# Enhancing Sustainable Trail Development: Pre-Construction Vegetation Assessments

Grace Dietsch, director of conservation Megan Rude, conservation coordinator



#### History of Trails at FRMP



- Substantial growth since 1963
  - o 6,200 acres by 1986
  - 16,000 acres by 2024
- Trail committee formed in 2005
  - Mission: ensure that FRMP's trails provide safe, consistent, and highquality experiences for visitors with varied interests and levels of abilities in a manner that protects natural resources and habitats.
- Trails #1 based on public feedback

#### Trail Committee



- Comprised of:
  - Committee Chairperson
  - Trail Manager
  - Conservation Regional Managers (2)
  - Park Manager Representatives (2)
  - o Equestrian Representative
  - Paddling Representative
  - Cycling Representative
  - Hiking / Pedestrian Representative
  - Education Representative
  - Planning & Projects Representative
  - o Interpretation Representative

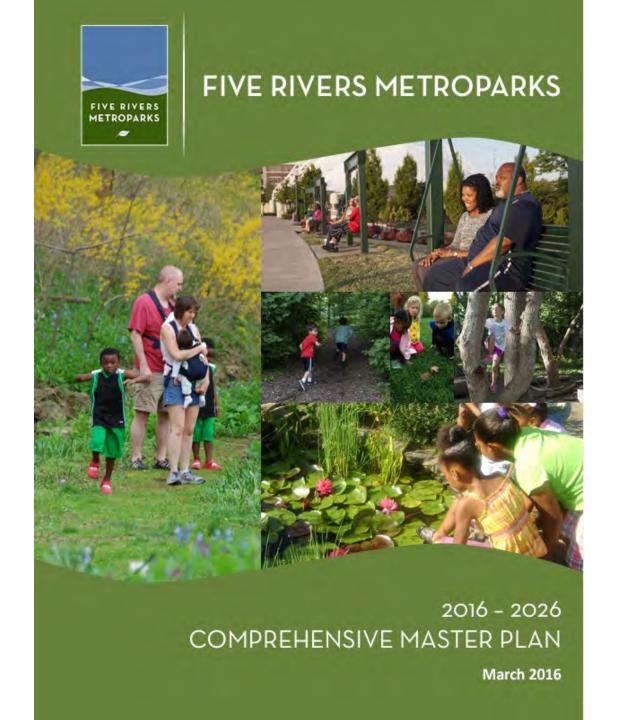
#### Trail Committee



- Establishes standards for repairs, installations, and maintenance
- Reviews trail proposals
- Identifies resources for monitoring, repairs, trainings
- Ensure trails support user needs, interests, and safety

## Drivers for More Trails



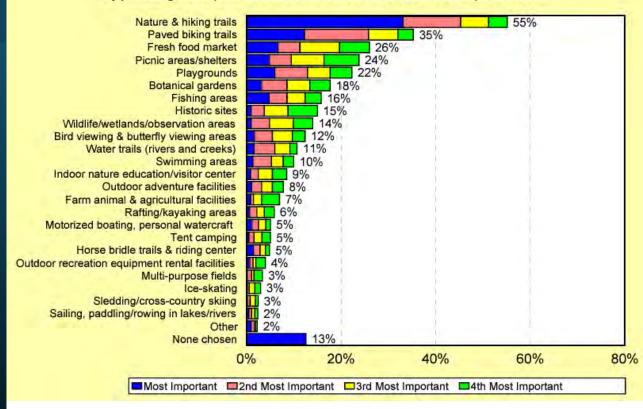


### Drivers for More Trails



#### Q10. Parks and Recreation Facilities That Are Most Important to Households

by percentage of respondents who selected the item as one of their top four choices



