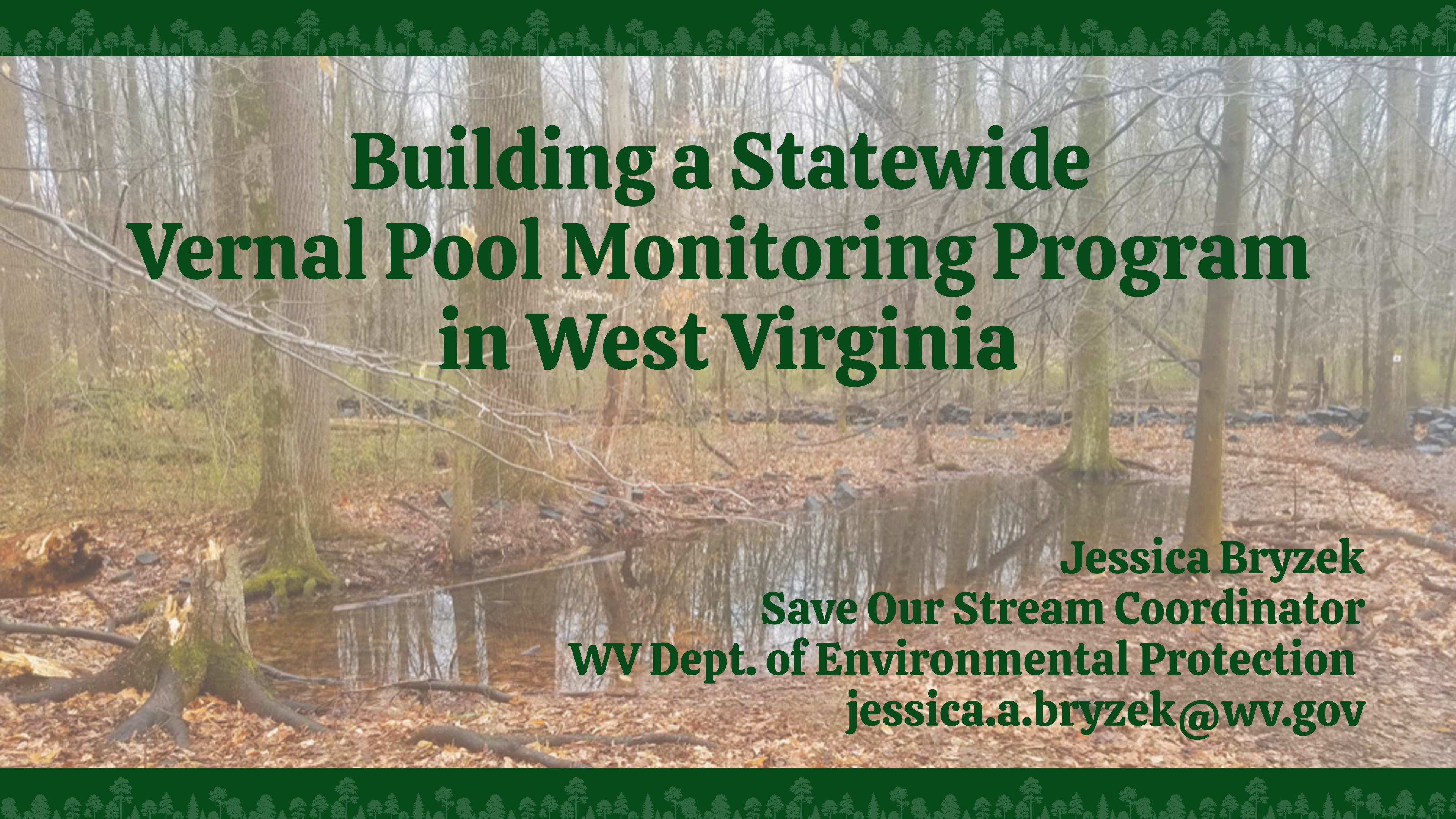




Building a Statewide Vernal Pool Monitoring Program in West Virginia

Jessica Bryzek
Save Our Stream Coordinator
WV Dept. of Environmental Protection
jessica.a.bryzek@wv.gov

Vernal Pools

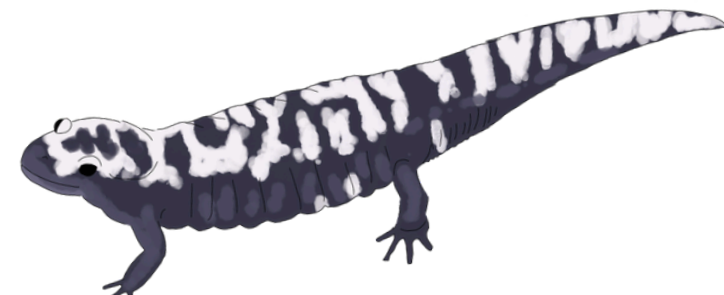
- 1) isolated wetlands not connected to other bodies of water
- 2) have wet-dry cycles that preclude permanent populations of fish
- 3) support unique biological community

Wood Frog



Spotted Salamander

Jefferson Salamander



Marbled Salamander





**Forest
Depression**

A photograph of a forest depression, showing a small, shallow pool of water surrounded by trees and fallen leaves.



