Rare Plant Surveys for the Michigan Department of Transportation: M-125 Three Bridges. Monroe County, Michigan. MDOT Project #214906.

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Cover photo: East side of Muddy Creek Bridge crossing along M-125 in southeast Monroe County. Photo by Phyllis J. Higman.

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Abstract

The three bridges over Woodchuck, Sulphur, and Muddy Creeks along M-125 lie within a highly fragmented landscape with a mixture of homes, agriculture, and occasional small, wooded remnants. Natural habitat along the creeks is minimal and largely weedy, with no suitable habitat for the target species. No rare species were found. European spindle tree was documented at the Woodchuck and Muddy Creek crossings, a new report for the County.

Introduction

This report provides a summary of rare plant surveys at three bridge crossings along M-125 in southeastern Monroe County just south of Monroe (Fig. 1). These surveys are required to ensure regulatory compliance for threatened and endangered species that might be impacted by proposed work along the route for MDOT Project #214906. The proposed work is for rehabilitation of the bridges at Woodchuck, Sulphur, and Muddy Creeks, including work on substructure approaches, headwall replacements, rip-rap as needed, joint work, epoxy overlay, grading, and downslope work.

Methods

A review of the Michigan Natural Heritage database was conducted for natural communities, federal and state listed plants, and state special concern plants[1], that have been previously documented within a two-mile radius of the project area (Fig. 1). Nine rare plant species were identified including one state endangered, six state threatened, and one state special concern species (Table 1). These focal species guided surveyor efforts, however, surveyors sought any suitable habitat for rare plants in case other species may occur in the project area that have not yet been documented.

Aerial imagery of the project area was reviewed to identify areas that clearly lack suitable habitat (commercial, residential, developed, mowed, maintained, or cropped areas) and areas with potentially suitable habitat for target species. Maps with the survey boundaries for each bridge area and rare species occurrences within the two-mile boundary, were developed using Field Maps. These were georeferenced and loaded onto a Samsung tablet with the Field Maps application for use in the field. This enabled surveyors to view their location and occurrences of natural features while surveying.

On-foot surveys were conducted on September 8, 2022, by meander survey, with a focus on areas with potentially suitable habitat. Surveyors recorded general habitat conditions, dominant plant species, rare plant species, and notable invasive species throughout the three bridge areas. A brief follow-up stop was conducted on September 17, 2022 to confirm several species identifications.

[1] State and federal threatened and endangered status are codified under Part 365 of PA 451, 1994 Michigan Natural Resources and Environmental Protection Act. State special concern status is a NatureServe designation for species that appear to be declining but have no legal protection.