#### **Drivers for More Trails**



#### Five Rivers MetroParks Level of Service

	2015 Inventory - Developed Facilities								
Park Type	Five Rivers MetroParks Inventory	Five Rivers MetroParks Current Service Level based upon population			Recommended Service Level			Recommended Additional Facilities / Amenities	
Conservation MetroParks	3,875.30	7.33	acres per	1,000	7.32	acres per	1,000	- 2	acres
Community and Nature MetroParks	10,045.78	18.99	acres per	1,000	20.00	acres per	1,000	534	acres
Urban MetroParks	193.72	0.37	acres per	1,000	0.50	acres per	1,000	71	acres
Total Park Acres	14,114.80	26.68	acres per	1,000	27.82	acres per	1,000	602	acres
OUTDOOR AMENITIES:									
Reservable Picnic Shelters (Small 1-25)	6.00	1.00	site per	88,165	1.00	site per	7,500	65	sites
Reservable Picnic Shelters (Medium 26-50)	32.00	1.00	site per	16,531	1.00	site per	20,000		sites
Reservable Picnic Shelters (Large 51-100)	5.00	1.00	site per	105,798	1.00	site per	50,000	6	sites
Outdoor Pavilions (100+)	1.00	1.00	site per	528,989	1.00	site per	50,000	10	sites
Playgrounds (Nature Play) - (Connections to regional bike trails)	11.00	1.00	site ner	48 090	1 00	site ner	25 000	10	sites
Paved Trails (Miles)	42.00	0.08	miles per	1,000	0.10	miles per	1,000	11	miles
Soft/Non-Paved Trails (Miles)	114.00	0.22	miles per	1,000	0.25	miles per	1,000	18	miles
Nature/Hiking/Backpacking Trails (Miles)	75.00	0.14	miles per	1,000	0.20	miles per	1,000	31	miles
Equine Trails (Miles)	30.00	0.06	miles per	1,000	0.08	miles per	1,000	12	miles
Mountain Bike/BMX Trails (Miles)	9.00	0.02	miles per	1,000	0.08	miles per	1,000	33	miles

