

Field Summary Report
for
Traverse City NE and SW, Michigan

I. Introduction

This mapping project is located in the lower peninsula of Michigan in the Northern Hardwoods Forest Section (2113) of the Laurentian Mixed Forest Province (211) (Bailey, 1978). The landforms in this area are largely the result of Pleistocene continental glaciation. The Traverse City NE work area is mostly sandy glacial outwash plain with large sandy ridges that are the remains of end moraines cut by outwash channels (Albert et al., 1986). Soils are typically entisols and spodosols developed on well drained or excessively well drained sands and sandy loams in the higher areas and poorly drained or very poorly drained outwash sands and clays in some of the lower areas. In the Traverse City SE work area a combination of end moraine, ground moraine and outwash plains produce a hilly topography with moderate relief. The soils are typically well drained entisols and spodosols and very poorly drained histosols. Both work areas have a humid temperate climate. At Cadillac, Wexford County, the average annual precipitation is 30.8", of which 56 percent falls in April through September (Soil Survey, Lake and Wexford Counties). The average snowfall is 71.2", and the average annual temperature is 42.5° F (Soil Survey, Lake and Wexford Counties).

A. 1:100,000 Maps

Traverse City NE (TCNE)
Traverse City SW (TCSW)

B. List of 7.5' quads with check sites

1. Traverse City NE

Island Lake 1, 2, 5
Mack Lake 3, 4a, 4b, 4c
Mio 6
Comins 7
Lake Margrethe 8
Grayling 9, 10a, 10b, 10c
Lake Arrowhead 11
Otsego Lake 12
Lovells 13
Wakely Lake 14a, 14b, 15
Luzerne NW 16a, 16b
Eldorado 17a, 17b, 17c 18a, 18b
Roscommon 19a, 19b
Pere Cheney 20
Fletcher 21
Black Creek 22a, 22b
Cote Dame Marie 23

2. Traverse City SW

Manton 1a, 1b, 2, 3
Mesick (15' Quad) 4, 5
Harlan 6
Copemish 7, 8

Wellston 9a, 9b
 Peacock 10a, 10b, 11a, 11b, 12
 Cadillac South 13
 Luther (15' Quad) 14, 15, 16, 17, 18
 Stewart Lake 19, 20, 21, 22
 Cadillac South (15' Quad) 23, 24
 Dighton 25
 Marion 26, 27
 Temple 28a, 28b
 Lake City 29, 30

C. Personnel

John Anderson (ARWC, Region 3, NWI, USFWS)
 David Foulis (Wetland Mapping Unit - Resource Mapping)
 George Springston (Wetland Mapping Unit - Resource Mapping)
 Richard Bachand (Wetland Mapping Unit - Resource Mapping)
 Brian Mastenbrook (Michigan Dept. Natural Resources, 08/09/89)

D. Field Trip Date: 8/5/89 - 8/11/89

E. Photography

1a. Traverse City NE

04/20/81	56% coverage
11/03/81	28% coverage
04/22/83	16% coverage

b. Traverse City SW

04/20/81	35% coverage
05/07/81	25% coverage
11/03/81	12.5% coverage
11/14/81	12.5% coverage
11/15/81	14.5% coverage

2. Scale: 1:58,000

3. Type: C.I.R. (Color Infrared)

F. Collateral Data

1. USGS 7.5' and 15' quads

2. USDA SCS Soil surveys for the following counties:
 Antrim, Clare, Kalkaska, Lake & Wexford, Missaukee,
 Oxceola.

3. Preliminary SCS soils maps of Crawford County.

4. Bailey, R.G., 1978, Description of the ecoregions of the United States: USDA Forest Service, Ogden, Utah, 77p.
5. Albert, D.A., Denton, S.R., and Barnes, B.V., 1986, Regional landscape ecosystems of Michigan: School of Natural Resources, University of Michigan, 32p.