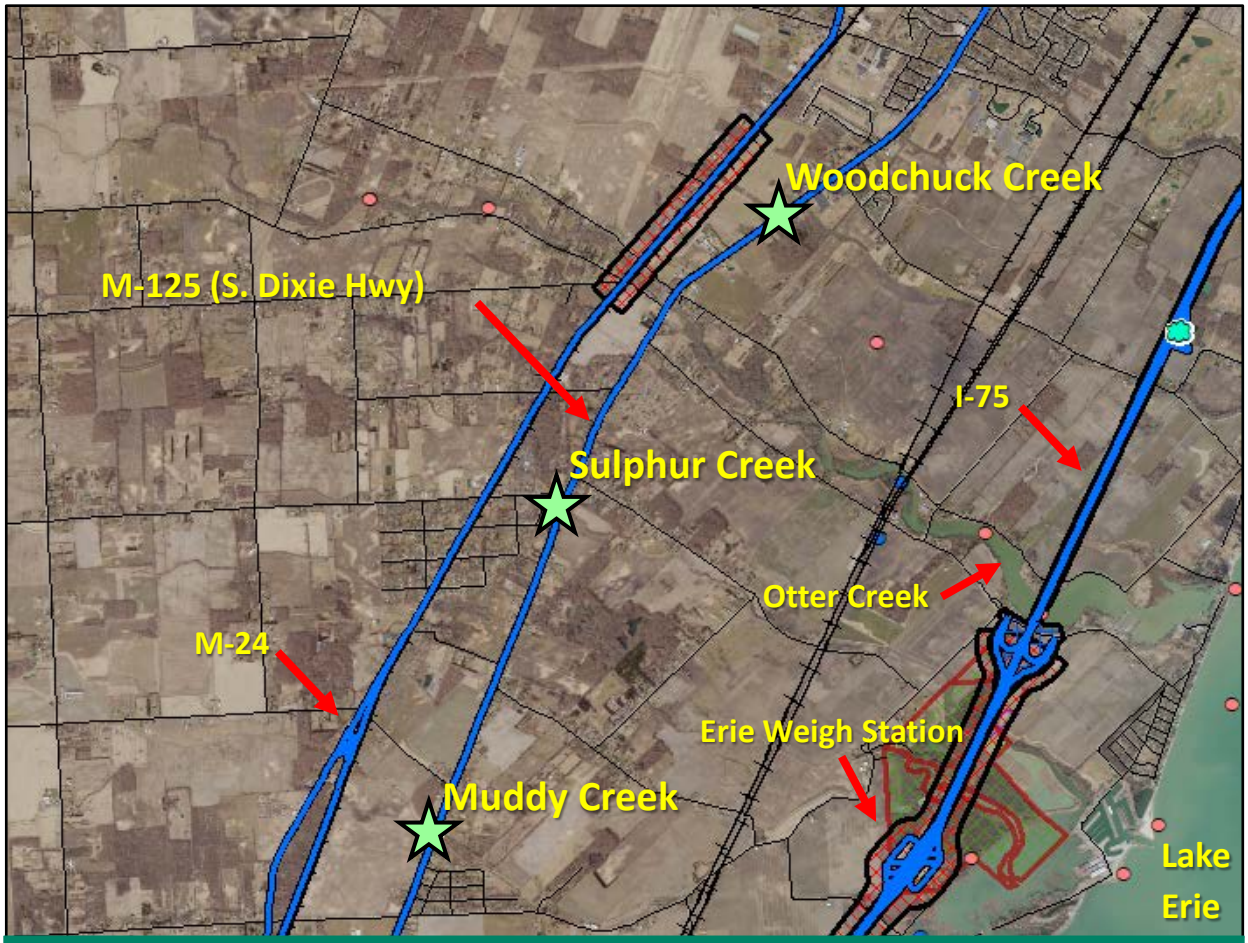

Figure 1. Project location showing the three bridge locations (green stars) along M-125 in southeast Michigan.

Table 1. Survey targets, their status, and optimal survey time.

Scientific Name	Common Name	Listing Status*	Optimal Survey Period
Agalinis gattingeri	Gattinger's false foxglove	E	late summer-early fall
Asclepias sullivantii	Sullivant's milkweed	T	summer
Justicia americana	water willow	T	summer-early fall
Lechea pulchella	Leggett's pinweed	T	summer-early fall
Nelumbo lutea	American lotus	T	summer-early fall
Oxalis violacea	violet wood sorrel	X	spring
Pycnanthemum pilosum	hairy mountain mint	T	summer
Strophostyles helvula	trailing wild bean	SC	summer
Valerianella umbilicata	corn salad	T	spring

*E: state endangered, T: state threatened; SC: state special concern, X: presumed state extirpated

Results

Descriptions of Vegetation at Each Bridge Crossing

Each of the bridge crossings are described separately below. The most commonly observed invasive species throughout all three survey areas are shown in Table 2.

Table 2. Most commonly encountered invasive species in the project area.

Scientific Name	Common Name	Abundance	Location in Region
Bromus inermis	brome grass	occasional	widespread, not mapped
Callery pear	Callery pear	occasional	widespread; not mapped
Celastrus orbiculatus	Oriental bittersweet	common	widespread, not mapped
Cirsium arvense	Canada thistle	common	widespread, not mapped
Dipsacus fullonum	wild teasel	common	widespread, not mapped
Elaeagnus umbellata	autumn olive	occasional	widespread, not mapped
Fallopia scandens	false buckwheat	common	widespread, not mapped
Frangula alnus	glossy buckthorn	rare	widespread, not mapped
Lonicera maackii	amur honeysuckle	common	widespread, not mapped
Phalaris arundinacea	reed canary grass	abundant	widespread, not mapped
Rhamnus cathartica	common buckthorn	abundant	widespread, not mapped

