Wet Spots in the Woods:
Conserving Michigan's Vernal Pools

Michigan Vernal Pools Partnership



Abby Pointer

Associate Director of Community Engagement & Partnership

Michigan Nature Association



Vernal pools are critical for maintaining forest ecosystem health and biodiversity.

What is a vernal pool and how can I identify them?

Why are vernal pools important?

What are we doing in Michigan to conserve vernal pools & how can you get involved?

Vernal Pool Ecology 101

What is a vernal pool?





Seasonally flooded wetlands (wet for 2+ mos)

Part of forest ecosystems

Fishless

Habitat for diverse & unique species

Vernal Pool Obligate / Indicator Species

Important habitat for invertebrates and amphibians

**Still can be VP without indicator species*









Where can we find vernal pools?



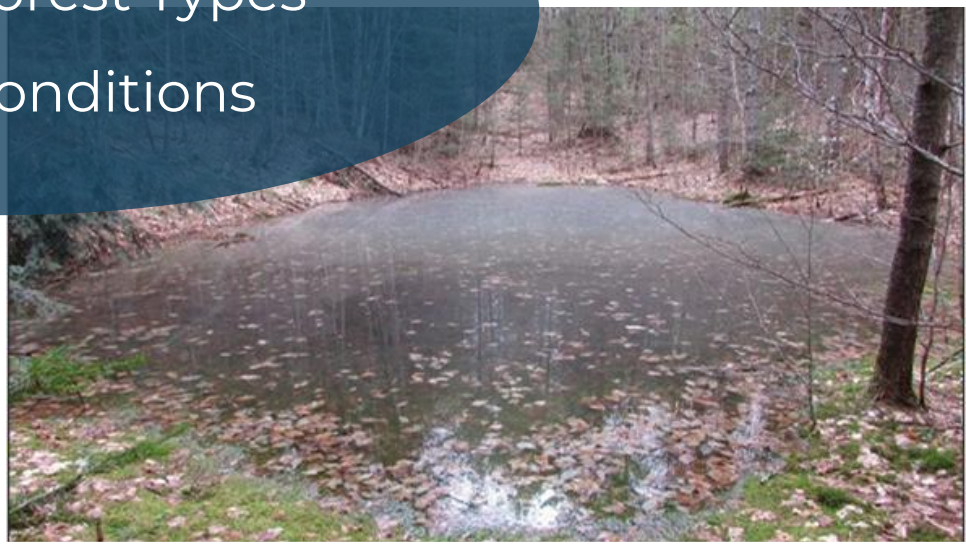


Statewide

Different Forest Types

“Right” Conditions





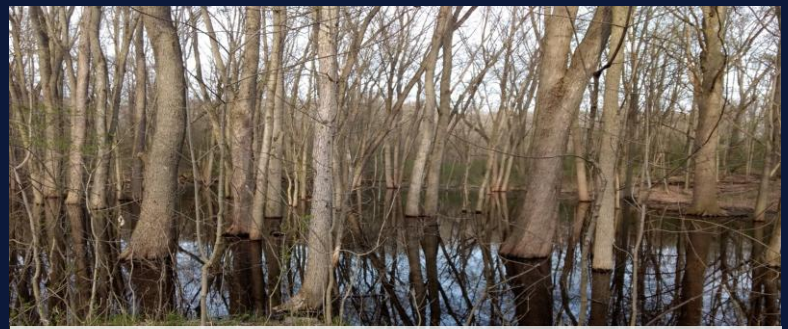
‘One Size Does Not Fit All’



Open – “Classic”



Shrubby



Forested



Marshy

Vernal Pool Hydroperiod

Proposed Hydrologic Class	Average Duration of Flooding (months)	Additional Information
Spring-filling pools, short-cycle	3 – 4	Dry by late June/early July
Spring filling pools, long-cycle	5 – 8	Dry mid-late summer/ early fall
Fall-filling pools, short-cycle	7 – 9	50% full in fall/winter; dry in late June/early July
Fall-filling pools, long-cycle	9 - 11	50% full in fall/winter; wet thru mid-summer
Semi-permanent pools	36 - 120	Dry completely every 5-10 years

From Colburn 2004 – Vernal Pools Natural History and Conservation



But most pools are…

- Small & Shallow
  - <2.5 ac, most <0.25 ac
  - < 1 m deep



- “Isolated” from permanent water bodies/Fishless
  - Can be temporarily connected
- Connected to surrounding forest & watershed



Amphibian indicator species migrate to natal vernal pools in early spring

Connected to surrounding forest & watershed

↓

Sensitive to changes in surrounding environment

↓

Affects species that use vernal pools as critical habitat and

Ecological Importance

Vernal pools are essential for maintaining healthy and resilient forest ecosystems.

Nature's Nurseries



"Coral Reefs of the Northern Forest"



Ecosystem Services



Nature’s Nurseries















Feeding the Forested Food Web


Mark Tegges


Lk Superior Watershed Partnership


Vernal Pool Assn








Frank Schroyer


























Leo Kenney

Coral Reefs of Northern Temperate Forests

- Wildlife habitat - >550 spp.
  - Invertebrates
  - Amphibians
  - Reptiles
  - Birds
  - Mammals

- Stepping stones in an upland landscape

















Ecosystem Services

- Nutrient cycling
- Water storage
- Groundwater recharge
- Flood control
- Water quality

