42° 0' North

Largest City : Port Clinton, Ohio

Toledo NE lies just east of Toledo, Ohio in the extreme north-central part of the state and covers portions of Ottawa and Erie Counties. The map area includes the point of land between Sandusky Bay and Lake Erie and also the Bass Islands and Kelleys Island in Lake Erie. Toledo NE is included in the Lake Erie watershed.

B. Ecoregion

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

Code: 2212L

Humid Temperate Domain (2000)

The entire Toledo NE 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.

Hot Continental Division (2200)

All of the Toledo NE map area lies within this Division.

This Division characteristically has hot summers and cool winters. The natural vegetation is winter deciduous forest, where tall broadleaf trees dominate. These trees form a dense canopy in the summer, but lose their leaves in the winter. The shrub layer is weakly developed. A lush herbaceous layer develops in early spring, but diminishes as the dense tree canopy forms and shades the ground. Soils are primarily Alfisols, Inceptisols and Ultisols which are rich in humus and moderately leached.

Eastern Deciduous Forest Province (2210)

The entire Toledo NE map area falls within this Province.

The vegetation of this Province represents a response to a climate that receives adequate precipitation all year long. Common tree species of the deciduous forests include beech (Fagus grandifolia), oak (Quercus spp.), birch (Betula spp.), basswood (Tilia americana), elm (Ulmus spp.), maple (Acer spp.), and ash (Fraxinus spp.). Pines develop quickly in forests cleared for logging.

Trees of poorly drained forests consist of alder (Alnus spp.), willow (Salix spp.), ash and elm.

Beech-Maple Forest Section (2212L)

This Section occurs in lowland areas and covers all of the Toledo NE map area.

Beech and maple trees form the principal plant association of this Section.

C. Topography and Land Forms

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

Codes: (III-2) A1

Interior Physical Division (III) - The entire Toledo NE map lies within this Physical Division.

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

Flat Plains Class (A1) - All of the Toledo NE map area is in this Class, where over 80% of the land is in gentle slopes of less than 100 feet.

HYDROLOGY

No major rivers or lakes occur in the Toledo NE map area. However, several lacustrine harbors border the mainland part of the map along the Lake Erie shoreline. The island portion of the map is completely surrounded by Lake Erie waters. Wetlands are few and scattered, most having been drained for agricultural and industrial purposes.

GEOLOGY

Northwestern Ohio, including Toledo NE, is underlain by bedrock from the Ordovician, Silurian and Devonian ages. These bedrock layers are covered by glacial deposits from a more recent period.

During glacial recession, clay-rich till was deposited by ice sheets and gravelly outwash was left behind by meltwater streams. Much of the till and outwash material which covers Toledo NE is interbedded due to repeated glacial advances and retreats.

Flat lake plains formed over this till and outwash material as glacial lakes melted. These former lake bottoms are commonly lined with heavy clay and have sandy edges. (Burgess and Niple 1967).

## CLIMATE

The climate of Toledo NE is rather mild, with average temperatures ranging from 21°F to 36°F in January and from 64°F to 84°F in July. The average annual precipitation ranges from 30 - 32 inches, of which 15 - 17 inches falls during the growing season. Snowfall averages 40 - 40 inches per year, and the ground is usually frost-free from April 20 - October 25 (Collins 1975). Intense rainstorms can occur during the spring and summer months, sometimes causing damage (Great Lakes Basin Commission 1975c).

## LAND USE

The presettlement vegetation of Toledo NE consisted primarily of oak, sugar maple and elm-ash swampland. Marshes and fens were common along the Lake Erie shoreline (Collins 1975).

As the area was settled during the mid-1800's, swamplands were drained through the construction of drainage ditches. The forests were cleared for agricultural crops and building construction. Additional drainage and clearing took place as roads were built and mineral resources were mined (Burgess and Niple 1967).

Presently, most of the Toledo NE land area is urbanized or farmed, with little of the natural vegetation remaining. However, some of the forest remain as scattered woodlots, as do a few of the Lake Erie marshes.

## RESOURCES

### A. Wetlands

No wetland acreage figure is available for the Toledo NE area at the present time.

