

Kettlehole Level Bog

State Rank: S2 - Imperiled



Kettlehole Level Bog with surrounding spruce and larch. Photo: Patricia Swain, NHESP.

Description: Kettlehole Level Bogs are a subset of Level Bog that develop in isolated valley bottoms without inlets or outlets. Kettlehole Level Bogs are peatlands - wetlands with incompletely decomposed plant material (peat) that accumulates when saturated year round by water that is cool, acidic, poorly oxygenated, and low in nutrients. The peat isolates them from the water table, making them the most acidic (pH range 3 to 4), and nutrient-poor of peatland communities. The word "level" differentiates Massachusetts' bogs from raised bogs of more northern latitudes where peat becomes so thick that precipitation is the only source of nutrients. Massachusetts' climate is not cold enough to develop raised bogs; the state is at the southern limit of the geographic range of peatlands.

Characteristic Species: Sphagnum moss is the most common plant in all acidic peatlands, forming a mat that the vascular plants grow on, and producing most of the peat that underlies the community. Kettlehole Level Bogs have

Kettlehole Level Bogs are acidic dwarf-shrub peatlands with little water input or outflow that form in circular depressions left by melting ice blocks in sandy glacial outwash. The vegetation in Kettlehole Level Bogs usually grows in rings.

similar vegetation to Level Bogs, except that the vegetation is typically in a ringed zonation pattern. Often the outer wet moat is dominated by a mixture of highbush blueberry and swamp azalea bordered to the interior by a ring of rhodora. The mat has a mixture of tall and short shrubs that are predominantly ericaceous (members of the Heath family). Leatherleaf is dominant. Other typical ericaceous shrubs include rhodora, sheep laurel, bog laurel, bog-rosemary, Labrador tea (northern sites), and low-growing large and small cranberry. Scattered, stunted coniferous trees (primarily tamarack and black spruce) occur throughout. A mixture of specialized bog plants grow on the hummocky sphagnum surface, including carnivorous pitcher plants and sundews. Many of the kettlehole bogs observed in the state have drier and more stable sphagnum mats than level bogs not in kettleholes, and they have abundant bog laurel and three-leaved Solomon's seal.

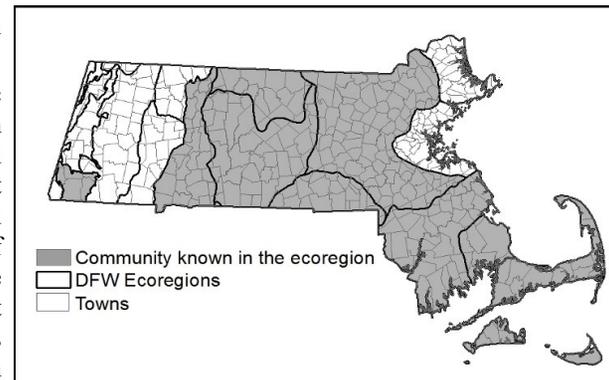


Bog laurel, often abundant in Kettlehole Level Bogs. Photo: Patricia Swain, NHESP.

Differentiating from Related Communities:

Natural communities on acidic peatlands all occur on sphagnum peat. The depth, density, and strength of the underlying peat control the structure and composition of each type of peatland community through the extent that plants growing on it are isolated from nutrients carried by ground water. In Level Bogs the sphagnum peat tends to be deep and well developed, graminoids may be present but not dominant, and shrubs are dominated by leatherleaf. Kettlehole Level Bogs are a subset of Level Bogs that occur in kettleholes in sandy glacial outwash. They are typically small (<3 acres), round, and they lack inlets and outlets. Atlantic White Cedar Bogs have sparse canopy cover of Atlantic white cedar trees over sphagnum on peat. Acidic Graminoid Fens are dominated by graminoid and herbaceous species and lack extensive shrubs. Spruce - Tamarack Bogs are acidic forested peatlands with an overstory of black spruce and tamarack.

Habitat for associated fauna: Due to the extended periods of saturation, lack of nutrients, and the high acidity and low oxygen content of the water, acidic peatlands are inhospitable to many animal species. Winged and mobile terrestrial animals can use peatlands as part of their habitat. Moose and white-tailed deer use acidic peatlands for browsing and grazing, and their trails are often evident across the peat mat. Bears are attracted to the



cranberries and blueberries in season. The acidity of the surface of Kettlehole Level Bogs make them poor habitat for most amphibians and reptiles, although some species can breed in the shallow pools that form among the sphagnum hummocks. Many species of dragonflies and damselflies inhabit acidic peatlands, especially where there is adjacent open water.

Examples with public access:

Bog surfaces are damaged by trampling; sites with boardwalks are best suited to visitation.



Kettlehole Level Bog with vegetation zones. Photo: Patricia Swain, NHESP.