**Pit &
Mound**

A photograph of a pit and mound, showing a small, shallow pool of water surrounded by trees and fallen leaves.



Floodplain

A photograph of a floodplain, showing a small, shallow pool of water surrounded by trees and fallen leaves.

**WV pools are small and
underrepresented**



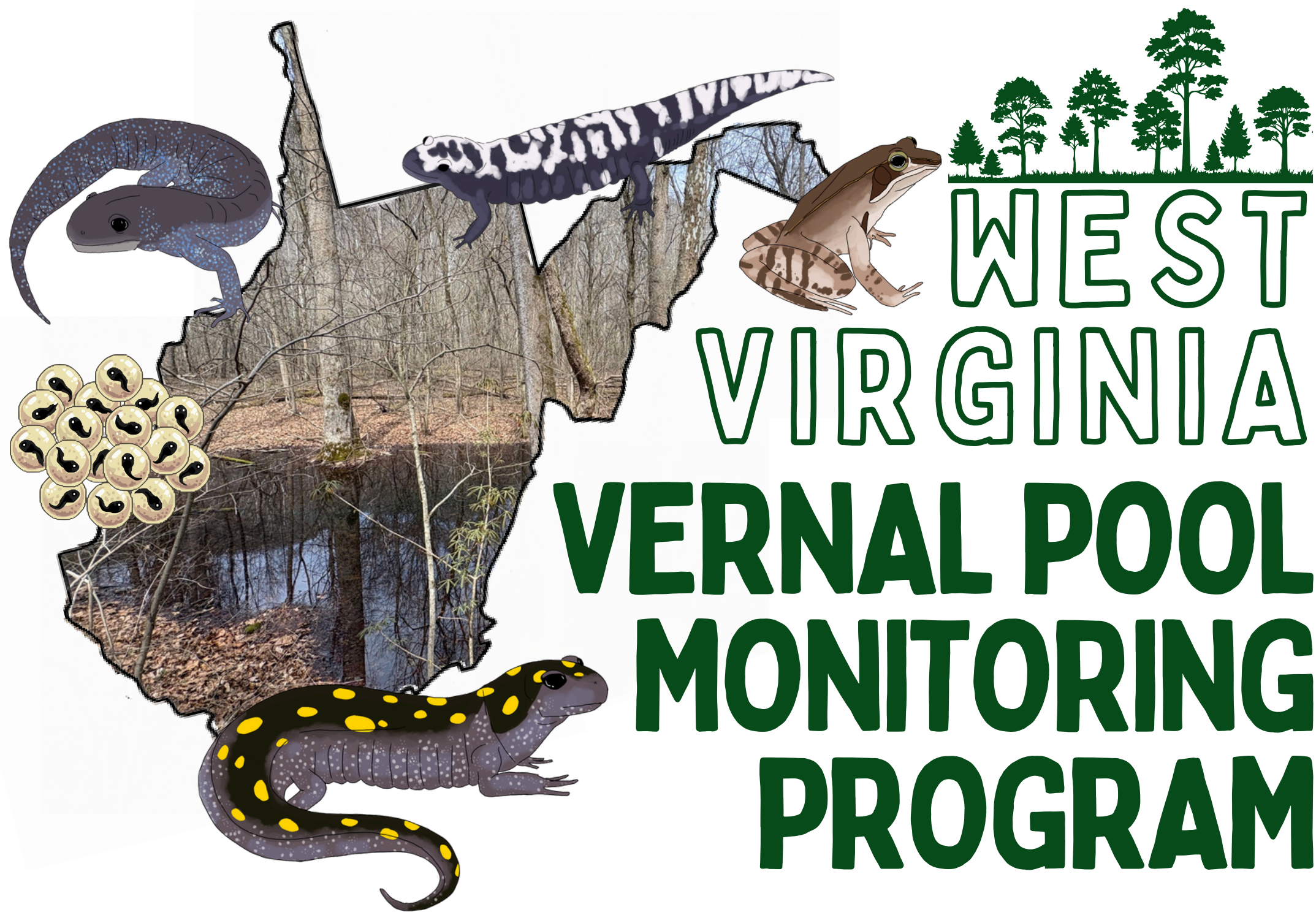
Constructed

A photograph of a constructed pool, showing a small, shallow pool of water surrounded by trees and fallen leaves.