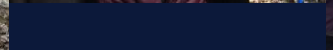


Gateway to Forests and Wetlands

















Gateway to Forests and Wetlands



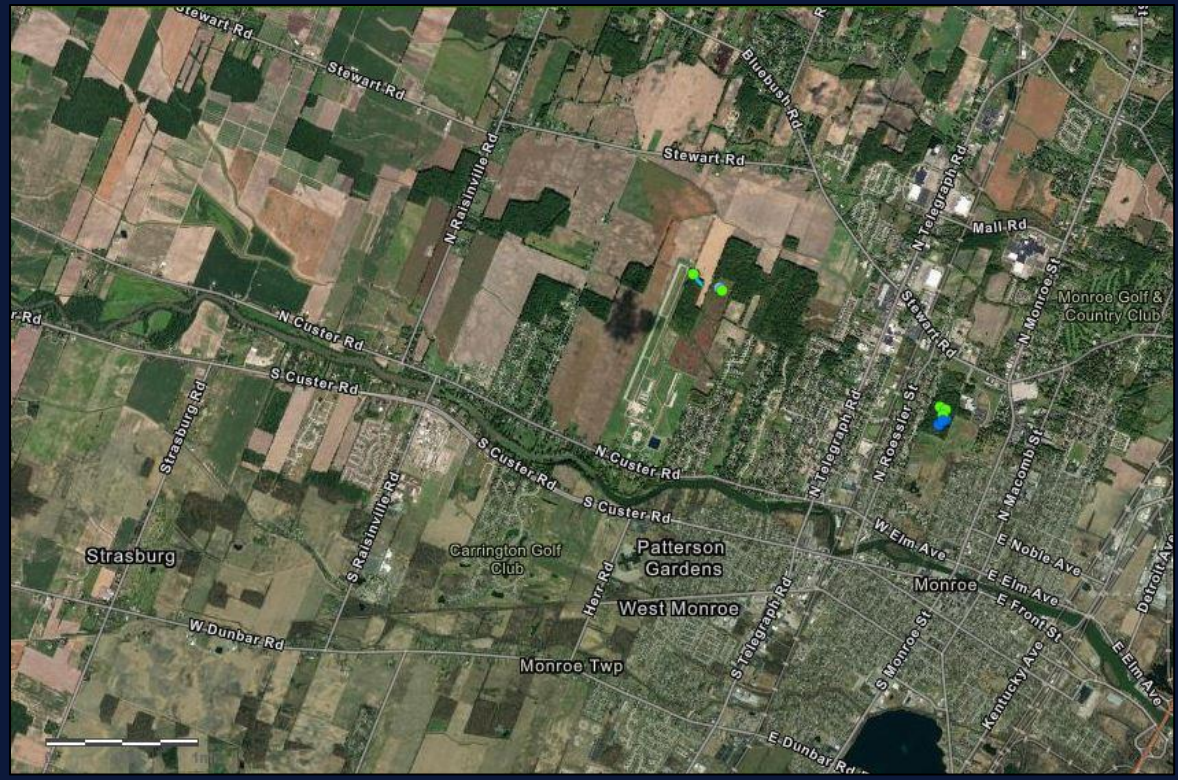
Why should we care?



- Limited awareness
- Limited information
  - Can be hard to identify and map
- Limited protection
  - Current regulated wetlands in MI
    - >5 acres in size
    - Connected to/within 1000’ GL
    - Connected to/within 500’ of inland lake, pond, river, stream
    - Essential - rare / T & E species

Why should we care?

- Loss and degradation
  - Development
  - Conversion to permanent ponds
  - Timber harvesting
  - Pollution
  - Invasive species
  - Climate change



What are we doing about it?

Michigan Vernal Pools Partnership

The mission of the Michigan Vernal Pools Partnership is to increase awareness, understanding and protection of vernal pools through conservation, research & mapping, education & outreach, and collaboration.

To achieve its mission, the partnership has developed four goals..

Conservation	Education & Outreach
Encourage vernal pool conservation through local and state measures	Improve awareness, understanding and engagement of land managers, educators, and other targeted audiences to increase effective conservation of vernal pools across Michigan.
Research & Mapping	**Collaboration & Coordination**
Understand the status, distribution and ecology of vernal pools to best inform conservation measures.	Leverage the experience, expertise and resources of partner organizations and others to maximize impact and accelerate progress.


FOR-MAR
NATURE PRESERVE AND ARBORETUM
EST. 1970
GRAND TRAVERSE
REGIONAL
land
CONSERVANCY
The Stewardship Network
Connect to Conserve
Huron
River
Watershed
Council
OAKLAND
UNIVERSITY
HEADWATERS
LAND CONSERVANCY
DEPARTMENT OF NATURAL RESOURCES
DNR
MICHIGAN
CWC
CHIPPEWA
WATERSHED
CONSERVANCY
MWA
Michigan Wetlands
ASSOCIATION
CHARTER TOWNSHIP OF
OAKLAND
1827
GRASS RIVER
NATURAL AREA
RiverRaisin
WATERSHED COUNCIL
Partner · Protect · Preserve
HURON-CLINTON
METROPARKS
Sea Grant
Michigan
EGLE
FOREST HILL
NATURE AREA
Huron
Pines
LITTLE TRAVERSE
CONSERVANCY
MARC
Michigan Amphibian and Reptile Conservancy
LOWER GRAND RIVER
ORGANIZATION of WATERSHEDS
MICHIGAN NATURE ASSOCIATION
Protecting Michigan's Natural Heritage Since 1952
Michigan
Natural
Features
Inventory
Discover. Define. Deliver.
DUCKS
UNLIMITED
BLUE HERON
Headwaters
Conservancy
LandConservancy
OF WEST MICHIGAN
chippewa
naturecenter
U.S.
FISH & WILDLIFE
SERVICE
DEPARTMENT OF THE INTERIOR
PARKS & RECREATION
WASHTENAW
COUNTY Michigan
HRM
HERPETOLOGICAL RESOURCE & MANAGEMENT
NCEC
NEWAYGO COUNTY
ENVIRONMENTAL COALITION
M
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WOODS
NATURE
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ROUGE
CITY OF ANN ARBOR
Natural Area
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Michigan Tech
Research Institute
GRAND RAPIDS
PUBLIC MUSEUM
Be curious.
MICHIGAN STATE
UNIVERSITY
Extension
OAKLAND
COUNTY PARKS
fenner
NATURE CENTER
The Nature
Conservancy
Kalamazoo
Nature
Center
www.NatureCenter.org

