

PENNSYLVANIA VERNAL POOLS

Wild Waters of the Forest

THE POOLS



B. LEPPPO/ PNHP



C. EICHELBERGER/ PNHP

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 condititons. When the pools dry up, species must be able to survive until the pools fill again in early winter.

POSSIBLE PLANTS



B. LEPPPO/ PNHP



G. GRESS/ TNC



B. LEPPPO/ PNHP

Blister sedge

Carex vesicaria

Buttonbush

Cephalanthus occidentalis

Cinnamon fern

Osmunda cinnamomea



B. LEPPPO/ PNHP



C. EICHELBERGER/ PNHP



M. CURRIE/ TNC

Winterberry

Ilex verticillata

Northeastern bulrush

Scirpus ancistrochaetus

Highbush blueberry

Vaccinium corymbosum



M. CURRIE/ TNC

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 **Saving Pennsylvania's Vernal Pools** website at www.nature.org/pavernalpools
- Visit the **Vernal Pools of Pennsylvania** website at www.naturalheritage.state.pa.us/VernalPools.aspx

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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 Darner

Epiaschna heros



B. MOUL

Meadowhawk

Sympetrum sp.



R. KOVAL

Four-toed Salamander

Hemidactylium scutatum