II. Biological Characteristics of Wetland Habitats

- A. Marine: not present
- B. Estuarine: not present
- C. Lacustrine: Both natural and man-made lakes occur in both work areas . These will be classified as L1UBH (Lacustrine, limnetic, unconsolidated bottom, permanently flooded). The diked or impounded modifier (h) will be used where appropriate. Some lakes were observed to have communities of Nuphar luteum (Nuphar advena) in the shallow water zone. This typically has a smooth scarlet signature on the spring photography. When observed, this will be mapped as L2EM2H (Lacustrine, littoral, emergent, nonpersistent, permanently flooded). Areas of aquatic bed vegetation will be classed as L2ABH (Lacustrine, littoral, aquatic bed, permanently flooded). An example is site 4b, TCNE on the margin of Mack Lake. A narrow zone near the shore was dominated by Nymphaea odorata and Polygonum amphibium. The site was classified as PEM2H in the field, but since there is no signature visible on the photo it will not be delineated.

Major Rivers in the Traverse City NE area are the Au Sable River and its branches and the Manistee River. Major Rivers in the Traverse City SW area are the Manistee River, the Pine River, and the Clam River.

- D. Palustrine: Many ponds and small water bodies less than 20 acres in size are visible. Natural ponds will be classified as PUBG (Palustrine, unconsolidated bottom, intermittently exposed). Farm ponds will be classified as PUBG with either the "h" modifier (diked or impounded) when they appear to be produced by damming a stream, or the "x" modifier (excavated) when they are the result of an excavation outside of a stream valley.

The "K" water regime (artificially flooded) and the "h" or "x" modifier will be used for sewage treatment ponds that do not have aerator or sprinkler devices visible on the photography. Those that have the above devices, or that exhibit evidence of chemical treatment (copper green signatures, for example) will not be mapped as wetland.

Occasionally, ponds were found to have mats of duckweed or green algae growing on the surface or suspended in the water column. When these mats are dominant over the open water zones, they exhibit the typical aquatic bed signature (a solid pink color with a slight sheen). These will be classified as PABG (Palustrine, aquatic bed, intermittently exposed).

Occasional areas of emergent, non-persistent vegetation seen in ponds were classed as PEM2G (Palustrine, emergent, non-persistent, intermittently exposed) based on field observations. However, no sign of this vegetation is visible on the photos (checksite 24, TCSW).

Forested wetlands were very common in both work areas, occurring in river floodplains and large wetland complexes.

The forested wetlands underlain by organic soils are typically dominated by Thuja occidentalis, Picea mariana, P. glauca, Larix laricina, Acer rubrum, Ulmus rubra (sites 5 and 13, TCNE; site 13, TCSW). The water regime at these sites is uniformly "B". When areas of Larix laricina can be distinguished they will be classified as PFO2B (Palustrine, forested, needle-leaved deciduous, saturated). On the 11/03/81 photography the larch needles have turned color and have an obvious strong white signature. On the 11/14/81 and 11/15/81 photography the larch signature is much weaker, probably due to the larch needles having mostly dropped off. On these dates of photography many areas of PFO2B will inadvertently be mapped as PFO1C (Palustrine, forested, broad-leaved deciduous, seasonally flooded). On the April and May photography the larch has a gray to grayish purple signature which looks quite similar to the FO1 crowns. Since FO4/6 is unfortunately not a permissible classification, areas of possible FO4/2 or FO4/2/1 mix will be labeled as FO4/1.

Floodplain forests were most common in TCSW. Site 28a, on the western bank of the Manistee River, was dominated by Acer saccharinum and Fraxinus pennsylvanica and showed evidence of frequent flooding. The dark forested signature is typical of many of the floodplain forests in this area. This and similar sites will be classed as PFO1C (Palustrine, forested, broad-leaved deciduous, seasonally flooded). Site 28b is dominated by Fraxinus pennsylvanica and Acer saccharum and shows little evidence of flooding. This site has a much lighter signature than site 28a and occupies a ridge between old PFO1C meander scars.

Much of the forest cover in these work areas consists of plantations and natural stands of Pinus banksiana and Pinus resinosa. For the most part, these areas are clearly upland. However, two cases arose where this generalization was called into question. On the Mack Lake topo (TCNE) a set of streaks of Pinus banksiana sweep across the photo, sometimes in valleys and sometimes crossing hill slopes and even summits. Although the origin of these bands of conifers is unclear, when they are viewed under the stereoscope they are as a rule clearly seen to be upland. The second case was at checksite 21, TCSW where Pinus banksiana occurred in the overstory with Chamaedaphne calyculata, Vaccinium angustifolium, Carex sp. and British Soldiers Moss in the understory. The soil survey showed this area as Croswell sand; a sandy, mixed, frigid, Entic Haplorthod. A soil pit confirmed that the soil was indeed an upland spodosol. Despite the presence of Chamaedaphne calyculata (which is an obligate wetland plant on the Region 3 Plant List), this area is clearly an upland. The SCS soil scientist at Grayling, Marty Kroell, told us that he has seen similar upland plant communities in the Grayling area (phone conversation, 08/14/89).

