



APPENDIX R: RARE, THREATENED, AND ENDANGERED PLANT SPECIES SURVEY

**I-495 & I-270 Managed Lanes Study
Montgomery & Prince George's County, Maryland**
Rare, Threatened, and Endangered Plant Survey Report

Prepared for:
Maryland Department of Transportation State Highway Administration

Under Contract to:
RKK
700 East Pratt Street, Suite 500
Baltimore, Maryland 21202

July 2019

Prepared by:



25 Old Solomons Island Road, Annapolis, Maryland 21401
phone (410) 956-9000 fax: (410) 956-0566

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A. Introduction

The I-495 & I-270 Managed Lanes Study is being conducted to address major traffic congestion problems within the National Capital Region. As part of the environmental review process for the Maryland portion of the I-495 & I-270 Managed Lanes Study, coordination was initiated with the Maryland Department of Natural Resources, Wildlife and Heritage Service (DNR-WHS) regarding the potential presence of state-listed rare, threatened, or endangered (RTE) species within the corridor study boundary (CSB). The DNR-WHS sent a response letter dated July 17, 2018 that identified various potential RTE species within or adjacent to the CSB. The DNR-WHS then submitted a follow up letter dated September 11, 2018 that provided more detail about the potential RTE species within or adjacent to the study area with a recommendation that habitat suitability and targeted species surveys be completed for six state-listed plant species potentially occurring within the Potomac River floodplain and adjacent forested habitat. The DNR-WHS response letters are included in **Appendix A**. The six RTE plant species referenced in the DNR-WHS letter included the following:

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Rumex altissimus</i>	Tall Dock	Endangered
<i>Paspalum fluitans</i>	Horse-tail Paspalum	Endangered
<i>Matelea obliqua</i>	Climbing Milkweed	Endangered
<i>Baptisia australis</i>	Blue Wild Indigo	Threatened
<i>Coreopsis tripteris</i>	Tall Tickseed	Endangered
<i>Phacelia covillei</i>	Buttercup Scorpionweed	Endangered

A meeting was then held with the DNR-WHS on September 14, 2018 to further discuss the recommended survey approach for the Maryland portion of the Potomac River floodplain and adjacent forested slopes.

This report summarizes the results of the RTE habitat assessment and targeted species survey for the above referenced species conducted by Coastal Resources, Inc. (CRI) within the Maryland portion of the I-495 & I-270 Managed Lanes Study.

B. Site Description

The limits of the RTE habitat assessment and targeted species survey were restricted to the I-495 & I-270 Managed Lanes Study corridor study boundary within forested habitat on terraces and slopes immediately above the Potomac River floodplain, the forested Potomac River floodplain itself, and the rocky shoreline of the Potomac River (**Figure 1, Site Location Map**).

Land use classifications within and adjacent to this portion of the study area include parkland, residential, forest, transportation, and wetlands. The study area occurs within the Potomac River MDE 8-digit watershed, along the fall line between the Atlantic Coastal Plain and Piedmont physiographic provinces. Within this area, several terrace levels occur above the Potomac River, rising to over 100 feet in elevation. The study area includes a portion of Plummerville Island south of the American Legion Bridge and a small stream known as Rock Run Culvert. Exposed bedrock occurs on Plummerville Island. Large boulders occur along the shoreline of the river.