Tire Rut

A photograph of a tire rut, showing a small, shallow pool of water surrounded by trees and fallen leaves.



A COLLABORATIVE PARTNERSHIP TO



IDENTIFY



MONITOR



EDUCATE

**ABOUT VERNAL POOLS,
ENGAGING CITIZEN SCIENTISTS
ALONG THE WAY!**

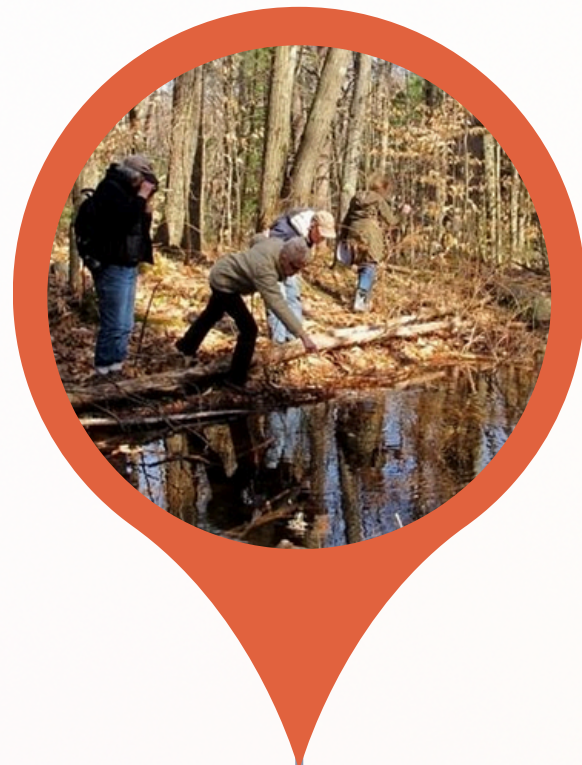
Program Development



2021-22

Research & Development

- Working Group
- Reviewed other state programs
- NEARMI
- Funding: WPDG



2023

First Round of Workshops

- 4 workshops
- 100 participants
- 15 surveys submitted



2024

Evaluation & More Workshops

- 5 workshops
- 100 participants
- 100 pools monitored



2025

Training Videos & Survey123



2026

More Workshops & Survey123 Roll Out

- 6 workshops
- Virtual workshop
- 100 pools monitored

**Location
Only**



**Year-
round**

Level 1



Tiered Structure



**Late Winter &
Spring**

Level 2



Level 3



**Late
Summer or
Early Fall**

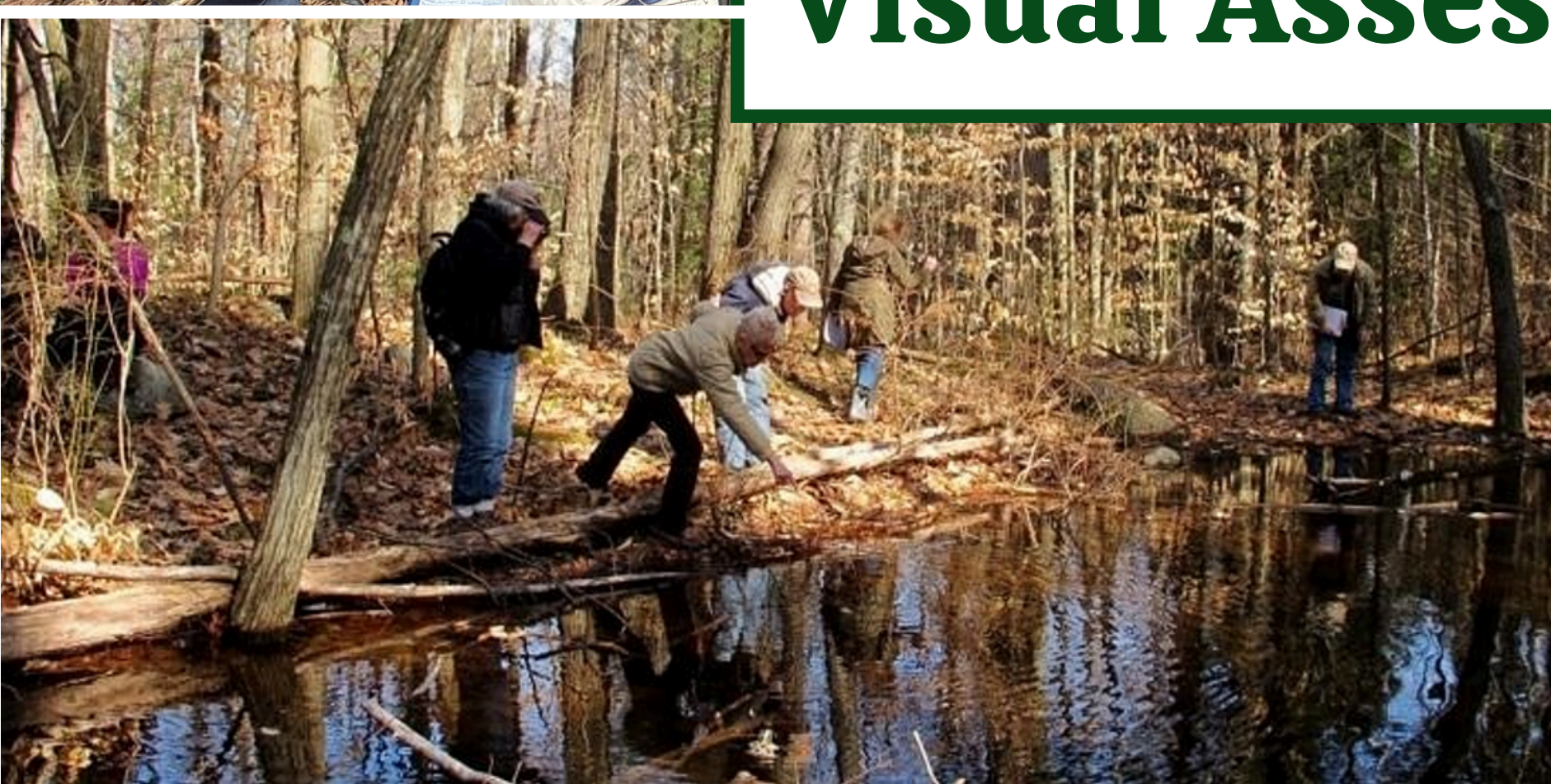


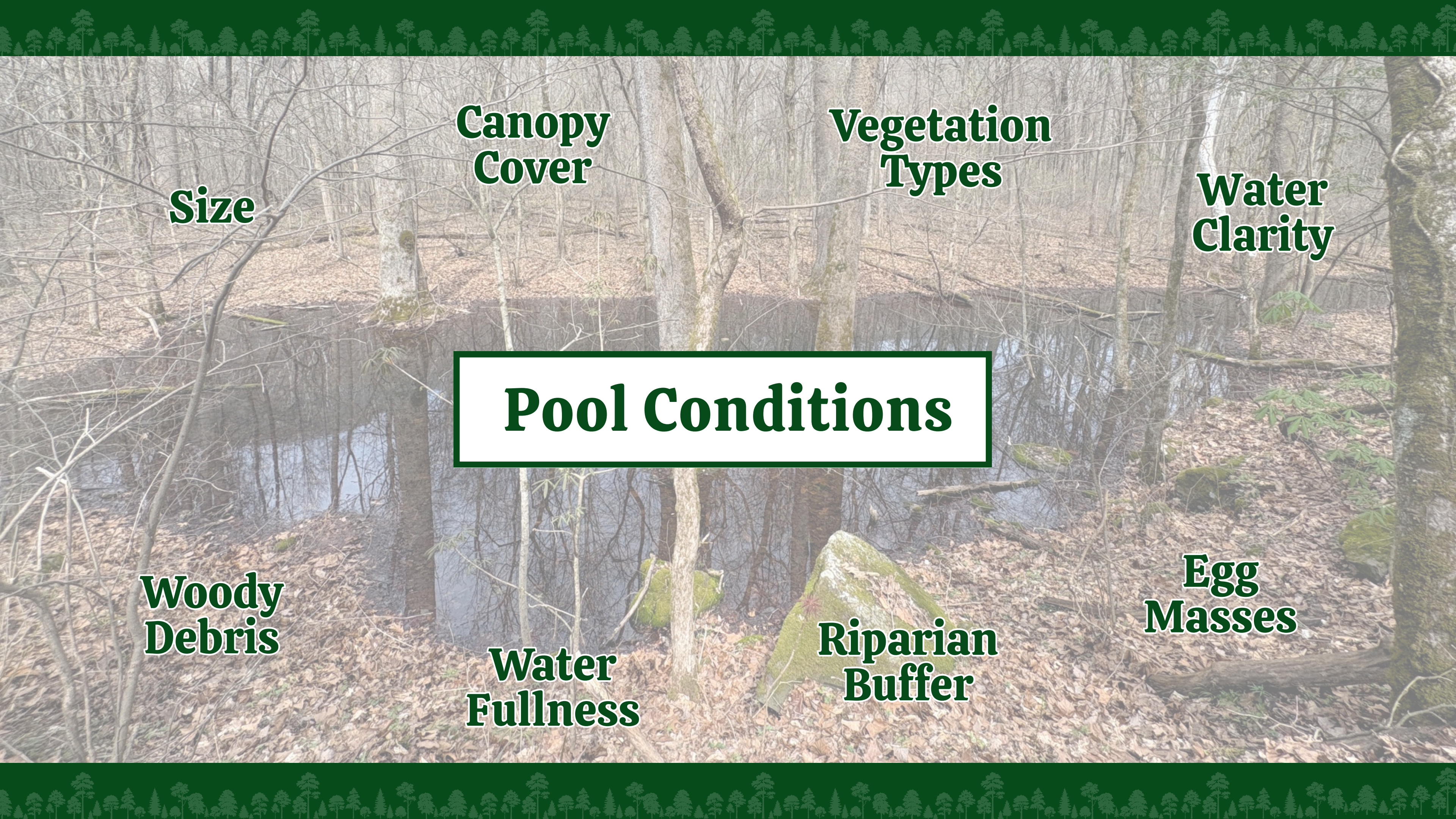
Workshop > Local





Visual Assessments Only





Size

**Canopy
Cover**

**Vegetation
Types**

**Water
Clarity**

Pool Conditions

**Woody
Debris**

**Water
Fullness**

**Riparian
Buffer**

**Egg
Masses**



Decontamination & Emerging Diseases



Monitoring Manual

Egg Mass ID Guide