Many of the wetlands of Toledo NE were drained as the area was settled and urbanized. The wetlands which remain are primarily seasonally flooded woodlots and marshes, and intermittently exposed/permanent open water ponds and harbors. Tree species present in the woodlots include red maple (Acer rubrum), elm (Ulmus sp.), willow (Salix sp.) and some oak (Quercus sp.). Emergents present in the marshes include cattail (Typha latifolia), sedge (Carex spp.) and bulrush (Scirpus sp.). A list of plant species for wetland types can be found in Appendix C.

Increased industrialization and urbanization pose the greatest potential threat to the remaining Lake Erie marshes. Some residents recognize the marshes as being valuable for muskrat production and waterfowl hunting.

B. Wildlife and Fish

The mainland portion of Toledo NE lies within the Lake Erie marshes. These marshes provide some of the most important waterfowl habitat in the Great Lakes region, particularly during spring and fall migrations. The open waters of Lake Erie, especially around the islands of this map area are also important to migrating waterfowl. Species of waterfowl which frequent the marshes and island areas include the mallard (Anas platyrhynchos), black duck (A. rubripes), blue-winged teal (A. discors), scaup (Aythya spp.), American wigeon (Anas americana), common goldeneye (Bucephala clangula), bufflehead (B. albeola), canvasback (Aythya valisineria), pintail (Anas acuta), merganser (Mergus spp.) and Canada goose (Branta canadensis) (Great Lakes Basin Commission 1975d, Rounds 1955).

Furbearers are common in the Lake Erie marshes. The most notable furbearer in the area is the muskrat (Ondatra zibethica). Ohio has the second highest harvest of muskrats in the United States, many of which come from the northwestern part of the state. However, increased urbanization has resulted in the direct destruction of Lake Erie marshes and water quality degradation in those which remain. Any further destruction or degradation of these marshes would threaten muskrat, waterfowl and other wildlife populations and thus have a negative impact on the surrounding economy (Great Lakes Basin Commission 1975d).

Sport fishing is common in the area, particularly around the Bass Islands in Lake Erie. Yellow perch (Perca flavescens) account for over 90% of the catch, although white bass (Morone chrysops), walleye (Stizostedion vitreum vitreum), channel catfish (Ictalurus punctatus), and smallmouth bass (Micropterus dolomieu) are frequently caught as well. Commercial fishing in Lake Erie is limited, primarily because the available commercial species are not high demand (Great Lakes Basin Commission 1975b).

D. Agriculture

Agriculture is an important land use on Kelleys island and on mainland portions of the map area. The most important agricultural commodities of the area are orchards and vineyards (U.S. Geological Survey 1969a, 1969b).

E. Minerals

One active mining operation exists in the Toledo NE map area, where limestone and dolomite are extracted (Burgess and Niple 1967). The potential for further mining of these resources exists on both the mainland and island portions of the map area (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.
- Burgess and Niple, Limited. 1967. The Northwest Ohio Water Development Plan. Ohio Department of Natural Resources, Columbus, Ohio 299 p.
- Collins, C.W. 1975. Atlas of Ohio. Amer. Printing and Publishing, Inc., Madison, Wisc. 310 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. Minerals: Great Lakes Basin Comm. Great Lakes Basin Framework Study, App. 5. Ann Arbor, Mich. 136 p.
- 1975b. Fish: Great Lakes Basin Comm. Great Lakes Basin Framework Study, App. 8. Ann Arbor, Mich. 290 p.
- 1975c. Flood Plains: Great Lakes Basin Comm. Great Lakes Basin Framework Study, App. 14. Ann Arbor, Mich. 327 p.
- 1975d. 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.
- Redmond, C.E., T.J.F. Hole, C.H. Innis, and M. Wachtman. 1971. Soil Survey of Erie County, Ohio. USDA Soil Conservation Service, Washington, D.C. 166 p.
- Rounds, B.W. 1955. Wetlands Inventory of Ohio. U.S. Fish and Wildlife Service, Office of River Basin Studies, Minneapolis, Minn. 23 p.
- U.S. Geological Survey. 1969a. 1:24,000 scale Topographic map, Gypsum, Ohio quadrangle. USDI Geol. Surv., Washington, D.C. 1 map.
- 1969a. 1:24,000 scale Topographic map, Put-in-Bay, Ohio quadrangle. USDI Geol. Surv., Washington, D.C. 1 map.

