

West Virginia's Vernal Pool Amphibians

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WEST VIRGINIA

DNR

Objectives

- What are vernal pools?
- Vernal pool amphibian life history
- Common vernal pool amphibian identification
- Disease risk at vernal pools



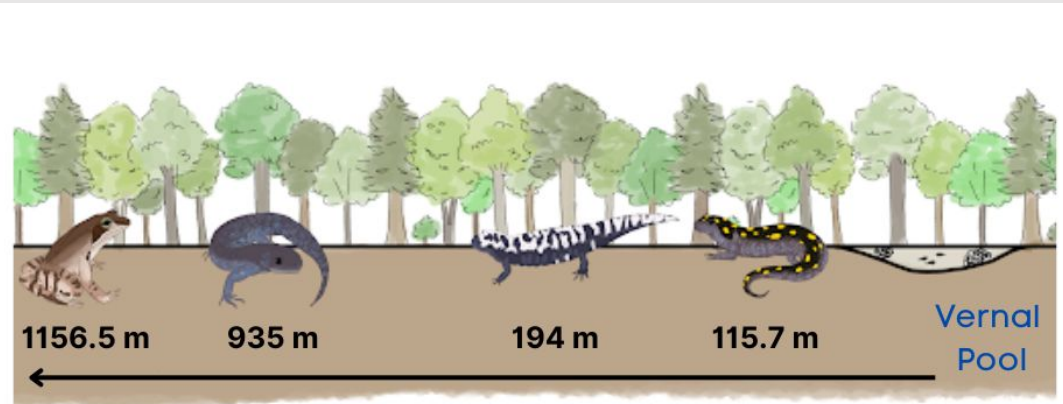
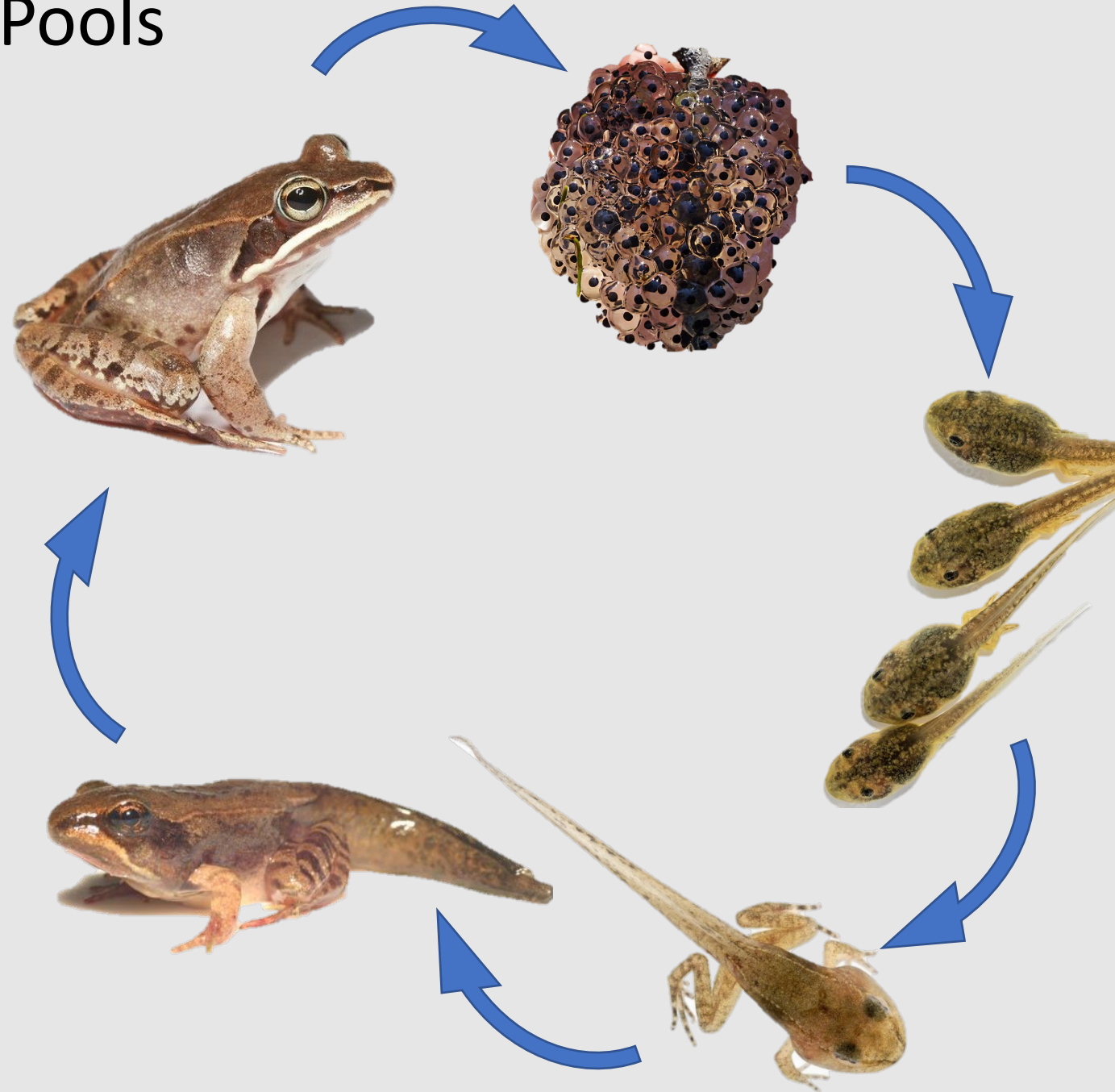
What is a vernal pool?

