



Wood frog



Blue-spotted salamander



Blanding's turtle

## conserving maine's significant wildlife habitat

# VERNAL POOLS

### Temporary Habitats That Need Permanent Protection

Vernal pools are usually small—often less than one acre—but their ecological impact for wildlife is much bigger. Even though vernal pools may only fill with water for a short time in spring and fall, they provide important breeding habitat for amphibians and invertebrates (small, soft-bodied animals). What draws these specialized species to breed in such temporary pools? It's actually something the pools *don't* have: fish. Isolated from streams and subject to periodic drying, vernal pools provide a nearly predator-free haven for the development of eggs into young animals. The amazing amount of life emerging from these pools each year then provides an important food source for larger animals from far into the surrounding forest, including raccoons, coyotes, snakes, hawks, turkeys, and numerous other predators.

The same temporary nature that makes vernal pools unique breeding habitat also puts them at high risk from develop-

ment. Without water for much of the year, vernal pools can be easy to miss. They can also fall through gaps in existing state and federal wetland regulations that are better designed to protect larger, more permanent wetlands. Significant Wildlife Habitat rules are an important tool to increase protection of Maine's most important vernal pools, and to balance that protection with well-planned development.

### What is Significant Wildlife Habitat?

Significant Wildlife Habitat is an area protected under Maine's Natural Resources Protection Act. The Maine Department of Environmental Protection (DEP) has established criteria to identify *significant* vernal pools, those with the highest value to wildlife. While forest management is exempt, other development activity within 250 feet of significant vernal pools may require a permit from DEP. The permit review process helps assure that any activities in and around significant vernal pools are done in ways that avoid harm to both wildlife and habitat.



Vernal pool with ice

## Unique Species in Special Pools

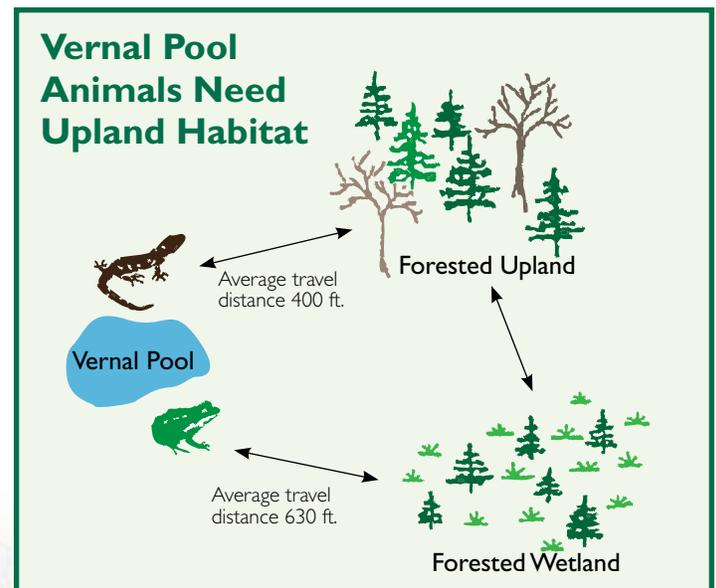
**Wood frogs** are the first frogs to emerge in spring, and can be heard calling from vernal pools that are sometimes still partially covered with ice. The males call in loud choruses that sound like quacking ducks for about two weeks in the spring, while the females each lay just one egg mass that can contain more than 1,500 individual embryos. After the brief breeding season, adult wood frogs will move as much as 1,500 feet away from the vernal pool to their summer habitat in nearby forest, often a forested wetland. The eggs hatch into tadpoles in about three weeks. About two months later, anywhere from early June to mid-August, they transform into miniature frogs about the size of a thumbnail. Both adults and young frogs will spend the winter hibernating on the drier, upland forest floor under leaves or in rotting logs and stumps.

**Blue-spotted and spotted salamanders** are two types of mole salamanders that spend most of the year hidden in underground tunnels made by small mammals, eating insects, earthworms and other invertebrates. They prefer damp, moderately shaded forests, and amazingly, they can live to be 15 to 20 years old! Each spring they travel at least 400 feet from forest habitat to vernal pools to breed. Spending up to six weeks in and around the pool, females lay their eggs in loose masses. The eggs develop into larvae within a couple months, and by fall the larvae transform into miniature adult salamanders. Both salamander species hibernate on the forest floor in burrows and root channels, or under large logs.

**Fairy shrimp** are aquatic crustaceans, up to one and a half inches long, that tend to congregate in sunny patches in vernal pools where they swim upside down and feed on tiny soft-bodied animals called zooplankton. Adult fairy shrimp cannot tolerate warm water (above about 70° F) and are typically not found in Maine's vernal pools beyond May or June. Their eggs, however, tolerate warm temperatures and will also survive long after the vernal pool has dried out. In fact, fairy shrimp eggs may remain viable for several years before hatching, perhaps explaining why adults may not appear every year in a given pool. The seemingly magical and unpredictable appearance of adult fairy shrimp is what gives them their name.



PIOTR NASRZECKI



## Beyond the Pool: The Importance of Protecting Upland Habitat

The forested uplands surrounding vernal pools are critically important for the survival of vernal pool amphibians. Pool-breeding species travel from the pools to forested and other wetland habitat where they can find abundant food, safety from predators, and places to hibernate. A vernal pool in isolation from these other important habitats will not sustain its amphibian population. To maintain healthy populations of vernal pool wildlife, it is important to maintain relatively undisturbed forest adjacent to pools. It is also important to maintain corridors of habitat among clusters of vernal pools, since amphibians and turtles may use multiple pools as stepping stones on their way to and from other habitats.



KEVIN J. RYAN

**Spotted and blue-spotted salamanders**