

Survey of Michigan Monkey-Flower (*Mimulus michiganensis*) Populations at Maple River, Woodland Road, Emmet County, Michigan



Prepared By:

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For:

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7 October 2015

Report No. 2015-19



Funding for this project was provided by the United States Fish and Wildlife Service, Purchase Order No. F15PX01151.

Suggested Citation:

Slaughter, B.S. 2015. Survey of Michigan Monkey-Flower (*Mimulus michiganensis*) Populations at Maple River, Woodland Road, Emmet County, Michigan. Michigan Natural Features Inventory, Report No. 2015-19, Lansing, MI. 6 pp.

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Cover photograph: Michigan monkey-flower (*Mimulus michiganensis*) at Maple River, Woodland Road, Emmet Co., Mich., July 24, 2015. All photographs in report by B.S. Slaughter.

Introduction

In spring 2015, The United States Fish and Wildlife Service (USFWS) requested Michigan Natural Features Inventory (MNFI) to survey and map colonies of the federally endangered Michigan monkey-flower (*Mimulus michiganensis*) in the vicinity of Woodland Road at the Maple River crossing in Emmet County (T36N R04W S10) to determine possible impacts related to the restoration of the stream crossing, which will involve removal of a dam and potentially re-routing of Woodland Road. This population is well-known for its relatively high levels of sexual reproduction compared to other populations that exhibit primarily vegetative reproduction (Bliss 1986; Penskar and Higman 2001). Therefore, this survey was conducted to mark populations in the field and develop fine-scale maps to help minimize impacts of dam and road work to this apparently unique population.

Methods

Prior to field surveys, the MNFI database was consulted for previously collected field survey data. Although field data indicated populations both west and east of Maple River, only the western population was mapped in the database (MNFI 2015). On July 24, 2015, meander surveys in springs south of Woodland Road, west and east of Maple River were conducted to identify and flag colonies of Michigan monkey-flower. Pink flagging tape was used to mark locations of colonies or clusters of colonies. Annotated GPS points were taken at each of these locations. Following field surveys, the element occurrence record (EOR), including population and habitat data and the digital map, were updated (MNFI 2015).

Findings

The attached EOR form for the Michigan monkey-flower population at Maple River Dam summarizes the findings of the July 24, 2015 field survey (Appendix). Included in the Appendix are population and habitat data, GPS locations of colonies, photographs, and information on population threats.

Acknowledgments

I thank Heather Rawlings, Andrea Ania, and Barbara Hosler of USFWS for project administration and consultation. Brian Klatt, Nancy Toben, and Sue Ridge of MNFI provided administrative support.

Literature Cited

- Bliss, M. 1986. The morphology, fertility, and chromosomes of *Mimulus glabratus* var. *michiganensis* and *M. glabratus* var. *fremontii* (Scrophulariaceae). *American Midland Naturalist* 116: 125-131.
- Michigan Natural Features Inventory (MNFI). 2015. Natural heritage database. Michigan Natural Features Inventory, Lansing, MI.
- Penskar, M.R., and P.J. Higman. 2001. Special plant abstract for *Mimulus michiganensis* (Michigan monkey-flower). Michigan Natural Features Inventory, Lansing, MI. 3 pp.

SURVEY INFORMATION

Species identified: **Mimulus michiganensis (Update EO #5; EOID 10194)** Phone or e-mail: slaugh14@msu.edu Survey date: Jul 24, 2015

Surveyors (principal surveyor first, include first & last name):

Brad Slaughter (F15SLA05MIUS)

Voucher/Collection#:

(permit required)

LOCATIONAL INFORMATION

County: Emmet Township/Range/Section: T36N R04W S10 SE1/4 USGS Topo Quad: 4508457

Latitude: attached Longitude: attached

DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

In springs and cold, narrow streams west and east of Maple River just south of Woodland Road and Lake Kathleen.

HABITAT DATA:

List associated species. For plants, please list at least 6 species in order of dominance, beginning with overstory if present. Restrict associates to immediate habitat.

Thuja occ, Alnus inc, Myosotis sco (D), Nasturtium off, Veronica sp., Cirsium arv, Mentha can, Cx stri, Lemna tur, Rumex orb, Impatiens cap, Epilobium par.

Describe microhabitat. Focus on exactly where species occurs and apparent favoring/limiting factors. Include relevant info. on soils, micro-topography, moisture conditions, etc.