A photograph of a forest stream. The water is calm, reflecting the surrounding evergreen trees and the sky. The banks are covered with green foliage and some fallen leaves. The scene is peaceful and natural.

West Virginia Vernal Pool Volunteer Monitoring Manual

Developed in Partnership with the following Agencies:

West Virginia Department of Environmental Protection
West Virginia Division of Natural Resources
United States Geological Survey - Amphibian Research and Monitoring Initiative (USGS-ARMI)
United States Fish & Wildlife Service - Canaan Valley National Wildlife Refuge



JEFFERSON SALAMANDER



- ## SPOTTED SALAMANDER



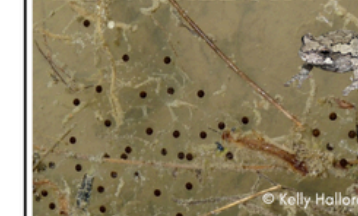
- ## WOOD FROG



- ## AMERICAN TOAD



- ## GREY TREE FROG



- ## SPRING PEEPER



- 
- MARBLED**



- Laid in dry vernal pools, under logs, leaves, or other structures in autumn (September/October)

Pocket Guide

DECONTAMINATION PROTOCOL

- 1 Brush** off all soil, seeds, and vegetation.
- 2 Rinse** clean with water. Use stiff brush (2-gallon capacity) and allow to dry according to crew needs) and allow to dry according to crew needs) and allow to dry according to crew needs).
- 3 Spray** with 10% bleach solution to 9 parts water) and allow to dry. The bleach solution must be replaced each week as it loses effectiveness over time, unless replaced quickly. A small sprayer such as mister or hairspray sprayer may be used. Bleach should not be introduced into the wetland.
- 4 Rinse** with water. Bleach should not be introduced into the wetland.

IS THIS A VERNAL POOL?

USE THIS CHECKLIST TO INVESTIGATE!

- ☐ **Seasonal wet-dry cycle:** Water is typically present in the winter and spring, then dries out annually or every few years (usually in late summer or fall).
- ☐ **Isolated hydrology:** There is no continuous surface-water connection to other bodies of water, nor any continuously flowing inlet or outlet.
- ☐ **Variable size and shape:** Pools vary in size and shape, but they are often small and shallow.
- ☐ **Absence of fish:** They lack established fish populations.
- ☐ **Presence of indicator species:** Amphibians and invertebrates that rely on vernal pools as essential habitat for a portion of their life cycle may be present.
- ☐ **Presence of facultative species:** Species that utilize a vernal pool when available may also be present.

WOOD FROG

Indicator (*Lithobates sylvaticus*)

ADULT CHARACTERISTICS:



© Brian Gratwicke

They have a white upper side with a black or brown triangular 'mask' behind the eye. They have two ridges down the back. Their call sounds like squeaky shoes or quacks.

