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# User Notes for National Wetlands Inventory Maps for Vermont*

U.S. Fish and Wildlife Service
Region 5
Habitat Resources
Newton Corner, MA 02158

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*This report covers the following 1:100,000 mapping units: Lakes Champlain NE, NW, SE, SW; Glens Falls NE, NW, SE, SW; Lewiston NW, SW.

## Introduction

The U.S. Fish and Wildlife Service, Office of Habitat Resources, is conducting an inventory of the wetlands of the United States using conventional aerial photointerpretation techniques. All wetlands are classified according to the Service's new system - Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979). The National Wetlands Inventory (NWI) is establisning a wetland data base, in both map and computer forms for the entire country. The present emphasis is on map production and in the future, wetland data will be digitized to create an automated wetand data base, as funding becomes available. The NWI information will serve to identify the current status of U.S. wetlands and can be used as a reference point from which future changes in wetlands can be evaluated. Final wetland maps for Vermont can be ordered from Steven Syz, Vermont Department of Water Resources, Montpelier, VT 05602 (802-828-2761). Other information, including a topical brief about the NWI program, can be obtained by contacting the Regional Wetland Coordinator, U.S. Fish and Wildlife Service, One Gateway Center, Newton Corner, MA 02158.

## Subject Area

Vermont falls within parts of the following 1:100,000 maps: Lake Champlain NE, NW, SE, SW; Glens Falls NE, NW, SE, SW; Lewiston NW, SW. This area is part of the Laurentian Mixed Forest Province (Bailey 1978).

## Map Preparation

Two series of wetland maps were produced: (1) large-scale (1:24,000) series and (2) small-scale (1:100,000) series. The National Wetlands Inventory employs conventional aerial photointerpretation techniques, i.e. high-altitude photography, to map wetlands and deepwater habitats. Wetlands were identified on aerial photographs based on vegetation, visible hydrology, and geography in accordance with the Fish and Wildlife Service's wetland definition and classification system (Cowardin et al., 1979). There is a margin of error inherent in the use of aerial photographs. Thus, a detailed on-the-ground survey may result in revision of the wetland boundaries. Maps should therefore be used to locate the presence of wetlands and not to identify precise boundaries between wetlands and uplands.

Outlined below are relevant data about the wetlands inventory for Vermont.

### Contractor for Photointerpretation

Martel Laboratories
Clearwater, Florida

### Aerial Photography Used

1:80,000 color infrared photography was used for this inventory. Photography was especially acquired for this work by the U.S. Army Corps of Engineers, New York District. Nearly all of these photographs was acquired in October 1977. The specific photography used for a given area is listed on each large-scale NWI map.

## Field Checking

Approximately six weeks of field work were performed from September 1978 to October 1979.

## Minimum Mapping Unit

The minimum mapping unit is generally one to three acres, although conspicuous wetlands less than one acre may be mapped.

## Collateral Data Used

U.S. Geological Survey Topographic Maps
U.S.D.A. Soil Conservation Service Soil Surveys
U.S. Department of Commerce Coast and Geodetic Survey Maps

## Reviewers of Draft Maps

Vermont Department of Fish and Game
Vermont Department of Water Resources
U.S.D.A. Soil Conservation Service
U.S. Army Corps of Engineers (New York and New England Districts)
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

## Financial Support

Partial support for photointerpretation was provided by the U.S. Army Corps of Engineers (New York District). Through this funding, water regime information was added to wetland maps.

## Photointerpretation Problems

In photointerpreting Vermont's wetlands, a few problems arose. These problems and their solutions are listed below:

1. Delineation of the lacustrine littoral zone along Lake Champlain. It was not possible to accurately photointerpret the shallow water boundary along the shore of Lake Champlain. We relied on water depth information from Department of Commerce Coast and Geodetic Survey maps. The six foot contour served as the boundary between the shallow water (littoral) and deep water (limnetic) areas.

2. Delineation of temporarily flooded or saturated deciduous forested wetlands. To help pinpoint the photo signature of these wetlands, we conducted numerous field checks of representative areas as well as consulted available SCS soil surveys for the presence of hydric soils.

3. Delineation of evergreen forested wetlands. This is a particularly difficult task with any photography due to the presence of evergreen leaves. In some cases, a specific signature was photo-identifiable, especially where the evergreen cover was not heavy. However, where a dense crown of evergreens existed, photointerpretation was difficult. This was a common problem in the Northeast Kingdom area. We conducted numerous field checks and consulted collateral data sources, like USGS topographic maps and SCS soil surveys when available to help resolve this problem.

