THE FLORA OF BENZIE COUNTY, MICHIGAN

BY

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INTRODUCTION

PART I - FERNS AND FERN ALLIES

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INTRODUCTION

Benzie County, bordering Lake Michigan in northwestern Lower Peninsula Michigan, is the smallest county in the state. It consists of 202,200 acres comprising 316 square miles. The flat to rolling topography is nearly entirely the result of deposition of the Wisconsin glacial period approximately 10,000 years ago. Terminal and other glacial moraines and outwash plains provide the habitat for a northern hardwoods plant community which with its variations originally covered nearly 75% of the county. The dominant species were Sugar Maple, American Beech, Red Oak, Eastern Hemlock, Yellow Birch, White Ash, and American Basswood. American Elm was once common on the moister sites. It has been virtually eliminated in the County by the Dutch Elm disease in recent years. Since logging of this forest at the turn of the century, Sugar Maple has become very abundant as sprout growth with Eastern Hemlock and Yellow Birch much less common than the early records and observations indicate.\(^1,2\) Rich spring wildflower displays are found on finer textured moraine soils with northern hardwoods, and are good indicators of soil profile development.\(^1\)

On the coarser sands of the outwash plains and on the gravelly sands of former beaches and shorelines of glacial Lake Michigan, covering about 10% of the county, an Oak-Pine forest, similar to the original forest, is found. Red Oak, White Oak, White Pine, and Red Pine are the common dominant species. Large-toothed Aspen
is locally common. Black Oak is very local.

Poorly drained soils are dominated by swamp forests that cover about 14% of the county. These include swamp hardwoods with Red Maple, Black Ash, and formerly American Elm, White Cedar swamps, Tamarack swamps, and locally Black Spruce swamps. Balsam is also locally common. Combinations of nearly all of the above species may be found under varying drainage conditions and as the result of human interference.

Pot hole lakes and ponds in various stages of succession are common. Open bogs dominated by leatherleaf and sphagnum are locally well-developed. Pitcher plants, sundew, and many species of orchids are found in these habitats. Deadstream bog, Little Platte Lake bog, and Lost Lake bog are outstanding localities. Calcareous fen areas are locally fairly common. The Belt Lake area has one of the best developed calcareous bogs.

Nearly all of the many lakes have well developed aquatic plant communities dominated by various species of Potamogeton and Najas. Aquatic plant communities are also locally well developed along the streams and rivers and in ditches. The localities given for each of the aquatic species in this report provide a guide to local habitats for these species.
The collecting of voucher specimens by the authors was begun in 1964. Other specimens collected earlier by Harold Gall were contributed to the collection. In several cases voucher specimens are located at major herbaria, especially at the University of Michigan and Cranbrook Institute of Science. At present, the voucher collection of over 2900 specimens is in the private herbarium of the authors. All voucher numbers in the text refer to this collection.

Each voucher specimen was given a number which is referred to a file card with complete data on the specimen. Collectors other than the authors are in parenthesis, especially Harold Gall of Crystal Downs and Arvid Tesaker of Frankfort, Benzie County. The authors especially wish to express their gratitude to these fellow searchers for the botanical treasures of the county. Without their interest and support, many rare and interesting plants would not have been located. They were always willing to share ideas, information on localities and enjoy the endless search for new species and localities. Their friendship and support has been an inspiration to us.
The authors are very appreciative of the critical review of certain collections by specialists at various universities and institutions. These include; Dr. Robert R. Haynes, University of Alabama (Potamogeton); Dr. A.A. Reznicek, University of Michigan (Carex); Dr. Alfred E. Schuyler, Academy of Natural Sciences of Philadelphia (Scirpus, Eleocharis); Dr. Ronald L. Stuckey, Ohio State University (Juncus); Dr. Stephen N. Stephenson, Michigan State University (Gramineae); Harvey E. Ballard, Jr., University of Michigan (Viola); Dr. Edward Voss, University of Michigan (Cra- taegus, Amelanchier, Rubus, Salix, and other troublesome specimens); Dr. Charles B. Heiser, Jr., Indiana University (Helianthus). Dr. Warren Wagner of the University of Michigan gave many helpful suggestions on the nomenclatural handling of the ferns and fern allies.

