

Rare Plant Surveys for the Michigan Department of Transportation: I-75 Corridor Otter Creek to Laplaisance Rd. Project #204085, Monroe County



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Cover: Special Concern species trailing wild bean (*Strophostyles helvula*). Photo by Amanda Klain.

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Abstract

Foot surveys for rare plant species were conducted in portions of the rights-of-way (ROW) of I-75 in Monroe County. Two occurrences of state special concern tailing wild bean (*Strophostyles helvula*) and one occurrence of state threatened Sullivant's milkweed (*Asclepias sullivantii*) were found within the ROW, and both of which had been previously documented there. American lotus (*Nelumbo lutea*) fruits were found adjacent to Otter Creek, within the ROW but no plants were observed.

Surveys revealed the project area to be dominated by wet ditches with non-native reed (*Phragmites australis* subsp. *australis*), narrow-leaved cat-tail (*Typha angustifolia*), and teasels (*Dipsacus fullonum*, *D. laciniata*); openings dominated by European grasses; mixed shrub zones; and wet meadows.

Introduction

This report is a summary of rare plant surveys conducted along portions of the I-75 corridor from Otter Creek to Laplaignance Rd. in Monroe County. Project #204085 is an approximately 3.5 mile stretch from the bridge at Otter Creek to just north of the Laplaignance interchange and includes the interchange itself (Fig. 1).

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 a full reconstruction of the I-75 corridor from Otter Creek to north of the Laplaignance Rd. interchange.



Figure 1. Map of project area showing survey segments and rare species locations.

Methods

A review of the Michigan Natural Heritage database was conducted to identify species listed as Threatened, Endangered, or Special Concern¹ that have been previously documented within a two-mile radius of the project area (Fig. 1). Five species were identified as survey targets and surveys were conducted to coincide with their flowering periods when they are most easily

¹ State and federal threatened and endangered species are codified under Part 365 of PA 451, 1994 Michigan Natural Resources and Environmental Protection Act, and state special concern species are a NatureServe designation.

detected (Table 1). Early season visits were performed on June 19, 28, and July 1st, 2021, and targeted state special concern hairy-fruited sedge (*Carex trichocarpa*). The optimal survey periods for the mid- and late-season species overlap and one visit was conducted on August 16, 2021, which allowed sufficient coverage for all of them. State threatened Sullivant's milkweed (*Asclepias sullivantii*), American lotus (*Nelumbo lutea*), and wild rice (*Zizania aquatica*), and state special concern trailing wild bean were targeted during this visit.

Table 1. Survey targets, their status, and optimal survey periods.			
Scientific Name	Common Name	Status	Best Survey Period
<i>Asclepias sullivantii</i>	Sullivant's milkweed	T	July-August
<i>Carex trichocarpa</i>	hairy-fruited sedge	SC	end of May-June
<i>Nelumbo lutea</i>	American lotus	T	June-October
<i>Strophostyles helvula</i>	trailing wild bean	SC	end of July-September
<i>Zizania aquatica</i>	wild rice	T	July-September
T: state threatened; SC: state special concern			

Foot surveys were conducted by meander survey and focused on suitable habitat for the target species. However, the surveyor aimed to capture all microhabitats and associated species along the corridors in case other rarities were present, but not yet documented. General habitat conditions, dominant plant species, and populations of rare and notable plant invasive species in all segments of the project area were recorded. Notable plant invasive species include all invasive plants for which management by MDOT can likely make a significant impact by containing their spread. When rare plant occurrences and notable invasive species populations were found, they were marked with GPS points using an Android phone and Samsung tablet. Notable invasive species points were submitted to the Midwest Invasive Species Information Network (MISIN). GPS points and associated data for rare plant occurrences were entered into Survey 123 for upload to the MNFI natural heritage database, Biotics.

Results

Overview of the Survey Area

The most common habitats throughout the project area are wetlands and ditches dominated by non-native reed (*Phragmites australis* subsp. *australis*) (Fig. 2), openings dominated by seaside goldenrod (*Solidago sempervirens*), teasel (*Dipsacus fullonum*, *D. laciniatus*) and non-native grasses, and wet meadows composed of mostly native species interspersed within shrub zones (Figs. 3, 4). There are some areas that have all three components present. Trees are limited to the fence line and include box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoides*), and American elm (*Ulmus americana*). The non-native grasses that dominate in the lower-quality openings include tall oat grass (*Arrhenatherum elatius*), smooth brome grass (*Bromus inermis*), tall fescue (*Lolium arundinaceum*), and reed canary grass (*Phalaris arundinacea*). *Carex lasiocarpa* dominates some of the higher quality openings (Fig. 4). The non-native rush (*Juncus compressus*) is a halophyte and is common throughout the ditches of the ROW.