270 miles

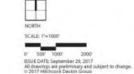
105 miles





Illustrative Site Plan Carriage Hill MetroPark

Huber Heights, Ohio



Five Rivers MetroParks

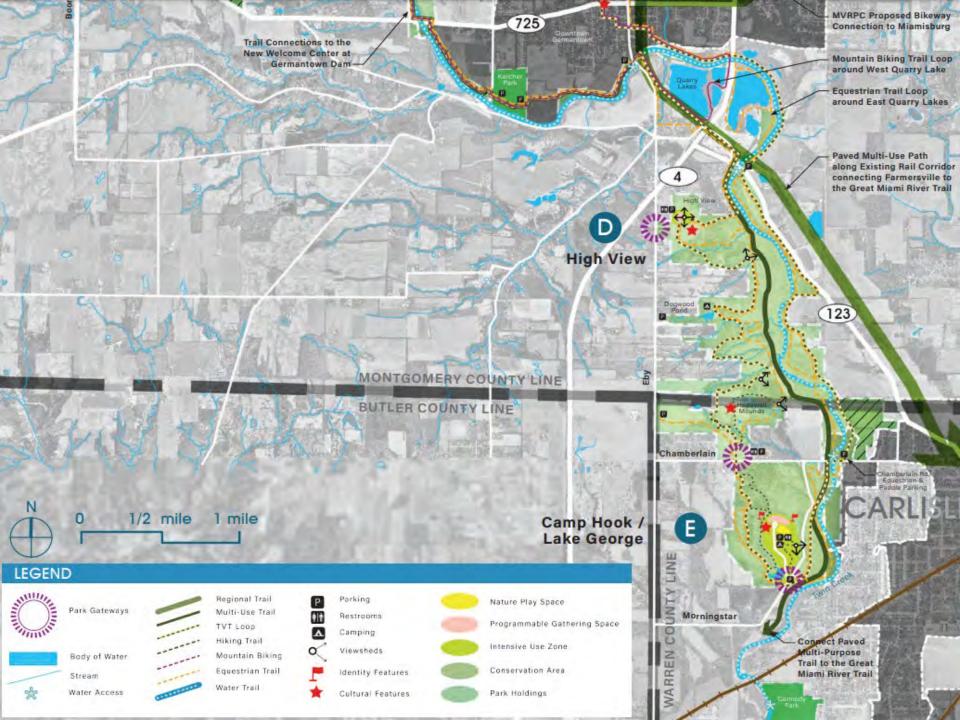
Dayton, OH

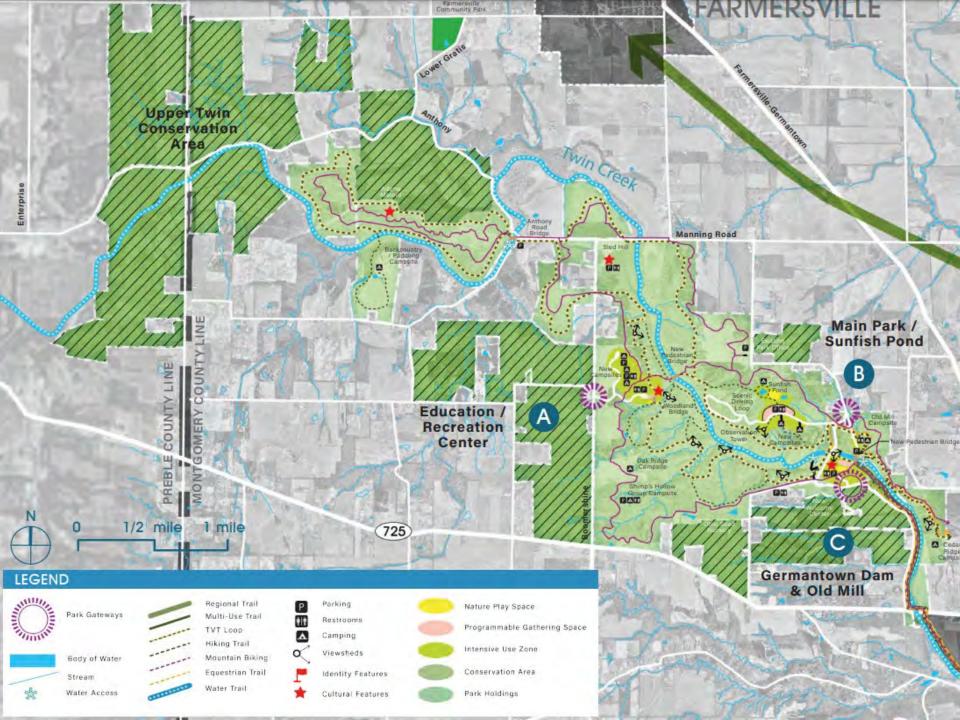
#### EASTWOOD METROPARK



CIRCULATION KEY Nature Trail Buckeye Trail Mad River Sikeway ULagaon Bridge ADA Fishing Pier Miligated Lake Edge Existing Train Tracks Beach Put-In Nature Flay Adult Boulder Course O Forking Lot Main Entry Signage Well Head Trail Head 1st Decision Point Designation FACILITIES KEY Boathouse & Storage Maintenance Building 3 Season Shelher/ Restroom/Concession Drive Through Building & Outdoor Storage Restroom Building Shelter/Storage Building Lean To Shelter Exercise Node Canae Storage Cleanout Station Bike Parking
(\*)=Changing Station A Back Country Comping A Picnic Area WATER ACCESS KEY ADA Fishing Dock Power Boat Kamp Paddle Put in

Observation/Overlook





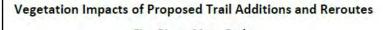
## Previous Trail Impact Evaluation Methods



- "We can't put a trail through here"
- "These woods are too nice"
- "These are sensitive plants"
- "There are streams here"
- "We'll kill spring ephemerals"
- "Let's go for a walk and discuss it"
- "Make us a map and we'll look at it"

## A New Evaluation Method

- Unbiased
- Quantifiable
- Qualitative
- Feasible
- Outcomes





Grace Dietsch, Regional Manager of Conservation Lisa Zoromski, Biologist Shelby Ashcraft, Conservation Manager Meredith Cobb, Conservation Manager

May 2021



#### Vegetation Survey Protocol



- Inventories all species within trail corridor
  - Invasive, native, herbaceous, woody
- Adheres to USFWS and ODNR rareness lists
  - o Endangered
  - o Threatened
  - Extirpated
  - o Potentially threatened
  - o Locally rare