Bogs were common in both work areas. Most were found to be dominated by Chamaedaphne calyculata and will be classified as PSS3B (Palustrine, scrub-shrub, broad-leaved evergreen, saturated). By contrast, site 22a, TCNE had a significant component of emergent vegetation (Carex sp.) and was classified as PEM/SS3B (Palustrine, emergent/scrub-shrub, broad-leaved evergreen, saturated). The signature associated with this site is a brownish orange color in contrast to the rusty orange color of pure leatherleaf bogs. During the field trip several bogs were encountered which had a very dark charcoal-gray signature on the photos and dominated by a mix of broad-leaved deciduous and broad-leaved evergreen scrub-shrub vegetation. these will be classed as PSS1/3B. An example is site #8, TCSW, which was dominated by Vaccinium corymbosum, Nemopanthus mucronata and Chamaedaphne calyculata. Larix laricina was a common constituent of bogs in both work areas, and where appropriate

stands will be mapped as PF02B (Palustrine, forested, needle-leaved deciduous, saturated).

Scrub-shrub wetlands occur throughout both work areas as part of river floodplains, as large wetland complexes and in isolated depressions. Most are dominated by Alnus rugosa or Salix sp. and will be classified as PSSIC (Palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded). Although the colors vary among the different dates of photography, the signatures are clearly distinguishable as wetland and the boundaries are sharp. The "A" water regime (temporarily flooded) will be used sparingly when weak signatures in the proper topographic position are encountered. Despite its occurrence in the Grand Rapids SW and Midland SE work areas to the south, no Cephalanthus occidentalis was observed. Although it is a fairly common shrub on the shores of ponds and lakes, river backwaters and semipermanently flooded basins in those work areas, the TCNE & SW work areas seem to be north of its natural range.

Emergent wetlands were common throughout both work areas. Although emergent wetlands in agricultural fields were less common than in the Grand Rapids SW and Midland SE work areas, several were visited in each 1:100,000 area. Several sites had pale-colored photo signatures with diffuse edges. These lacked hydric soil indicators or hydrophytic vegetation and were therefore classified as upland during field checking. Other sites with distinct boundaries and dark moist-soil signatures were located in well-defined topographic basins underlain by hydric mineral soils. Despite the absence of hydrophytic vegetation (due to plowing), these sites will be classified as wetlands based on soils and hydrology. They will be classified as PEMA (Palustrine, emergent, temporarily flooded) with the ditched modifier ("d") used when evidence of draining is discernable on the photo (checksites 6 and 7, TCNE; checksite 7 TCSW). Wet spots supporting hydrophytic vegetation which are avoided by farmers during plowing will be classified as PEMC (Palustrine, emergent, seasonally flooded). Besides these small basins in agricultural fields there are also more extensive emergent wetlands such as site 18, TCSW, which is dominated by Phalaris arundinacea and was classified as PEMC (Palustrine, emergent seasonally flooded). Site 5 TCSW, which is dominated by Typha latifolia, was classified as PEMF (Palustrine, emergent, semipermanently flooded). Similar marshes dominated by T. latifolia and T. angustifolia are common throughout both work areas.

Photointerpretation Guidelines
for Traverse City NE, SW

- 1) Zones of shallow water visible on the photos will not be delineated as L2 since actual depth information is not available.
- 2) Impounded and excavated ponds less than 20 acres in area will be classified as PUBGh or x.
- 3) Nuphar luteum (Nuphar advena) will be classified as EM2.
- 4) The K water regime will be used for sewage treatment ponds without aerators.
- 5) The d modifier will be used when a ditch is within or adjacent to the wetland.
- 6) Areas of FO4 or FO2 will receive the B water regime while areas of FO1 will normally receive the C water regime, even if they are part of an FO4B or FO2B complex.
- 7) Polygons should not be broken for narrow roads (less than pen width).
- 8) The mixing of classes and subclasses will be limited whenever possible.
- 9) The subclass for persistent emergents will not be used. An emergent wetland will be assumed to be persistent unless stated otherwise.