Vegetation on the west side of I-75 was much higher quality than on the east side, with a great diversity of native plants and fewer infestations of non-native reed. The wet meadows displayed several species with high conservation values.



Figure 2. Wet ditches with non-native reed cat-tail, and teasel.



Figure 3. Wet meadow on the west side of I-75.



Figure 4. Shrub zone interspersed with wet meadow.



Figure 5. *Carex lasiocarpa* in foreground, narrow-leaved cat-tail in background.

Rare Species Occurrences

State special concern trailing wild bean was found in two areas within the Laplaisance interchange (Fig. 1). The first is in the northwest triangle of the off-ramp that has already been surveyed and permitted. Construction is underway in this area and mitigation will be implemented by stockpiling soil from the ROW that contains wild bean seed and redistributing it across the area so that it can regenerate naturally. This occurrence was reported to MDOT but not entered into Survey123 because it was previously mapped. The second occurrence of trailing wild bean was found along the southbound entrance ramp at the Laplaisance interchange (Fig. 1). Approximately 31 individuals were scattered throughout a 150 ft swath across the un-mowed and mowed ROW. These were reported to MDOT and entered into Survey123; however, it is possible that these may overlap with occurrences mapped during earlier surveys.

Sullivant's milkweed was previously mapped in Segment 3; and was reconfirmed during surveys for this project. American lotus fruit was found along the ROW just north of the Otter Creek bridge on the east side of I-75 (Fig. 1), but no lotus plants were observed.

Descriptions of Survey Segments

Segment 1: Laplaisance interchange north to project extent

This segment is dominated by non-native reed, seaside goldenrod, the halophytic rush, Canada thistle (*Cirsium arvense*), and teasel. Common native species include staghorn sumac (*Rhus typhina*), rough-leaved dogwood (*Cornus drummondii*), dogbane (*Apocynum cannabinum*), and whorled milkweed (*Asclepias verticillata*). In the wetter areas, common species include Canadian and other native rushes (*J. canadensis*, *J. spp.*), and a variety of sedges and bulrushes (*Eleocharis erythropoda*, *Schoenoeplectus acutus*, *S. pungens*, *Scirpus atrovirens*, *S. pendulus*). Purple loosestrife (*Lythrum salicaria*) is present but not dominant.

As noted above, two occurrences of trailing wild bean occur in this section at the Laplaisance interchange. Construction is actively on-going including mitigation measures for this species (Figs. 1, 6).



Figure 6. Active construction at Laplaisance interchange.

Segment 2: south of Laplaignance interchange to Mortar Creek Rd

This segment includes the Welcome Center on the east side of the highway, which is an unsuitable habitat for any of the target species (Fig. 7). The areas of the Welcome Center are mowed with some spots of dense non-native reed in ditches. Most of the east side of the highway is dominated by non-native reed, European grasses, and seaside goldenrod. There are patches of high-quality wet meadow scattered along the west side of the ROW with some highly conservative species such as winged loosestrife (*Lythrum alatum*; C=9)² and false dragonhead (*Physostegia virginiana*; C=8) (Fig. 8).



Figure 7. Unsuitable habitat at the Welcome Center showing ditches with dense infestations of non-native reed.

Also common are a diversity of sedges, including those listed in Segment 1, native shrubs including buttonbush (*Cephalanthus occidentalis*; Fig. 5), rough-leaved dogwood, elderberry (*Sambucus canadensis*), and staghorn sumac, and native forbs such as pale spiked lobelia (*Lobelia spicata*; Fig. 6) and common mallow (*Hibiscus moscheutos*; Fig. 7). Invasive shrubs are frequent as well, including autumn and Russian olive (*Elaeagnus umbellata*, *E. angustifolia*), glossy buckthorn (*Frangula alnus*), and Morrow's honeysuckle (*Lonicera morrowii*).

The state watch list invasive species European frog's-bit (*Hydrocharis morsus-ranae*) was found in a small body of water within the ROW and was reported immediately to MDOT and recorded in MISIN.

² C = Coefficient of Conservatism; ranges from 1-10 for native species, with increasing fidelity to circa 1800 natural communities



Figure 8. Wet meadow species winged loosestrife and false dragonhead.



Figure 9. Buttonbush in wet meadow.



Figure 10. Pale-spiked lobelia in wet meadow.



Figure 11. Common mallow in wet meadow.

