

# Rare Plant Surveys for the Michigan Department of Transportation: I-96 over Rogers Creek. Project #208348, Van Buren County, Michigan



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## Prepared For:

Michigan Department of Transportation

12/20/2021

MNFI Report No. 2021-28

Suggested Citation: Klain, A.K. and P.J. Higman. 2021. Rare Plant Surveys for the Michigan Department of Transportation: I-96 Over Rogers Creek. Project #208348, Van Buren County, Michigan. Michigan Natural Features Inventory, Report No. 2021-28, Lansing, MI.

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Cover: *Ptelea trifoliata* (hop tree) by Amanda K. Klain.

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# Abstract

Foot surveys for rare plant species were conducted in portions of the rights-of-way (ROW) of I-96 near Rogers Creek in Van Buren County which is proposed for road construction. Surveys revealed three different natural community types: dry southern forests, open dunes, and a high-quality southern hardwood swamp. Also displayed were some more mesic, successional forests and forest edges near the culverts that contained greater plant diversity, both native and non-native, than in the southern dry forested areas.

None of the target species for this project were found. Nine of the eleven target species occur in Coastal Plain Marshes, a natural community type that was not found within the project area. Several invasive species were found and reported, including baby's breath (*Gypsophila paniculata*), which is known to be very aggressive in open dunes. Only one plant was found within the project boundary and was pulled. It is recommended to protect the southern hardwood swamp during construction, by taking measures to prevent disturbance and avoid runoff.

Three memorials were documented at the south end of the project, one in each survey segment and one in the median.

# Introduction

This report is a summary of rare plant surveys conducted along a portion of I-96 in Van Buren County. Project #208348 is in the vicinity of Rogers Creek and starts ¼ mile south of the 44th Ave. crossing and extends south along I-96 for approximately ¾ of a mile (Fig. 1). The site includes the immediate area around Rogers creek and the culverts plus a 500-foot buffer north and south on both sides of the Interstate.

Surveys are required prior to reconstruction and rehabilitation of these portions of the highway to ensure regulatory compliance for the state and federal endangered species acts. This project consists of culvert replacement, roadway reconstruction, installation of riprap and guardrails, and maintenance of traffic along I-96 near the intersection of Clymer Rd. and 44th Ave.



**Figure 1.** Project location on I-96 over Rogers Creek in Van Buren County, Michigan.



# Methods

A review of the Michigan Natural Heritage database was conducted to identify species listed as Threatened, Endangered, or Special Concern<sup>1</sup> that have been previously documented within a two-mile radius of the project area (Fig. 1). Eleven species were identified as survey targets and surveys were conducted to coincide with their optimal detection periods (Tables 1, 2). Early season surveys were conducted on June 17, 2021, and late season surveys were conducted on August 25, 2021.

**Table 1.** Early-season targets, their status, habitat, and optimal survey periods.

Scientific Name	Common Name	Status	Associated Natural Community	Best Survey Period
<i>Carex platyphylla</i>	broad-leaved sedge	E	Rich mesic and dry-mesic woods	End of May-end of June
<i>Carex seorsa</i>	sedge	T	Swamps	June
E: state endangered; T: state threatened				

**Table 1.** Late-season targets, their status, habitat, and optimal survey periods.

Scientific Name	Common Name	Status	Associated Natural Community	Best Survey Period
<i>Eleocharis melanocarpa</i>	black-fruited spike-rush	SC	Coastal Plain Marsh	August-September
<i>Juncus scirpoides</i>	scirpus-like rush	T	Coastal Plain Marsh	August-October
<i>Ludwigia sphaerocarpa</i>	globe-fruited seedbox	T	Coastal Plain Marsh	August-September
<i>Lycopodiella subappresa</i>	northern appressed clubmoss	SC	Coastal Plain Marsh	August-November
<i>Persicaria careyi</i>	Carey's smartweed	T	Coastal Plain Marsh	August-September
<i>Rhexia virginica</i>	meadow beauty	SC	Coastal Plain Marsh	July-September
<i>Rhynchospora macrostachya</i>	tall beak-rush	SC	Coastal Plain Marsh	August-September
<i>Rhynchospora scirpoides</i>	bald-rush	T	Coastal Plain Marsh	August-October
<i>Scleria reticularis</i>	netted nut rush	T	Coastal Plain Marsh	August-October
E: state endangered; T: state threatened; SC: state special concern				