## Wetland Communities

The Fish and Wildlife Service is preparing a list of wetland plants (i.e. hydrophytes) to help identify wetlands. A tentative regional list is now available for distribution. In the future, the Service plans to develop a list of the Nation's wetland plant communities. At this time, however, such information is not available.

Table 1 represents a list of major wetland plant communities observed during inventory work in Vermont. Map symbols are also given; they reflect dominant vegetative life-form and water regime (i.e. the degree of flooding and/or soil saturation).

## Hydric Soils

The presence of undrained hydric soil is one of the three major criteria used to define wetlands (Cowardin et al., 1979). The U.S.D.A. Soil Conservation Service is preparing a list of hydric soils to accompany the Fish and Wildlife Service's wetland classification system. Table 2 is a draft list of hydric soils for Vermont. For specific information regarding hydric soils in Vermont, contact the State Soil Scientist, U.S.D.A. Soil Conservation Service, Burlington Square Suite 205, Burlington, VT 05401.

Table 1 Examples of major Vermont wetland plant communities. Note: This is not a comprehensive list, but is based on actual field observations. Plant names generally follow Gray's Manual of Botany (1970).

| Wetland Type Mapping Symbol | Dominance Types | Plant Common Name | Water Regime |
|---|---|---|---|
| PEM2 | Sparganium spp. | Burreed | Semi-Permanently Flooded |
| | Typha spp. | Cattails | |
| | Zizania aquatica | Wild Rice | |
| | Scirpus acutus | Hardstem Bulrush | |
| PEM1C or PEM1E | Scirpus spp. | Bulrushes | Seasonally Flooded |
| | Typha spp. | Cattails | |
| | Lythrum salicaria | Purple Loosestrife | |
| | Carex spp. | Sedges | |
| | Leersia orzoides | Rice Cutgrass | |
| | Spartina pectinata | Sloughgrass | |
| | Calamagrostis canadensis | Bluejoint | |
| | Cladium mariscoides | Twig Rush | |
| | Bidens spp. | Beggar's ticks | |
| PEM1A | Phalaris arundinacea | Canary Grass | Temporarily Flooded |
| PSS1F | Cephalanthus occidentalis | Buttonbush | Semi-Permanently Flooded |
| PSS1C or PSS1E | Alnus spp. | Alders | Seasonally Flooded |
| | Acer rubrum (saplings) | Red Maple | |
| | Salix spp. | Willows | |
| | Myrica gale | Sweet Gale | |
| | Cornus amomum | Silky Dogwood | |
| PSS1A | Spirea tomentosa | Steeplebush | Temporarily Flooded |
| | Spirea latifolia | Meadowsweet | |
| | Alnus spp. | Alders | |
| | Cornus stolonifera | Red Osier | |
| PSS3B | Chamaedaphne calyculata | Leatherleaf | Saturated |
| PFO1C or PFO1E | Acer rubrum | Red Maple | Seasonally Flooded |
| | Acer X freemanii | Hybrid Red Maple | |
| | Fraxinus pensylvanica | Green Ash | |
| PFO1A | Acer rubrum | Red Maple | Temporarily Flooded |
| | Ulmus americana | American Elm | |
| | Acer saccharinum | Silver Maple | |
| PFO2B | Larix laricina | Larch | Saturated |

Table 1 (CONTINUED)

| Wetland Type Mapping Symbol | Dominance Types | Plant Common Name | Water Regime |
|---|---|---|---|
| PFO4C or PFO4B | *Abies balsamea* | Balsam Fir | Seasonally Flooded or Saturated |
| | *Picea mariana* | Black Spruce | |
| | *Thuja occidentalis* | Northern White Cedar | |
| | *Tsuga canadensis* | Hemlock | |
| PFO5Zb | Dead Trees (beaver flowage) | | Permanently Flooded |
| PABH | *Nuphar variegatum* | Pond Lily | Permanently Flooded |
| | *Nymphaea tuberosa* | Water Lily | |
| | *Potamogeton* spp. | Pondweeds | |
| | *Myriophyllum* spp. | Parrotfeather | |
| | *Ceratophyllum* spp. | Coontail | |
| | *Anacharis canadensis* | Waterweed | |

## Literature Cited


Bailey, L.G. 1978. Ecoregions of the United States. Forest Service. U.S. Dept. of Agriculture. 77 pp.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Fish and Wildlife Service, Office of Biological Services, U.S. Dept. of the Interior. FWS/OBS 79/31. 103 pp.

Fernald, M.L. 1970. Gray's Manual of Botany. D VanNostrand Company, New York. 1632. pp.