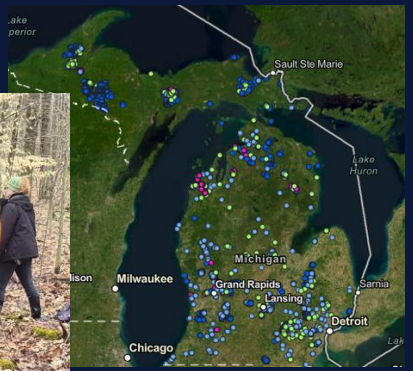
Vernal Pool Patrol

Michigan Vernal Pools Partnership

Michigan Natural Features Inventory

MICHIGAN STATE UNIVERSITY | Extension





Conservation

Research & Mapping

Education & Outreach

Michigan Natural Features Inventory

Michigan Nature Association

EGLE

DNR Department of Natural Resources Michigan

Michigan Tech Research Institute

MICHIGAN STATE UNIVERSITY | Extension

HRM Herpetological Resource and Management

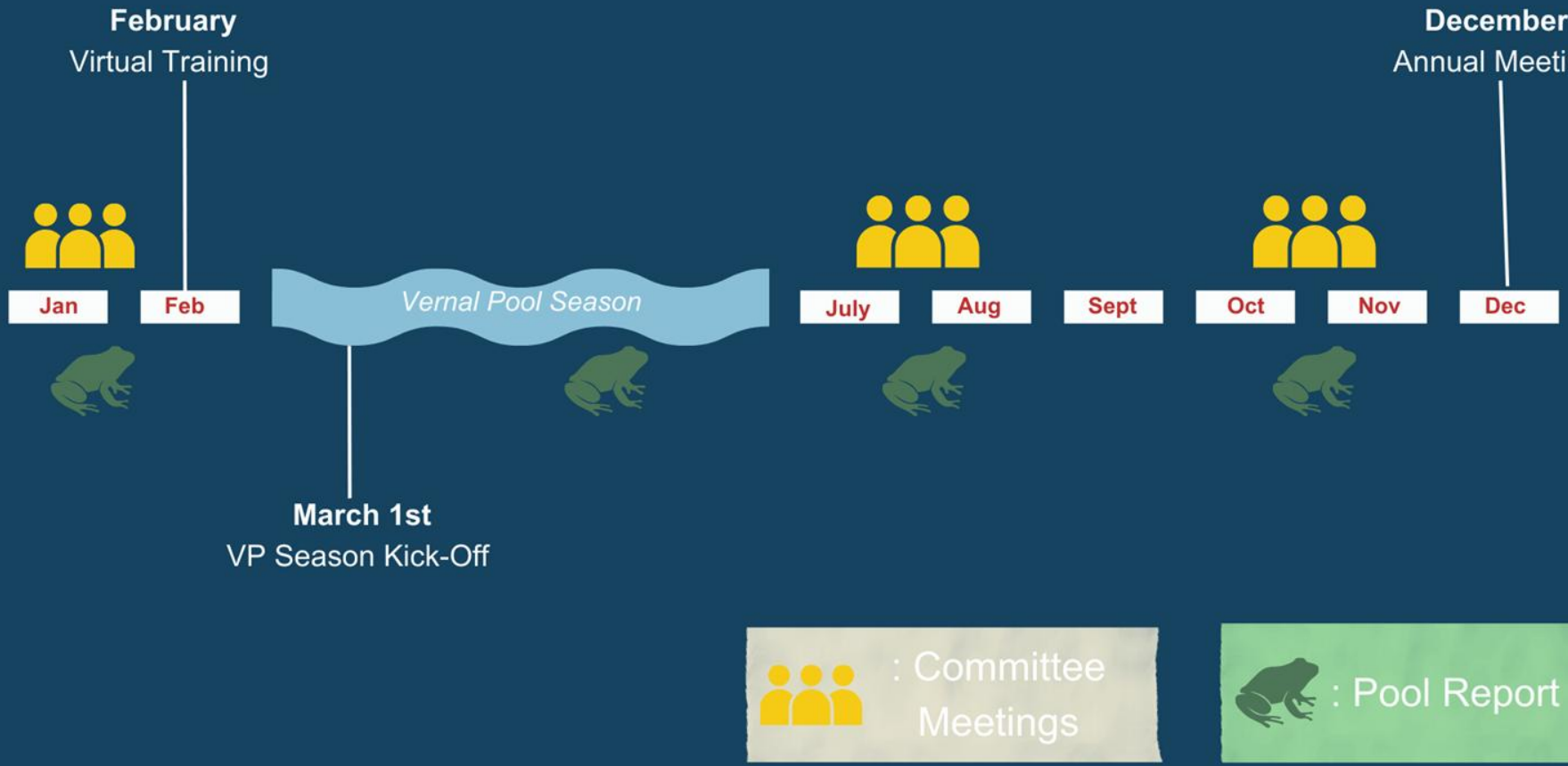
U.S. Fish & Wildlife Service

Consumers Energy Count on Us®

22 local program coordinators

53 statewide partners

A Year of Vernal Pools



Michigan Vernal Pool Patrol - Community Science











Michigan Natural Features Inventory

Statewide Program Coordinators:

Yu Man Lee & Courtney Ross

‘Ephemeral’



