WELLESLEY NATURAL RESOURCES COMMISSION

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VERNAL POOLS

WHAT ARE VERNAL POOLS?

Vernal pools are temporary bodies of fresh water that provide critical habitat for many vertebrate and invertebrate wildlife species. “Vernal” means spring, and indeed, many vernal pools are filled by spring rains and snowmelt, only to dry up during the hot, dry months of summer. However, many vernal pools are filled by the rains of autumn and may persist throughout the winter. Vernal pools are quite often very small and shallow; vernal pools that support rich communities of vertebrate and invertebrate animals may measure only a few yards across. However, vernal pools of several acres occur throughout Massachusetts.

WHERE ARE VERNAL POOLS FOUND?

Vernal pools are common in Massachusetts, occurring in every town in the state. Vernal pools are found across the landscape where small woodland depressions, swales or kettle holes collect spring runoff or intercept seasonally high groundwater tables. Although many people associate vernal pools only with dry woodland areas, vernal pools also occur in meadows, river floodplains, interdunal swales, and large vegetated wetland complexes. Vernal pool habitat occurs wherever water is contained for more than 2 months in the spring and summer of most years and where no fish are present.

WHY ARE VERNAL POOLS VALUABLE?

Vernal pools constitute a unique and increasingly vulnerable type of wetland. Vernal pools are inhabited by many species of wildlife, some of which are totally dependent on vernal pools for their survival. Vernal pools do not support fish because they dry out annually or at least periodically. Some may contain water year round, but are free of fish as a result of significant drawdowns that result in extremely low dissolved oxygen levels.

The wood frog (*Rana sylvatica*) and the four local species of mole salamander *(Ambystoma* spp.) have evolved breeding strategies intolerant of fish predation on their eggs and larvae; the lack of fish populations is essential to the breeding success of these species. Other amphibian species, including the American toad (*Bufo americanus*), green frog (*Rana clamitans*), and the red-spotted newt (*Notophthalmus viridescens*), often exploit the fish-free waters of vernal pools but do not depend on them. Vernal pools also support rich and diverse invertebrate faunas. Some invertebrate species, such as fairy shrimp (*Eubranchipus* spp.), are also entirely dependent upon vernal pool habitat. Invertebrates are both important predators and prey in vernal pool ecosystems.

Vernal pools are an important habitat resource for many birds, mammals, reptiles and amphibians, including many state-listed rare species.

WHAT IS THE VERNAL POOL BOUNDARY?

The extreme edges of vernal pool habitat represent one of the most ecologically valuable portions of these habitats. Shallow water at the edge of a pool is generally the first to thaw in the spring. This provides early access to the pool for the earliest breeding species. The shallow water zones also tend to be significantly warmer than the deeper portions of a vernal pool throughout the spring. Egg masses of early breeding amphibians benefit from the warmer water temperatures at the pool edges that promote rapid egg development.

The boundary of vernal pool habitat must incorporate the shallowest reaches of the pool. Where there is no distinct and clear topographic break at the edge of a pool, the maximum observed or recorded water level represents the ecological boundary of the vernal pool. This boundary is evident and should be delineated by leaf staining and other indicators of hydrology outside of the peak-flood stage of early spring (March through early April in most cases).

PLEASE NOTE The boundary of vernal pool habitat may be defined differently for the purpose of local, state or federal protection.

The physical, on-the-ground, boundary of a certified vernal pool is not established when a certification number is issued.

Field observations of maximum flood levels, or of indicators of the maximum water level, must be made to determine the boundary. The boundary must be established based on field observation of water level indicators. The NHESP, in certifying a vernal pool, does not visit the pool, and as such does not establish the actual boundary through the certification process. Therefore, in recording observations of vernal pools for the purpose of certification, notes pertaining to observed water level and recognizable landmarks that show maximum flooding are extremely helpful in boundary delineation.

DO VERNAL POOLS NEED TO BE CERTIFIED TO BE PROTECTED?

No. Wellesley's Wetlands Protection Bylaw (Article 44) protects all of Wellesley's vernal pools, whether they have been certified or not.

HOW CAN I CERTIFY A VERNAL POOLS?

For more information about how to certify a vernal pool, you can visit the Mass. Natural Heritage and Endangered Species Program's website at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/vernal-pools/vernal-pool-certification.html.