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:

Snell Environmental Group. 1977. Critical Wetland Areas. Ohio Department of Natural Resources. Columbus. 83 pp.

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 three: Lake Erie. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-81/02-v3. 505 p.

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.

Appendix B

SPECIAL MAPPING PROBLEMS

Problem 1: It was difficult to make a distinction between seasonally flooded and upland forested woodlots because of extensive agricultural drainage in the area.

Resolution: USGS topographic quad sheets were used for collateral data.

Problem 2: Some woodlands may be temporarily flooded by water, but not mapped as wetland.

Resolution: Some field checking was done to determine plant species. The difference in signature between upland and wetland areas was noted for some areas.

Problem 3: The quality of the photography used was generally poor for wetland inventory purposes.

Resolution: Inventory conducted from this photography due to availability, scale and costs.

Problem 4: 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>
PFOW	Inundated woodland	<u>Acer rubrum</u> <u>Platanus occidentalis</u> <u>Populus deltoides</u>	Intermittently flooded Temporary
PF01Y	Swamp	<u>Acer rubrum</u> <u>Ulmus spp.</u> <u>Quercus spp.</u>	Saturated Seasonal Semi-permanent
PF01/SS1Y	Swamp	<u>Acer rubrum</u> <u>Salix spp.</u> <u>Ulmus spp.</u> <u>Spiraea latifolia</u>	Saturated Seasonal Semi-permanent
PFO/EMY	Swamp	<u>Acer rubrum</u> <u>Salix spp.</u> <u>Ulmus sp.</u> <u>Carex spp.</u>	Saturated Seasonal Semi-permanent
PSS1Y	Swamp	<u>Salix spp.</u> <u>Acer rubrum</u> <u>Ulmus spp.</u> <u>Spiraea latifolia</u>	Saturated Seasonal Semi-permanent
PSS1/EMW	Swale	<u>Populus tremuloides</u> <u>Ulmus spp.</u> Misc. grasses/sedges	Intermittently flooded Temporary
PSS1/EMY	Swamp	<u>Salix spp.</u> <u>Acer rubrum</u> <u>Ulmus spp.</u> <u>Carex spp.</u> <u>Typha latifolia</u>	Saturated Seasonal Semi-permanent
PEMW	Swale	Misc. grasses and sedges	Intermittently flooded Temporary
PEMY	Marsh	<u>Typha latifolia</u> <u>Carex spp.</u> <u>Scirpus sp.</u>	Saturated Seasonal Semi-permanent
PEMZ	Marsh	<u>Typha latifolia</u> <u>Scirpus sp.</u> <u>Polygonum spp.</u> <u>Echinochloa sp.</u>	Intermittently exposed Permanent

<u>MAP SYMBOLS</u>	<u>LOCAL NAME</u>	<u>DOMINANT VEGETATION</u>	<u>WATER REGIME</u>
PEM/OWKZ	Controlled lagoon	<u>Typha latifolia</u> <u>Scirpus sp.</u> <u>Polygonum spp.</u> <u>Echinochloa sp.</u> Open water	Artificial control Intermittently exposed Permanent
POWZ	Pond	Open water	Intermittently exposed Permanent
L10WZ	Lake	Limnetic open water	Intermittently exposed Permanent
L10WH	Lake	Limnetic open water	Permanent
L20WYx	Shallow excavated lake	Littoral open water	Semi-permanent (excavated)
L20WZ	Lake	Littoral open water	Intermittently exposed Permanent
L2FLY	Flat	Lacking vegetation	Seasonal Semi-permanent
L2BBW	Beach/Bar	Sand	Intermittently flooded Temporary
L2RSWr	Rocky breakwater	Rubble	Intermittently flooded Temporary (artificial)

\*Plant species listed here were found in adjacent 1:100,000 map area and therefore may not be representative of species present in the Toledo NE map area.