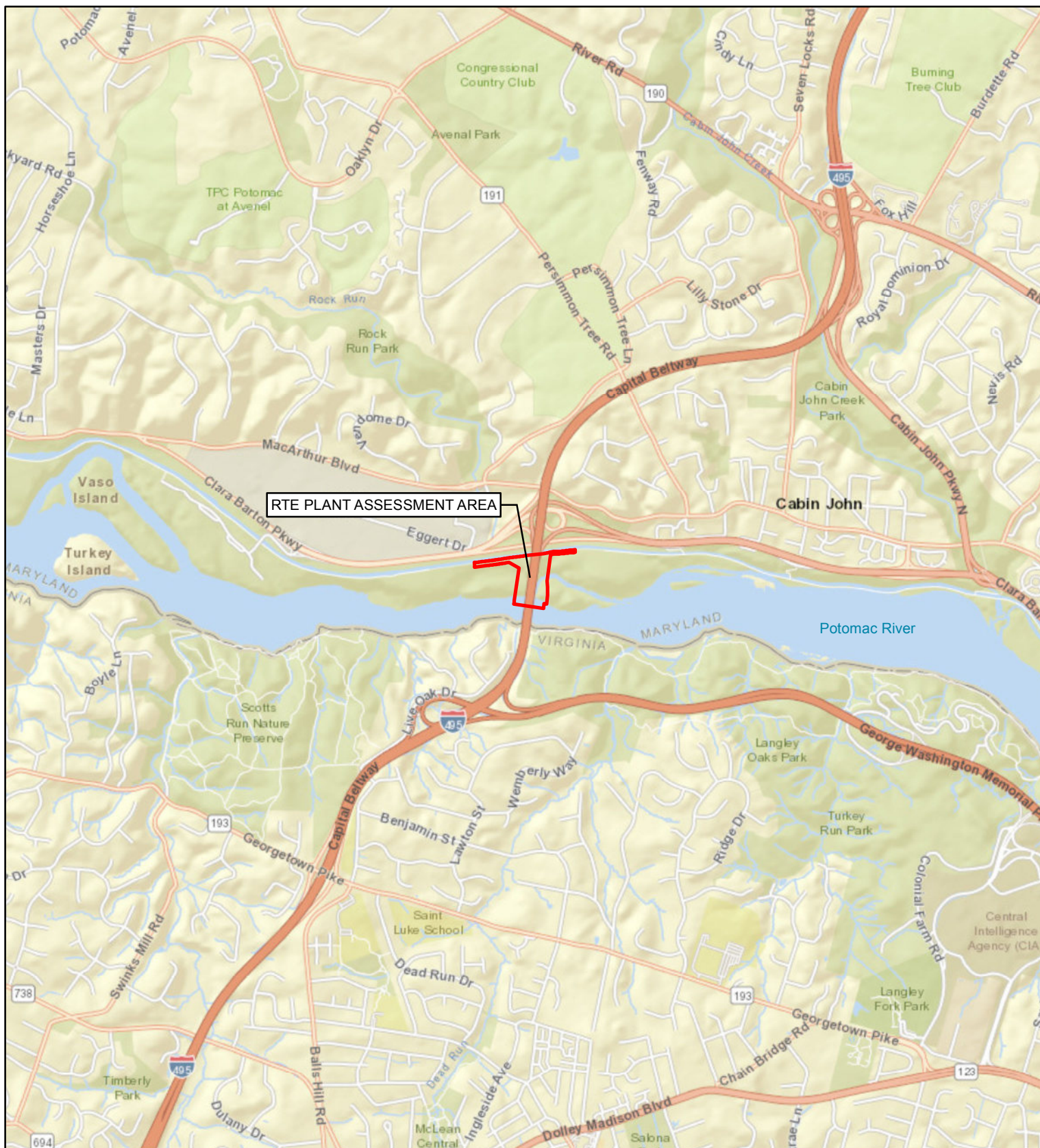
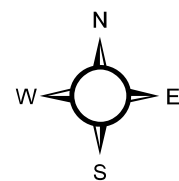


Figure 1
I-495 & I-270 Managed Lanes Study
Rare, Threatened, and Endangered Species Survey
Site Location Map

Montgomery County, MD
 July 2019



1 in = 0.5 miles



C. Species Descriptions

***Rumex altissimus* Alph. Wood** – Tall dock is a perennial herbaceous plant with a long tap root that grows up to 2 m tall. Leaves occur primarily along the stem, are ovate or oblong lanceolate, and grow to 15 cm long. Flowers are born on spikelike racemes up to 30 cm long. Habitat includes frequently flooded zones along rivers in sandy to gravelly alluvium. They can also occur within forested wetlands in muck soils. Their flowering period is from May to June or rarely July. The plants typically go to seed in August.

***Paspalum fluitans* (Elliott) Kunth** – Horse-tail paspalum is an aquatic annual. Stems are soft and spongy and grow to a meter long. Plants submerged in water have elongate stems that are little branched. Plants that are growing more terrestrially often form mats. Leaves are lanceolate, up to 35 cm by 2 cm in size, and taper at both ends. Flowering spikelets occur in open panicles with up to 70 branches. Upper florets are white. Habitat includes floodplain seeps and pools with muck soils or seasonally exposed rocky stream channels. The flowering/fruiting period is late August through September or early October.

