

## **EPHEMERAL POOL CRITERIA**

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The following sections list the various criteria that are to be used in the identification of Ephemeral Pools in the Town of North Andover as required by the North Andover Wetlands Regulations. These criteria have been, for the most part, adopted from the Massachusetts Division of Fisheries and Wildlife's (Natural Heritage Program) "Guidelines for Certification of Vernal Pool Habitat", March 2009, with some modifications.

### **I. Biological and Physical Criteria**

Ephemeral pool habitat is extremely important to a variety of wildlife species. Some amphibians breed exclusively in ephemeral pools, whereas other organisms such as fairy shrimps spend their entire life cycles confined to ephemeral pools among various aquatic habitats for breeding, feeding and other important functions.

The species listed under categories A and B below are "obligate" ephemeral pool species – that is, species that are found only in ephemeral pools during all or part of their lifetimes, and that require ephemeral pools for their survival. They serve as direct indicators for the existence of ephemeral pool habitat. These species are the intended primary beneficiaries of ephemeral pool habitat protection. Documentation of ephemeral pool utilization by these species is the preferred method of identifying ephemeral pools. It is also generally the easiest type of evidence to find in the field.

The animal and plant species listed under categories C and D below are "facultative" ephemeral pool species – that is, species which occur in ephemeral pools, but which can also be found in permanent water. They serve as indirect indicators for the existence of ephemeral pool habitat. Because these species also occur in permanently aquatic habitats that support fish populations, it is essential that the absence of fish be confirmed. . Generally, such documentation will consist of evidence that the pool dries up during the year. Category E may include a combination of obligate and facultative ephemeral pool species, including those not specifically listed in A and C, such as Spadefoot Toads (*Scaphiopus holbrookii*).

**Any One of the Following Criteria (A through E) Will Verify the Existence of an Ephemeral Pool:**

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**A.** Existence of (1) a temporary water body and (2) evidence of breeding in standing water by any of the following amphibian species (these species breed only in ephemeral pools):

- a. Wood Frog (*Rana sylvatica*)
- b. Spotted Salamander (*Ambystoma maculatum*)
- c. Blue-spotted Salamander (*Ambystoma laterale*)
- d. Jefferson Salamander (*Ambystoma jeffersonianum*)
- e. Silvery Salamander (*Ambystoma "platineum"*)
- f. Tremblay's Salamander (*Ambystoma "tremblayi"*)
- g. Marbled Salamander (*Ambystoma opacum*)

(Species b through g above are collectively known as mole salamanders.)

The presence of any of the following will be considered as acceptable proof that an ephemeral pool is utilized for breeding purposes by one or more of the above named species:

1. Breeding adults
  - a. Wood frog - breeding chorus and/or mated pairs
  - b. Mole salamanders - courting individuals and/or spermatophores
2. Two or more egg masses of any of the above-named species
3. Wood frog tadpoles or mole salamander larvae
4. Transforming juveniles
  - a. Wood frog - tail stubs evident
  - b. Mole salamanders - gill remnants evident; **or**

**B.** Existence of (1) a temporary freshwater body and (2) the presence of fairy shrimp (*Anostraca*) or their eggs therein. These species spend their entire life cycles in ephemeral pool habitat; **or**

C. Existence of (1) a temporary freshwater body which (2) contains standing water that dries up during the year (or which for other reasons is free of adult fish populations) and (3) the presence of two or more of the following in standing water (these species are not found in water that persists for less than two continuous months in the spring and/or summer).

- a. Breeding spring peepers (*Hyla crucifer*)\*
  - b. Breeding gray tree frogs (*Hyla versicolor*)\*
  - c. Breeding green frogs (*Rana clamitans*)\*
  - d. Breeding American toads (*Bufo americanus*)\*
  - e. Breeding Fowler's toads (*Bufo woodhousii fowleri*)\*
  - f. Breeding four-toed salamanders (*Hemidactylium scutatum*)\*
  - g. Adult red-spotted newts (*Notophthalmus viridescens*)
  - h. Spotted turtles (*Clemmys guttata*)
  - i. Painted turtles (*Chrysemys picta*)
  - j. Snapping turtles (*Chelydra serpentina*)
  - k. Water scorpions (*Nepidae*)
  - l. Predaceous diving beetle larvae (*Dytiscidae*)
  - m. Whirligig beetle larvae (*Gyrinidae*)
  - n. Dobsonfly larvae (*Corydalidae*)
  - o. Caddisfly larvae (*Trichoptera*)
  - p. Dragonfly larvae (*Odonata, Anisoptera*)
  - q. Damselfly larvae (*Odonata, Zygoptera*)
  - r. Leeches (*Hirudinea*)
- \* Evidence of breeding activity includes breeding adults, eggs, tadpoles or larvae, and transforming juveniles (see category I.A. 1-4 above); **or**