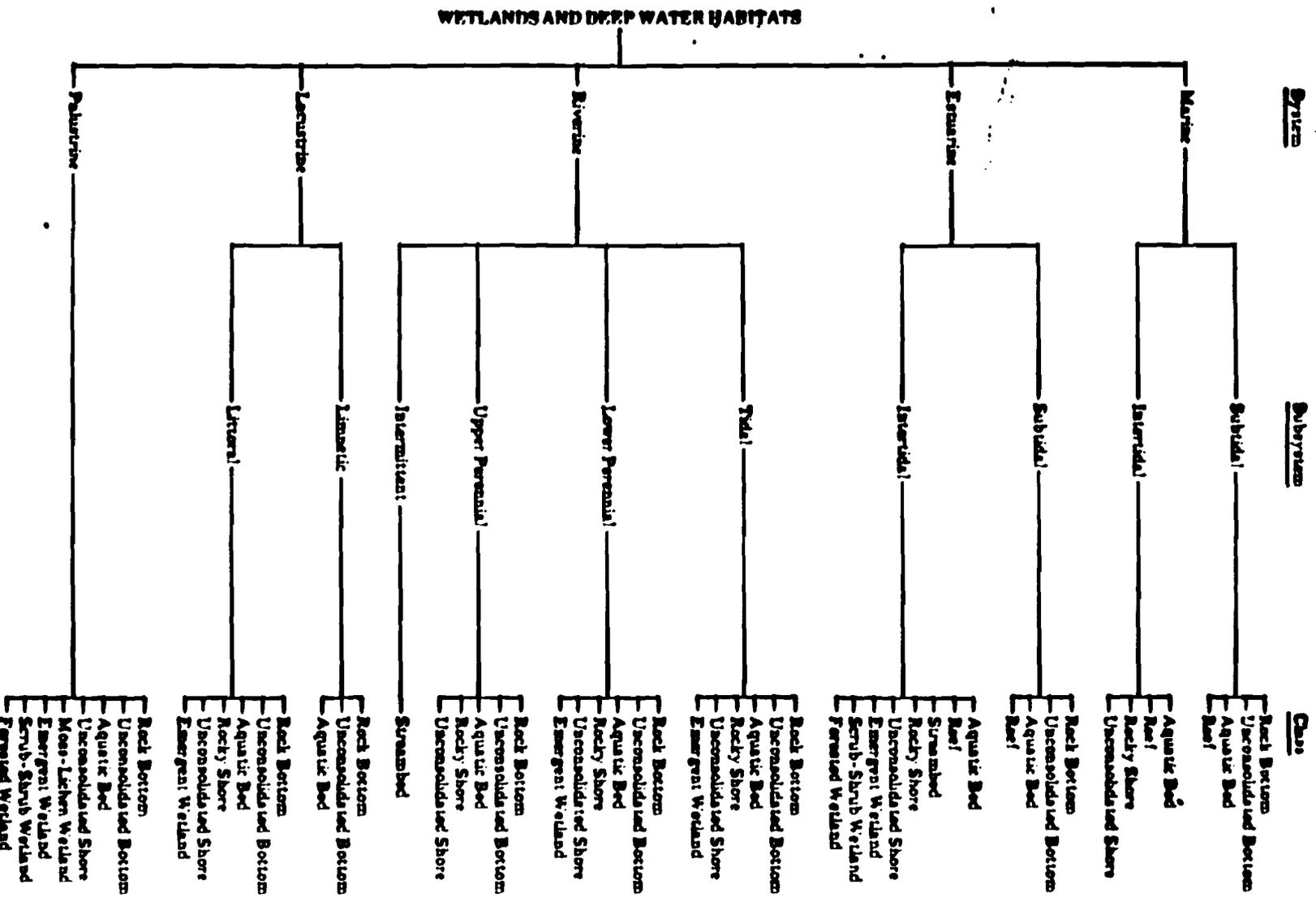


Fig. 1. Classification hierarchy of wetlands and deepwater habitats showing systems, subsystems, and classes. The Pulsatile System does not include deepwater habitats.

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/Gr
- 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

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
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.