***Matelea obliqua* (Jacq.) Woodson** – Climbing milkweed or angle-pod is a perennial herbaceous vine. Stems are hairy. Leaves are rounded with a pointed tip and a base that is somewhat heart shaped, growing up to 15 cm in length and 13 cm in width. The inflorescence is branched, often compound, and 10 to 50 flowered. Flowers are somewhat star shaped with purplish petals. Habitat includes bedrock scour and terrace woodlands in rich alluvium, upland forests, barrens, glades, clearings, and roadsides over limestone or shale substrates. The plants typically flower from June to July and are in fruit in September.

***Baptisia australis* (L.) R. Br.** – Blue wild indigo is a perennial herb with ascending branches that can grow to over 1.5 m tall. Leaflets are small (3 cm by 7 cm), oblong, and have entire margins. Flower racemes are erect, terminal, and loosely flowered, growing to 40 cm tall. Flowers are blue and seed pods are pointed, somewhat inflated, and contain many small seeds. Habitat includes prairie-like scour bars and riverside prairies in rich alluvium. Flowering occurs in May and fruits are present from June to August.

***Coreopsis tripteris* L.** – Tall tickseed is a perennial herb with long or short rhizomes. Stems are stout and up to 3 m tall. Leaves are numerous, grow mostly along the stem, and are divided into three to five leaflets. Flowers are yellowish and become tinted purple or deep red. Habitat includes bedrock scour bars and riverside prairies in rich alluvium. Flowering occurs in September and fruits are present from September through October.

***Phacelia covillei* S. Watson** – Buttercup scorpionweed is a short, hairy annual or biennial. Stems are weak, spreading, and up to 20 cm long. The oblong leaves are pinnate and deeply divided into one to six segments, the terminal segment often with three lobes. The inflorescence is also sparsely hairy and is comprised of five blue petals. Seed capsules are 4-6 mm in diameter, rounded, and contain four seeds. Habitat includes rich floodplain and terrace and ravine forests and mesic upland woods. Flowering typically occurs from late March to April with fruits present in May.

D. Methodology

The survey entailed both background research and field investigations. The objective of the survey was to assess the presence or absence of suitable habitat for the subject species within the study area and to attempt to locate those target species possibly visible during the time of the survey. Background research included review of standard botanical references to determine identifying and habitat characteristics of targeted species. References used included Brown and Brown (1984), Gleason and Cronquist (1991), Holmgren (1998), and Weakley et al. (2012).

Two qualified observers traversed the study area described above looking for the presence of suitable habitat for the target species. The observers also searched for evidence of the six target species, though the buttercup scorpionweed may have already senesced by the time of the survey and the horse-tail paspalum is a late summer species. Survey time was recorded in fifteen-minute increments. For any confirmed element occurrences, population limits were surveyed using a handheld Global Positioning System (GPS). GPS survey locations were recorded around the perimeter of each population cluster, and the numbers of individual plants of the identified targeted species were counted or estimated for each population encountered.

E. Results

The field investigation was conducted on June 25 and July 10, 2019. The total time of the field survey was 9 hours. None of the targeted RTE plant species were found during the field survey. Suitable habitat for some of the RTE plant species was observed within the study area and are depicted on **Figure 2, Photo Location & Suitable Habitat Area Map**. The following is a brief description of the suitable habitat areas identified during the field survey.

Upland Terrace Forest

Mesic upland terrace forest habitat was present throughout much of the study area. This habitat lies along the proposed access areas abutting the C & O Canal Towpath and along the eastern and western sides of the American Legion Bridge. While DNR-WHS identified this habitat as being suitable to support the climbing milkweed and buttercup scorpionweed, most of the upland terrace forest habitat within the study area was comprised of a dense invasive groundcover, vine, and shrub layer that degrades the habitat sufficiently to render it unsuitable for these species. Common invasive shrub, vine, and understory plants included bush honeysuckle (*Lonicera* sp.), Asian bittersweet (*Celastrus orbiculatus*), Japanese stilt grass (*Microstegium vimineum*) and ground ivy (*Glechoma hederacea*).

