# PENNSYLVANIA VERNAL POOLS

# Wild Waters of the Forest

#### THE POOLS





Sphagnum moss

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.

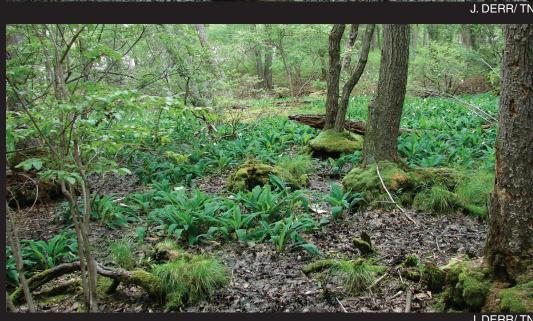
Dry Pools in July

#### Wet Pools in May

Buttressed tree







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

## POSSIBLE PLANTS



Blister sedge

Carex vesicaria

Winterberry

Ilex verticillata



Cephalanthus occidentalis

Buttonbush



Cinnamon fern Osmunda cinnamomea



The Nature (\*\*)

Protecting nature. Preserving life.

Conservancy









Northeastern bulrush Scirpus ancistrochaetus



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 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

This project was funded in part by grants received by the Western Pennsylvania Conservancy: 1) The Community Conservation Partnerships Program, Keystone, Recreation, Park and Conservation Fund, administered by the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation; 2) The U.S. Fish and Wildlife Service Landowner Incentive Program (LIP), administered by the Pennsylvania Fish and Boat Commission.

#### 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



Spotted Salamander Ambystoma maculatum

Wood Frog

Lithobates sylvaticus

communal rafts

- Raucous call sounds similar

to people laughing or ducks

• Breeds February-March; lays

soft egg clusters in large

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



Marbled Salamander Ambystoma opacum

Eastern Spadefoot

Scaphiopus ĥolbrookii

sandy soils

the year underground

• Like mole salamanders, a 'fosso-

rial' species that spends most of

Named for webbed feet adapted

for digging, prefers sites with

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



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.



#### 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.

#### HER COMMON ANIMALS



Green Frog

Swamp Darner

Epiaeschna heros



EPARTMENT OF CONSERVATION

**Spring Peeper** Pseudacris crucifer

Meadowhawk

Sympetrum sp.



Red-spotted Newt Notophthalmus viridescens



Four-toed Salamander Hemidactylium scutatum