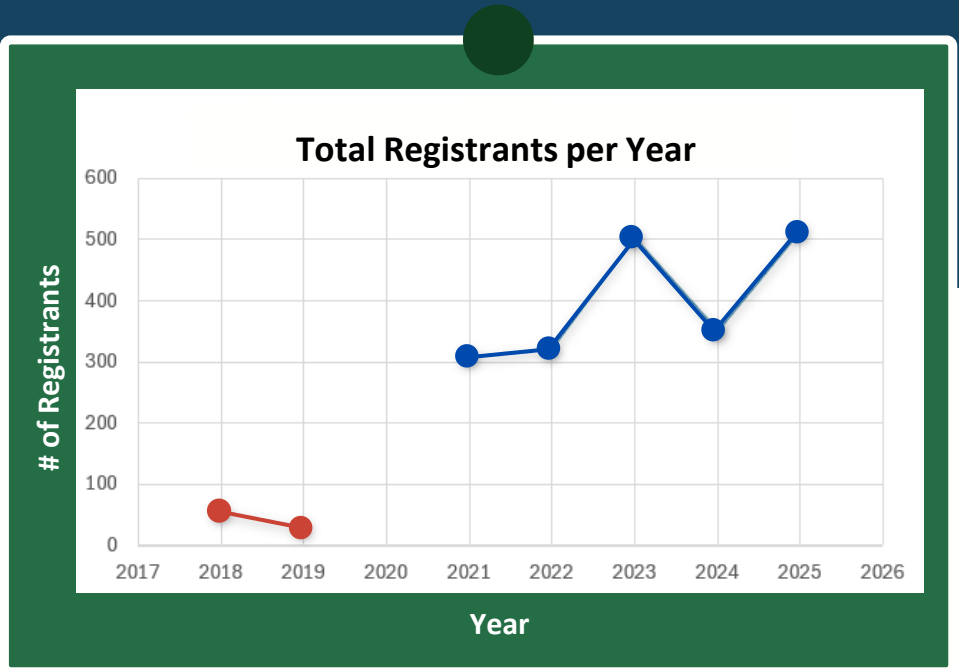
“Ephemeral” by Fauna Creative on Youtube

https://youtu.be/vdJDe3bA7j8



February

Virtual Training Series





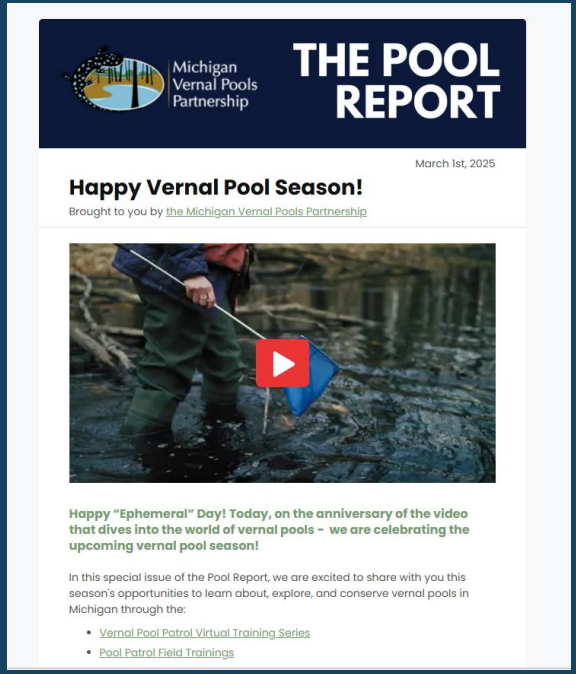


~500 additional VPP participants watched the recordings to participate in the program based on MNFI Community Account records (2021-2025)



March - June

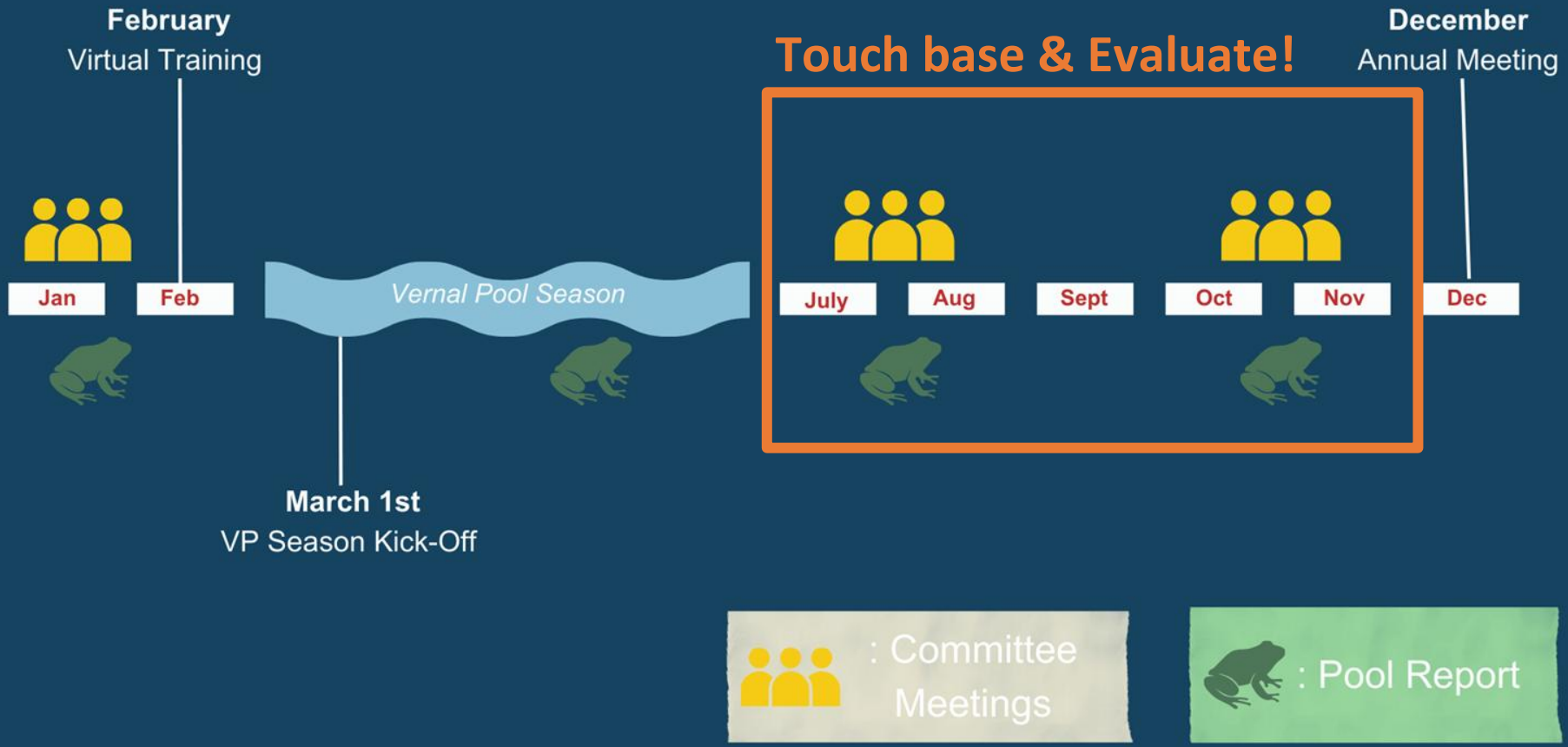
- Vernal Pool Season!



