Field Report
for Midland NE and NW, Michigan

I. Introduction

This mapping project is located in the lower peninsula of Michigan, and is included within 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.

A. 1:100,000 Maps:

Midland NE
Midland NW

B. List of 7.5' quads with check sites:

1. Midland NE

Auburn 1a, 1b, 2a, 2b
Midland North 3
Willard 4a, 4b, 5, 6, 7a, 7b
Bentley 8
Wooden Shoe Village 9, 10, 11
Edenville 12, 13a, 13b, 14a, 14b
Gladwin 15, 16
Coleman NE 17a, 17b, 18a, 18b, 19, 20
Browns Corners 21
Hatton 22
Woods 23, 24
Weidman 44a, 44b
Pleasant Valley 45a, 45b
Floyd 46a, 46b

2. Midland NW

Lake 25a, 25b
Lake NE 26a, 26b, 27a, 27b
Sears 28
Merrill Lake 29
Chippewa Lake South 30
Slaybaugh Corner 31a, 31b
Reed City (15' Quad) 32
Reed City SW (orthophoto) 33
Reed City NW (orthophoto) 34
Baldwin 35, 36a, 36b
Townsend Lake 37
Marlborough 38
Woodville 39
Dayton Center 40
Big Prairie 41
Big Bend 42
Altona 43

C. Personnel:

John Anderson (ARWC, Region 3, NWI, USFWS, 09/25/89-09/28/89)
Janice Stone (Wetland Mapping Unit, Resource Mapping)
David Byron Foulis (Wetland Mapping Unit, Resource Mapping)
David Campbell (East Lansing Field Office, USFWS, 09/25/89)

D. Field Trip Dates: 09/23/89 - 09/28/89

E. Photography:

1a. Midland NE
04/20/81 28% coverage
11/03/81 24% coverage
04/22/82 4% coverage
04/22/83 18% coverage
04/25/83 26% coverage

b. Midland NW
05/02/81 73% coverage
05/07/81 26.5% coverage

2. Scale: 1:58,000

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

F. Collateral Data:

1. USGS 7.5', 15', Orthophoto quads
2. USDA SCS Soil Surveys for the following counties: Gladwin, Bay, Clare, Isabella, Midland, Osceola, Lake and Wexford
3. Bailey, R.G., 1978, Description of the ecoregions of the United States: USDA Forest Service, Ogden, Utah, 77p.
4. Albert, D.A., Denton, S.R., and Barnes, B.V., 1968, Regional landscape ecosystems of Michigan, School of Natural Resources, University of Michigan, 32p.

II. Biological Characteristics of Wetland Habitats

Midland NE

Site 1. A) PFO1C. *Acer rubrum* was dominant. *Ulmus americana* was common.

B) PSS1C. *Salix spp*. was dominant.

Site 2. A) PEMC. *Typha angustifolia* was dominant. *Phalaris arundinacea* was common.

B) PEMF. *Lycopus* sp. was dominant. *Juncus canadensis* was common.

Site 3. PEMC. *Phalaris arundinacea* was dominant. Corn stubble was common. *Xanthium strumarium* was less common.

Site 4. A) PEMF. Typha angustifolia was dominant.

B) PSSIF. Cephalanthus occidentalis was dominant.

Site 5. PFO1C. Salix nigra, Fraxinus pennsylvanica, and Acer saccharinum shared dominance. Ilex verticillata and Cornus stolonifera were common.

Site 6. PEMAd. Ambrosia artemisiifolia and Amaranthus spinosus shared dominance.

Site 7. A) PFO1A. Fraxinus pennsylvanica was dominant. Salix nigra, Ulmus americana, and Elymus riparius were common.

B) PFO1C. Fraxinus pennsylvanica was dominant. Pilea pumila and Iris versicolor were common.

Site 8. PFO4B. Pinus banksiana was dominant. Osmunda regalis, Aronia melanocarpa, and Spiraea alba were common.

Site 9. PSS3/1B. Chamaedaphne calyculata was dominant. Aronia melanocarpa, Pteridium aquilinum and reindeer moss were common.

Site 10. PSS3B. Chamaedaphne calyculata was dominant. Sphagnum sp. was common.

Site 11. PSS3/1B. Chameadaphne calyculata and Aronia melanocarpa shared dominance. Kalmia angustifolia and Pinus resinosa were common.

Site 12. PSS1/EMB. Juncus effusus, Populus tremula, and Sphagnum sp. shared dominance.

Site 13. A) PFO1C. Acer rubrum and Populus tremula shared dominance.

B) PSS1C. Spiraea alba, Alnus rugosa, and Salix sp. shared dominance.

