

which occur frequently are *Solidago ohioensis*, *S. gigantea*, *Aster lucidulus*, *Coreopsis triptera*, *Silphium integrifolium*, *Angelica atropurpurea*, *Zizia aurea*, *Pycnanthemum virginianum*, *Steironema quadriflorum*, *Polemonium reptans*, *Valeriana ciliata*, and *Thelypteris palustris*. Several species are on the Michigan list of rare and endangered species (Wagner et al., 1977). These species are shooting star (*Dodecatheon meadia*), sweet william phlox (*Phlox maculata*), white lady's slipper (*Cypripedium candidum*), Jacob's ladder (*Polemonium reptans*), valerian (*Valeriana ciliata*), and rosinweed (*Silphium integrifolium*). Listed in decreasing order the major groups are composites, grasses and sedges, roses and legumes, crowfoots and umbels, and mints with 42, 19, 10, 7, and 6 species, respectively.

ACKNOWLEDGEMENTS

I thank Cranbrook Institute of Science for research funds. I appreciate the assistance of James R. Wells (Cranbrook Institute of Science) and Margaret Kohring (Fernwood) for portions of the fieldwork.

LITERATURE CITED

- Burgh, Robert. 1939. The region of Three Oaks. 234 p.
- Butler, A.F. 1947. Rediscovering Michigan's prairies. Mich. Hist. 31:267-286; 32:15-36; 33:117-130, 220-231.
- Chapman, Charles C. 1880. History of St. Joseph County, Indiana. Chas. C. Chapman and Co., Chicago, Ill. 971 p.
- Coolidge, O.W. 1906. History of Berrien County, Michigan. Lewis Publishing Co., Chicago, Ill. 1007 p.
- Gleason, H.A. 1952. The new Britton and Brown illustrated flora of the northeastern United States and adjacent Canada. 3 vols. N.Y. Bot. Gard., N.Y., N.Y.
- Hinsdale, W.B. 1931. Archaeological atlas of Michigan. Univ. Mich. Press, Ann Arbor, Mich. 38 p.
- Thompson, P. W. 1968. A wet prairie community in Ann Arbor, Michigan. Mich. Academ. 2:87-94.
- _____. 1975. The floristic composition of prairie stands in southern Michigan, p. 317-331. In Mohan K. Wali, ed. Prairie: A multiple view. Univ. N.D. Press, Grand Forks, N.D. 433 p.
- Wagner, W.H., E.G. Voss, J.H. Beaman, E.A. Bourdo, F.W. Case, J.A. Churchill, and P.W. Thompson. 1977. Michigan's endangered and threatened species program. Mich. Bot. 16:99-110.

SAVING MICHIGAN'S RAILROAD STRIP PRAIRIES

Margaret A. Kohring¹
 Department of Botany
 Michigan State University
 East Lansing, Michigan 48824

A management agreement with AMTRAK has safeguarded Michigan's railroad strip prairies. Some of southwestern Michigan's last prairie remnants lie along the AMTRAK route between Lawton, Michigan, and the Michigan-Indiana border. In November 1977, AMTRAK began bulldozing from fence to fence along the entire length of the railroad right-of-way as part of a program to upgrade the Michigan line. AMTRAK officials were receptive to the idea of preserving prairie relicts if they contained uncommon species and arrangements could be made to maintain them properly. Six representative prairie strips were identified with the help of the District Engineer for AMTRAK. It was agreed that these would be excluded from immediate clearing provided encroaching brush was removed from the parcels. A management agreement appeared to be the best vehicle to provide for continued maintenance of the prairie strips. The Nature Conservancy negotiated the management agreement with AMTRAK. Four miles (6.4 km) of prairie ecosystem, containing 15 species on the list of endangered, threatened, and rare plants of Michigan (Wagner, et al., 1977) have been preserved through this arrangement.

THE RAILROAD

Michigan Central Railroad constructed the line from Kalamazoo to Niles in the autumn of 1848 and completed the section from Niles to New Buffalo in the spring of 1849. The route was built in part through existing prairies. The original right-of-way was 30.3 m (100 ft) wide and provided a refuge for prairie species. In some places the sod remained unbroken, virgin prairie. Disturbed areas were quickly reseeded from surrounding prairie not yet cultivated. The railroad right-of-way was burned regularly until 1950 preserving an ideal habitat for prairie species.