- Shallow depressions that usually contain water for only part of the year
 - Typically, Winter-Spring
- Often forested or associated with forested wetlands
- Pools range in size
- Lack fish

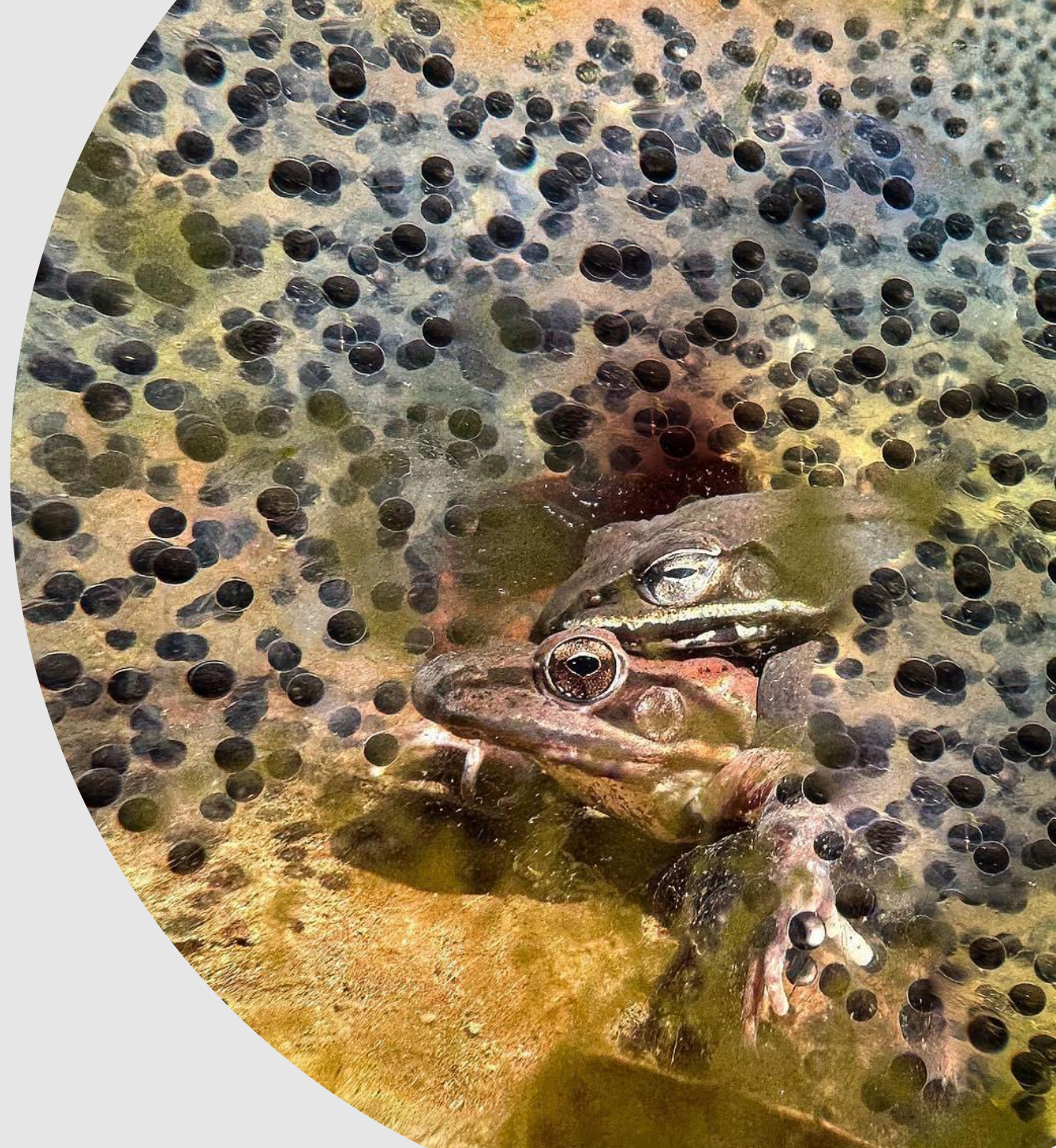


Amphibian Ecology at Vernal Pools

- Vernal pools are critical components of some amphibian life cycles
 - Serve as breeding sites
 - Tadpole/larvae and juvenile rearing
 - Adults typically do not disperse far from vernal pools
- Metamorphosis
 - Adults (amplexus/ egg mass laying)
 - Tadpole/ larvae
 - Metamorph/ froglet
 - Adult



- Timing of breeding migrations vary by species
 - Jeffersons salamander
 - Wood frog
 - Spotted salamander
 - American toad
 - Gray treefrog
 - Marbled salamander