One small area of upland terrace forest south of the C & O Canal Towpath east of I-495 and a larger area just west of the American Legion Bridge had a sparse native understory and mature canopy layer and was identified as being suitable habitat for the two RTE plants (**Figure 2**). Common canopy trees within the suitable habitat area along the C & O Canal Towpath included white oak (*Quercus alba*) and common hackberry (*Celtis occidentalis*). Common canopy trees within the other suitable habitat area included American sycamore (*Platanus occidentalis*), pignut hickory (*Carya glabra*), and tuliptree (*Liriodendron tulipifera*). Common saplings and shrubs within both habitat areas included common pawpaw (*Asimina triloba*). Common groundcover plants within the habitat adjacent to the C & O Canal Towpath included partridge-berry (*Mitchella repens*). Common groundcover plants within the area west of the American Legion Bridge

included Pennsylvania sedge (*Carex pensylvanica*) and kidney-leaf white violet (*Viola renifolia*). Invasive groundcover was absent within the smaller habitat area adjacent to the C & O Canal Towpath. Invasive groundcover comprised about 25 percent of the habitat west of the American Legion Bridge. Invasive species present included Japanese stilt grass, Asian bittersweet, and garlic-mustard (*Alliaria petiolate*).

Bedrock Scour Bar and Riverside Outcrop Barrens

Small areas of bedrock scour bar habitat were present along the shoreline of the Potomac River beneath the American Legion Bridge and downstream to the edge of the CSB (**Figure 2**). These areas occurred with riverside outcrop barren habitat that was present on large boulders along the shoreline. Most of the scour bar areas were rocky and had very little soil. However, a few areas along the river edge had enough soil for vegetation growth. According to the DNR-WHS, this habitat is suitable for blue wild indigo, tall tickseed, tall dock, and perhaps horse-tail paspalum. Within the CSB, this habitat was observed to support various seedling trees, including ash-leaf maple (*Acer negundo*), silver maple (*Acer saccharinum*), and American sycamore. Few herbaceous plants were observed, the most common being common morning-glory (*Ipomoea purpurea*). Sparse herbaceous vegetation occurred on the riverside outcrop barrens habitat, including sapling American sycamore and sticky goldenrod (*Solidago racemose*). While this area was considered marginally suitable habitat for some of the listed plant species, the apparent higher frequency of flooding in this location makes it less likely to support these species.

F. Conclusions

Field surveys were conducted in late June and early July to assess the potential presence of suitable habitat for six state-listed plant species documented along and adjacent to the Potomac River near the I-495 & I-270 Managed Lanes Study CSB. Based on flowering phenology, a targeted species survey was also completed for four of the six species, including tall dock, climbing milkweed, tall tickseed, and blue wild indigo. Marginally suitable habitat for the climbing milkweed and the buttercup scorpionweed was found within upland terrace forest in two locations within the CSB, one just south of the C & O Canal Towpath and the other just west of the American Legion Bridge. Neither of these species were observed during the field survey. Marginally suitable habitat was also found for tall dock, tall coreopsis, wild blue indigo, and horse-tail paspalum within bedrock scour bar/riverside outcrop barrens habitat, though the scour areas appear to be too frequently disturbed and the outcrop barrens devoid of sufficient soil to support these plants. None of these four species were found during the survey.

The proposed I-495 & I-270 Managed Lanes Study limits of disturbance for Alternatives 8/9/10/13B/13C slightly overlap these marginally suitable habitat areas. However, it is not likely that these areas support any of the listed RTE species, as none were found during the targeted field survey and the habitats along the Potomac River do not exactly match those described for the species. The buttercup scorpionweed is a weak plant that flowers in early spring. It likely would not still be visible during the late June and early July survey period. A followup survey during spring may be necessary to completely rule out the potential presence of this species within the upland terrace forest habitat areas.





