



Maine Association of
Conservation Commissions

Topsham Vernal Pool Mapping

Topsham, Maine

Home Rules, Home Tools: Locally Led Conservation Achievements

Brief, once-a-year
hands-on opportunity for
environmentally interested
volunteers.

Training provided by UMaine biologists
seeking to map significant Vernal Pools.

Rubber boots required.
Waders preferred. Camera essential.



A potential vernal pool in Topsham.

Thus read a want-ad that kicked off a two-year project designed to map and assess the vernal pools in Brunswick, Cumberland, Freeport, Orono, Readfield, Scarborough, Topsham, Veazie, Wayne, Windham, and Yarmouth. As a result of this work, conservation commissions and town planners now have firm data on the location and viability of these unique aquatic resources in their communities. That information is valuable when planning land conservation projects, and to landowners seeking to develop their property.

With funding from Maine Audubon and support from the University of Maine Sustainability Solutions Initiative and the Department of Wildlife Ecology, participating communities announced training dates for interested volunteers. Experts from the University of Maine met with the volunteers, helped them learn what they'd be looking for and how to gather the needed data. The trainers provided excellent visuals. They led a field trip so volunteers could experience the activity before going out on their own.

What is a Vernal Pool?

Vernal (springtime) pools occur naturally, usually in shallow depressions in forested areas. They are temporary or semi-permanent, and highly weather-dependent. A vernal pool may be quite small, usually no larger than 2 acres. There is no flow-through water in a vernal pool. There are no fish. In Maine vernal pools provide the primary breeding habitat for wood frogs, blue-spotted and spotted

salamanders, and fairy shrimp. These provide nourishment for other animals including wood, snapping, and painted turtles, ribbon snakes, birds and mammals. The creatures that breed in vernal pools return to them year after year. By summer no moisture may be left in the pool. Unless the pool is large and rather deep, the depression in which it had existed in the spring may be completely unnoticed. Even if a vernal pool has been destroyed or paved over, the animals hatched in that pool will seek to return to it to complete their biological cycle.

How do we know this? Biologists have identified significant vernal pools, tagging and observing amphibians. They have learned not only that these same creatures return to this same pool, but also which direction they traveled and how far. They have learned what other animals come to the vernal pool to rest and to feed. They have learned that without the recurring watery breeding spot being available year after year, the frogs and salamanders from that area will not reproduce. Some may be lucky enough to find another source of appropriate habitat, i.e. a water-filled rut or ditch

in which to lay their eggs. Those who cannot find a substitute for their age-old breeding pool will die. Without the seasonally recurring vernal pools the amphibians as well as the creatures who depend on them for food will disappear. The diversity of wildlife in Maine forests will be diminished.



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Topsham's Experience

Through aerial photography funded by Maine Audubon, the town of Topsham identified 300 potential vernal pools. Town staff contacted landowners offering a free field survey. 40% of the property owners returned a positive response. Trained volunteer teams then contacted the responsive property owners, making arrangements to survey the potential pools. On the appointed day volunteer teams, equipped with boots or waders (one never knows the depth of a pool), cameras, a light-colored Frisbee-like object to place beneath egg masses for photos, and a clipboard with the data forms, went forth. Some of the property owners wanted to meet the volunteers and accompany them for the survey. Occasionally a property owner would ask a team to check an additional pool which had not been identified on the list. Because the aerial mapping cannot show pools that may be obscured by forest growth, volunteers discovered some unmapped pools as they went about their field work.

Some of the pools were relatively easy to locate. Others required considerable orienteering and backcountry hiking skills. Brush, grasses, fallen trees, leaves, and natural debris complicated the terrain. If it was raining, or even a slight drizzle, it would pucker the surface of the water, compromising the required visibility. Thus, a slightly overcast day was best, with no strong reflection of sunlight. One volunteer would begin the slow, methodical wading, searching for egg masses along the edges of the pool, counting them, reporting the types of eggs found and numbers of masses so the other volunteer could notate the data. Teams developed their own method for covering the entire pool. Because they were volunteers and not biologists, they needed to provide clear photos of what they found so the scientists could confirm their tentative identifications. Volunteer teams were required to provide photos of each pool and of each type of egg mass. This tricky operation was best done by holding the white Frisbee-like object just beneath the egg mass and, with camera strap securely around the wrist of the other hand, snapping a photo of the eggs. (Most digital cameras are not waterproof). The bottom of potential vernal pools can be a hazard course of submerged branches. Awkward at first, this technique improved with practice.



A white Frisbee aids visibility of a cluster of wood frog eggs.

Topsham received land-owner permission to survey 112 potential vernal pools. Fifteen volunteers collected data from 80+ pools, logging 400 volunteer hours. Town staff, with volunteer participation, logged another 100 hours organizing the collected data and providing it to the University of Maine biologists who would determine the significance of potential vernal pools.

Even though this two-year project is now completed, those who served as potential vernal pool project volunteers are sure to be highly attentive to the coming spring weather. The sounds of the “peepers” are a Maine indicator that the seasons have turned. Once more an amazing abundance of life is preparing to emerge from a vulnerable, temporary habitat. Without human consciousness of this vulnerability, without mandated protection, significant vernal pools and the life dependent on them will cease to exist.

Lessons Learned

- Advertise widely for volunteers, who need not have a scientific background. This is a unique educational opportunity for all.
- Survey the pools in teams of two: one person to wade and search for egg masses, the other to record the data required.
- Weather is critical: there may be only a few weeks when vernal pool data is available. Once it gets warm, eggs hatch. Some pools will vanish. Watch the weather carefully.
- A potential vernal pool can be a labyrinth of vegetation that must be approached with respect for the teeming life it can support. Move slowly and quietly, disturbing as little as possible.
- Gathering data about potential vernal pools is an enormous undertaking, requiring many volunteers. Without the availability of data for mapping, vernal pools are easily missed, and may be unintentionally destroyed.
- With the proper training and equipment, gathering data from potential vernal pools is a deeply engaging experience. Anyone seeking a closer connection with the natural environment will find it in this endeavor.
- It is more than a matter of caring about frogs. We humans, as co-residents of an ever more crowded planet, must understand that balance is essential to sustaining life for all.

For more information, contact

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