#### Locally Rare Plants



- More common elsewhere, but rare/declining locally
- Edge of historic range
- Important for preservation of species diversity & ecological processes







#### Locally Rare Plant List



#### Locally Rare Vascular Plant Species: Montgomery County, Ohio (largely exclusive of grasses and sedges)

#### Common Name/Scientific Name

Maidenhair fern, Adiantum pedatum Catnip giant hyssop, Agastache nepetoides Nodding onion, Allium cernuum Toothcup spp., Ammannia spp. Putty-root, Aplectrum hyemale Canada columbine, Aquilegia canadensis Spikenard, Aralia racemosa Virginia-snakeroot, Aristolochia serpentaria Pale Indian-plantain, Cacalia atriplicifolia Wild hyacinth, Camassia scilloides White turtlehead, Chelone glabra Blue-eyed Mary, Collinsia verna Coral-root spp., Corallorhiza spp. American hazelnut, Corvlus americana Leatherwood. Dirca palustris Shooting-star, Dodecatheon meadia Bottlebrush-grass, Elymus hystrix Running strawberry-bush, Euonymous obovatus American columbo. Frasera caroliniensis Black ash, Fraxinus nigra Stiff gentian, Gentianella quinquefolia Ragged fringed orchid, Habenaria lacera

#### Common Name/Scientific Name

Green violet, Hybanthus concolor Shrubby St. John's-wort, Hypericum prolificum Twin-leaf, Jeffersonia diphylla Michigan-lily, Lilium michiganense Large twayblade, Liparis liliifolia Mitrewort, Mitella diphylla Pennywort. Obolaria virginica Southern adder's-tongue, Ophioglossum vulgatum Showy orchis, Orchis spectabilis Violet wood-sorrel, Oxalis violacea American ginseng, Panax quinquefolius Yellow passion-flower, Passiflora lutea Wood-betony, Pedicularis canadansis Milkwort spp., Polygala spp. Hop-tree, Ptelea trifoliata Squaw-bush, Rhus aromatica Beak-rush spp., Rhynchospora spp. Eastern black currant, Ribes americanum Swamp-rose, Rosa palustris Common marsh pink, Sabatia angularis Rough-leaved goldenrod, Solidago patula Skunk-cabbage, Symplocarpus foetidus Dockmackie, Viburnum acerifolium Goldenseal, Hydrastis canadensis Black Cohosh. Actaea racemosa

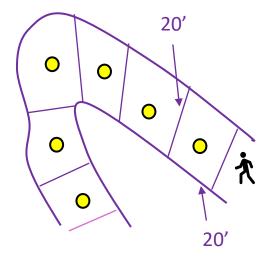
Also, the Threatened and endangered plants that have historically been spotted at Sugarcreek include:

Sisyrinchium montanum, Blue-Eyed Grass Penstemon canescens, Gray Beardtongue Arabis sp., Rock Cress Cystopteris fragile, Fragile Fern

#### Vegetation Survey Protocol



- Surveys occur:
  - March 15 April 15
  - May 15 July 1
  - October
  - December/January if likelihood of orchids is expected
- 20' x 20' quadrants along proposed route



- O GPS coordinate
- Anticipated trail
- —— Impact zone/survey area

#### Survey Data Sheet



#### APPENDIX I

**Trail Vegetation Survey Data Sheet** 

Recorder name (first, last):

Date (MM/DD/YYYY):

Site (abbreviations):

Trail ID:

Trail Type (equestrian, bike, hiking, service):

Quadrant	Easting	Northing	Q	Easting	Northing
1			26		
2			27		
3			28		
4			29		
5			30		
6			31		
7			32		
8			33		
9			34		
10			35		
11			36		
12			37		
13			38		
14			39		
15			40		
16			41		
17			42		
18		-	43		
19			44		
20			45		
21			46		
22	1		47		