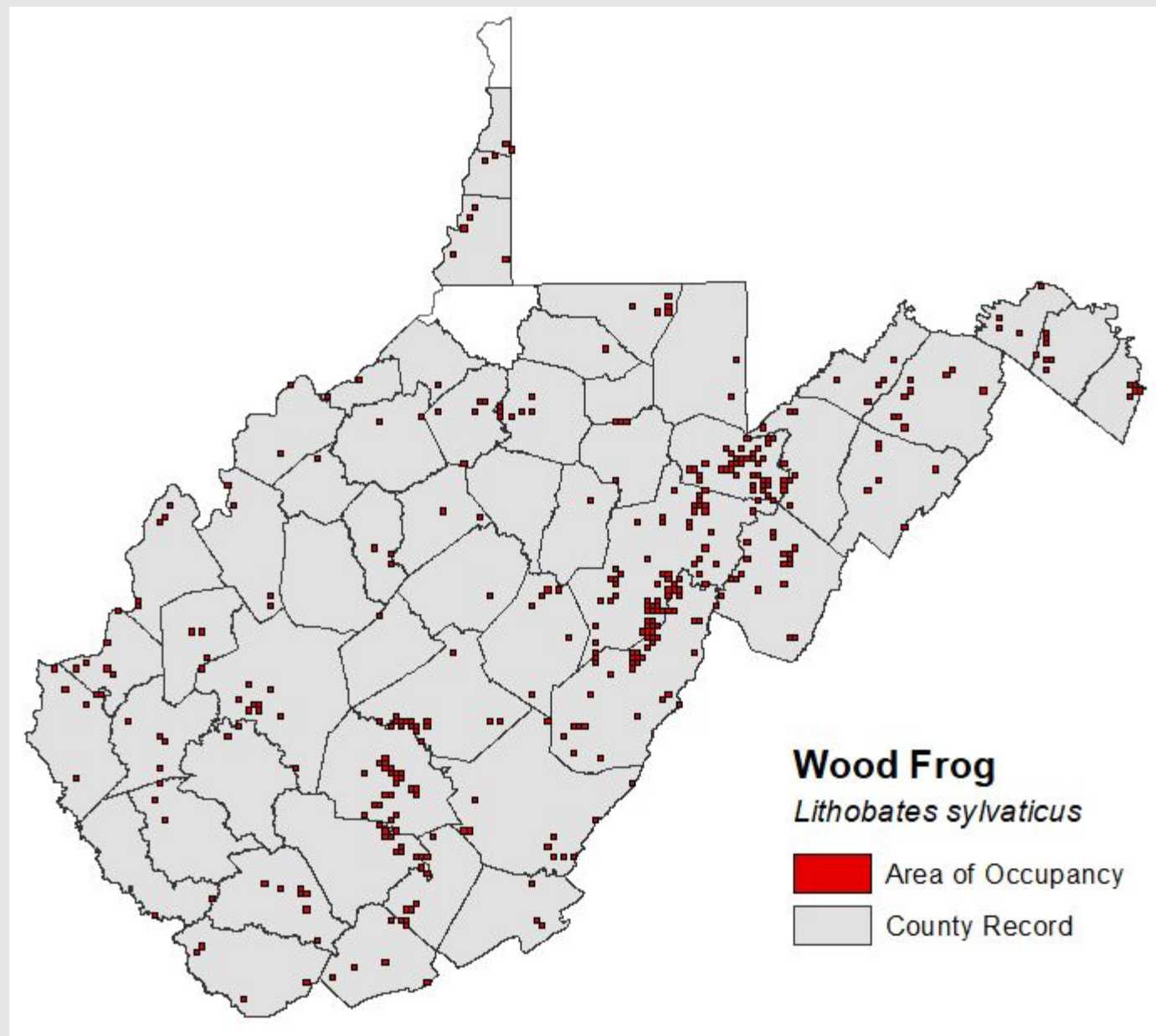


Wood Frog

Lithobates sylvaticus

- Adult
 - White upper lip
 - Black triangular “mask” behind eye
 - Dorsolateral ridges
- Egg Mass
 - Gelatinous
 - Grapes
 - Attached to sticks and vegetation in the water
- Call
 - Squeaky shoes or “wonky” duck







Spotted Salamander

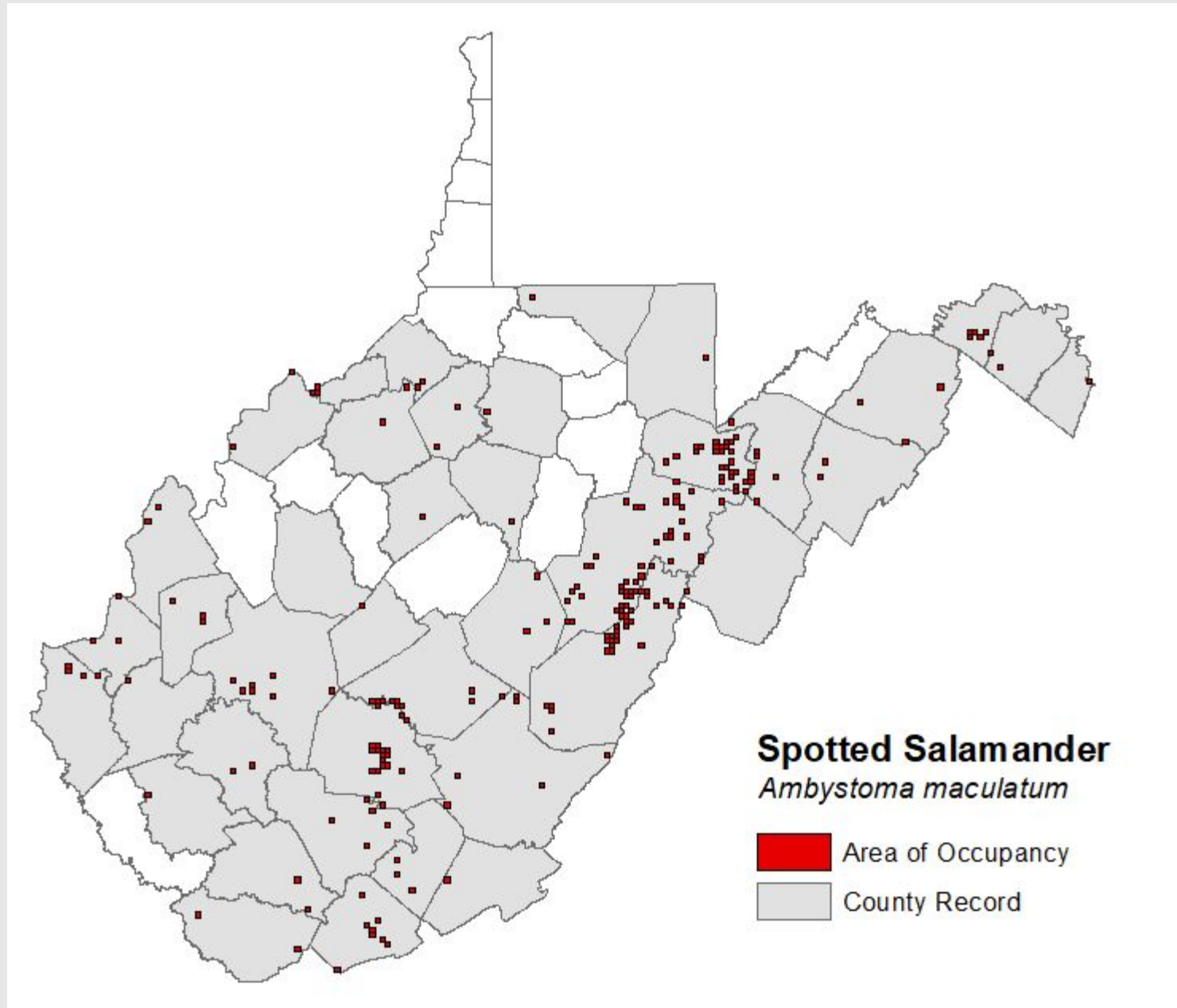
Ambystoma maculatum

- Adult

- Large, thick salamander
- Black to gray overall
- Yellow spots on back
- Pale gray on belly
 - No spots on belly