Site 14. A) PSS3B. Chamaedaphne calyculata was dominant. Sphagnum sp. and Scirpus cyperinus were common.

B) PEMC. Scirpus cyperinus was dominant.

Site 15. . Populus grandidentata was dominant. Pteridium aquilinum, Gaultheria procumbens, and Vaccinium vacillans were common.

Site 16. PFO1/4B. Acer rubrum, Fraxinus pennsylvanica, and Thuja occidentalis shared dominance. Abies balsamea and Boehmeria cylindrica were common. Aralia nudicaulis was less common.

Site 17. A) . Trifolium hybridum was dominant. Trifolium arvense and Lotus corniculatus were common.

B) PEMA. Eleocharis sp. was dominant. Ambrosia artemisiifolia was common. Echinochloa crus-galli was less common.

Site 18. A) PSS3/FO2B. Chamaedaphne calyculata and Larix laricina shared dominance. Andromeda glaucophylla, Kalmia polifolia, Eriophorum virginicum and Carex stricta were common. Vaccinium macrocarpon and Picea mariana were less common.

B) PSS1C. Ilex verticillata was dominant. Alnus rugosa and Nemopanthus mucronata were common. Alisma sp. and Sium suave were found in the moat.

Site 19. PFO4B. Thuja occidentalis was dominant. Onoclea sensibilis was common. Tilia americana, Larix laricina, and Amphicarpa bracteata were less common.

Site 20. PEMC. Phalaris arundinacea was dominant.

Site 21. PFO2B. Larix laricina was dominant. Impatiens capensis, Fragaria virginiana, Osmunda cinnamomea, and Betula papyrifera were common.

Site 22. PFO4B. Thuja occidentalis was dominant. Abies balsamea, Picea glauca, Tsuga canadensis, and Larix laricina were common.

Site 23. PFO4/2B. Thuja occidentalis, Tsuga canadensis, Abies balsamea, and Larix laricina shared dominance. Osmunda regalis was common.

Site 24. A) PFO1B. Populus tremula was dominant. Ulmus americana, Aster novae-angliae, and Eupatoriadelphus maculatus were common. Quercus alba, Prunus serotina, and Clematis virginiana were less common.

B) PF04/1B. Thuja occidentalis was dominant. Larix laricina and Populus tremula were common. Populus deltoides and Maianthemum canadense were less common.

Site 44. A) PEMA. Abutilon theophrasti, Cyperus sp., and Setaria sp. were mixed.

B) PEMC. No vegetation. Plowed.

Site 45. A) PFO1A. Acer rubrum, Fraxinus pennsylvanica, and Tilia americana shared dominance. Podophyllum peltatum, Asarum canadense, and Matteuccia struthiopteris were common. Celtis occidentalis was found on the natural levee.

B) PFO1C. Acer saccharinum was dominant. Iris versicolor and Onoclea sensibilis were common.

Site 46. A) PFO1C. Acer rubrum was dominant. Osmunda regalis was common. Quercus bicolor and Trientalis borealis were less common.

B) PFO1C. Acer rubrum was dominant. Fraxinus americana and Ilex verticillata were common.

Midland NW

Site 25. A) PSS1Bd. Spiraea alba was dominant. Sphagnum sp. was less common.

B) PSS3B. Chamaedaphne calyculata was dominant. Sphagnum rubrum, Aronia melanocarpa, and Triadenum virginicum were common. Andromeda glaucophylla and Euthamia graminifolia were less common.

Site 26. A) PFO4B. Pinus banksiana was dominant. Picea mariana was less common.

B) PSS1/3B. Aronia melanocarpa was dominant. Chamaedaphne calyculata, Sphagnum rubrum, Sphagnum sp. and Carex sp. were common.

Site 27. A) PFO1A. Acer rubrum and Fraxinus pennsylvanica shared dominance. Tilia americana, Matteuccia struthiopteris, and Populus deltoides were common. Carpinus caroliniana and Quercus rubra were less common.

B) PAB4G. Myriophyllum sp. and Potamogeton sp. shared dominance. Nuphar advena and Sparganium sp. were common.

Site 28. PFO4B. Thuja occidentalis was dominant. Sphagnum sp., Aster novae-angliae, Solidago gigantea, Sium suave, and Alnus rugosa were common.

Site 29. PEM/SS1C. Carex stricta, Carex sp., Euthamia graminifolia, Typha latifolia, Eupatoriadelphus maculatus, Phalaris arundinacea, Salix sp., Spiraea alba, and Alnus rugosa were well mixed.