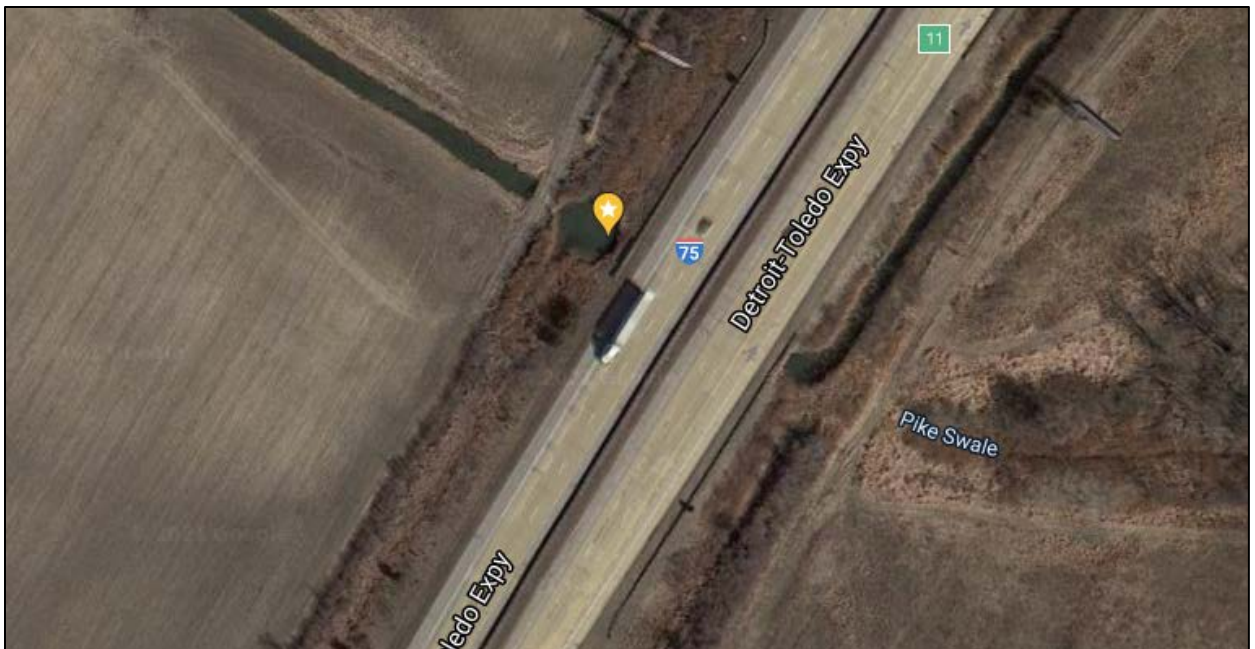


Figure 12. Location of, European frog-bit, state watch list species, in a small pond.

Segment 3:

This segment has vegetation similar to Segment 2, also with higher diversity areas on the west side of I-75. Approaching the bridge over Otter Creek the habitat is more disturbed and European grasses dominate, interspersed with goldenrods (*Solidago* spp.) and many non-native forbs including burdock (*Arctium minus*), Canada thistle, perennial pea (*Lathyrus latifolius*), sweet clover (*Melilotus* spp.), and catnip (*Nepeta cataria*). Along the east ROW close to Otter Creek many snakes were observed, as well as minks that were stirred up every 10-20 feet while walking through the dense grassy vegetation. Within the dense shrubs and trees along this portion of the ROW, large amounts of American lotus fruits were found at the fence edge (Fig 1). It is thought that the animals were bringing the fruit heads offshore and eating them under the sumacs along the ROW fence.

Discussion

The highest quality vegetation in the project area is on the west side of I-75 which has some wet meadow species with high coefficient of conservatism values. Care should be taken to limit the disturbance to this area so that the current habitat and native species are maintained. The rest of the project area is moderately infested with dense stands of non-native reed. Further disturbance from road construction could likely facilitate its spread and worsen the problem.

It is recommended that the ROW containing the 31 individual trailing wild bean plants found along the on-ramp to southbound I-75 be undisturbed because it is highly likely that construction activities will impact the population. If disturbance is unavoidable, mitigation measures for this species that enable seeds to germinate are recommended. Trailing wild bean is an annual and individual plants do not survive from year to year, however, it is likely that a seed bank is present, and potentially new plants will have emerged prior to construction work. Stockpiling soil with seeds and respreading it after construction is recommended. Transplanting individual plants may be tried, however, a suitable transplant site must be identified, and it must be done early in the life cycle so that seeds will still be produced. The second occurrence of trailing wild bean in the northwest triangle of the interchange is a result of previous stockpiling of seed-laden soil. Further disturbance of this area should be avoided so that offspring from 2021 and beyond will sustain this population in subsequent years.