- Egg Mass

- Globular
- Clear or white in color
- Masses attached to submerged sticks, vegetation, or the pool bottom

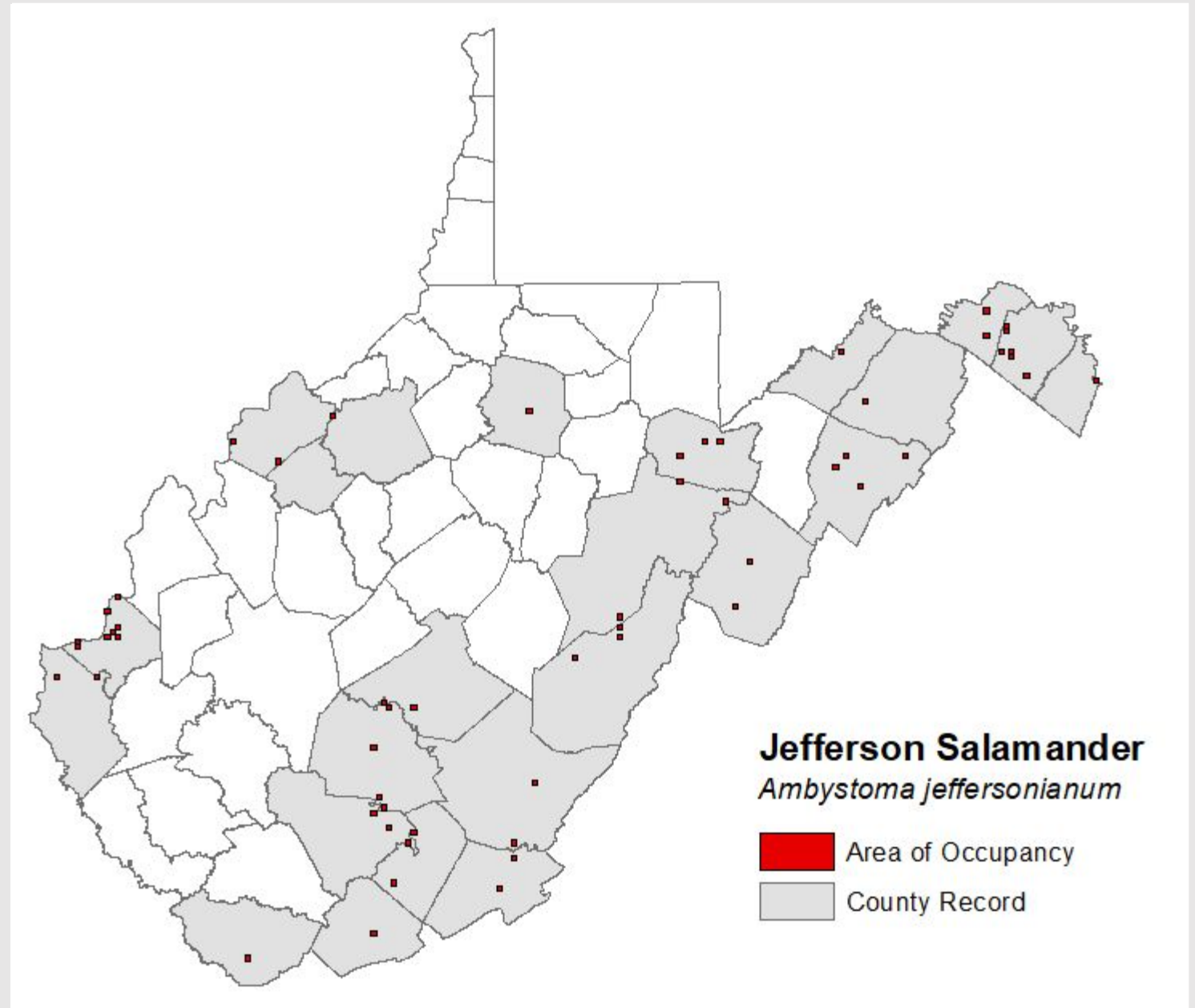




Jeffersons Salamander

Ambystoma jeffersonianum

- Adult
 - Large salamander
 - Black to gray overall
 - Pale blue flecks may be on sides
 - Elongated toes
 - Especially hind feet
- Egg Mass
 - Globular
 - Clear in color
 - Masses typically attached to submerged sticks/twigs