SOME SELECTED REFERENCES ON THE 
FLORA AND VEGETATION OF BENZIE COUNTY

1. Overlease, W.R., and Edith D. Overlease, 1976, A Study of 
   Spring Herbaceous Ground Cover as an Indicator of Site Con-
   ditions in Mesic Northern Hardwoods, Benzie County, North-

2. Vegetation as recorded on surveys of 1839. Map 2154, 3/73, 
   Michigan Dept. of Natural Resources in cooperation with Mi-
   chigan State University. Map shows northern one-half of 
   Benzie County.

3. Forest Soils Report, Benzie County, 1982. Northwestern Michi-
   gan Prime Forestlands Identification Project, Michigan Dept. 
   of Natural Resources.

   vegetation map of Benzie County, based on section by sec-
   tion general vegetation composition surveys along access 
   roads throughout the county.

5. Benzie County Map of Glacial Geology, 1957, Michigan Dept. of 
   Conservation.

   Department of Resource Development, Michigan State University.
7. Waterman, W.C., 1922. Forests and Dunes from Point Betsie to Sleeping Bear, Benzie and Leelanau Counties, Michigan, Northwestern University, Evanston, Ill.


LYCOPODIACEAE

1. Lycopodium annotinum L. Stiff Club-moss.
   Cool, moist forests. Common, often locally abundant.
   22 moist hardwoods, Saffron Road.

2. Lycopodium clavatum L. Running-pine
   Moist to dry hardwoods. Common, though generally local.
   85 moist hardwoods, Little Platte Lake; 154 hardwoods,
   Turtle Lake; 1282 open hardwoods, Pigeon Lake.

3. Lycopodium digitatum Dillen. ex. A. Braun. Ground Pine
   Old fields, young successional forests. Local.
   1832 brushy field, south of Graves Road near foot of Main
   Hill (Gall); 1972 old field, under bracken fern; 2054
   old field off Nugent Road about 1-1/4 miles south of
   Grace Road; 2830 slope, North Branch Creek just east of
   Way Road.

   Bog, sandy moist shores. This species appears to be very
   local and fairly rare in the county.
   1409 bog, County Line Road near junction of St. John's
   Road; 2073 Steven's Lake, moist, sandy shore, approxi-
   mately 12 plants associated with Xyris difformis; 2473
   edge, wet sand pond, Thompsonville-Nessen City Road;
   2494 sandy pond edge, Thompsonville-Nessen City Road.

   Moist rich hardwoods, hardwoods. Common.
   369 moist hardwoods, Saffron Road.

   Hardwoods, moist hardwoods. Common.
   54 rich hardwoods, Hooker Road near junction of Gudemoos
   Road.

   Hardwoods. Frequent.
   141 hardwoods south of Pigeon Lake; 1282 hardwood, Pigeon
   Lake; 1875 Haze Road (Gall).
1. **Equisetum arvense** L. Common Horsetail.

Railroad roadbed, roadsides, disturbed ground. Locally abundant.
195 roadside, Indian Hill Road near junction of Saffron Road; 1129 railroad roadbed near Honor; 1139 roadside, North Shore Drive, Crystal Lake; 2291 shaded roadside, Pilgrim; 2893 old MN & E Railroad roadbed, near junction of Fowler Road, east of Route 665; 2288 ditch, North Shore Crystal Lake Drive.

2. **Equisetum fluviatile** L. Swamp Horsetail.

Marshy stream banks. Local.
1907, 1908, 1909, 1910 River Road near Benzonia bridge (first bridge out of Benzonia on Betsie River) (Gall); 2598 Herendeen Lake margin; 2812 margin Betsie River below Benzonia near first bridge.


Roadsides, moist lower slopes. Locally abundant.
186 roadside, Indian Hill Road near junction of Saffron Road; 677 Pioneer Road near Honor; 2412 Homestead Dam, slope; 2851 roadside, Aral.


Dunes, moist dune depressions. Locally abundant.
249 dunes, Aral; 951 dunes, Elberta; 1860 dunes, Point Betsie (Gall).


Stable dunes, pond edges. Local.
915 Jack Pine flats, Aral; 2766 gravel pit, wet area by small ponds, Deadstream Road by Honor.

6. **Equisetum pratense** Ehrh. Meadow Horsetail.

Reported for Benzie County in Ferns of Michigan by Billington, 1952.

7. **Equisetum scirpoides** Michx. Sedge-like Equisetum.

Cedar swamps, hardwood slope. Occasional.
77 cedar swamp, near junction of Dymond and Skinner Roads; 2829 North Branch Creek just east of Way Road, in cedar swamp.