Woodchuck Creek

The southeast corner of the Woodchuck Creek crossing (Fig. 2, 3) is primarily mowed grasses and weeds including barnyard grass (*Echinochloa* sp.), foxtails (*Setaria* spp.), smooth brome (*Bromus inermis*), reed canary grass (*Phalaris arundinacea*), common rag-weed (*Ambrosia artemisiifolia*) chicory (*Cichorium intybus*), and wild carrot (*Daucus carota*). There is a wooded border on the east edge, with black walnut (*Juglans nigra*), hackberry (*Celtis occidentalis*), white mulberry (*Morus alba*), box elder (*Acer negundo*), Siberian crab (*Malus baccata*), gray dogwood (*Cornus foemina*), river-bank grape (*Vitis riparia*), thicket creeper (*Parthenocissus inserta*), and poison ivy (*Toxicodendron radicans*). Invasive species are common, including false buckwheat (*Fallopia scandens*), Oriental bittersweet (*Celastrus orbiculata*), Callery pear (*Pyrus calleryana*), Amur honeysuckle (*Lonicera maackii*), and glossy buckthorn (*Frangula alnus*).

Figure 2. Woodchuck Creek crossing along M-125 in southeast Monroe County.

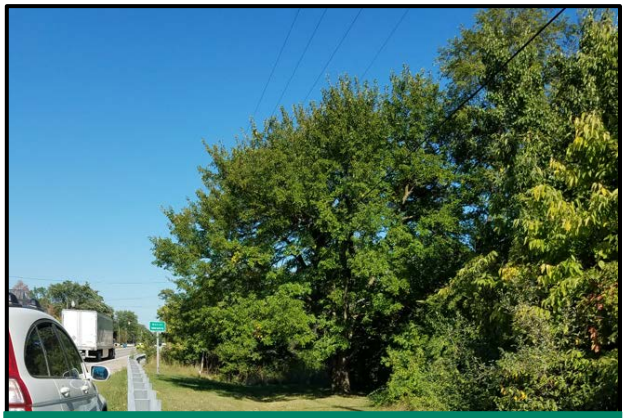

Figure 3. Wooded edge in southeast corner of Woodchuck Creek crossing, Monroe County.

Figure 4. Weedy vegetation surrounds Woodchuck Creek in southeast Monroe County (looking east).

The ground layer is a mix of native and non-native species, including Canada goldenrod (*Solidago canadensis*), white snakeroot (*Ageratina altissima*), Canada thistle (*Cirsium arvense*), teasel (*Dipsacus fullonum*), and Eurasian marsh thistle (*Cirsium palustre*).

The slopes to the creek are mostly open canopy with scattered black walnut, box elder, elderberry (*Sambucus canaden-sis*), and abundant reed canary grass (Fig. 4). A few native forbs occur in the creek bed including jewelweed (*Impatiens capensis*), blue vervain (*Verbena hastata*), and beggar's tick (*Bidens frondosa*).

The northeast corner of the crossing is dominated by mowed grasses and weeds with a row of blue spruce (*Picea pungens*) that extends from a yard to the creek (Fig. 4). Additional species observed here include sow thistle (*Sonchus* sp.), giant ragweed (*Ambrosia trifida*), curly dock (*Rumex crispus*), burdock (*Arctium minus*), and horseweed (*Conyza canadensis*).

Figure 5. A shrubby border runs along Woodchuck Creek on the west side of M-125, with mowed areas to the north and south.

The creek on the west side is bordered by a narrow strip of shrubs (Fig. 5), predominantly box elder and scattered elderberry, with some dead ash (*Fraxinus americana*). Pale-leaved sunflower (*Helianthus strumosus*) and New England aster (*Symphyotrichum novae-angliae*) were observed at the edge. To the north is a home with a mowed lawn (Fig. 5) and to the south is a disturbed, weedy clearing with concrete and bare ground adjacent to a corn field (Fig. 6). At the southern extent is a small patch of shrubs and trees, including hackberry, honey locust (*Gleditsia triacanthos;* Fig. 7), gray dogwood, common buckthorn, grape, and one large cottonwood (*Populus deltoides*). The Eurasian spindle tree (*Euonymus europaeus*) was also noted here – a new report for the county.

Figure 6. Bare ground and concrete south of Woodchuck Creek, M-125, Monroe County.

Figure 7. Honey locust at the southern extent of Woodchuck Creek crossing, M-125, Monroe Cty.

