

# PENNSYLVANIA VERNAL POOLS

## Wild Waters of the Forest

### THE POOLS



B. LEPPPO/ PNHP



C. EICHELBERGER/ PNHP



M. CURRIE/ TNC

#### Buttressed tree

Vernal pools fill with water in late winter or early spring. During the summer dry phase, look for buttressed trees and sphagnum moss that indicate periodic flooding.

#### Sphagnum moss

#### Wet Pools in May



J. DERR/ TNC

#### Dry Pools in July



J. DERR/ TNC



J. DERR/ TNC



J. DERR/ TNC

Plants and animals that live in these pools must withstand harsh conditions. When the pools dry up, species must be able to survive until the pools fill again in early winter.

### POSSIBLE PLANTS



B. LEPPPO/ PNHP

**Blister sedge**  
*Carex vesicaria*



G. GRESS/ TNC

**Buttonbush**  
*Cephalanthus occidentalis*



B. LEPPPO/ PNHP

**Cinnamon fern**  
*Osmunda cinnamomea*



B. LEPPPO/ PNHP

**Winterberry**  
*Ilex verticillata*



C. EICHELBERGER/ PNHP

**Northeastern bulrush**  
*Scirpus ancistrochaetus*



M. CURRIE/ TNC

**Highbush blueberry**  
*Vaccinium corymbosum*

### Now you see it, now you don't

Woodland vernal pools are temporary bodies of water that are typically wet in the winter and spring but dry-up by mid-summer. Vernal pools are primarily found in forested areas and are characterized by absence of fish, lack of flowing water, small size, shallow depth, and presence of plants and animals that can withstand a period of drought (Brown and Jung 2005).

Many species of amphibians (frogs, toads, and salamanders), insects, and crustaceans are adapted to breed in vernal pools. This is because vernal pools provide an ideal nursery where their young can mature. Protecting these pools and the surrounding 1000 feet of upland habitat is critical for protection of water quality, amphibian breeding, and terrestrial habitat for adult and juvenile amphibians (Brown and Jung 2005).

### CHECKLIST FOR VERNAL POOL IDENTIFICATION

- ☑ **Ephemeral:** Typically dries up every summer and refills in late winter or early spring.
- ☑ **No fish:** Seasonal drying maintains a fishless environment that is necessary for successful reproduction by indicator species.
- ☑ **No flow:** No permanent inlets or outlets of flowing surface water.
- ☑ **Indicator species:** Presence of mole salamanders (Jefferson, Marbled, or Spotted), Wood Frogs, Eastern Spadefoot, or Fairy Shrimp.
- ☑ **Wetland plants:** Presence of water-loving plants. Note that some vernal pools will not have any wetland vegetation.
- ☑ **Dry phase:** Evidence of water-stained leaves in a depression, buttressed and/or water-stained tree trunks, presence of sphagnum moss and/or other wetland plants growing in dry soil, and wetland soils.

### TAKE THE PLUNGE!

- Visit the **The Nature Conservancy's Vernal Pools** Web site at [nature.org/pavernalpools](http://nature.org/pavernalpools)
- Visit the **Pennsylvania Seasonal Pools Registry** at [WaterLandLife.org/54](http://WaterLandLife.org/54)

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#### Literature Cited:

Brown, L. J. and R.E. Jung. 2005. "An introduction to Mid-Atlantic Seasonal Pools," EPA-903-B-05-001. U.S. Environmental Protection Agency, Mid-Atlantic Integrated Assessment, Ft. Meade, Maryland.

### INDICATOR ANIMALS



M. CURRIE/ TNC

**Spotted Salamander**  
*Ambystoma maculatum*

- Like all mole salamanders, spends most of the year underground
- Breeds in March, often forms large breeding congregations



M. CURRIE/ TNC

**Marbled Salamander**  
*Ambystoma opacum*

- Only fall-breeding mole salamander (August–September)
- Females lay their eggs in dry pool beds and guard them until the pools flood.



C. EICHELBERGER/ PNHP

**Jefferson Salamander**  
*Ambystoma jeffersonianum*

- First mole salamander to arrive in the spring (February–March), often crossing snow and ice
- Note: The Blue-spotted Salamander (*Ambystoma laterale*) is a similar species that is rarely encountered in Pennsylvania.



M. CURRIE/ TNC

**Wood Frog**  
*Lithobates sylvaticus*

- Raucous call sounds similar to people laughing or ducks quacking.
- Breeds February-March; lays soft egg clusters in large communal rafts



M. REDMER

**Eastern Spadefoot**  
*Scaphiopus holbrookii*

- Like mole salamanders, a 'fossorial' species that spends most of the year underground
- Named for webbed feet adapted for digging, prefers sites with sandy soils



L. KENNEY

**Springtime Fairy Shrimp**  
*Eubranchipus vernalis*

- Lays tough eggs that can pass unharmed through the gut of a bird or lie dormant for decades in a dry pool bed
- Eggs hatch when the pools fill with water in winter or early spring.

### OTHER COMMON ANIMALS



M. CURRIE/ TNC

**Green Frog**  
*Lithobates clamitans*



C. EICHELBERGER/ PNHP

**Spring Peeper**  
*Pseudacris crucifer*



J. DERR/ TNC

**Red-spotted Newt**  
*Notophthalmus viridescens*



B. LEPPPO/ PNHP

**Swamp Damner**  
*Epiaschna heros*



B. MOUL

**Meadowhawk**  
*Sympetrum sp.*



R. KOVAL

**Four-toed Salamander**  
*Hemidactylium scutatum*