Mitigation for Sullivan's milkweed is planned for 2022, by transplanting individuals to a suitable site nearby that is currently supporting previously transplanted milkweed. No impacts to the water lotus are anticipated, as only fruits were found on-site. The construction will likely impact habitat for the large numbers of minks and other shore animals, particularly where the lotus fruits were found.

Acknowledgements

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Literature Cited

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Appendices

Appendix 1. List of plant species documented in the project area during surveys.

Scientific Name	Common Name	C	W	Native/Adventive (Non-native) Physiognomy
<i>Apocynum cannabinum</i>	Dogbane	Native	3	0
<i>Asclepias incarnata</i>	Swamp milkweed	Native	6	-5
<i>Asclepias sullivantii</i>	Sullivant's milkweed	Native	9	3
<i>Asclepias verticillata</i>	Whorled milkweed	Native	1	5
<i>Butomus umbellatus</i>	Flowering-rush	Non-native	X	-5
<i>Carex granularis</i>	sedge	Native	2	-3
<i>Carex lasiocarpa</i>	sedge	Native	8	-5
<i>Cephalanthus occidentalis</i>	Buttonbush	Native	7	-5
<i>Cornus drummondii</i>	Rough-leaved dogwood	Native	6	0
<i>Cornus foemina</i>	Gray dogwood	Native	1	0
<i>Dipsacus fullonum</i>	Wild teasel	Non-native	X	3
<i>Dipsacus laciniatus</i>	Cut-leaf teasel	Non-native	X	3
<i>Elaeagnus angustifolia</i>	Russian olive	Non-native	X	3
<i>Elaeagnus umbellata</i>	Autumn olive	Non-native	X	3
<i>Eleocharis erythropoda</i>	Spike-rush	Native	4	-5
<i>Eupatorium perfoliatum</i>	boneset	Native	4	-3
<i>Frangula alnus</i>	Glossy buckthorn	Non-native	X	0
<i>Hibiscus moscheutos</i>	Swamp mallow	Native	7	-5
<i>Hordeum jubatum</i>	Squirrel-tail grass	Non-native	X	0
<i>Juncus canadensis</i>	Canadian rush	Native	6	-5
<i>Juncus compressus</i>	rush	Non-native	X	-3
<i>Juncus tenuis</i>	Path rush	Native	1	0
<i>Leucanthemum vulgare</i>	Ox-eye daisy	Non-native	X	5
<i>Lobelia spicata</i>	Pale-spiked lobelia	Native	4	0

<i>Lonicera morrowii</i>	Morrow honeysuckle	Non-native	X	3
<i>Lythrum alatum</i>	Winged loosestrife	native	9	-5
<i>Lythrum salicaria</i>	Purple loosestrife	Non-native	X	-5
<i>Mentha canadensis</i>	Wild mint	Native	3	-3
<i>Phalaris arundinacea</i>	Reed-canary grass	Native	0	3
<i>Phragmites australis</i> subs. <i>australis</i>	Reed	Non-native	X	-3
<i>Physostegia virginiana</i>	False dragonhead	Native	8	-3
<i>Populus deltoides</i>	Cottonwood	Native	1	0
<i>Rhus typhina</i>	Stag horn sumac	Native	2	3
<i>Sambucus canadensis</i>	Common elderberry	Native	3	-3
<i>Schoenoplectus acutus</i>	Hardstem bulrush	Native	5	-5
<i>Schoenoplectus pungens</i>	Threesquare	Native	5	-5
<i>Scirpus pendulus</i>	Bulrush	Native	3	-5
<i>Scirpus atrovirens</i>	Bulrush	Native	3	-5
<i>Sisyrinchium angustifolia</i>	blue-eyed grass	Native	4	0
<i>Solidago sempervirens</i>	Seaside goldenrod	Non-native	X	-3
<i>Toxicodendron radicans</i>	Poison-ivy	Native	2	0
<i>Vernonia missurica</i>	Missouri ironweed	Native	4	0
<i>Vitis riparia</i>	Riverbank grape	Native	3	0
<i>Zizania aquatica</i>	Wild rice	Native	9	0
Notes: C: Coefficient of Conservatism (0-10 for native species, with increasing fidelity to circa 1800 natural communities; non-native species are not assigned coefficients of conservatism); W: Wetland coefficient (-5 to 5 for all species, with decreasing fidelity to wetlands; W= -5 indicates obligate wetland species and W= 5 indicates obligate upland species).				