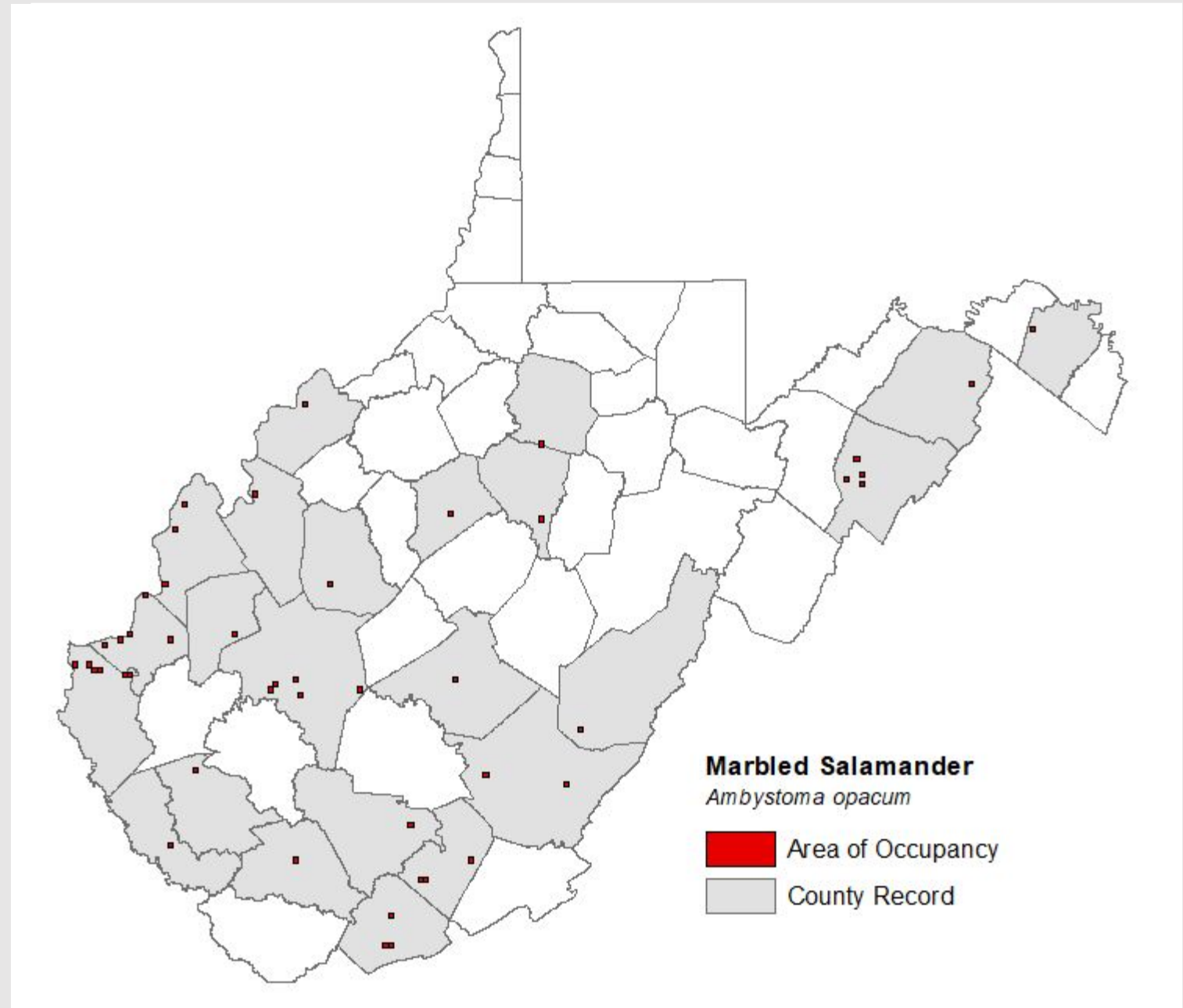


Marbled Salamander

Ambystoma opacum

- Adult
 - Large, thick salamander
 - Black with white netting/crossbands on back
 - Black or pale gray belly
- Eggs
 - Laid in dry vernal pools, under logs, leaves, or other structure, in Autumn (September/October)
 - Nests guarded by female
 - Eggs not contained in globular mass