Aerial maps with the project locations and previously mapped rare species occurrences within a two-mile radius of the project area were georeferenced and loaded onto a Samsung tablet with

<sup>1</sup> State and federal Threatened and endangered species are codified under Part 365 of PA 451, 1994 Michigan Natural Resources and Environmental Protection Act; state special concern species is a NatureServe designation.

the Field Maps application for use in the field. The surveyor was able to view their location on the map as they moved through the project area.

The project area was divided into two segments for survey: Segment 1 along the west side of I-96, and Segment 2 along the east side of I-96, as shown in Figure 1. Foot surveys were conducted by meander survey along both segments. These surveys focused on suitable habitat within the right-of-way, however, the surveyor aimed to survey all microhabitats and note all species along the corridor in case other rarities were present, but not yet documented. Because of its small area, the entire project was surveyed during each visit.

General habitat conditions, dominant plant species, and populations of rare and notable plant invasive species in the two segments were recorded. Notable plant invasive species include non-native, invasive plants for which management by MDOT can make a significant impact by containing their spread along the I-96 corridor. When rare plant occurrences and notable invasive species populations were found, they were marked with GPS points using an Android phone and Samsung tablet. Associated data for rare plant occurrences were entered into Survey 123 for upload to the MNFI natural heritage database, Biotics.

## Results

### Overview

The project area is primarily dry southern forest interspersed with open dune and early successional habitat (Fig. 2). A high-quality hardwood swamp occurs on the west side of the interstate, just south of the culvert where Rogers Creek runs under the road (Fig. 3). The areas immediately surrounding the culverts are disturbed and the vegetation immediately adjacent to the highway are dominated by non-native grasses and forbs. The hardwood swamp provided suitable habitat for *Carex seorsa*, however, it was not found during either visit. No suitable coastal plain marsh habitat for the nine other target species was documented in the project area. Numerous prickly pear cactus (*Opuntia cespitosa*) plants were scattered throughout the open dunes and three separate memorials were also documented, one in each segment and one in the median.



**Figure 2.** Open dune and dry southern forest dominate the project area.



**Figure 3.** Location of Rogers Creek, the culverts, and the hardwood swamp.

## Descriptions of Segments

### Segment 1: The west side of I-96.

This segment is characterized by open dune at the road that slopes up to a dry southern forest ridge along the inner edge of the right-of-way. A small but high-quality hardwood swamp (~100 x 50 ft) occurs about 800 ft south of the culverts, slightly inland from the road edge. The culverts are surrounded by disturbed, successional southern mesic forest edges (Fig 3).

The open dune areas are dominated by native dune grasses including *Ammophila breviligulata* (beach grass), *Calamovilfa longifolia* (sand reed grass), *Koeleria macrantha* (June grass), *Panicum virgatum* (switch grass), and *Tridens flava* (purple-top). Herbaceous plants include native *Pteridium aquilinum* (bracken fern), *Monarda punctata* (horsemint), *Erigeron strigosus* (daisy fleabane), *Psuedognaphalium obtusifolium* (sweet everlasting), and invasive spotted knapweed (*Centaurea stoebe*). Woody plants are scattered throughout, including *Sassafras albidum* (sassafras) saplings and seedlings, *Prunus serotina* (black cherry), *Rubus* spp. (blackberry and raspberry), and prickly pear (Fig. 4). Approximately 75 cactus plants were observed in the median, within 10-15 feet of the road edge (Fig. 5).