#### Survey Data Collection



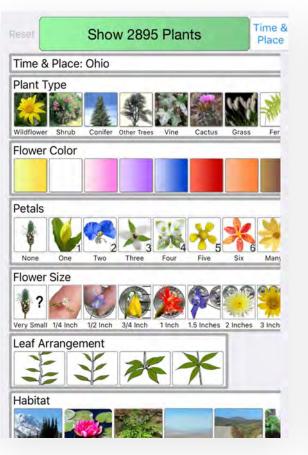
- Record all plant species
- Estimate number of each species per quadrant
- Compare to ODNR Rare Plant Species List
- Identify C of C values



#### Survey Data Sheet



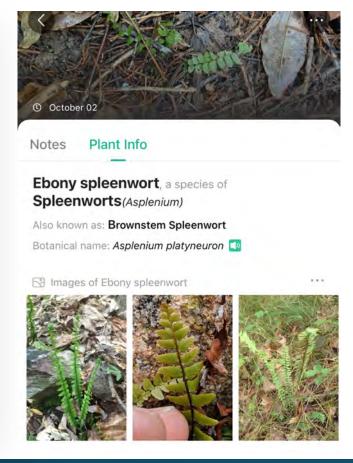
Name: Date (MM/DD/YYYY):							
Site	Trail ID	Quad.	Species	Abund.	Plant Class.	Plant Status	Notes
Н							
Н							
H							
-							
		1	1				





#### ABOUT

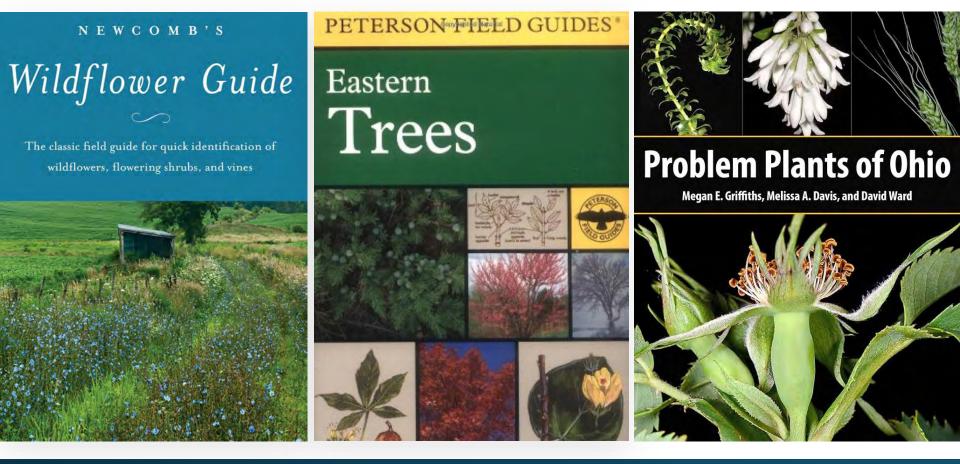
Trillium flexipes, the nodding wakerobin, bent trillium, or drooping trillium, is a spring-flowering perennial that is most common in the midwestern United States. Scattered populations are found as far east as Philadelphia and as far south as



#### Plant Identification Resources

- Google Lens or iPhone Look Up
- Apps: Ohio Wildflowers, Seek (iNaturalist), Picture This





#### Plant Identification Resources

- Plant field guides
- OSU Extension offices



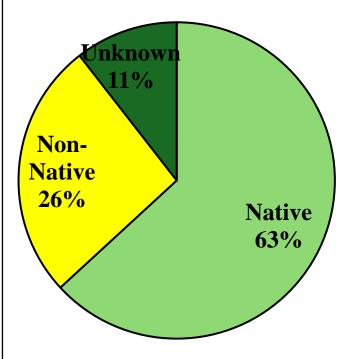
### Presentation of Results to Trail Committee