MD Map 6-Inch Imagery (2017)









Figure 2
I-495 & I-270 Managed Lanes Study
Rare, Threatened, and Endangered Plant
Habitat Assessment & Targeted Species Survey
Photo Location & Suitable Habitat Area Map

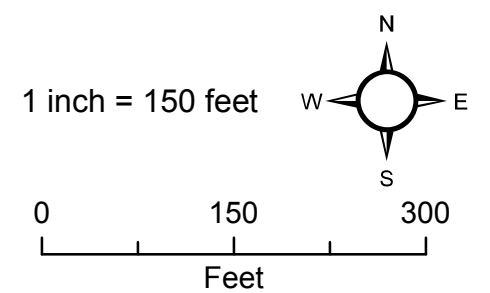
Montgomery County, MD
 July 2019

SUITABLE HABITAT AREA

-  BEDROCK SCOUR BAR & RIVERSIDE OUTCROP BARRENS
-  UPLAND TERRACE FOREST

-  RTE PLANT SURVEY PHOTO POINTS
-  RTE PLANT ASSESSMENT AREA
-  C&O CANAL TOWPATH
-  100-YEAR FLOODPLAIN

-  NHD STREAMS
-  2FT CONTOURS



G. References

- Brown, M. L. and R. G. Brown. 1984. *Herbaceous Plants of Maryland*. Port City Press, Baltimore, Maryland.
- Gleason, H. A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. The New York Botanical Garden, Bronx, New York.
- Holmgren, N.H. 1998. *The Illustrated Companion to Gleason and Cronquist's Manual*. The New York Botanical Garden, Bronx, New York.
- Weakley, A. S., J. C. Ludwig, and J. F. Townsend. 2012. *Flora of Virginia*. Bland Crowder, ed. Foundation of the Flora of Virginia Project Inc., Richmond. Fort Worth: Botanical Research Institute of Texas Press.

Appendix A

MDNR Correspondence



Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Mark Belton, Secretary
Joanne Throwe, Deputy Secretary

July 17, 2018

MEMO

To: Gwen Gibson, IPR

From: Lori Byrne, WHS

RE: Environmental Review for I-270/I-495 Managed Lane Study - AW073A11 Montgomery & Prince George's Counties

The Wildlife and Heritage Service has determined that there are the following areas of concern in regard to potential impacts to rare, threatened or endangered species, in the study corridor that you have provided:

In the area of the project route crossing of the Potomac River, there are records for these RT&E species occurring within close proximity where they may be directly impacted by this project:

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Rumex altissimus</i>	Tall Dock	Endangered
<i>Paspalum fluitans</i>	Horse-tail Paspalum	Endangered
<i>Matelea obliqua</i>	Climbing Milkweed	Endangered
<i>Baptisia australis</i>	Blue Wild Indigo	Threatened
<i>Coreopsis tripteris</i>	Tall Tickseed	Endangered
<i>Phacelia covillei</i>	Buttercup Scorpionweed	Endangered

Near Sellman Road there is a meadow habitat within a powerline right-of-way that is known to support occurrences of state-listed threatened Sundial Lupine (*Lupinus perennis*) and state-listed endangered Long's Rush (*Juncus longii*). The Lupine occurs in open sandy soils within the powerline corridor and the Long's Rush is found in seepage areas in the same corridor.

Just south of the intersection of Powder Mill Road with I-95, there are wetlands associated with Little Paint Branch that are designated in state regulations as NTWSSCs, and are regulated by MDE, due in part to the presence of these species: Long's Rush, state-listed threatened Long-stalk Greenbrier (*Smilax pseudochina*) and state rare Pink Milkwort (*Polygala incarnata*). Impacts to this wetland should be avoided as much as possible.

Where the project route crosses Little Paint Branch in the area of Cherry Hill, there are records for the state-listed threatened American Brook Lamprey (*Lethenteron appendix*) and the Acuminate Crayfish (*Cambarus acuminatus*), a species with In Need of Conservation status in Maryland. Maintaining good water quality and hydrology is important to these species.

Adjacent to the Greenbelt Metro Station, a stream system associated with Indian Creek supports a population of state-listed endangered Trailing Stitchwort (*Stellaria alsine*). Impacts to the floodplain should be avoided and all appropriate BMPs for sediment and erosion control should be stringently enforced.

On the northeast side of the project route where Indian Creek crosses there are records for state rare Laura's Clubtail (*Stylurus laurae*) and state-listed threatened Selys' Sundragon (*Helocordulia selysii*) occurring downstream in Beaverdam Creek where the wetland is designated as a NTWSSC. These odonate species have an aquatic larval stage that is very susceptible to changes in water quality.