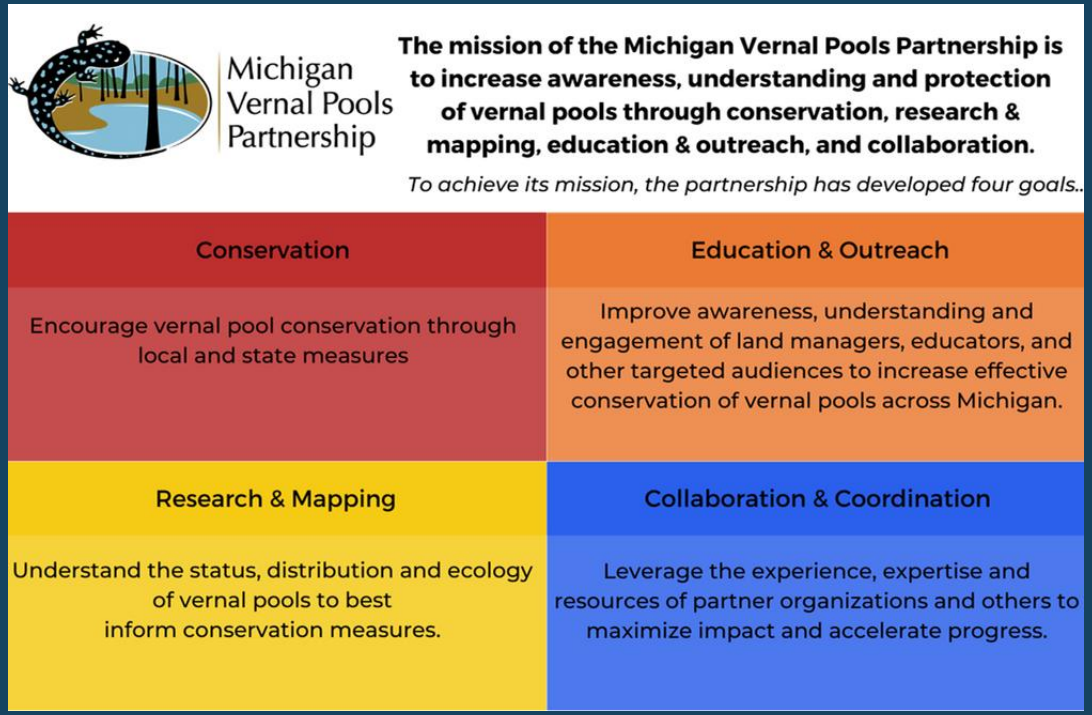
New this year

Comms Toolkit

A Year of Vernal Pools



July - November: Touch base & Evaluate



- Partners share updates, successes, challenges, needs, etc.

- Discuss new tools & resources
  - Connecting with private landowners
  - FAQ for Local Ordinance Essentiality Criteria
  - Communications Toolkit
  - Curriculum development
  - Updates to monitoring protocols

- Explore new directions
  - Local ‘Pool Parties’?
  - Training for partner orgs?

December: Annual Meeting

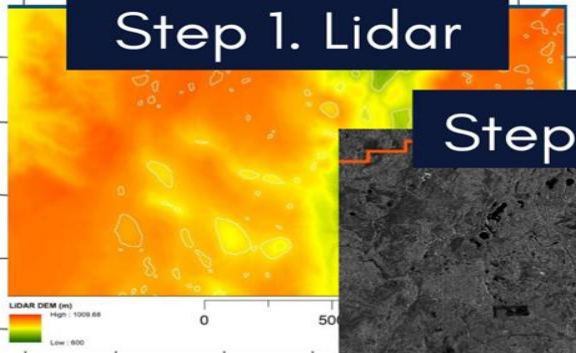


MVPP Annual Meetings

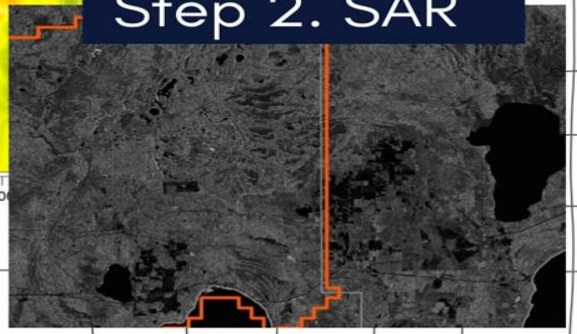
- Learn latest research
- Share experiences
- Inspire and facilitate collaboration
- Recognize partners and progress

How can I help?