Number of native species vs non-native

#### **Carriage Hill MetroPark Farm Trail Reroute**

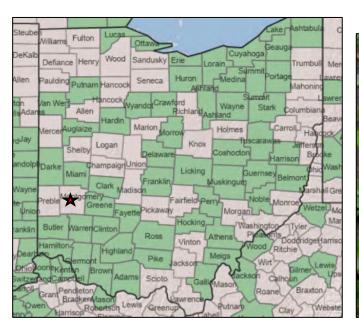
COUNT	SPECIES	21	HONEY LOCUST
1	ASIAN BITTERSWEET	22	HONEYSUCKLE
2	ASTER SP.		
3	AUTUMN OLIVE	23	HORSETAIL
4	AVENS SP.	24	MONEYWORT
5	BEDSTRAW	25	MULTIFLORA ROSE
6	BLACK SNAKEROOT	26	OSAGE ORANGE
7	BLACKHAW VIBURNUM		
8	BOXELDER	27	PHILADELPHIA FLEABANE
9	BUCKTHORN	28	PRIVET
10	BUTTERCUP SP.	29	SLIPPERY ELM
11	CHERRY TREE	30	SOLOMON'S SEAL
12	COOL SEASON GRASSES SP.	31	SWAMP AGRIMONY
13	DANDELION	31	SWAINIP AGRINIONY
14	DOGWOOD SP.	32	TREE SP.
15	EASTERN RED CEDAR	33	VIOLETS SP.
16	EBONY SPLEENWORT	34	VIRGINIA CREEPER
17	FLEABANE	35	WALNUT
18	GOLDENROD SP.		
19	GRAPEVINE	36	WHITE VERVAIN
20	GREEN ASH	37	WINTERCREEPER



## Presentation of Results to Trail Committee



- Locally Rare Species
  - Germantown MP Pink Trail Reroute
  - Wild Hyacinth (Camassia scilloides)
  - 4-2500 plants in a quadrant
  - CC value = 6





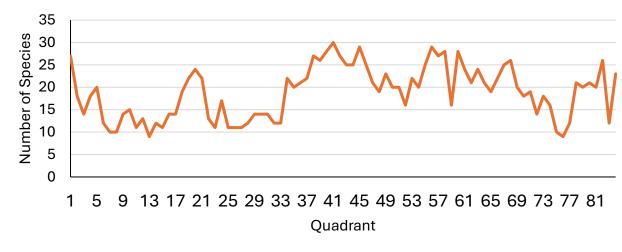


## Presentation of Results to Trail Committee



- Quadrants with highest/lowest biodiversity
- Quadrants with high invasive pressure

#### **Englewood MetroPark Biodiversity**



# Presentation of Results to Trail Committee



- Conservation recommendations and considerations for trail installation
  - If native plant mitigation should occur
  - How invasive species should be managed before, during, and after construction



#### Native Plant Mitigation



- Supplemental planting, seeding, or moving seed rich soil
- Reforest woody invasive removal areas or decommissioned trails





#### Native Plant Mitigation



#### Englewood Proposed Reroute Low Abundance Native Plants

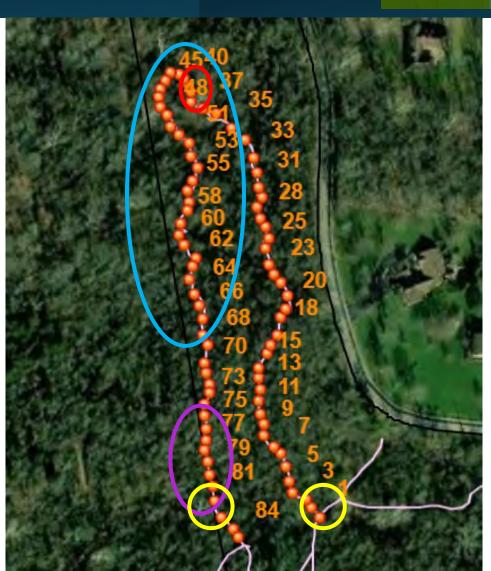
Species	Sum of Relative Abundance	Count of	Quadrants	C of C
Species		Quadrants	Present In	Value
RATTLESNAKE FERN	3	1	45	4
ROCKCRESS SPP	21	2	17, 21	4
SHORTS ASTER	50	2	1, 84	4
SMOOTH SOLOMON'S SEAL	24	3	41, 42, 44	4
BLACK WALNUT	4	4	4, 55, 70, 72	5
BLUE STEMMED GOLDENROD	2	2	66, 73	5
RUNNING STRAWBERRY BUSH	13	3	65, 67, 68	5
SPICEBUSH	1	1	82	5
WOOD NETTLE	2	1	68	5
BASSWOOD	3	3	29, 44, 82	6
JOE PYE WEED	5	3	41, 49, 50	6
PAWPAW	1	1	81	6
RED COLUMBINE	8	2	44, 45	6
WILD PETUNIA	9	4	4, 5, 6, 38	6
SYCAMORE	2	2	39, 71	7



