

SEASONALLY FLOODED WETLANDS

CLIMATE ASSESSMENT



Seasonally-flooded wetlands generally occur in small basins that are inundated in the winter and spring, draw down over the course of the summer, and frequently become completely dry by the end of the growing season. They lack significant surface flows into or out of the basins. The vast majority of basins in this habitat group are classified as vernal pools. These are small basins in forested settings that are shaded by the surrounding tree canopies, and which are critical breeding sites for a variety of amphibian and invertebrate species. This habitat group also includes basin marshes, an unusual type of open wetland that supports rare natural communities and plant species, many of which have a southern distribution.

POTENTIAL CHANGES TO HABITAT

- Higher temperatures could cause vernal pools to draw down earlier in season or have greater annual variation in hydroperiod, which could affect breeding amphibians and other species.

WHAT DOES THIS MEAN?

The vast majority of seasonally-flooded wetlands are vernal pools, which are extremely sensitive to changes in hydrology (Brooks 2004). Most climate change scenarios predict a combination of increased temperatures and more frequent summer drought, both of which have the potential to dry pools out earlier in the season. Conversely, extended periods of heavy rain early in spring could potentially result in larger pools not drying out, or becoming hydrologically connected to adjacent permanent water bodies. Any such changes in hydrology could have significant effect on vernal pool wildlife, as discussed below.

HOW DOES THIS AFFECT WILDLIFE?

Several species of amphibians and invertebrates rely on vernal pools to provide breeding habitat that is free of fish and other predators generally found in permanent ponds. They are also adapted to complete their life cycles in a relatively short window between spring rains and the drying that occurs in smaller pools by the end of the growing season. Shorter hydroperiods (a result of increased temperatures and more frequent summer drought) could make smaller vernal pools less habitable for amphibians and other vernal pool obligate species. If seasonal hydrologic patterns become more unpredictable, it may favor generalist species that can tolerate these variable conditions, and result in an overall loss of species diversity. State-endangered marbled salamanders (*Ambystoma opacum*) and species of special concern Jefferson's and blue-spotted salamanders (*A. jeffersonianum* and *A. laterale*) are vernal pool obligate species, and may decline due to hydroperiod changes. However,

marbled salamanders are at the northern extent of their range in NH, and so may be able to expand their populations with warming temperatures.

General Strategies to Address these Vulnerabilities:

See the full [Climate Change Adaptation Plan](#) for strategy descriptions

S1: Conserve Areas for Habitat Expansion and/or Connectivity

S2: Habitat Restoration and Management

S4: Protect Riparian and Shoreland Buffers

S5: Invasive Species Plan

S6: Comprehensive Planning

S8: Revise Water Withdrawal Policies

Specific Strategies:

1. Develop a program for identifying and mapping the vernal pools that are most productive and/or support rare species. These should include areas with particularly high densities of vernal pools and all vernal pools on public lands. Mapping should identify connections between pools to protect metapopulation dynamics. Work with local citizen science groups to map vernal pools and monitor vernal pool functions.
2. Develop a monitoring program to identify temporal shifts or hydrologic changes in vernal pools.
3. Manage forests to protect vernal pools from degradation or loss of overhead canopy to keep temperatures stable.
4. Focus land protection efforts on connecting vernal pool areas to allow for vernal pool herps and other species to migrate.
5. Integrate vernal pool prioritization criteria into wetland decision-making.