Sulphur Creek

The southeast corner of the Sulphur Creek crossing (Fig. 8) has scattered trees, shrubs, and vines, with cottonwood, American elm (*Ulmus americana*), northern catalpa (*Catalpa speciosa*), box elder, gray dogwood, staghorn sumac (*Rhus typhina*), thicket creeper, riverbank grape, poison ivy, and abundant Amur honeysuckle and Oriental bittersweet (Fig. 9.) A narrow strip of weedy grasses and forbs lies directly adjacent to the asphalt extending across the bridge to the northeastern extent of the survey area. Species here are similar to the open, weedy areas noted at Woodchuck Creek, but with occasional native prairie grasses including purple top (*Tridens flavus; Fig. 10*), Indian grass (*Sorghastrum nutans*), and switch grass (*Panicum virgatum*). Autumn olive, young black walnut, and gray dogwood occur at the edge of the creek.

Figure 8. Sulphur Creek crossing survey area along M-125 in Monroe County.

Figure 9. Southeast corner of the Sulphur Creek crossing in Monroe County.

Figure 10. Purple top (*Tridens flava*) at Sulphur Creek, M-125, Monroe County.

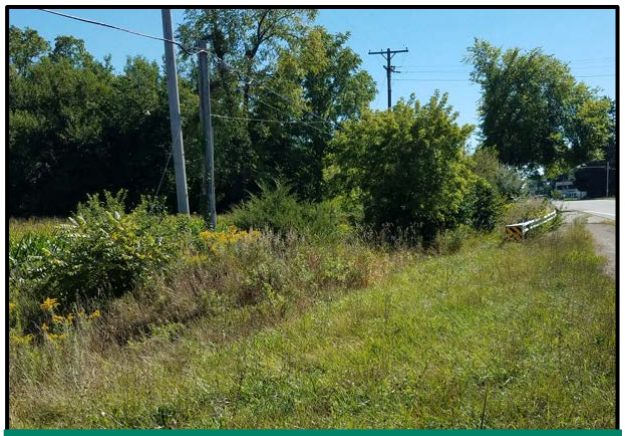

Figure 11. Northeast corner of Sulphur Creek crossing, M-125, Monroe County.

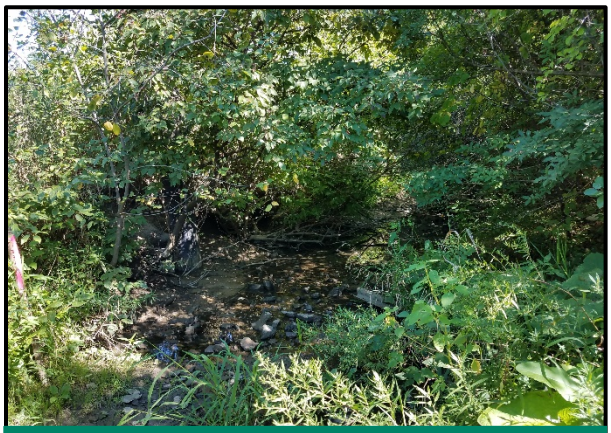

Figure 12. Shrubs shade Sulphur Creek on M-125, Monroe County.

Figure 13. Rocky substrate at northeast corner of Sulphur Creek, M-125, Monroe County.

The northeast corner of the crossing (Fig. 11) has a weedy ditch next to the grass zone with box elder, young black walnut, gray dogwood, red cedar (*Juniperus virginiana*), Canada goldenrod, common mullein (*Verbascum thapsus*), common teasel, and curly dock. Slightly northeast is a wetter patch with glossy buckthorn (*Alnus frangula*), jewelweed (*Impatiens capensis*), great blue lobelia (*Lobelia siphilitica*), New England aster, and tall goldenrod (*Solidago gigantea*). Further east is a corn field. Sulphur Creek itself is shaded by shrubs with little vegetation except reed canary grass (Fig. 12).

The northwest corner of the crossing has a garage surrounded by gravel with sparsely scattered fescues, foxtails, purple lovegrass (*Eragrostis spectabilis*), common ragweed, horseweed, and Canada thistle (Fig. 13).