The dry southern forest is dominated by *Pinus banksiana* (jack pine), *P. strobus* (white pine), *Quercus rubra* (red oak), *Q. velutina* (black oak), sassafras, and *Amelanchier* spp. (service berry), and *Smilax rotundifolia* (common greenbrier; Fig. 6) are common in the understory (Fig. 7). The ground layer includes *Chimaphila maculata* (Prince's pipe), *Carex molesta*, *C. swanii*, *C. pensylvanica*, (sedges), and *Dichanthelium commutatum*, *D. depauperatum*, *D. spp.* (panic grasses).





**Figure 4.** Flowering prickly pear.



**Figure 6.** Common greenbriar was frequent throughout the dry southern forest.



**Figure 5.** The project median with prickly pear.



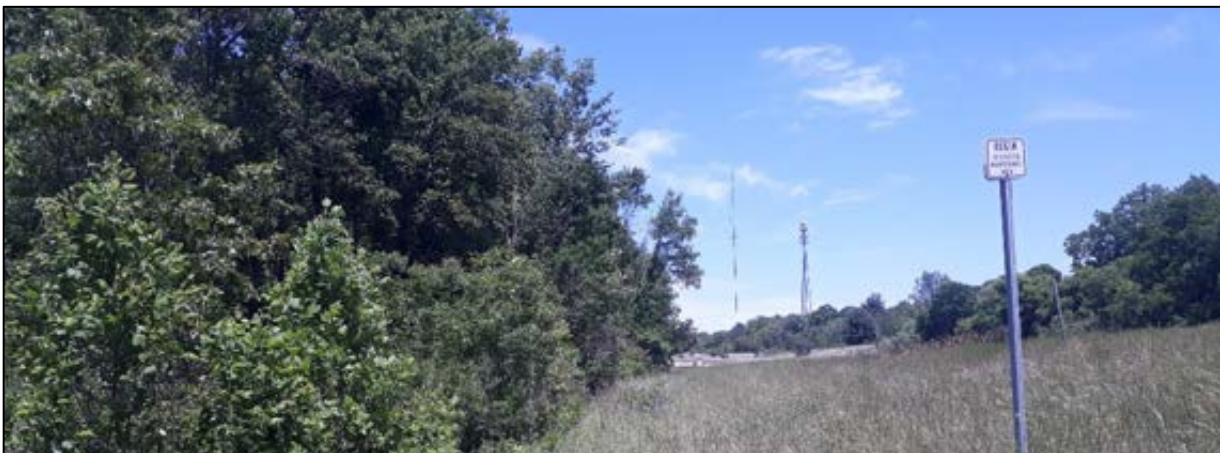
**Figure 7.** Dry southern forest at the top of the ridge in Segment 1.



The hardwood swamp is high quality and diverse with *Betula alleghaniensis* (yellow birch), *Liriodendron tulipifera* (tulip tree), *Nyssa sylvatica* (black gum), and red oak in the canopy, and *Carpinus caroliniana* (musclewood), *Ilex verticillata* (Michigan holly), and *Lindera benzoin* (spice bush) common in the understory (Fig. 8). The dense ground layer includes a diverse array of native ferns such as *Thelypteris noveboracensis* (New York fern), *Onoclea sensibilis* (sensitive fern), and *Osmundastrum cinnamomeum* (cinnamon fern) that was 5 feet tall. Many forbs and sedges also occur there, including *Saururus cernuus* (lizard's-tail), *Sium suave* (water parsnip), *Solidago patula* (swamp goldenrod), *Persicaria sagittata* (arrow-leaved tear-thumb), *Carex bromoides*, *C. comosa*, *C. folliculata*, and *C. rosea* (sedges). Invasive *Phragmites australis* subsp. *australis* (invasive reed) and *Typha angustifolia* (narrow-leaved cat-tail) are present but not yet dominant or abundant. The swamp that is within the right-of-way is marked as an MDOT Restricted Maintenance Area (Fig. 9).