Where the project route overlaps Bald Hill Branch, there are records for these species in close proximity to the project route, downstream in Western Branch. Maintaining good water quality and hydrology is important to these species, especially the fish.

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Arundinaria tecta</i>	Switch Cane	Rare
<i>Lethenteron appendix</i>	American Brook Lamprey	Threatened
<i>Etheostoma vitreum</i>	Glassy Darter	Threatened
<i>Percina notogramma</i>	Stripeback Darter	Endangered

Thank you for the opportunity to review and comment. We look forward to further coordination as project details become available. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

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Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Mark Belton, Secretary
Joanne Throwe, Deputy Secretary

September 11, 2018

MEMO

To: Gwen Gibson, IPR

From: Lori Byrne, WHS

**RE: Follow-Up to Environmental Review for I-270/I-495 Managed Lane Study - AW073A11
Montgomery & Prince George's Counties**

Regarding the need for RT&E species surveys, please see the additional comments after each section. The Wildlife and Heritage Service has determined that there are the following areas of concern in regard to potential impacts to rare, threatened or endangered species, in the study corridor that you have provided:

In the area of the project route crossing of the Potomac River, there are records for these RT&E species occurring within close proximity where they may be directly impacted by this project. We recommend that surveys for these species be conducted in areas of appropriate habitat that may fall within proposed limits-of-disturbance for this project.

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Rumex altissimus</i>	Tall Dock	Endangered
<i>Paspalum fluitans</i>	Horse-tail Paspalum	Endangered
<i>Matelea obliqua</i>	Climbing Milkweed	Endangered
<i>Baptisia australis</i>	Blue Wild Indigo	Threatened
<i>Coreopsis tripteris</i>	Tall Tickseed	Endangered
<i>Phacelia covillei</i>	Buttercup Scorpionweed	Endangered

Based on a compilation of Maryland records, habitat info and flowering/fruiting info for these species is described as:

Rumex altissimus Polygonaceae (Smartweed Family)

Habitat: Frequently flooded zones along rivers in sandy/gravelly alluvium; also forested wetlands in muck soils.

Flw: May-Jun (July); Fr: Aug.

Paspalum fluitans Poaceae (Grass Family)

Habitat: Floodplain seeps and pools in muck soils; seasonally exposed rocky stream channels.

Flw/Fr: late Aug-Sept (Oct).

Matelea obliqua Apocynaceae (Dogbane Family)

Habitat: Bedrock scour and terrace woodlands in rich alluvium, upland forests, barrens, glades, clearings, and roadsides over limestone or shale substrates.

Flw: Jun-Jul; Fr: Sept.

Baptisia australis Fabaceae (Legume Family)

Habitat: Prairie-like scour bars, depositional bars, rocky alluvial flats.

Flw: May; Fr: late Jun-Aug.

Coreopsis tripteris Asteraceae (Aster Family)

Habitat: Bedrock scour bars and riverside prairies, in rich alluvium.

Flw: Sept; Fr: Sept-Oct.

Phacelia covillei Boraginaceae (Borage Family)

Habitat: Rich floodplain and terrace and ravine forests, mesic upland woods.

Near Sellman Road there is a meadow habitat within a powerline right-of-way that is known to support occurrences of state-listed threatened Sundial Lupine (*Lupinus perennis*) and state-listed endangered Long's Rush (*Juncus longii*). The Lupine occurs in open sandy soils within the powerline corridor and the Long's Rush is found in seepage areas in the same corridor. If either of these suitable habitats occurs in proposed limits-of-disturbance for this project, we recommend that surveys be conducted for these species. Based on a compilation of Maryland records, habitat info and flowering/fruiting info for these species is described as:

Lupinus perennis Fabaceae (Legume Family)

Habitat: Dry sandy soils of inland dunes and sand ridge woodlands, sandy powerline meadows, dry rocky slopes and outcrops.

Flw: May-early Jun; Fr: late Jun-early Jul.

Juncus longii Juncaceae (Rush Family)

Habitat: Open-canopied seepage wetlands, roadside seeps, powerlines.