Site 30. L2EM2G. Pontederia cordata was dominant. Nuphar advena was common. Decodon verticillatus was found along the lakeshore.

Site 31. A) PEMF. Typha latifolia was dominant. Phalaris arundinacea was common.

B) PSS1C. Salix sp. was dominant. Typha latifolia was common.

Site 32. PSS1C. Salix sp. was dominant. Phalaris arundinacea and Alnus rugosa were common.

Site 33. PF04/1B. Pinus strobus was dominant.

Site 34. . Populus tremula was dominant. Campanula rotundifolia, Acer rubrum, and Monarda fistulosa were less common.

Site 35. PFO2B. Larix laricina was dominant. Ilex verticillata, Alnus rugosa, Viburnum cassinoides, and Osmunda regalis were common. Cornus canadensis was less common.

Site 36. A) L2EM2G. Scirpus validus was dominant.

B) PEMC. Spartina pectinata was dominant. Juncus canadensis and Lycopus sp. were common.

Site 37. PFO1C. Acer rubrum and Tilia americana shared dominance. Carpinus caroliniana and Onoclea sensibilis were common. Calamagrostis canadensis was less common. Physocarpus opulifolius was found growing on the sub-linear natural levee.

Site 38. PEMBd. Eupatorium perfoliatum, Solidago rugosa, Euthamia graminifolia, Scirpus cyperinus, and Juncus effusus were well mixed.

Site 39. PFO4/1B. Mixed dominance types included Thuja occidentalis, Betula lenta, Tsuga canadensis and Fraxinus pennsylvanica. Osmunda cinnamomea and Adiantum pedatum were common.

Site 40. . Acer rubrum was dominant. Fraxinus pennsylvanica, Tovara virginiana, Pteridium aquilinum, Prunus serotina and Crataegus sp. were common.

Site 41. A) PEMB. Carex sp. was dominant. Juncus canadensis was common.

B) PEM2/1G. Nuphar advena, Scirpus validus, and Myriophyllum sp. shared dominance.

C) PEMG. Scirpus validus was dominant.

Site 42. PAB4G. Potamogeton sp. was dominant. Ceratophyllum sp., Sparganium sp. and Elodea canadensis were common.

Site 43. PFO2/SS3B. Larix laricina was dominant. Eriophorum virginicum, Chamaedaphne calyculata, Vaccinium macrocarpon and Carex stricta were common.

III. Field Observations

(Note: In Region 3 the persistent, emergent subclass is considered to be understood, and is not included in the alpha-numerical classifications).

A. Marine: not present

B. Estuarine: not present

C. Lacustrine: Non-persistent emergent vegetation was encountered in the shallow water zones of several lakes in the Midland NW work area. They had two distinct signatures. The first was a murky, blue-black signature most characterized by a lack of reflections from sunlight. Check site #30 is an example. Check site #36a is an example of the other signature type. It is bright white, and could reflect dry conditions at the time of photography. L2EM2G's cannot be consistently mapped in this work area.

D. Palustrine: Two Palustrine, Aquatic Bed, floating-vascular, intermittently exposed (PAB4G) wetlands were encountered. The first was an oxbow pond along the Muskegon River (check site #27b). The signature appears as open water on the 05/02/81 photograph. The second PAB4G was check site #42. On the 05/02/81 photography it had a scarlet-red signature. We will only be able to map those aquatic beds that have signatures similar to check site #42. The difference in signatures for these two check sites is, in part, related to the fact that #27b was in the most northeastern corner of the work area, while #42 was at the southern border.

One intermittently exposed Palustrine emergent marsh with a mix of non-persistent and persistent vegetation (PEM2/1G) was documented (check site #41b). Again, the 05/02/81 photography was too early for detection of vegetation. As a result, we will assume wetlands of this type can not be identified consistently in these work areas for this date of photography.

Check site #41a was one of two examples of a Palustrine, emergent, saturated marsh (PEMB). The corresponding signature should not present any difficulties. The second PEMB was assigned a "d" special modifier because drains were noted in the field (check site #38). The signature on the 05/07/81 photograph is bright red. This is a result of active cattle grazing and the subsequent removal of dead herbaceous material.

Portions of the Midland NW work area will be difficult to interpret because a similar photo signature represents different classifications. Many kettles in the pitted outwash plain that covers much of this area were flooded on the 05/02/81 photography, and appear as black holes. Check site #31 is a good example of the problem. The Palustrine, emergent, semipermanently flooded marsh (PEMF, check site #31a) has a black, open water signature. Check site #31b was a Palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded wetland (PSS1C). It has the same signature as the PEMF. Refer to Field Convention #3 for further discussion and proposed resolution of this problem.