The species occurs in springheads and open to partially shaded, shallow, cold springs below the springheads. The species is absent from areas of faster-moving water downstream near Maple River.

Estimate of habitat extent: 0.5 per area unit: ☐ meters² ☐ kilometers² ☐ feet² ☒ acres

POPULATION SIZE, EXTENT AND CONDITION: Total # of individuals: 30+ fl; 100s+ st ☒ estimate ☐ actual count

Phenology (plants): % flowering: 1 % fruiting: 1 Apparent vigor (plants): poor to fair

Population Age Structure (animals): # adults _____ # juveniles _____

Evidence of reproduction: seed capsules present locally

CONSERVATION DATA

Overall Site Quality: ☐ Excellent ☐ Good ☒ Fair ☐ Poor

Disturbance to organisms or habitat:

The western spring abuts Woodland Road and receives run-off from the road and adjacent degraded uplands, in addition to seeds of invasive and weedy species such as Canada thistle. The eastern population, though much smaller, is better buffered.

Threats or need for protection (immediate? long term?):

The species is threatened at this site by the density of the dominant forget-me-not and the presence of other weedy species such as Canada thistle. These species are likely encouraged by run-off from the adjacent road and degraded uplands and the lack of an adequate buffer between the road and the springhead west of Maple River. The plants are potentially threatened by dam and road projects if those projects impact groundwater discharge or inundate springs and springheads.

Other information needs (survey, monitoring, etc):

Surveys should be conducted south along Maple River & associated springs and streams. Occasional monitoring suggested, particularly after land use changes such as a proposed dam removal and road re-routing. Numbers of flowering/fruiting individuals should be periodically counted.

Other comments related to observation:

GPS coordinates and notes are attached.

NOTE: All images and maps uploaded and submitted help expedite transcription of this information into the Natural Heritage Database. This type of information allows MNFI staff to verify species and locations to ensure accurate information is entered at all times. Please call us if you have any questions on how to complete this form.

IMAGE INSERT: **click** on space below and navigate to saved photo, supported formats include BMP, JPG, GIF, PNG, TIF



IMAGE INSERT: **click** on space below and navigate to saved photo, supported formats include BMP, JPG, GIF, PNG, TIF



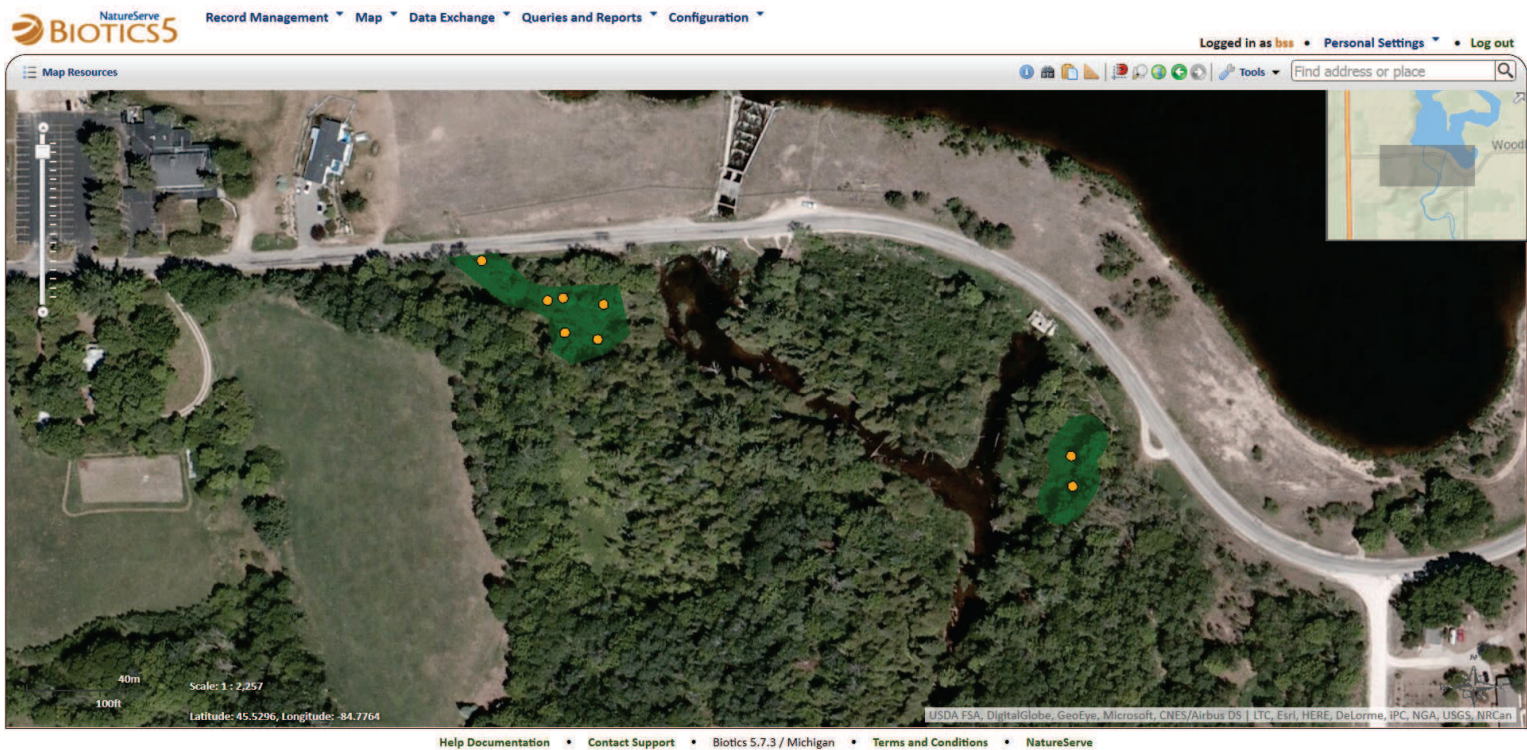
IMAGE INSERT: **click** on space below and navigate to saved photo, supported formats include BMP, JPG, GIF, PNG, TIF