#### Invasive Species Results Example



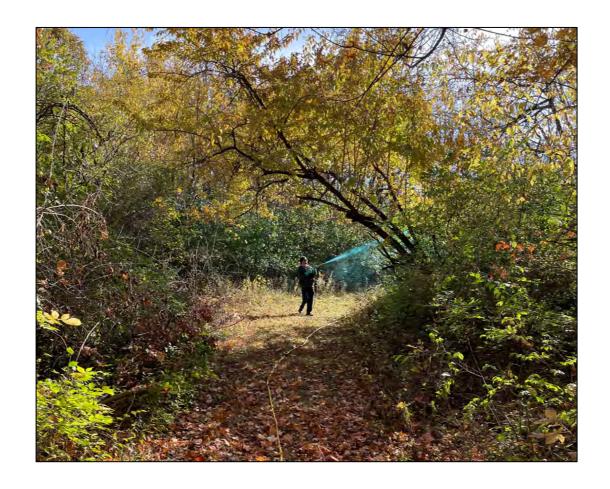
```
Ailanthus = 258
    Q74, 76-82
Buckthorn = 2
    Q43
Honeysuckle = 3,338
    All besides Q1, 37, 65, 74
Japanese Honeysuckle = 100
    Q38, 40, 41
Lesser Celandine = 32
    Q1 and Q82
Wintercreeper = 38
    Q1, 2, 22, 29, 34, 41, 42, 47,
    56, 79, 80
```



# Invasive Species Management: Before Construction



 Surveys identify invasive species, so we can determine best treatment method and timing



# Invasive Species Management: During Construction



- Consider equipment sanitization to minimize spread
- No soil movement offsite
- Identify setback distance from trail to remove invasive species



# Invasive Species Management: Post Construction



- Soil disturbance exacerbates invasive species pressure
- Work with park staff to schedule follow up treatments



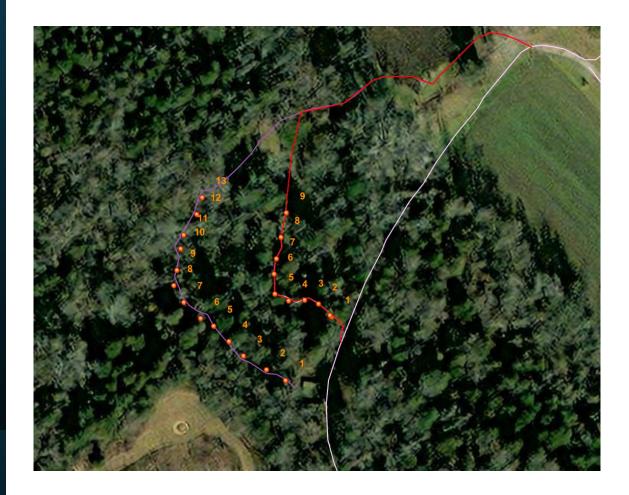
## Qualitative and Anecdotal Results

- Historical habitat type
- Impacts on stream crossings
- Considerations for wildlife



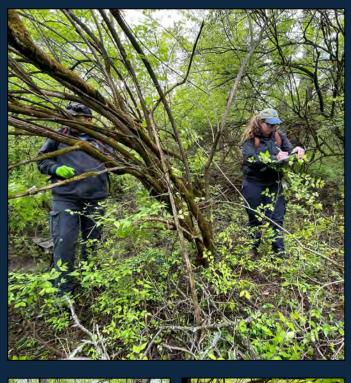
#### Understand Historical Habitat Type





Two proposed trail connections at Carriage Hill MetroPark.