In April 1976, AMTRAK acquired the line for passenger service. Projected improvements including bulldozing, brush removal, and use of herbicides threatened prairie remnants along the tracks. Since

some of southwestern Michigan's last prairie relicts were located along these railroad strips, it seemed desirable to preserve those which contained uncommon plants. In August 1977, negotiations were begun to prevent obliteration of these prairies in Michigan.

Little precedent has been established for negotiating with a railroad to set aside parcels for plant conservation. The problem was first presented to Ben Stark, the AMTRAK District Engineer. He indicated that AMTRAK might be willing to cooperate in such a project if these areas were unique and if permanent arrangements could be made for maintenance according to government specifications.

The area between New Buffalo and Kalamazoo was surveyed jointly with railroad representatives to determine where the major prairie relicts were located, how they could be protected, and how they were to be maintained. Six areas were selected for preservation in August 1977. Through an informal agreement these parcels were not to be bulldozed, and, in return, the encroaching brush was to be removed. A lease agreement between AMTRAK and a conservation agency appeared to be the best vehicle to provide for continued maintenance.

During 1978, protection of selected sites began. Signs were installed to prevent future bulldozing and brush was cut from the preserved areas. With cooperation from AMTRAK and the Department of Natural Resources, two strip prairies were burned in the spring of 1978. Negotiations with The Nature Conservancy as a private agency to lease and manage these strip prairies are underway.

DESCRIPTION OF PRAIRIE REMNANTS

The railroad prairie remnants consist of six individual parcels totaling about four miles (6.4 km) between the Michigan-Indiana boundary and Lawton, Michigan. These tracts represent some of the last prairie relicts in Michigan. Dry, mesic, and wet prairie sites along the tracks contain many of the endangered and threatened prairie species on the state list.

Grand Beach Tract in Berrien County is in New Buffalo Township, T8S, R21W, Section 17, Section 18, SE¼, and Section 19, NE¼, on

¹ Current address: The Nature Conservancy, 328 E. Hennepin Ave., Minneapolis, Minnesota 44514.

the north side of the tracks between mile post 220 and 222. It is flat sand prairie bordered by oak and pine forest. The soil is well-drained humic, composed of Oakville, Pipestone, and Bridgman Series. Most of the area is covered with little bluestem (*Andropogon scoparius*), with a few scattered stands of Indian grass (*Sorghastrum nutans*). Among the characteristic dry prairie species are bush clover (*Lespedeza capitata*), puccoon (*Lithospermum croceum*), starved panic grass (*Panicum depauperatum*), and butterfly weed (*Asclepias tuberosa*). Meadow beauty (*Rhexia virginica*), listed as rare on Michigan's endangered species list, is also present.

Schwark Road prairie is in Berrien County, in Three Oaks Township, on the four corners of the intersection of Schwark Road with the railroad. It is in T8S, R20W, Section 3 and Section 4, SE¼, from mile post 212.6 to 212.9, on both sides of the tracks. Soils at Schwark Road are part of the Pewamo Series with mollic in the A horizon and heavy clay loam in the B horizon. This mesic prairie has scattered stands of big bluestem (*Andropogon gerardii*), wild lupine (*Lupinus perennis*), and mountain mint (*Pycnanthemum virginianum*). Of special interest is compass plant (*Silphium laciniatum*) which is listed as threatened and occurs in only a few places in Michigan.

Bakertown Fen in Berrien County, Buchanan Township, T7S, R18W, Section 34, SE¼, is located on both sides of the tracks from mile post 119.5 to 200. The fen and wet prairie soils are Houghton Muck with a pH of 7.2. This fen encompasses both wet and mesic prairies. The area has white lady's-slipper (*Cypripedium candidum*), spotted phlox (*Phlox maculata*), Jacob's ladder (*Polemonium reptans*), Sullivant's coneflower (*Rudbeckia sullivantii*), and rosinweed (*Silphium integrifolium*) which are all on the Michigan list of threatened plants. Valerian (*Valeriana ciliata*), which is listed as rare, is also present.