EGG MASS CHARACTERISTICS:

A female lays a single, fist-sized mass of many egg masses may be laid in large communal groups near the water surface. Each egg has a black embryo in the center. There is no outer protective envelope. The entire mass; each embryo has its own sac, creating clearly discernible individual eggs that look much like a cluster.



EQUIPMENT CHECKLIST

- ☐ Vernal Pool Data Sheet
- ☐ Protocol Instruction Manual
- ☐ Egg Mass ID Guide
- ☐ Mobile Device with Survey123 app
- ☐ Polarized Sunglasses
- ☐ Decontamination Kit
 - Stiff Brush
 - 10% Bleach Solution
 - Clean Water for Rinsing
- ☐ Optional:
 - Digital Camera
 - GPS Unit
 - Tape Reel (to assist in estimating forested buffer size)

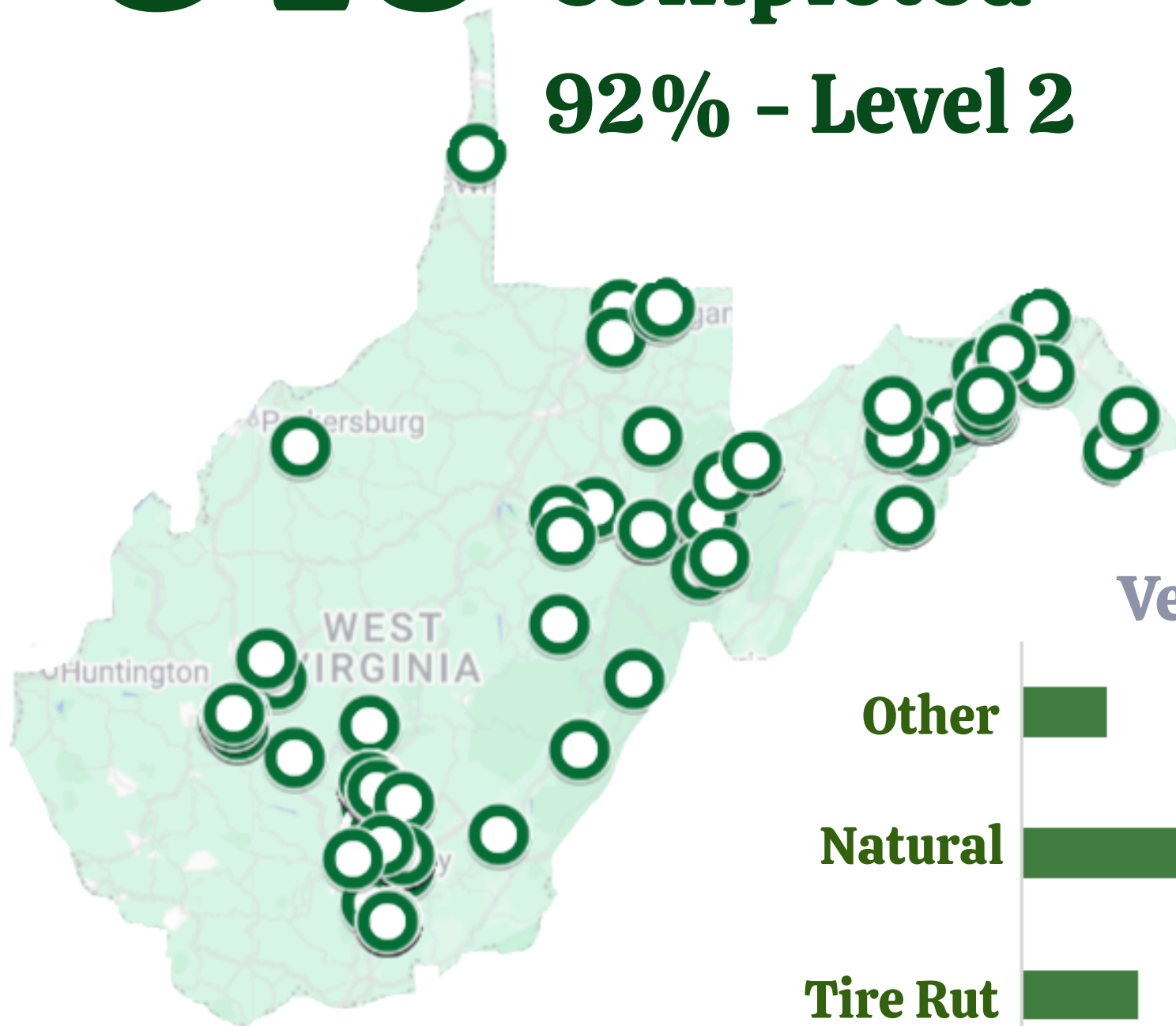


SUBMIT YOUR OBSERVATIONS

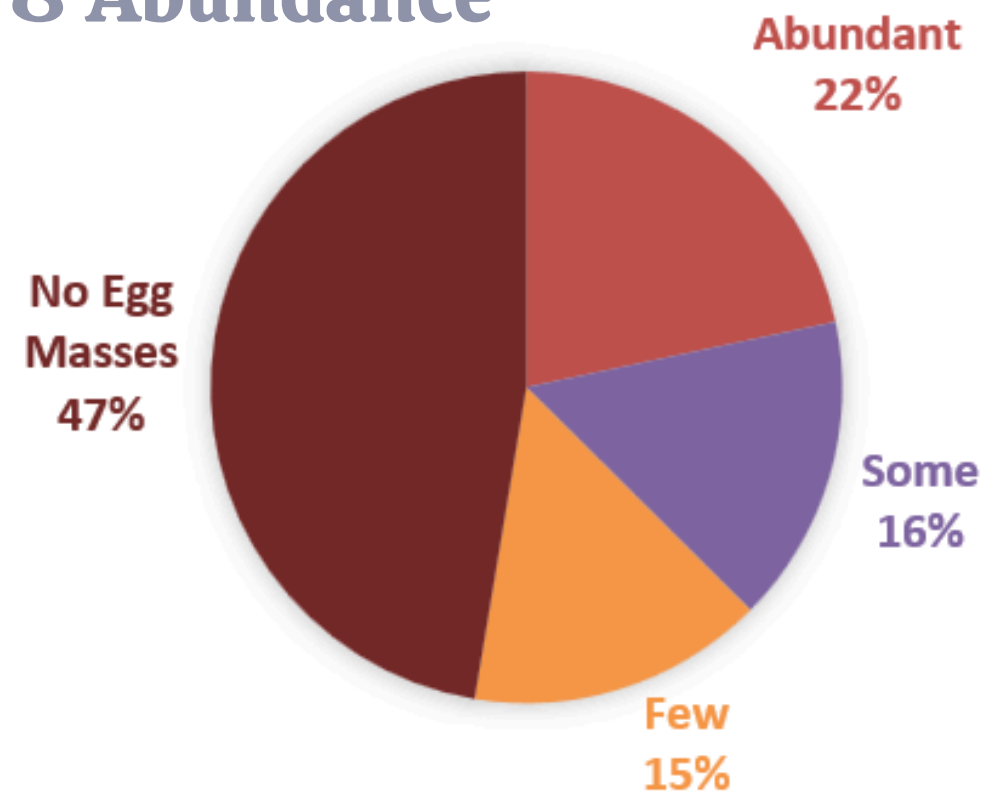
using Survey123 on a mobile device or desktop browser