**Figure 8.** High quality hardwood swamp south of the Rogers Creek culverts in Segment 1.



**Figure 9.** An MDOT Restricted Maintenance Area spans the hardwood swamp.



The areas around Rogers Creek and its culverts are moister and generally disturbed with a dense under story of invasive shrubs and forbs including *Lonicera morrowii* (morrow honeysuckle), *Ligustrum sp.* (privet), *Elaeagnus umbellata* (autumn olive), and *Rosa multiflora* (multiflora rose), *Alliaria petiolata* (garlic mustard), *Saponaria officinalis* (soapwort), and *Conium maculatum* (poison hemlock). The native matrix is still evident including species such as *Acer negundo* (box elder), *Prunus virginiana* (choke cherry), *Salix spp.* (willows), *Rhus typhina* (stag horn sumac), (*Rubus spp.*) (blackberries and raspberries) *Clematis virginiana* (virgin's bower), and *Solidago spp.* (goldenrods).



**Figure 10.** Disturbed area near Rogers Creek and the culverts.

The 500 ft buffer on the south end is steeply sloped dry southern forest, and the buffer on the north end is a bit more mesic forest but generally congruent with the rest of the project area.

Priority invasive species in this segment include *Gypsophila paniculata* (baby's breath; Fig. 11) and *Ailanthus altissima* (tree-of-heaven; Fig. 12). Only one individual of baby's breath was observed in open dunes to the north and was pulled out by the root. Tree-of-heaven is dense and concentrated in one area near the northwest end of the project area. It appears to be in the process of being treated. These occurrences are shown in Figure 13.

One memorial was documented at the south end of Segment 1 in the ROW and is also shown in Figure 13.





**Figure 11.** A single occurrence of invasive baby's breath was found in Segment 1.



**Figure 12.** A dense grove of tree-of-heaven was found in the northeast end of Segment 1.





**Figure 13.** Priority invasive species and Memorial locations in Segments 1 and 2.

### **Segment 2: The east side of I-96.**

This segment is very similar to Segment 1; however, the open dune spans the entire right-of-way in places (Fig. 14), and the slope up to the forested ridge is generally less steep. The culverts are surrounded by similar successional mesic southern forest edges (Fig. 15). Native *Hudsonia tomentosa* (beach heather) and *Ptelea trifoliata* (hop-tree; cover photo) were found in the open dunes in this segment only.

The 500 ft buffer to the north is open dune and the buffer to the south is dry southern forest.

Two memorials were documented at the south end of Segment 2, one in the ROW and one in the median (Fig. 13).

The priority invasive species *Pinus sylvestris* (Scotch pine) is scattered throughout Segment 2 and clustered in the open dune area at the northern extent of the project area.





**Figure 14.** Dry southern forest and open dune in Segment 2.



**Figure 15.** Successional mesic southern forest near the culverts in Segment 2.

## Discussion

While no target species were found, the bridge work could facilitate the spread of invasive species into the hardwood swamp. Care should be taken during construction to avoid disturbance to this riparian habitat and to avoid runoff and associated siltation from impacting Rogers Creek. Scotch pine is a prolific seeder and will degrade the open dune areas quickly, as will baby's breath. Cutting of Scotch pine is recommended, taking care to distinguish it from Jack pine, by using its orange bark that is easily seen at the top of the tree. The one occurrence of baby's breath that was observed was pulled, however it is likely that other plants will arrive and/or germinate from a seed bank. This species has not been reported in any southwest Michigan County yet, and early detection and removal will help prevent it from becoming established. Continued control of tree-of-heaven, another rapid spreader, is also encouraged.

## Acknowledgements

Thank you to Dave Schuen of MDOT for coordinating the work, Phyllis Higman for project coordination and broad support, Helen Enander and Courtney Ross for technical support.

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