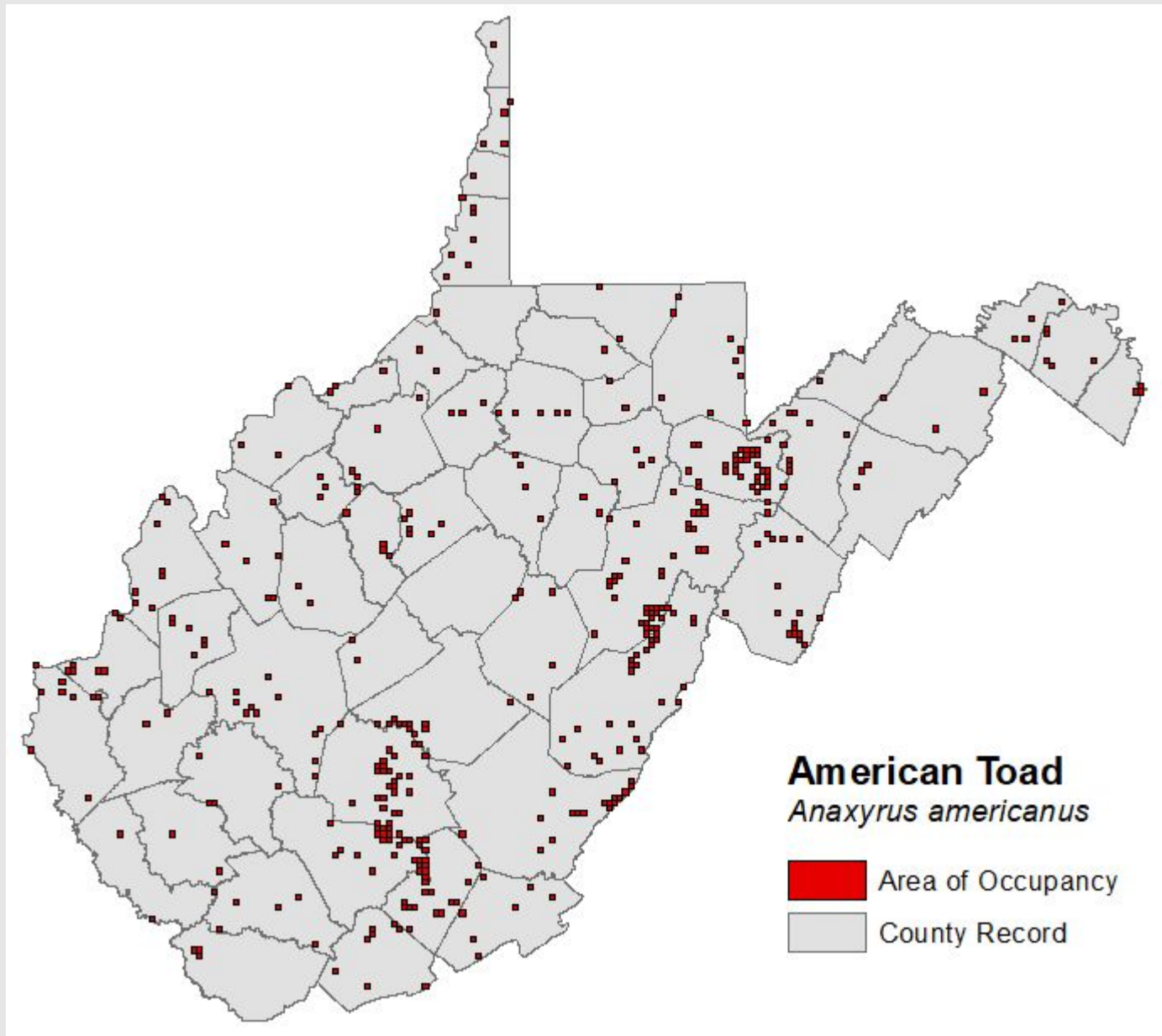


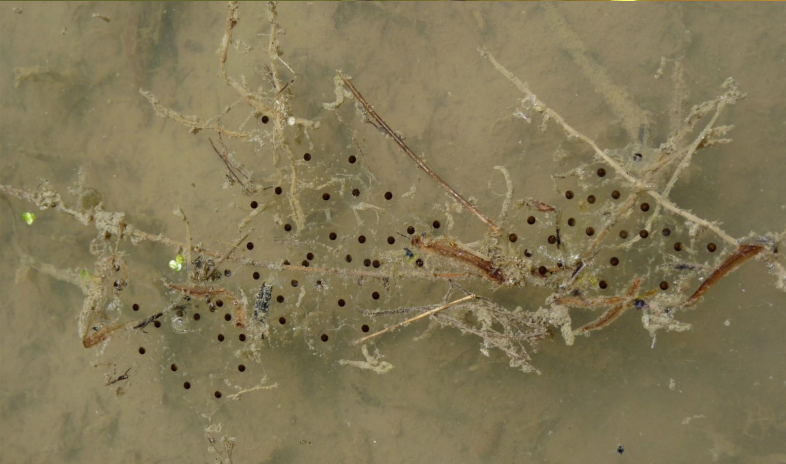
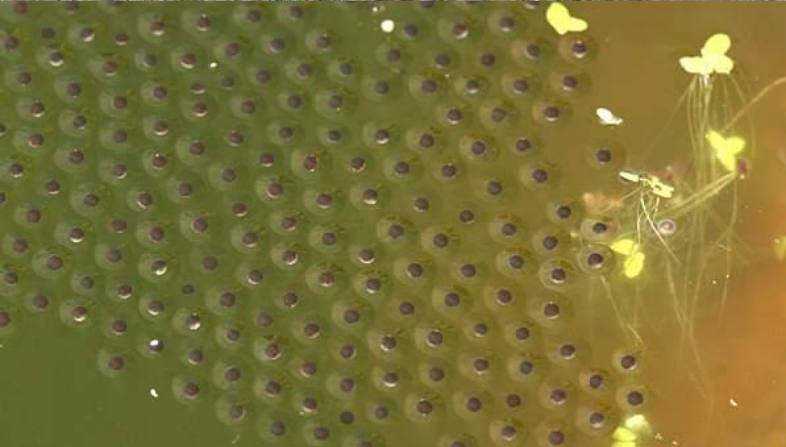