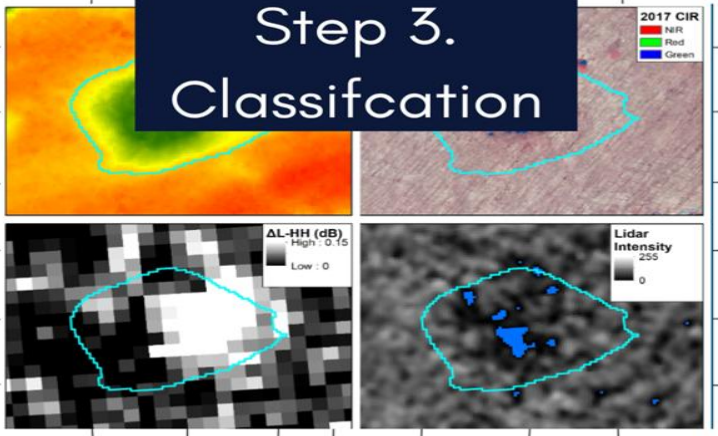
Step 1. Lidar



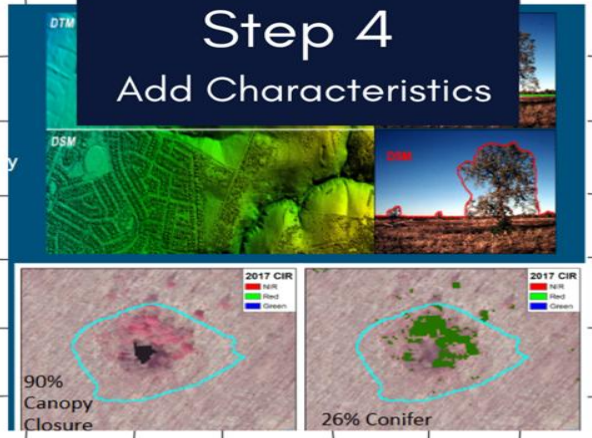
Step 2. SAR



Step 3. Classifcation



Step 4
Add Characteristics



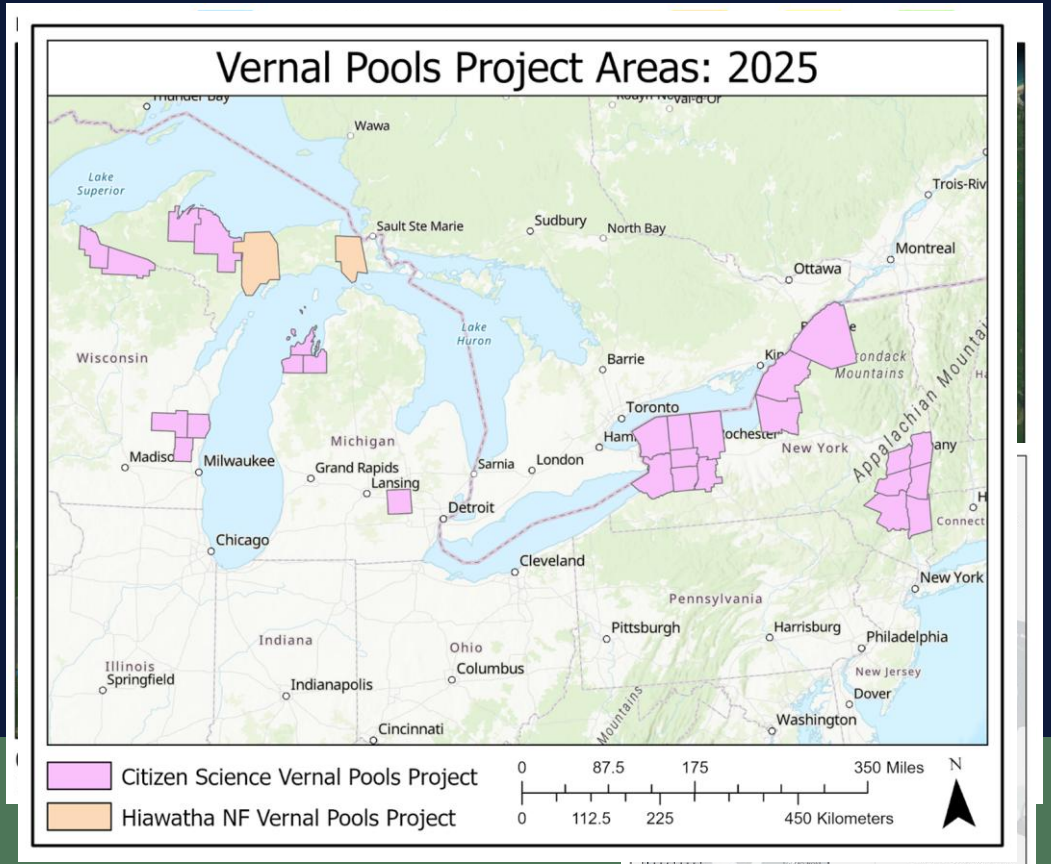
Step 5.
Field Verification!



Current Map Results!

- US National Parks project 2019-2024
- Mapped 6 National Parks and Lakeshores in 4 Great Lakes states (MI, MN, IN, WI)
- 303 pools field visited
- 78.2% accuracy overall

National Park	Field Data	Accuracy
Apostles Island	43	80.0%
Indiana Dunes	65	75.4%
Isle Royale	51	84.3%
Pictured Rocks	47	85.1%
Sleeping Bear Dunes	49	73.5%
Voyagers	51	72.5%
All Parks	303	78.2%



National Parks in the Great Lakes

VERNAL POOL PATROL

FREE VIRTUAL TRAINING SERIES

Tuesday Evenings 6-8PM EST

February 10th
Vernal Pool Introduction



February 17th
Vernal Pool Ecology



February 24th
Vernal Pool Monitoring



Michigan Natural Features Inventory
Discover. Define. Deliver.