82 rich hardwoods near junction of Hooker and Gudemoos Road; 1165 White Cedar swamp south of Cedar Run; 2747 rich calcareous clay hardwoods, Gudemoos Road; 2893 bog area along old MN & E Railroad near junction with Fowler Road, east of Route 665.


Dunes, ditches. Local.
241 ditch, Indian Hill Road, near junction of Saffron Road; 1762 Jack Pine grove, Aral dunes (Gall).

Open dry fields. Very local, but may be abundant locally. 1345 old, dry field near junction of Welden and Aylsworth Roads; 2471 open dunes; near two-track just north of Platte River Campground, Sleeping Bear Dunes National Lakeshore; also noted as locally abundant along Turtle Lake access road.
1. **Botrychium campestre** ssp. *michiganense* (undescribed as yet). Dunewort.

One record for Benzie County, reported by W. Wagner on a perched dune.

2. **Botrychium dissectum** Spreng. Grape Fern.

Rare.

1312 swamp hardwoods near spring area, 1/2 mile east of junction of Indian Hill and Saffron Road, associated with *Thelypteris hexagonoptera*; 1541 roadside near junction of Pioneer and Goose Roads (Tesaker).


Swamp hardwoods, rich hardwoods, old fields. Fairly frequent, locally common.

358 swamp hardwoods east of junction of Indian Hill and Saffron Roads; 683 rich hardwoods, Joyfield Road; 701, 702 old railroad roadbed, south of Cedar Run; 1234 cedar swamp north of Cedar Run; 1307 hardwoods near Eliza Lake; 1903 sterile field associated with hawkweed, north of Graves Road and east of 7th St. (Gall); 2646 Coon Spring, 1/2 mile east of junction of Indian Hill and Saffron Roads.

4. **Botrychium multifidum** (Gmel.) Rupr. Leather Grape Fern

Hardwoods, moist shrub area. Occasional.

269 hardwoods, W.P. Dunn Road near Indian Hill Orchard; 702 roadside, hardwoods, Rogers Road; 1316 Haze Road, Weldon Township, associated with *Spiraea-Viburnum* (Gall); 1308 Eliza Lake area.

5. **Botrychium oneidense** (Gilb.) House. Grape Fern

Rich hardwoods. Rare.

1315 rich hardwoods near junction of Hooker and Gudemoos Roads.


One collection. Sect. 1 NW Shorter Lake, collector Hagenah. Reported by W. Wagner.

Hardwoods, swamp hardwoods. Common.
49 rich hardwoods, near junction of Hooker and Gudemoos Roads; 357 swamp hardwoods, east of junction of Indian Hill and Saffron Roads.


703 willow-sedge meadow, south of Bendon, rare (Tesaker). Only station.
1. *Osmunda cinnamomea* L. Cinnamon Fern.

Swamp hardwoods, open or semi-open swamps. Common. 91 moist hardwoods, Little Platte Lake.

2. *Osmunda claytoniana* L. Interrupted Fern.

Open to semi-open swampy areas. Occasional. 216 moist hardwoods, Hooker Bridge; 658 Nessen City Road near Little Betsie River.


Wooded to semi-open swamps. Common. 6 edge cedar swamp, Platte Lake.
FORMERLY POLYPODIACEAE, now separated into 8 Families, presented alphabetically, for this report.

1. ASPLENIACEAE
   1. Asplenium platyneuron (L.) B.S.P. Ebony Spleenwort.

   Semi-open to shaded hardwoods. Fairly rare.
   1617 Weldon Township, T25N, R14W, Sec. 7 under shade, associated with some Ostrya and maple. Approximately 100 plants in colony (Tesaker); 2055 same site as 1617; 1618 steep hardwood slope just south of Lost Lake, under Sugar Maple, ten fronds in colony. Also noted at west end of Luedtke Road, west end of Harvest St., west side of Benzie St. (East of Homestead Pond) by A. Tesaker, and a large colony of 100+ plants on a fairly open shaded hardwood slope, first road to right off Carmien Road, south of U.S. Rt. 31.

2. BLECHNACEAE

   723 bog on Route 671 between Nessen City and Thompsonville, associated with Black Spruce and Mountain Holly, locally abundant. Only station, located by H. Gall.

3. DENNSTAEDTIACEAE
   1. Pteridium aquilinum v. latiusculum (Desv.) Underw. Bracken Fern, Brake.

   Oak-pine forests, logged and burned hardwoods, swamp hardwoods, old fields, roadsides. Abundant.
   193 roadside, Indian Hill Road near junction of Saffron Road.