D. Existence of (1) a temporary freshwater body which (2) lacks standing water or which contains standing water that dries up during the year (or is otherwise free of adult fish populations) and (3) the presence of one or more of the following (these species are found only in areas that contain water for at least two continuous months in the spring and/or summer):

- a. Cases of caddisfly larvae (*Trichoptera*)
- b. Adults, juveniles or shells of either of the following:
  - 1. Freshwater clams (*Pisidiidae*)
  - 2. Amphibious air-breathing snails (*Basommatophora*)

- c. At least six of the following wetland plant species:
1. Duckweeds (*Lemna spp.*, *Spirodela spp.*, *Wolffia spp.*)
  2. Fountain moss (*Fontinalis spp.*)
  3. False mermaid weeds (*Proserpinaca palustris* and *P. pectinata*)
  4. Bur-reeds (*Sparganium androcladum* and *S. chlorocarpum*)
  5. Buttonbush (*Cephalanthus occidentalis*)
  6. Pondweeds (*Potamogeton spp.*)
  7. Bladderworts (*Utricularia clandestina*, *U. gibba* and *U. subulata*)
  8. Water-milfoils (*Myriophyllum humile* and *M. tenellum*)
  9. Water plantain (*Alisma plantago-aquatica*)
  10. Yellow water-crowfoot (*Ranunculus flabellaris*)
  11. Featherfoil (*Hottonia inflata*)
  12. Water-starworts (*Callitriche spp.*)
  13. False pimpernels (*Lindernia anagallides* and *L. dubia*)
  14. Lance-leaved violet (*Viola lanceolata*)
  15. St. John's-worts (*Hypericum adpressum*, *H. boreale*, *H. canadense*, and *H. mutilum*)
  16. Smartweeds (*Polygonum amphibium*, *P. hydropiper*, *P. hydropiperoides*, *P. pensylvanicum* and *P. punctatum*)
  17. A rush (*Juncus pelocarpus*)
  18. Sedges (*Rhynchospora capitellata* and *R. fusca*)
  19. Grasses
    - a. *Agrostis scabra*
    - b. *Glyceria acutiflora*
    - c. *Glyceria canadensis*
    - d. *Glyceria fernaldii*
    - e. *Glyceria pallida*
    - f. *Muhlenbergia uniflora*
    - g. *Panicum dichotomiflorum*
    - h. *Panicum meridionale*
    - i. *Panicum philadelphicum*
    - j. *Panicum rigidulum*
    - k. *Panicum tuckermanii*
    - l. *Panicum verrucosum*; **or**

- E.** Existence of all of the following:
1. Documented presence of water in a temporary freshwater body for at least two continuous months in the spring and/or summer; and
  2. Confirmation that the ephemeral pool area becomes completely dry during a portion of the year (or other documentation proving the absence of adult fish populations); and
  3. Presence of any amphibians and/or reptiles in standing water within the temporary freshwater body; or
- F.** In the absence of that evidence identified in A through E above, which may be impossible to obtain outside the breeding season, a temporary freshwater body may still be protected as an ephemeral pool under the Bylaw and Regulations if it meets all of the following criteria:
1. Evidence of seasonal flooding, a minimum mean depth of 6" and 200 square feet in surface area as determined by field indicators of hydrology.
  2. Evidence that the flooding persists for several weeks, as determined by field indicators of hydrology.
  3. No evidence of the presence of fish.
  4. The presence of leaf litter, organic soil, living or dead woody vegetation, and other structural components of an ephemeral pool which could support breeding.