Just south of the intersection of Powder Mill Road with I-95, there are wetlands associated with Little Paint Branch that are designated in state regulations as NTWSSCs, and are regulated by MDE, due in part to the presence of these species: Long's Rush, state-listed threatened Long-stalk Greenbrier (*Smilax pseudochina*) and state rare Pink Milkwort (*Polygala incarnata*). Impacts to this wetland should be avoided as much as possible. If impacts to this NTWSSC are unavoidable, we may ask for the extent of these populations to be delineated so that impacts can be evaluated.

Where the project route crosses Little Paint Branch in the area of Cherry Hill, there are records for the state-listed threatened American Brook Lamprey (*Lethenteron appendix*) and the Acuminate Crayfish (*Cambarus acuminatus*), a species with In Need of Conservation status in Maryland. Maintaining good water quality and hydrology is important to these species. We would not recommend surveys for these aquatic species, but instead would want to emphasize the need for stringent sediment and erosion control during all work in this area.

Adjacent to the Greenbelt Metro Station, a stream system associated with Indian Creek supports a population of state-listed endangered Trailing Stitchwort (*Stellaria alsine*). Impacts to the floodplain should be avoided and all appropriate BMPs for sediment and erosion control should be stringently enforced. Recent surveys have indicated that this population still exists within the braided stream floodplain to the southwest of I-95/495, therefore we would not recommend more surveys, but instead would want to emphasize the need for stringent sediment and erosion control during all work in this area.

On the northeast side of the project route where Indian Creek crosses there are records for state rare Laura's Clubtail (*Stylurus laurae*) and state-listed threatened Selys' Sundragon (*Helocordulia selysii*) occurring downstream in Beaverdam Creek where the wetland is designated as a NTWSSC. These odonate species have an aquatic larval stage that is very susceptible to changes in water quality. We would not recommend surveys for these aquatic species, but would want to emphasize the need for stringent sediment and erosion control during all work in this area.

Where the project route overlaps Bald Hill Branch, there are records for these species in close proximity to the project route, downstream in Western Branch. Maintaining good water quality and hydrology is important to these species. We would not recommend surveys for these aquatic species, but would want to emphasize the need for stringent sediment and erosion control during all work in this area.

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Arundinaria tecta</i>	Switch Cane	Rare
<i>Lethenteron appendix</i>	American Brook Lamprey	Threatened
<i>Etheostoma vitreum</i>	Glassy Darter	Threatened
<i>Percina notogramma</i>	Stripeback Darter	Endangered

Thank you for the opportunity to review and comment. We look forward to further coordination as project details become available. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

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Cc: K. McCarthy, DNR

Appendix B

Photographs

Attachment B: Photograph Log
I-495 & I-270 Managed Lanes Study
Rare Threatened, and Endangered Plant Survey



Photo 1: Looking east at forested habitat area with relatively sparse native groundcover & fewer invasive plants



Photo 2: Looking east at disturbed forested habitat area with dense invasive groundcover



Photo 3: Looking east at disturbed forested habitat area with dense invasive groundcover



Photo 4: Looking northwest at emergent wetland habitat area dominated by invasive reed canary grass



Photo 5: Looking east at rocky scour bar habitat area along Potomac River shoreline



Photo 6: Looking southwest at rocky scour bar habitat along Potomac River shoreline



Photo 7: Looking south at hilltop rocky habitat area with sparse native groundcover



Photo 8: Looking southwest at top of bank of Rock Run Culvert forested habitat area with dense invasive groundcover



Photo 9: Looking south at forested habitat area with dense invasive shrub and groundcover layers

