INFORMATION SHEET 15
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# Forest Management and Vernal Pools

Maine Forest Service, DEPARTMENT OF CONSERVATION, 22 State House Station, Augusta, ME 04333
Maine DEPARTMENT OF INLAND FISHERIES AND WILDLIFE, 41 State House Station, Augusta, ME 04333

*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 have no permanent inlet or outlet and no viable populations of predatory fish. In Maine, vernal pools are also defined by the animals that use them for breeding, including:

Three amphibians:

- Spotted salamander
- Blue spotted salamander
- Wood frog

And one crustacean (invertebrate):

- Fairy shrimp

To review, vernal pools are:

- Fishless
- Seasonal (hold water at least 2-1/2 months)
- 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 750 ft of the pool are:

- **water quality**
- **forest cover**
- **uncompacted soil**
- **coarse woody material**

## 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).
- Lidar Imagery (3-D scans of topography).

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

- Small, isolated areas of standing water 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.
- Areas without trees, or with trees occurring only on hummocks.
- 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 as Significant Wildlife Habitat by the Department of Inland Fisheries and Wildlife have statutory protection (38 M.R.S. §480-Q) and may require a permit by rule for activities within 250 feet of the pool perimeter (DEP Chapter 335 Rule).

## 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 harvested and regenerated near significant vernal pools. It may not be possible to protect all vernal pools during forest management activities. Priority should be placed on protecting high-value pools that show significant breeding activity (more than one indicator species, and/or more than 10 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 feet of the pool perimeter (Protection Zone), and the area between 100 feet and 400 feet 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.
- Limit roads, landings and heavy cuttings between significant pools separated by less than ¼ mile.

**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 feet 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/rutting 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 dead and dying trees as sources of future coarse woody material.
- Leave tops and limbs from harvested trees.
- Avoid chemical use.

**Outside 100 feet of pool perimeter but within 400 feet** (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 one acre.
- Leave dead and dying trees (two 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:**
**Maine Forest Service**
**DEPARTMENT OF CONSERVATION**
**22 State House Station**
**Augusta, ME 04333-0022**
**(207) 287-2791**
forestinfo@maine.gov

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