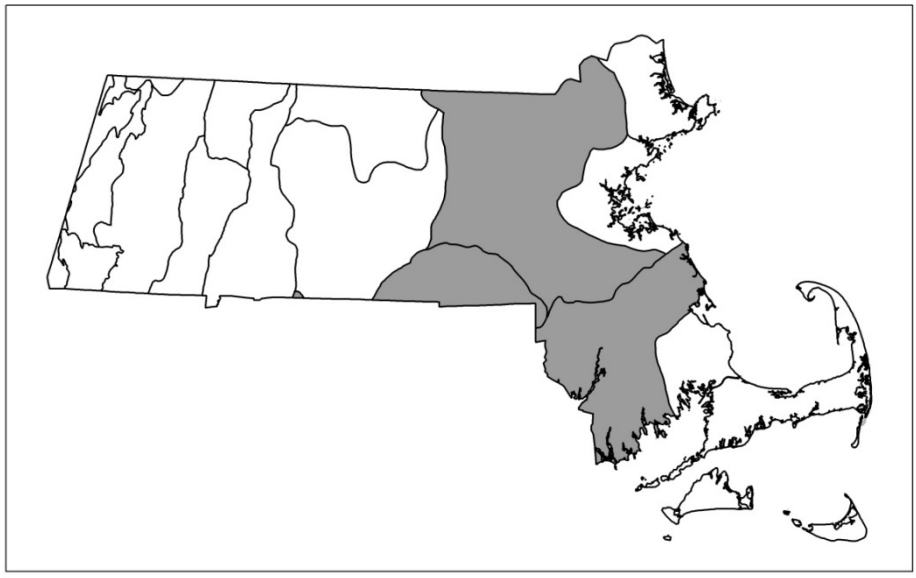
Kettlehole Wet Meadow

Community Code: CP2A0A2100

State Rank: S3



Concept: Graminoid/emergent herbaceous or mixed shrub/herbaceous communities that are restricted to small (<5 acres), seasonally inundated kettle depressions in sandy glacial outwash.

Environmental Setting: The Kettlehole Wet Meadow community is a variation of both Wet Meadow and Shallow Emergent Marsh communities. It occurs in depression basins (kettleholes in glacial sediments) that are seasonally inundated by local runoff and groundwater fluctuations and often have no stream inlet or outlet. In the winters of most years, they may be shallow ponds that then dry down to mucky peaty sediments through the summer; emergent, usually graminoid, vegetation, becomes dense as the growing season progresses. Deep peat does not develop due to the seasonal drawdown of water. A series of plant associations occur along a gradient from the higher, drier margins to the lower, wetter centers.

Vegetation Description: Kettlehole Wet Meadows are typically fringed with shrubs, such as leatherleaf (*Chamaedaphne calyculata*), highbush blueberry (*Vaccinium corymbosum*), buttonbush (*Cephalanthus occidentalis*), and water willow (*Decodon verticillatus*), and trees including tupelo (*Nyssa sylvatica*), swamp white oak (*Quercus bicolor*), and red maple (*Acer rubrum*), often with sphagnum moss (*Sphagnum* spp.) under them. By the end of the summer, with lowered water, the basin is covered by a dense growth of emergents graminoids, often in zones or patches of single species. The dominants may be bulrushes, sedges, or rushes, or, occasionally, grass. Wool-grass (*Scirpus cyperinus*) can be close to a monoculture when present. Other species present may include different *Scirpus* species (such as dusky wool-grass (*S. atrocinctus*), meadow bulrush (*S. hattorianus*), red-stemmed bulrush (*S.*

microcarpus), and Torrey's bulrush (*Schoenoplectus torreyi*)), sedges including tussock-sedge (*Carex stricta*), rushes (such as marsh rush (*Juncus canadensis*), bayonet rush (*J. militaris*), and pondshore rush (*J. pelocarpus*)), and grasses (including panic-grasses (*Dichanthelium* and *Panicum* spp.), creeping bentgrass (*Agrostis stolonifera*), and mannagrass (*Glyceria pallida* and *G. acutiflora*)) ferns including marsh fern (*Thelypteris palustris*), and forbs such as beggar's ticks (*Bidens* spp.).

Differentiating Occurrences: Kettlehole Wet Meadows are a specialized type of Shallow Emergent Marsh in small basins that have dense graminoid marshes on mucky peat. They are temporarily inundated after storms as well from high groundwater. Wet Meadows, related graminoid communities, are in lake basins, backwaters, and sloughs along rivers. Shallow Emergent Marshes are graminoid wetlands in broad, flat areas bordering rivers or along pond margins and are seasonally flooded. Coastal Plain Pondshore Communities and Coastal Plain Pondshores - Inland Variant are generally on sand around ponds in closed basins that intersect groundwater affecting the pond levels. The seasonally fluctuating water table typically leaves an exposed shoreline by late summer that supports herbaceous species. Sediments are sandy or mucky, but not peaty, and late summer vegetation is not dominated by tall dense graminoids.

Associated Fauna: Because they are small, Kettlehole Wet Meadows are parts of the habitat of wide-ranging species, including wetland nesting birds. Kettlehole Wet Meadows often function as vernal pools: with standing water in the winter and spring, and drawdown to the sediments in most summers, the areas provide important breeding habitat for amphibians that live in surrounding forests during the rest of the year.

Public Access: Douglas State Forest, Douglas; Minute Man National Historical Park, Concord; Demarest Lloyd State Park, Dartmouth.

Threats: Alterations to natural water-level fluctuations. The sites for which there are vegetation data have surprisingly few non-native plant species, and exotics may not currently threaten these communities.

Management Needs: More information is needed on the physical and hydrological processes associated with Kettlehole Wet Meadows in order to make educated management recommendations. It is known that seasonal water level fluctuations play an important role in the occurrence of the community. Spring high-water levels prevent encroachment of woody shrubs and trees, and late-summer low-water levels allow characteristic narrow-leaved emergents to appear. Any alteration in natural water level fluctuations, such as groundwater withdrawal, would negatively affect the community. Kettlehole Wet Meadows may be prone to burning during low-water periods, but the role of fire in community dynamics is not known.

USNVC/NatureServe: A.1386 - *Scirpus cyperinus* Seasonally Flooded Herbaceous Alliance, *Scirpus cyperinus* Seasonally Flooded Herbaceous Vegetation [CEGL006349]; (part of) A4107 *Carex* spp. - *Calamagrostis canadensis* Eastern Wet Meadow Herbaceous Alliance, *Carex stricta* - *Carex vesicaria* Herbaceous Vegetation [CEGL006412].