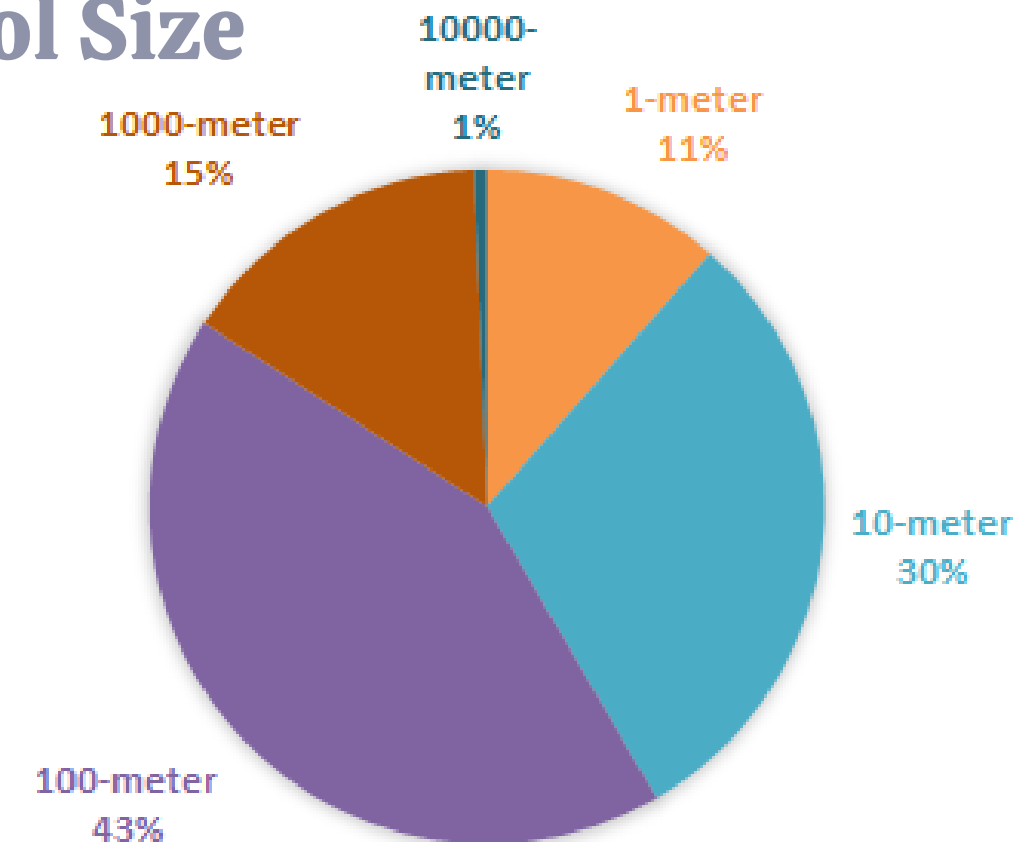
345 Surveys Completed
92% - Level 2



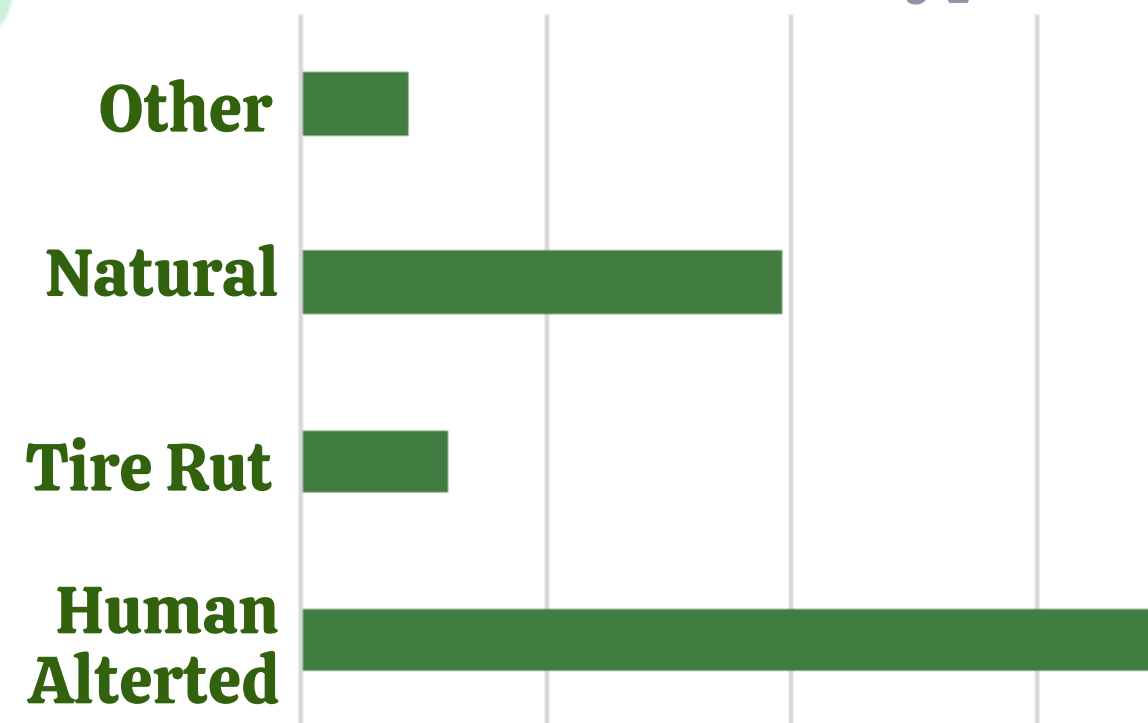
Egg Mass Presence & Abundance



Pool Size



Vernal Pool Type



348 Workshop Attendees
13 Workshops

- 30% Master Naturalist
- Academia, Environmental Non-Profit, Watershed Associations, K-12 Schools, State Parks, Community Member

A background image of a forest with a stream. The trees are mostly bare, suggesting autumn or winter. The stream is calm, reflecting the surrounding trees. The ground is covered in fallen leaves. The overall tone is natural and serene.

Questions?

Visit our website

<https://dep.wv.gov/WWE/getinvolved/Pages/Vernal-Pool-Monitoring.aspx>

Jessica Bryzek
Save Our Stream Coordinator
WV Dept. of Environmental Protection
jessica.a.bryzek@wv.gov