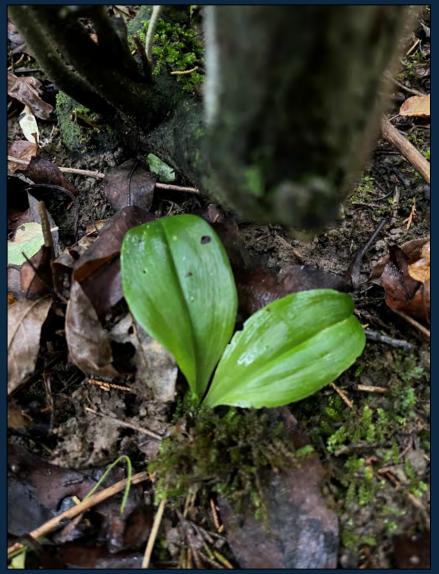
The purple route is a 240ft section, the red route was 180ft.

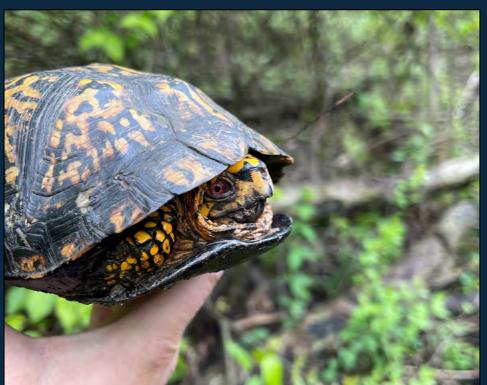














## Impacts of Creek Crossings

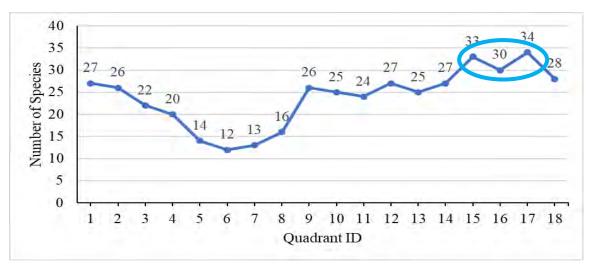


#### Englewood



1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 Quadrant

#### Carriage Hill



### Considerations for Wildlife

FIVE RIVERS METROPARKS

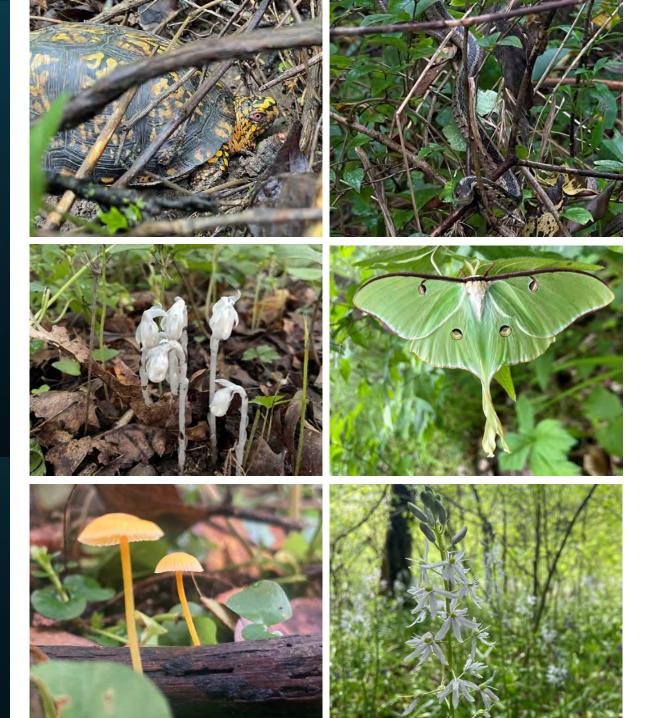
- Are we impacting important wildlife sites?
- Will this trail fragment the habitat such that less-mobile species will be negatively impacted?





#### Lots of Cool Things to See





#### In Summary: Adaptable and Versatile





#### In Summary: Improved Stewardship



- Mechanism to mitigate
- Hold ourselves accountable to impacts
- Trust, collaboration, and communication







#### Thank you!



### QUESTIONS?

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