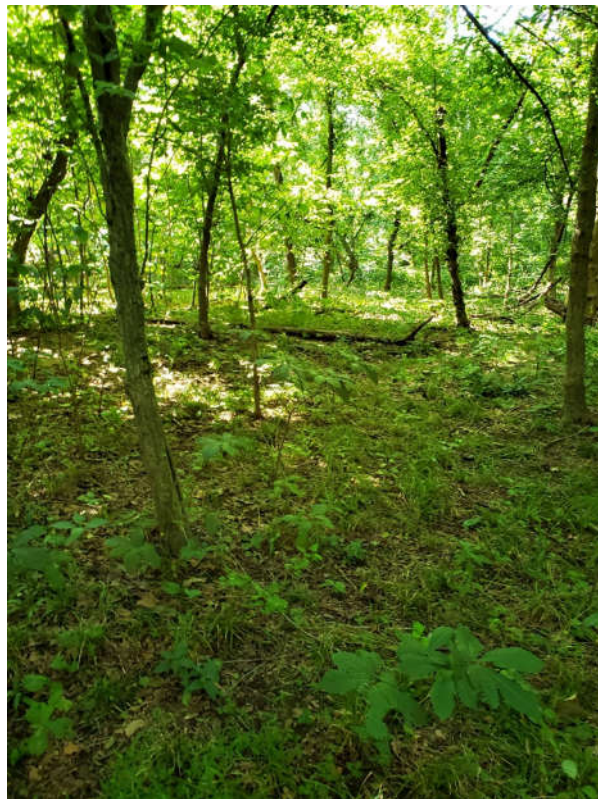


Photo 10. Looking southeast at suitable mesic upland terrace forest

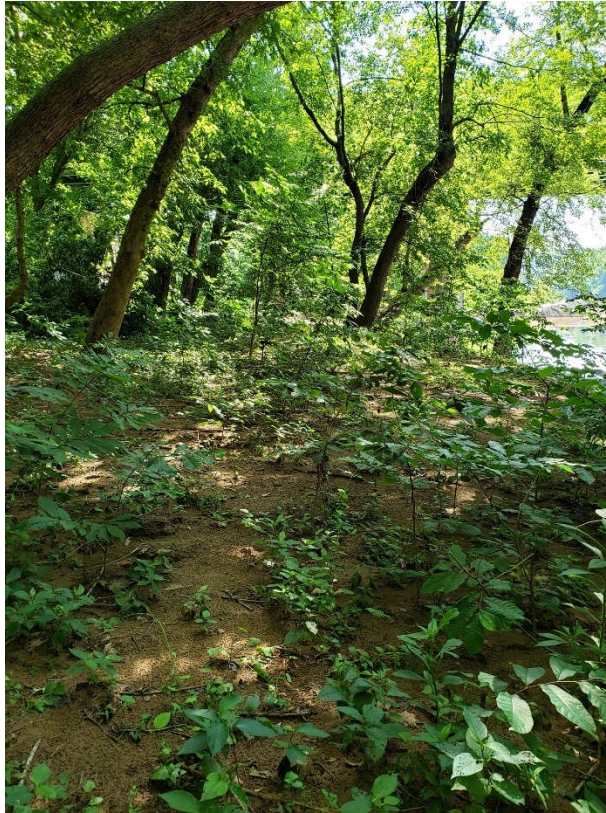


Photo 11. Looking east at Potomac River floodplain habitat

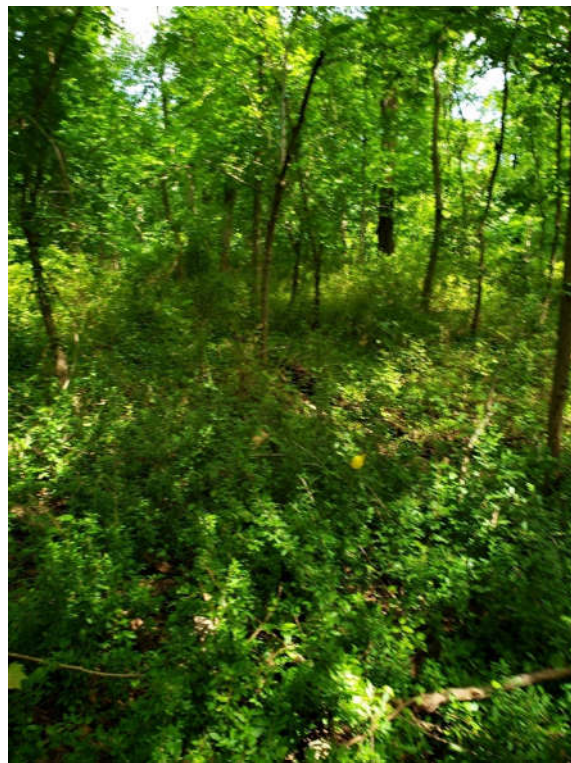


Photo 12. Looking northwest at forested habitat with dense invasive groundcover and shrub layer