Vegetation shades over most of the creek on the west side of M-125, and includes silver maple, white ash, box elder, gray dogwood, staghorn sumac, river-bank grape, false buckwheat, common buckthorn, Oriental bittersweet, and Amur honeysuckle (Fig. 14). Jewelweed, New England aster, clearweed (*Pilea* sp.), and common milkweed (*Asclepias syriaca*) on the banks and creek, the area is

mostly weedy with nodding smartweed (*Polygonum lapathifolium*), evening primrose, chicory, wild carrot, biennial gaura (*Gaura biennis*), common ragweed, brome grass, and foxtails. South of the creek is a mowed lawn (Fig. 15).

Figure 14. Weeds dominate Sulphur Creek crossing on west side of M-125, Monroe County.

Figure 15. Mowed lawn on the southwest side of Sulphur Creek at M-125, Monroe County.

Muddy Creek

Much of the land bordering the Muddy Creek crossing is mowed and weedy like Woodchuck and Sulphur Creek crossings (Fig. 16), with species such as timothy, foxtails, barnyard grass, reed canary grass, common ragweed, chicory, evening primrose, daisy fleabane (*Erigeron strigosus*), wild carrot, curly dock, horseweed, and burdock. The banks are dominated by reed canary grass and the creek bed is rocky with sparse vegetation including some jewelweed, non-native cockle bur (*Xanthium strumarium*), and reed canary grass (Fig.17).

Figure 16. Muddy Creek crossing on M-125 in SE Monroe County.

Figure 17. Muddy Creek on the east side of M-125 in SE Monroe County.

Behind the mowed zone on the southeast corner of the crossing is a narrow strip of trees with cottonwood and basswood (*Tilia americana*) dominating the canopy, and black walnut, American elm (*Ulmus americana*), green ash (*Fraxinus pensylvanica*), hackberry, and Siberian crab in the understory. Shrubs and vines include native gray dogwood, elderberry, black

raspberry (*Rubus occidentalis*), riverbank grape, thicket creeper, and poison ivy. However, Oriental bittersweet, trumpet creeper (*Campsis radicans*), false buckwheat (*Fallopia scandens*), Amur honeysuckle, and common buckthorn are abundant. The Eurasian spindle tree was also noted here (Fig. 18).

Figure 18. Spindle tree along M-125 south of the Muddy Creek crossing.

The ground layer is fairly diverse with blue lettuce (*Lactuca biennis*), enchanter's nightshade (*Circaea canadensis*), Canada goldenrod, nettle (*Urtica dioica*), snakeroot (*Sanicula* sp.), common beggar-ticks, bluestem goldenrod (*Solidago caesia*), fowl manna grass (*Glyceria striata*), and Virginia wild-rye (*Elymus virginicus*). However, weedy species such as reed canary grass, horseweed, giant ragweed (*Ambrosia trifida*), Canada thistle, European gromwell (*Lithospermum officinale*), and Kentucky bluegrass (*Poa compressa*) are well established.

The northwest corner of the crossing has a row of young trees, shrubs, and vines bordering an agricultural field. It is a tangle of species including American elm, box elder, white mulberry, gray dogwood, staghorn sumac, autumn olive, common buckthorn and Oriental bittersweet (Fig. 19). Herbaceous species include Canada goldenrod, blue lettuce, evening primrose, narrow-leaved cat-tail (*Typha angustifolia*), Canada thistle, and bull thistle (*Cirsium vulgare*).

South of the creek on the west side is a wooded strip of Norway spruce (*Picea abies; Fig. 20*) with black walnut, young sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), white mulberry, box elder, Amur honeysuckle, riverbank grape, and Oriental bittersweet. An abundance of weedy grasses and forbs dominates the road edge, but several clumps of Indian grass and big bluestem were observed as well.

Figure 19. Tangle of shrubs over Muddy Creek, on the west side M-125, Monroe County.

Figure 20. Norway spruce at the southwest corner of Muddy Creek crossing, Monroe Cty.

Discussion

Weedy forbs and grasses dominate the open areas at all three bridges, the woodland remnants are highly invaded fragments, and there is low diversity in and around the creek beds, which are also highly invaded. No suitable habitat was found for the target species, and no rare species were detected. Due to the prevalence of numerous, aggressive species at each creek corridor, it is recommended that construction equipment be cleaned when moving from this project area to other areas to avoid facilitating their spread. While a new county record for the spindle tree was documented at both Woodchuck and Muddy Creeks, it is a Eurasian species that has escaped cultivation and underscores the degraded nature of the vegetation at these creek crossings

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