IMAGE INSERT: **click** on space below and navigate to saved photo, supported formats include BMP, JPG, GIF, PNG, TIF



MAP INSERT: **click** on space below and navigate to saved map file, supported formats include BMP, JPG, GIF, PNG, TIF



Id	Name	Descript	Type	Comment	DateTimeS	Elevation	POINT_X	POINT_Y	POINT_Z	POINT_M
0	10:11	MIMMIC	WPT	Diffuse pop; ca. 12+ fl stems over 8 x 8 m area between willow and downed cedar, shallow water flat adjacent to spring brook. densely infested with myosotis.	2015-07-24T18:11:24Z	210.000000000000	-84.77621194550	45.52882653540	210.000000000000	1.000000000000
0	10:17	MIMMIC	WPT	dense mats S side brook; 99% sterile, w/ CIRARV, MENCAN, .VERONICA?	2015-07-24T18:17:24Z	0.000000000000	-84.77612754870	45.52883530470	0.000000000000	1.000000000000
0	10:29	MIMMIC	WPT	1 fl	2015-07-24T18:29:50Z	0.000000000000	-84.77656692290	45.52897663190	0.000000000000	1.000000000000
0	10:33	MIMMIC	WPT	sterile mats; 5 fl below spring head	2015-07-24T18:33:13Z	0.000000000000	-84.77611778140	45.52870476150	0.000000000000	1.000000000000
0	10:35	MIMMIC	WPT	6 fl; sterile patches too in partial shade ALNINC	2015-07-24T18:35:22Z	199.000000000000	-84.77594032700	45.52867916120	199.000000000000	1.000000000000
0	10:37	MIMMIC	WPT	3 fl. stream velocity increases rapidly here.	2015-07-24T18:37:58Z	0.000000000000	-84.77590994670	45.52881146470	0.000000000000	1.000000000000
0	10:56	MIMMIC	WPT	small colony 2 fl. spring at base slope adjacent to alder - CXSTRI. w/ myosotis, LEMTUR, NASOFF	2015-07-24T18:56:32Z	0.000000000000	-84.77337694680	45.52812383960	0.000000000000	1.000000000000
0	11:02	MIMMIC	WPT	1 fl 1 past on perched peat seep above brook in moss, w/ JUNNOD, MENCAN, CXSTRI, RUMORB, IMPCAP, EPIPAR, Myosotis	2015-07-24T19:02:08Z	0.000000000000	-84.77338529770	45.52823791300	0.000000000000	1.000000000000