Michigan Vernal Pools Partnership

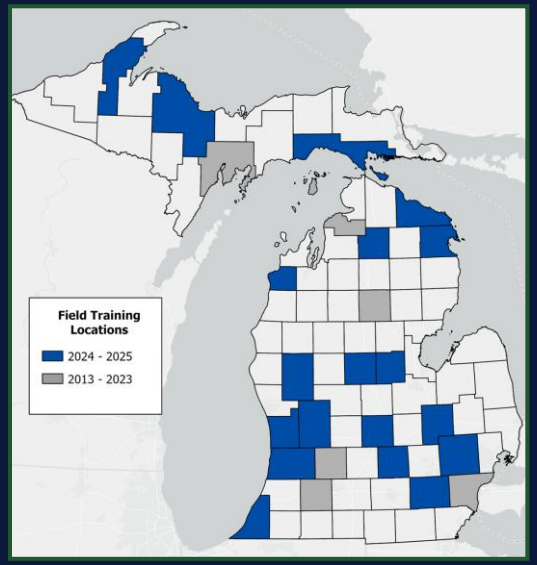


Monitoring Form & Protocol Discussion



Surrounding Habitat & Botany Exploration

Attend a Field Training





Pool Sampling & Species Identification

Survey123 Field App & Data Entry Review

Kent County - Sat, March 28th

Kent County Conservation District, Grand Rapids Public Museum, and the Lower Grand River Organization of Watersheds

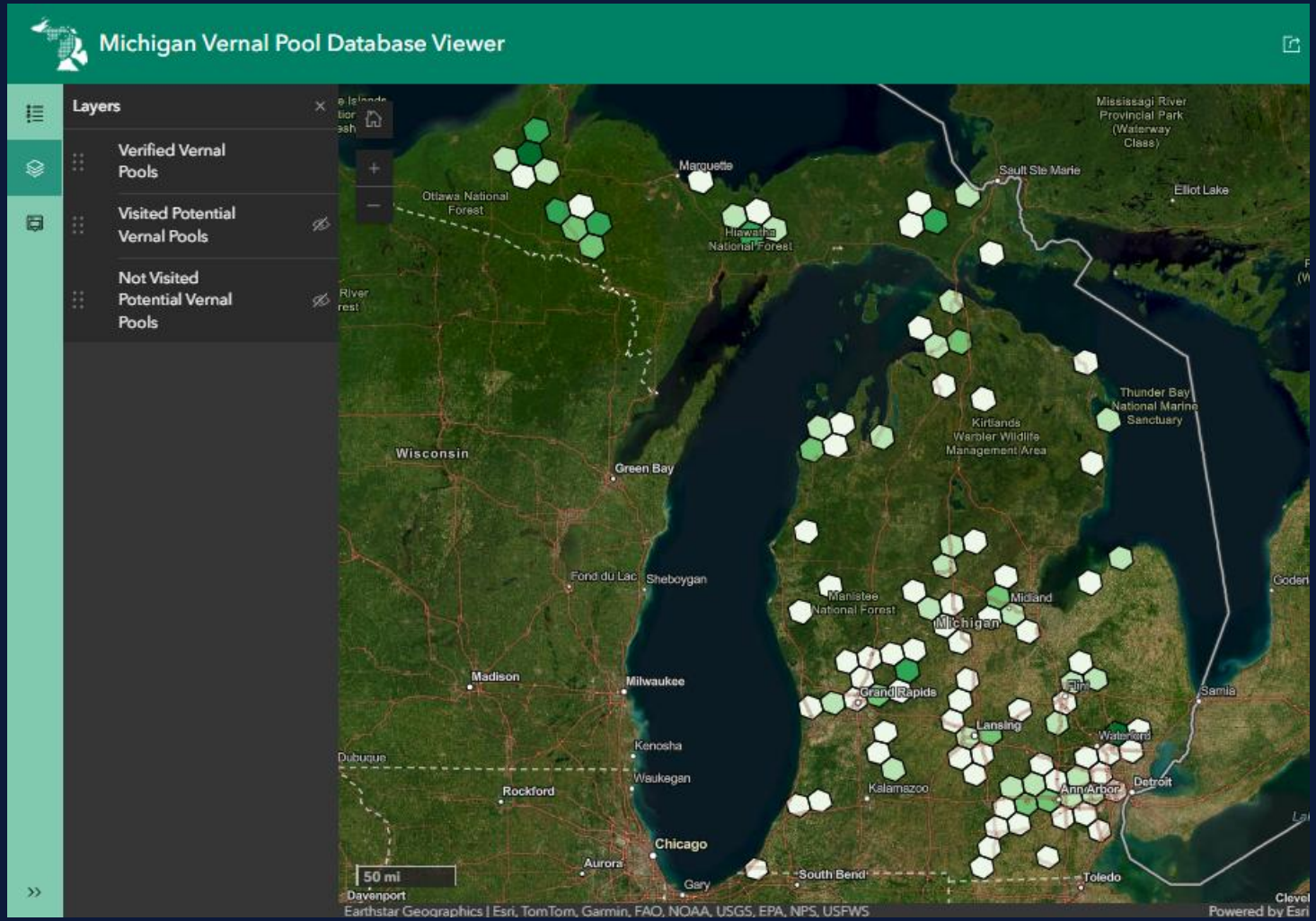
Data Collection - VP Ecology & Threats

- Physical, hydrological, and biological characteristics
  - Vernal pool type
  - Indicator, rare & other species
  - Pool size, water depth & temperature, soils
  - Landscape
  - Disturbances / threats