The prairie at Thompson Road in Cass County, Pokagon and Howard Townships, T6S, R16W, Section 32, SE¼, and T7S, R18W, Section 5, NE¼, is on the north side of the tracks between mile post 186.5 and 186.7, where the road and the railroad are parallel. The soil consists of Theford and Brady Series, probably formed under grass vegetation. Thompson Road is the best mesic prairie site in Cass County. Typical prairie species are prairie coreopsis (*Coreopsis palmata*), rosinweed (*Silphium integrifolium*), rattlesnake master (*Eryngium yuccifolium*), and bird foot violet (*Viola pedatifida*); all of which are threatened.

Klumbis Road Prairie in Cass County, Pokagon Township, T6S, R16W, Section 22, SW¼, lies on the south side of the tracks between mile post 183.8 and 184, where the road and the railroad are parallel. Klumbis Road soils are Morocco and Spinks Series developing towards prairie soil types. Klumbis Road is a mesic prairie, but it tends to have species requiring sandy soil. Prairie coreopsis (*Coreopsis palmata*) and rosinweed (*Silphium integrifolium*), which are listed as threatened, and columbo (*Swertia carolinensis*), which is listed as rare, are abundant on the site.

Lawton is in VanBuren County, T35, R13W, Section 22, SW¼, from mile post 158.9 to 159.5. It is mesic prairie with large stands of big bluestem (*Andropogon gerardii*) and with the following threatened species: white wild indigo (*Baptisia leucantha*), rattlesnake master (*Eryngium yuccifolium*), and dropseed (*Sporobolus heterolepis*).

Because these areas constitute some of the last prairie remnants in Michigan and contain 15 species on the Michigan list of endangered, threatened, and rare species (Wagner, et al., 1977), their preservation is warranted. Through the negotiations between AMTRAK and The Nature Conservancy, these railroad prairies in Michigan have been preserved.

ACKNOWLEDGEMENTS

The author thanks the management and staff of AMTRAK for support and assistance with this project. Ben Stark, district engineer, was particularly helpful in facilitating arrangements with AMTRAK and assisted with surveying in August 1977. The regional engineer, Ken Kulck, aided in the designation of the areas to be preserved.

In addition, Stan Beikmann, director of Fernwood, Inc., 1720 Range Line Road, Niles, Michigan, 49120, and his staff provided the labor force for cutting brush and burning the railroad right-of-way in the spring of 1978.

LITERATURE CITED

- Wagner, W.H., E.G. Voss, J.H. Beaman, E.A. Bourdo, F.W. Case, J.A. Churchill, and P.W. Thompson. 1977. Michigan's endangered and threatened species program. Mich. Bot. 16:99-110.

A SURVEY OF PRAIRIE PRESERVATION AND RECONSTRUCTION IN MICHIGAN

Kim Alan Chapman
Department of Biology
Western Michigan University
Kalamazoo, Michigan 49007

Robert J. Pleznac
Kalamazoo Nature Center
Kalamazoo, Michigan 49007

Progress has been made in the preservation of native grassland communities in Michigan since the survey of preserved remnants by Thompson (1972). Currently preserved native grassland sites and prairie reconstructions in Michigan are listed here with a brief description of each. Additional native grasslands in the state are recommended for preservation on further study and are also described. The survey covers preserved sites belonging to federal, state, local, and private agencies, in addition to prairie reconstructions and sites which have no protection but which should be evaluated.

Information is presented in the following manner: name of site; ownership (owner); location (site); type of community and dominant species (type); species listed which are noted as endangered, unusual for the area, or of assistance in categorizing the community (other); management and nature of preservation (management); literature pertaining to the area (cite); names and addresses of persons to whom inquiries may be directed (inquire).

PRESERVED SITES

Federal

Newaygo Dry Prairies

Owner. U.S. Forest Service.

Site. Newaygo County, Brooks Township, Section 35, NE ¼, 32 ha (80 acres). (Part of larger grassland area; see Newaygo Plant Preserve and Newaygo Dry Prairies in "Unprotected Sites.")

Type. Dry Prairie; *Carex pensylvanica*.

Other. *Stipa spartea*, *Opuntia humifusa*, *Koeleria cristata*, *Liatriis cylindracea*, *Campanula rotundifolia*, *Aureolaria pedicularia*, and *A. flava*.