American Toad

Anaxyrus americanus

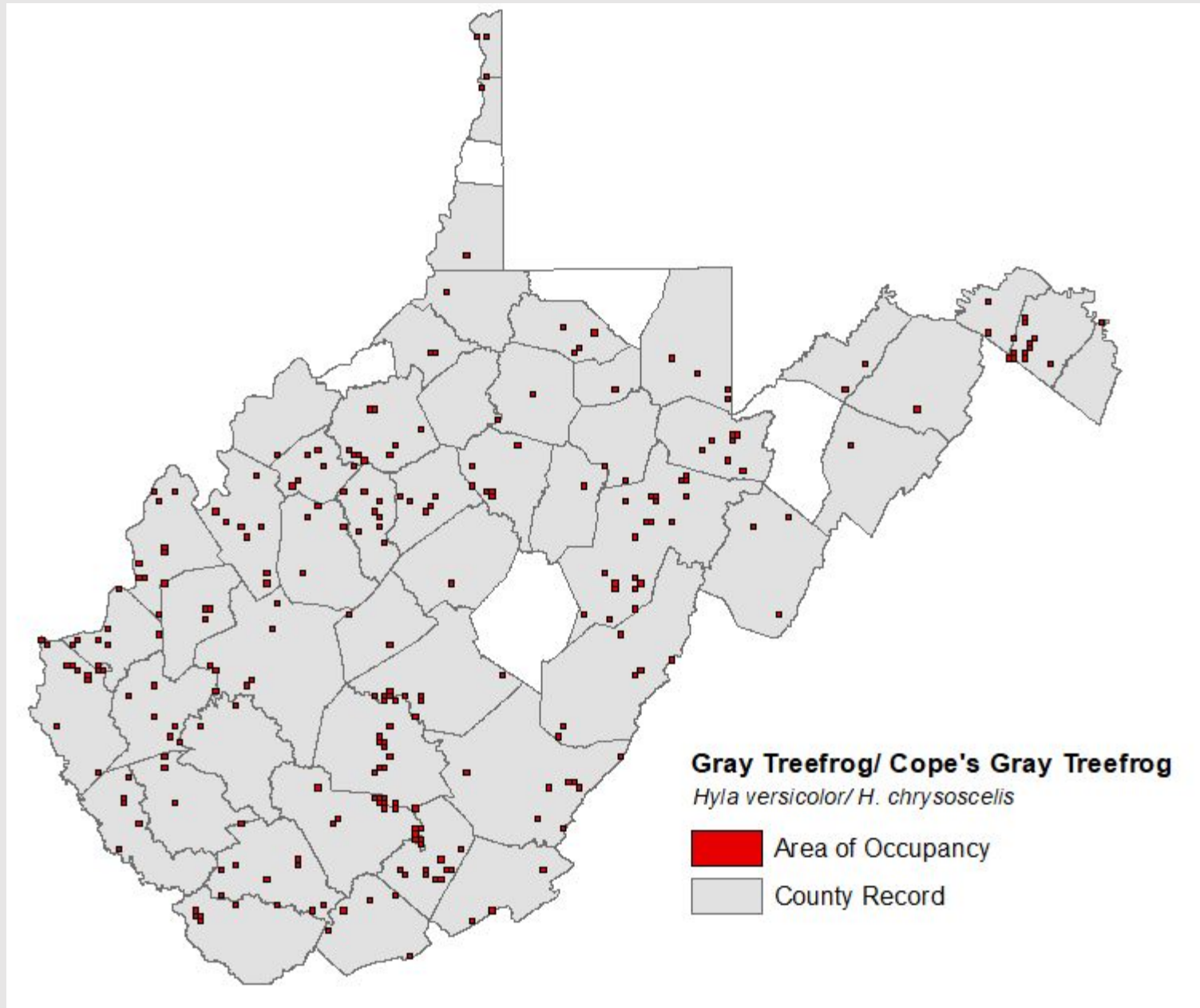
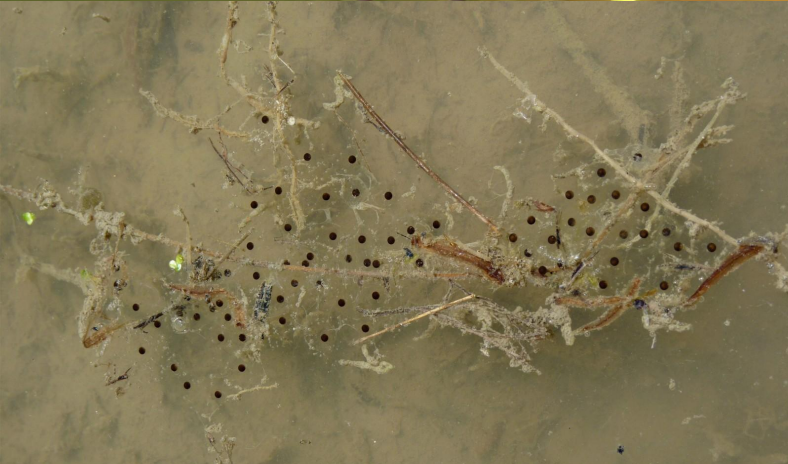
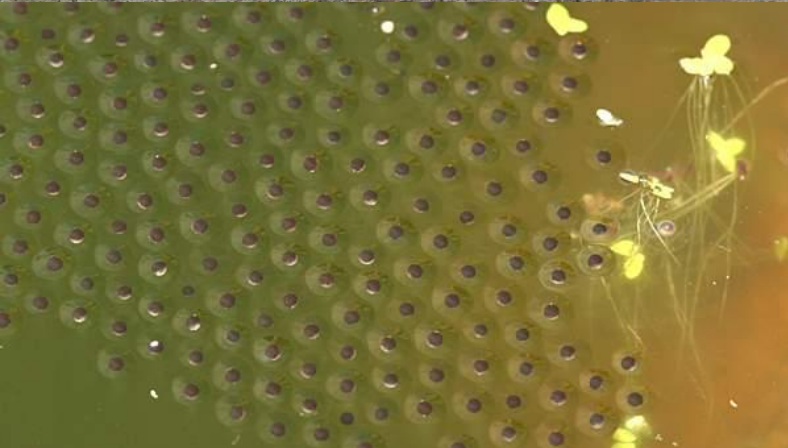
- Adult
 - Typically, brown or gray in coloration
 - Dark patches on back contain bumps (warts)
 - Parotoid glands located behind eyes
 - Release toxin when touched
- Egg Mass
 - Laid in long, thin, often coiled masses
- Call
 - Long trill

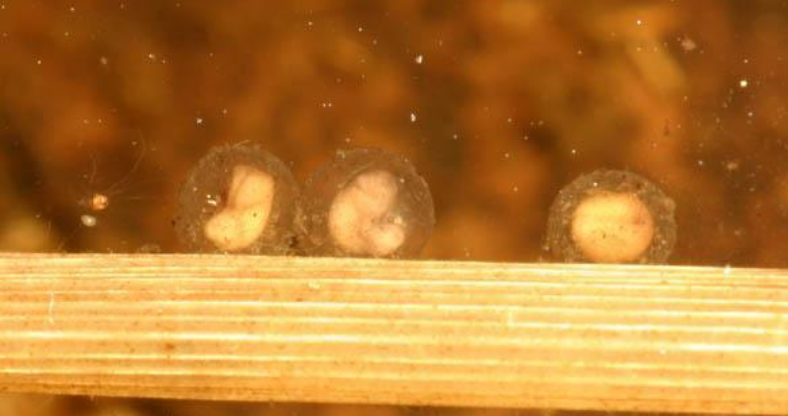




Gray Treefrog/ Cope's Gray Treefrog *Hyla versicolor*/ *H. chrysoscelis*

- Adult
 - Vary in color from mottled gray to green
 - Large toepads
 - Yellow inner thighs
- Egg Mass
 - Eggs laid in thin film-like mass on water surface
- Call
 - Short, bird-like trill