4. DRYOPTERIDACEAE
   1. Dryopteris carthusiana (Villars) H.P. Fuchs. Spinulose Shield-fern.

   281 rich hardwoods, U.S. 31 near junction with Worden Road; 646 rich hardwoods, Joyfield Road.

Swamp hardwoods, cedar swamps, moist hardwoods. Fairly common.
446 moist hardwoods, Hooker Bridge.


1738 lowland near bluff between Long and Rush Lakes, rare (Gall). Only locality. Specimen from original plant transplanted to cottage site on Crystal Lake about 1940.


2635 Joyfield Road, hardwoods; 2636 Crystal Downs, hardwoods; 2637 Crystal Downs, hardwoods; 2675 cedar swamp, Otter Lake; 2699 hardwoods, junction of Hooker and Gudemoos Roads; 2826 Otter Creek cedar swamp.

5. Dryopteris marginalis (L.) A. Gray. Marginal Shield-fern.

214 hardwoods, Margin Road.

6. Dryopteris x triploidea Wherry (D. carthusiana x D. intermedia). Triploid Shield-fern.

53 rich hardwoods, Hooker Road near junction with Gudemoos Road.


Hardwood slopes. Occasional.
57 rich hardwoods, Hooker Road near junction of Gudemoos Road; also noted in Crystal Downs hardwoods, and hardwoods, Swamp Road.
5. **POLYPODIACEAE**

1. **Polypodium virginianum** L. Common Polypody.

   219 hardwoods, Hooker Bridge. Four additional stations located in county, not collected (Figg Road; banks of Betsie River, several plants; banks Betsie River near Dair's Mill; Graves Road).

6. **SINOPTERIDACEAE**

1. **Adiantum pedatum** L. Maidenhair Fern.

   63 rich hardwoods, Hooker Road near junction of Gudemoos Road.

7. **THELYPTERIDACEAE**

1. **Thelypteris hexagonoptera** (Michx.) Weatherby. Broad Beech-fern.
   (see Dryopteris hexagonoptera)

   139 rich hardwoods near springy area, about 1 mile east of junction of Indian Hill and Saffron Roads, locally abundant; 2644 coon spring, same site as above; 2746 same site as 139. Only station.

   (see Dryopteris noveboracensis)

   1383, 1384 swamp hardwoods, south end of Swamp Road, locally abundant. Only station.

   (see Dryopteris thelypteris v. pubescens)

   Open to semi-open swamps and marshes. Abundant.
   72, 72a swamp south of junction of Dymond and Skinner Roads.

4. **Thelypteris phegopteris** (L.) Slosson. Narrow Beech-fern.
   (see Dryopteris phegopteris)

   Moist hardwoods. Common.
   128 hardwoods, Hooker Road near junction of Gudemoos Road.
Lady-fern.


131 rich hardwoods, Hooker Road near junction of Gudemoos Road; 280 rich hardwoods, U.S. 31 near junction of Warden Road; 662, 663 cedar swamp, Valley Road.


Moist, rich hardwoods. Occasional.

223 rich hardwoods, Hooker Bridge. It has been noted but not collected at at least 6 other stations in the county (South Crawford Road; Fewins Road; Swamp Road; hardwoods, Aral; Hooker & Gudemoos Roads).


Moist rich hardwoods, cedar swamps, moist to swamp hardwoods. Frequent, though it may be locally common.

130, 132 rich hardwoods, Hooker Road near junction of Gudemoos Road; 661 cedar swamp, Valley Road.


Cedar swamps. Common, locally abundant.

71 cedar swamp south of junction of Dymond and Skinner Roads.


Hardwoods. Occasional.

649- rich forested dune, Elberta; 728 hardwoods, Crystal Downs; 854 hardwoods, Frankfort Golf Course.

(see *Dryopteris disjuncta*)

Swamp hardwoods, cedar swamps, moist rich hardwoods. Common, often locally abundant.

44 moist rich hardwoods, Saffron Road; 70 cedar swamp south of junction of Dymond and Skinner Roads; 123 rich hardwoods, Hooker Road near junction of Gudemoos Road.
WOODSIACEAE (Cont.)

   Ostritch Fern.
   (see Pteretis pensylvanica)

   Moist rich hardwoods, edges of swamp hardwoods. Occasional.
   54 moist rich hardwoods, Little Platte Lake; also noted along Rogers Road.


   Open swamps and marshes, ditches. Common, often locally abundant.
   72 marshy area south of junction of Dymond and Skinner Roads.