Anna Sheppard





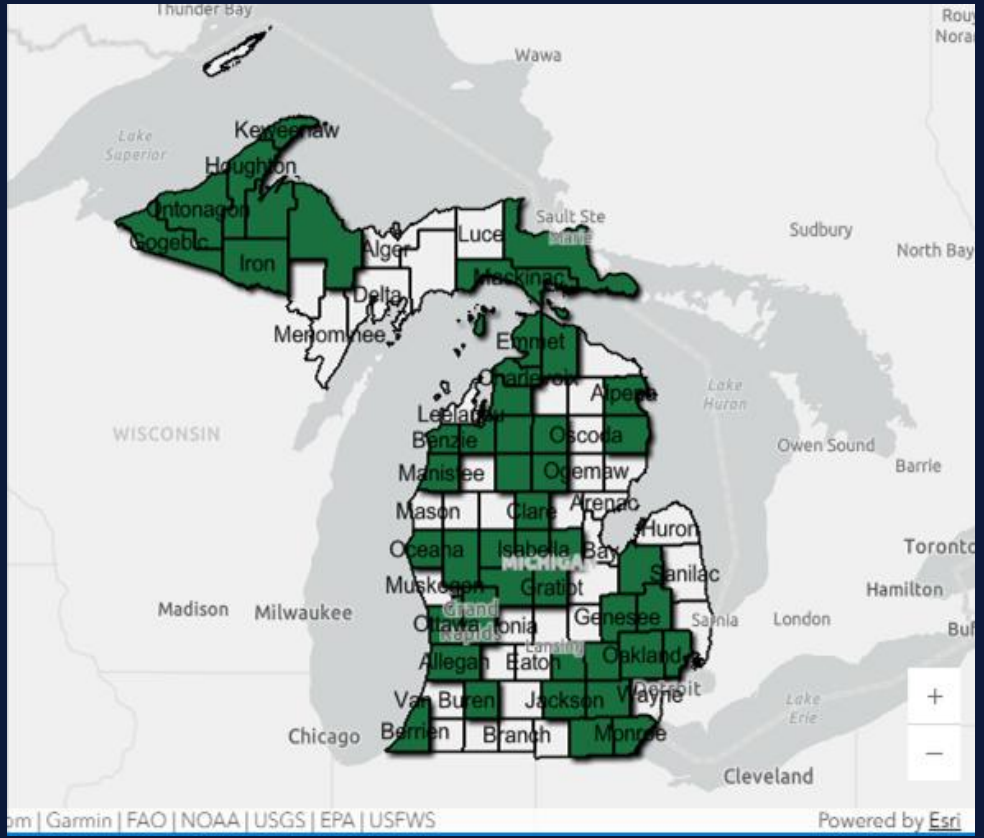

Michigan Vernal Pool Database Viewer
Layers
Verified Vernal Pools
Visited Potential Vernal Pools
Not Visited Potential Vernal Pools
Mississagi River Provincial Park (Waterway Class)
Marquette
Sault Ste Marie
Elliot Lake
Ottawa National Forest
Hiawatha National Forest
Thunder Bay National Marine Sanctuary
Kirtlands Warbler Wildlife Management Area
Wisconsin
Green Bay
Fond du Lac
Sheboygan
Manistee National Forest
Midland
Michigan
Madison
Milwaukee
Grand Rapids
Flint
Samia
Lansing
Waterford
Kenosha
Dubuque
Waukegan
Kalamazoo
Ann Arbor
Detroit
Rockford
Chicago
Aurora
Gary
South Bend
Toledo
Davenport
50 mi
Earthstar Geographics | Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, NPS, USFWS
Powered by Esri

Supported by Local Program Coordinators

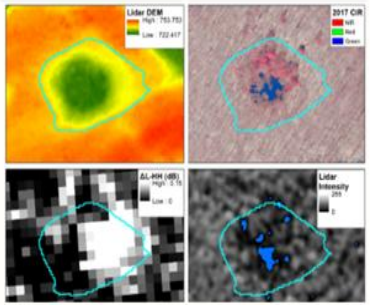
Antrim, Benzie, Grand Traverse, Kalkaska, Manistee

Erica DesJardins, Grand Traverse Regional Land Conservancy

edesjardins@gtrlc.org
231-929-7911



You Data Supports...



Improving Vernal Pool Detection and Mapping

We develop and refine methods to identify vernal pools across broad landscapes, including the use of remote sensing and other geospatial tools to detect these small and cryptic wetlands more efficiently.



Building a Regional Framework for Verification

Because remotely mapped pools must be confirmed on the ground, our work uses field surveys and community science to verify presence, improve data quality, and support a more standardized regional inventory.



Linking Physical Features to Biodiversity

To help characterize high quality vernal pools, our work examines which pools support indicator species and what landscape features are associated with higher biological diversity.



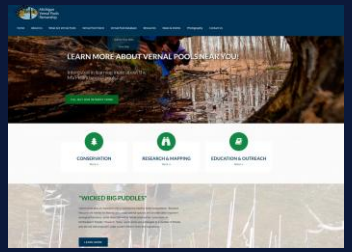
Assessing Vulnerability and Guiding Conservation Priorities

Our research aims to evaluate which vernal pools are most vulnerable to climate and land-use change and use that information to develop vulnerability assessments and identify high-priority sites for protection and management.

Keep Learning and Stay Connected!

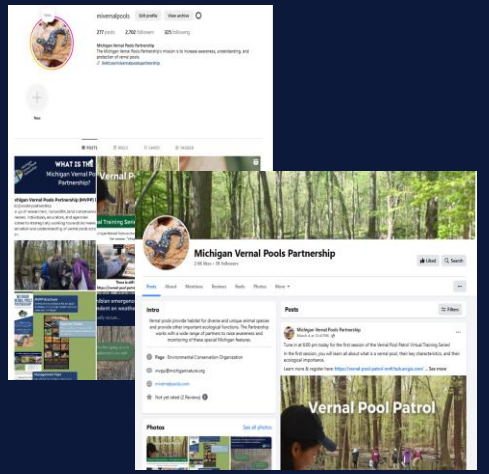


"The Pool Report"



www.mivernalpools.com

Vernal Pool Story Map



Social Media
@mivernalpools

Thank You! Questions?

Michigan Vernal Pools Partnership



Abby Pointer

apointer@michigannature.org

Summer & Fall Pool Identification









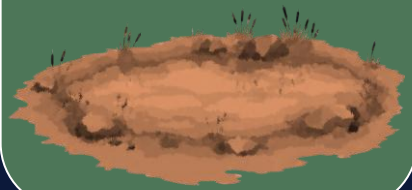
- Small & shallow depression
- Black, water-stained leaves
- Black water marks at base of trees
- No vegetation / abrupt change in vegetation
- Wetland / VP indicator specie (including wetland plants, snails, fingernail clams)

What Characteristics are Observable With Remote Sensing?

Filled with water in the Springtime



Annual Wet/Dry cycle from Spring to Summer





Small topographic depressions that lack a permanent connection to other bodies of water.