Some leatherleaf bogs in these work areas were very dry in the field and had atypical signatures and plant communities. Check site #9 was a Palustrine, scrub-shrub, broad-leaved evergreen mixed with broad-leaved deciduous, saturated, bog (PSS3/1B) with a pink-brown signature and a poorly defined upland/wetland break. Xeric plant species (*Pteridium aquilinum*, *Comptonia peregrina*, *Pinus resinosa*, reindeer moss) were scattered throughout the wetland on slightly higher knolls.

Check site #25b was a PSS3B that did not have the standard leatherleaf photo signature (rusty orange, finely textured). Field conditions led to standing water on the bog mat and the resultant dark blue, vaguely textured signature.

In comparison, check site #18a was a classic kettle bog with an outer moat and a rusty-orange signature.

Larix laricina occurred commonly throughout both work areas, but the varied dates of photography will make it difficult to

map larch wetlands consistently.

On the 11/03/81 photography larch is clearly identifiable, showing strong white crowns. Check site #21 is a Palustrine, forested, needle-leaved deciduous, saturated wetland (PFO2B) with this signature type. The 05/02/81 photography is too early for larch leafout this far north, but crown shape and habitat can sometimes be used to separate Larix laricina inhabiting this appropriate habitat, as they have conifer type crown shapes and a bluish-grey signature on the 05/02/81 photos.

Check site #35 shows a reddish crown signature for PFO2B on the later 05/07/81 photography. Check site #23 is a Palustrine needle-leaved evergreen, mixed with needle-leaved deciduous forest, saturated wetland (PFO4/2B). The Larix laricina does not have a distinct signature on this date of photography (04/25/83).

Check site #26 was an atypical Palustrine, forested, needle-leaved evergreen, saturated wetland, (PFO4B), dominated by Pinus banksiana. It was dry at the time of the field check. Pinus banksiana can grow in bog habitats, though it is unusual in stands such as this. The signature is very clear and jack pine wetlands should not present problems as far as mapping is concerned.

Two upland check sites are of special interest. Check site #15 is an upland forest with Pteridium aquilinum in the understory. This fern species is responsible for the pink/orange signature found throughout these work areas. It is distinct enough so that there should be no confusion with wetland signatures.

Check site #40 was an upland Acer rubrum forest. On the 05/07/81 photography, partial leaf out has obscured the understory. Drainage ditches and flat terrain make this site confusing. Forested areas with leaf out will have to be interpreted cautiously.

Regional Conventions Applied to Midland NE, NW

1. Zones of shallow water visible on the photos will not be delineated as L2 when 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. The K water regime will be used for sewage treatment ponds without aerators.

4. The d modifier will be used when a ditch is within or directly adjacent to the wetland.

5. Polygons should not be broken by sublinear roads, or other man made features.

6. The mixing of classes and subclasses will be limited whenever possible.

7. The subclass for persistent emergents will not be used. An emergent wetland will be assumed to be persistent unless stated otherwise.

Field Conventions for Midland NE, NW

1. After discussions with Chuck Wolverton of the Michigan Department of Natural Resources, it was determined that Cephalanthus occidentalis reaches the northern limit of its range in this portion of the Midlands. Since it rarely occurs in Midland NW, or the northwestern portions of Midland NE, very few PSS1F's will be mapped in these areas.

2. The photography for these two work areas was between six and eight years old at the time of field work. A number of problems resulted from having old photography.

   a. Many PFO1C's, PFO4B's, and PFO2B's that appeared on the photography were PF05's (Palustrine, forested, dead) in the field.

   b. Many of the PEMC's on the photography had experienced succession to PSS1C's and mixes, dominated by fast growing Salix spp.

   c. Water table fluctuations were evident in many wetlands, sometimes resulting in different classes, subclasses and water regimes from those apparent on the photography.

   Because these changes can not be incorporated consistently in our interpretation procedures, wetlands will be mapped and classified according to the signatures appearing at the date of photography.

3. The pitted outwash plain of Midland NW referred to in field trip vernacular as the "black hole" region remains a difficult area to map. High water tables, well confined kettle basins, species of willows that have poor signature returns, and wet conditions at time of photography (05/02/81) at these sites all combine to produce hard to interpret, dark signatures.

   Because the vast majority of these wetlands were found to be willow dominated PSS1C's during field work, the photo interpreter will classify these areas as PSS1C's, unless there is evidence to the contrary. Occasionally, small PEMF's were observed (see check site #31a, Midland NW). Unfortunately, it will not be possible to always distinguish these different types on the flooded photos for the above stated reasons; and as a result some PEMF's will be classified as PSS1C.