



# Forest Management and Vernal Pools

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Vernal pools provide important habitat for many common and specialized forest-dwelling species. Timber harvesting activities should avoid disturbing high-value vernal pools and limit impacts to the immediate surrounding forest.

## What is a vernal pool?

A vernal pool is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools are small (usually less than an acre), have no permanent inlet and no viable populations of predatory fish. In Maine, vernal pools are also defined by the animals that use them for breeding, including the following indicator species:

- ✿ Spotted salamander
- ✿ Blue spotted salamander
- ✿ Wood frog
- ✿ Fairy shrimp

To review, vernal pools are:

- ✿ Fishless
- ✿ Seasonal (usually)
- ✿ Naturally occurring water bodies

Vernal pool-dependent organisms rely on the pool itself as well as an intact forest immediately surrounding the pool to complete their lifecycle. Some important habitat elements that should be maintained within several hundred feet of the pool are:

- ◆ water quality
- ◆ forest cover
- ◆ uncompacted soil
- ◆ woody debris

## How do I identify a vernal pool?

When planning a timber harvest look for potential vernal pools on:

- ✿ National Wetland Inventory Maps—look for isolated depressions designated as:
  - ◆ PUB/POW (open water)
  - ◆ PSS (shrub swamp)
  - ◆ PFO (forested wetland).
  - ◆ PEM (marsh)
- ✿ Aerial photographs (large scale, color infrared taken with leaves off the trees are best).
- ✿ USGS topographical maps (look for depressions, indications of wetlands).

In early spring vernal pools can be identified by looking for:

- ✿ Small, isolated wetlands that are at least 12" deep and likely to hold water for more than 2 ½ months.
- ✿ Evidence of one or more indicator species (mating adults, egg masses, spermatophores, or larvae).

In drier periods look for depressions in the forest with:

- ✿ Compacted leaves and objects with water stains or a film of sediment.
- ✿ Wetland plants (mosses, sedges, some ferns and shrubs) and soils.
- ✿ Fingernail clams, snails and/or caddisfly cases.

## What do I do once I identify a vernal pool?

Document the pool's existence. Identify it on your management plan maps and/or include it in a planning GIS layer. Plan your harvesting activities using the vernal pool Habitat Management Guidelines described below.

Vernal pools that have been mapped (pursuant to 38 MRSA § 480-I) as Significant Wildlife Habitat (SWH) by the Department of Inland Fisheries and Wildlife have statutory protection (38 MRSA § 480-Q) and may require a permit for activities within 250 ft of the pool perimeter (DEP rules Chapter 335). Please check with an IFW wildlife biologist (287-8000) or DEP analyst (287-7688) to learn if a SWH is mapped on your forest parcel. Most vernal pools have not been mapped and adopted as SWH, and yet they often benefit from the voluntary forest management recommendations outlined below.

## What are Habitat Management Guidelines?

Habitat Management Guidelines have been developed to help forest managers, harvesters and landowners protect elements of critical habitat for vernal pool-dependent wildlife. They are meant to be applied within a working forest where trees are regenerated and grown in the vicinity of important

vernal pools. Priority should be placed on protecting high-value pools that show significant breeding activity (more than one indicator species, and/or more than 20 egg masses of one indicator species).

The habitat guidelines, outlined below, are broken into three zones. Full descriptions and justifications can be found in *Forestry Habitat Management Guidelines for Vernal Pool Wildlife* (Calhoun and deMaynadier 2004). The habitat management zones include the pool itself, the area within 100 ft of the pool perimeter (Protection Zone), and the area between 100 ft and 400 ft of the pool perimeter (Life Zone).

#### **When planning management activities:**

- ✿ Scout for potential vernal pools using wetland maps, aerial photographs and topographic maps.
- ✿ Document vernal pools found in the field.
- ✿ Map vernal pools and surrounding habitat management zones.
- ✿ Avoid vernal pools and associated management zones when planning roads and log landings.
- ✿ Avoid clearcuts and pesticide applications near vernal pools.

**Within the pool depression** (delimited by spring high water level):

- ✿ Flag the pool perimeter during harvest layout and prior to cutting (can be done during spring break-up when harvesting activities are curtailed).
- ✿ Avoid disturbing the basin and surrounding vegetation.
- ✿ Prevent slash and sediment from entering the pool.
- ✿ Between March and June leave debris that falls in accidentally to avoid disturbing breeding activity and development of young.

**Within 100' of the pool perimeter** (Protection Zone):

- ✿ Flag the boundaries of the protection zone.
- ✿ Maintain a uniformly distributed stand of trees, at least 20-30 feet tall, with at least 75% canopy cover.
- ✿ Minimize soil disturbance and limit harvest to periods when soil is dry or frozen.
- ✿ Avoid use of heavy machinery.
- ✿ Avoid construction of new roads or landings; use BMP's to protect water quality on old ones.
- ✿ Avoid disturbing fallen logs.
- ✿ Leave some older or dying trees as sources of future coarse woody debris.
- ✿ Leave tops and limbs from harvested trees.
- ✿ Avoid chemical use.

**Outside 100' of pool perimeter but within 400' (Life Zone):**

- ✿ Maintain a uniformly distributed stand of trees, at least 20-30 feet tall, with at least 50% canopy cover.
- ✿ Avoid plantations and large-scale changes in forest cover type.
- ✿ Limit canopy openings to less than 1 acre.
- ✿ Leave older or dying trees (2 per acre or more).
- ✿ Minimize soil compaction by harvesting when soil is frozen or dry.
- ✿ Avoid constructing new roads or landings; apply BMP's to existing ones.
- ✿ Minimize the use of chemicals, especially during early spring and late summer/early fall, when amphibians are migrating.

#### **Summarized from:**

Calhoun, A.J.K. and P. deMaynadier. 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA technical paper no. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY.

#### **Further Reading:**

Calhoun, A.J.K. 2003. Maine citizen's guide to locating and documenting vernal pools. Maine Audubon Society.

**For more information, please contact:**

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