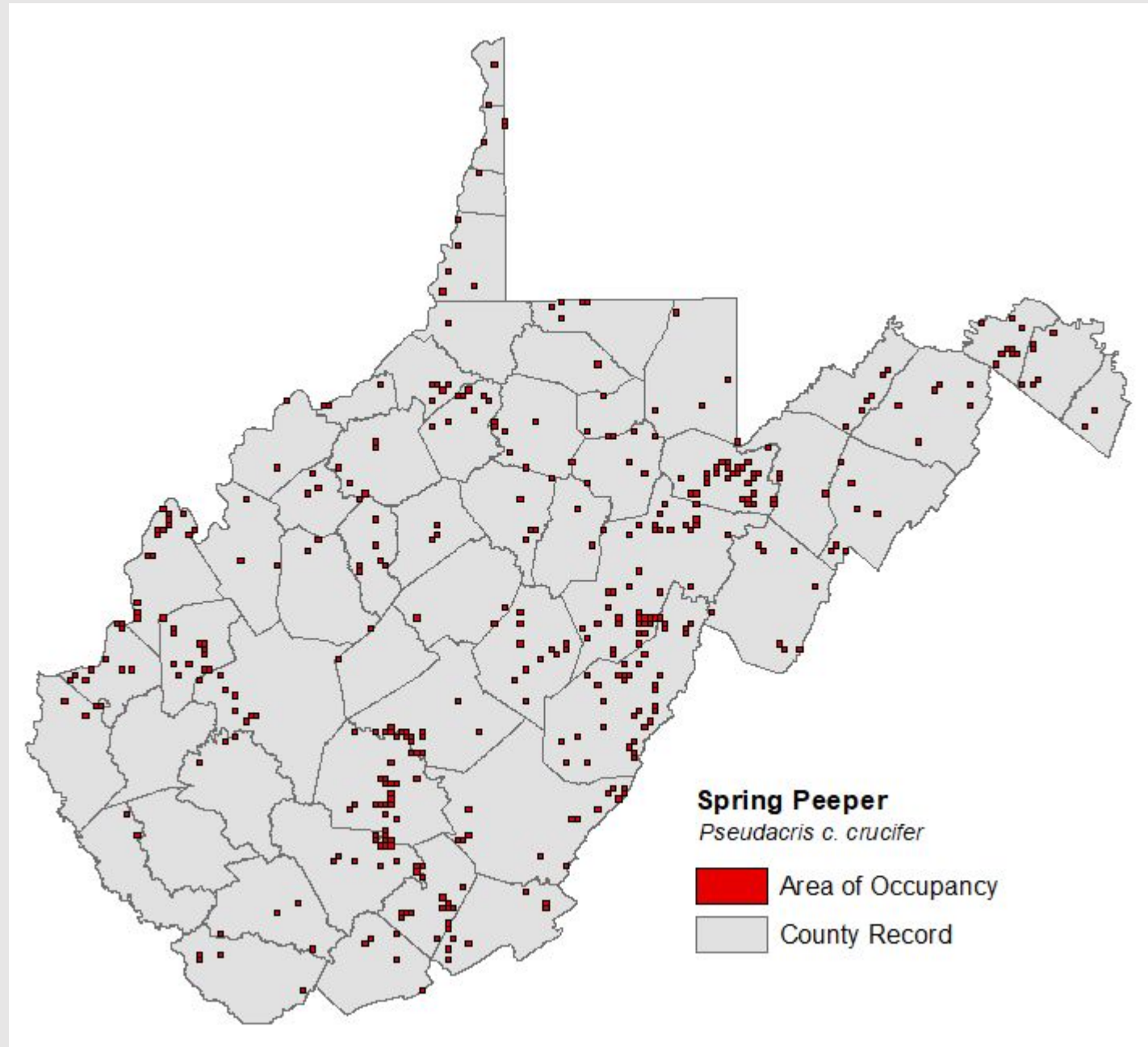
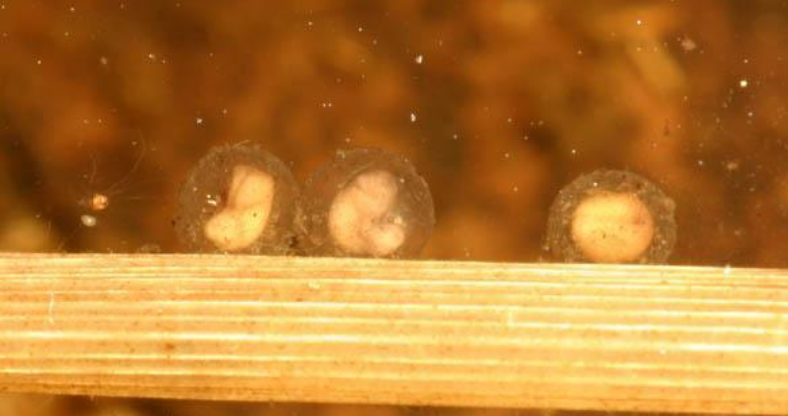




Spring Peeper

Pseudacris crucifer

- Adult
 - Small frog
 - Light brown to pale olive coloration with darker brown markings on back
 - “X” marking on back
- Egg Mass
 - Eggs deposited singly or in small clumps on submerged vegetation
- Call
 - Bird-like “peep”



Amphibians Declining

- Leading cause is habitat destruction and emerging diseases.
 - What are Emerging Diseases?
 - A disease that has increased in the past 20 years and could increase in the near future.
- Emerging diseases impacting amphibians and reptiles
 - Ranaviruses
 - Chytrid fungus
- Vernal pools present an elevated risk due to concentrating animals.



Ranaviruses

- Viral disease that can impact amphibians, reptiles, and fishes.
- Very detrimental in ephemeral wetlands
- First isolated from northern leopard frogs in 1960
- Mass mortality events have occurred in over 20 US states
 - Mass mortality events can impact local populations, range-wide population impacts still unknown
- Routes of Transmission
 - Indirect contact (water or sediment contact with epithelial cells in the skin, gills, or intestines)
 - Direct contact (during breeding or other social interactions)
 - Ingestion (depredation)



Ranaviruses cont.

- Can cause 50%-99% mortality in larval amphibians.
- Wood frogs are thought to be most susceptible
- Has been detected in WV



Clinical Signs of Ranavirus

- Swelling of legs and body
- Internal hemorrhaging
- Redness of the legs and vent
- White plaque in the mouth, swollen eyes, and wheezing in reptiles



Chytrid Fungus

- Fungal disease only known to impact amphibians
 - Has caused large-scale population declines
- 2 species of chytrid fungus
 - Bd Bsal



Batrachochytrium dendrobatidis (Bd)

- Leading cause of amphibian decline worldwide
- Aquatic zoosporic fungi
 - Infects skin and causes skin lesions, anorexia, apathy, and death
- Routes of Transmission
 - Direct contact (social interactions; zoospore flagellum)
- Has been detected in WV

Clinical Signs of Bd

- Reddening of the skin
- Excessive shedding of the skin
- Unusual posturing



Batrachochytrium salamandrivorans (Bsal)

- Aquatic zoosporic fungi
- Discovered in 2013
 - Not in North America yet
- Only believed to impact salamanders, but other amphibians are carriers
- Routes of transmission same as Bd





10%
BLEACH-WATER
SOLUTION

1 Cup Bleach : 1

Questions?

