



Coastal Plain Pondshore Community

Community Code: CP2A0B1200

State Rank: S3



Concept: Herbaceous communities of exposed pondshores in southeastern Massachusetts that are characterized by a distinct coastal plain flora.

Environmental Setting: Coastal Plain Pondshore Communities are herbaceous communities characterized by a distinct coastal plain flora on exposed pondshores in southeastern Massachusetts. Coastal plain ponds are shallow, highly acidic, low-nutrient, groundwater ponds in sandy glacial outwash, with no inlet or outlet. Water rises and falls with changes in the water table, typically leaving an exposed shoreline in late summer. Annual and inter-annual fluctuations in water levels are key to maintaining the community: low-water years eliminate obligate aquatic plants and allow adapted plants to grow, and high-water years limit invasion by woody species. The community develops best in small ponds or bays of larger ponds with little space for wind sweep that causes wave and ice damage along shorelines on large ponds. The substrates are usually sand, sometimes with cobbles; a surface layer of organic muck occurs on some ponds and pondshores. Many of the plant species of the community are able to start growth from seed, perennial basal leaves, or roots while under water in the spring and grow in the increasingly dry soils as the season progresses; others may germinate only when exposed to air. In wet years, the water level does not recede as far as in dry years, and the constituent species may grow vegetatively while submerged, with little flowering, or may not grow or germinate at all.

Vegetation Description: Coastal Plain Pondshore Communities are composed of a mixture of herbaceous and graminoid plants that include state-rare species that can be locally abundant, growing mixed with more common plants typical of dry grasslands (such as little



bluestem (*Schizachyrium scoparium*) or marshes (including rushes (*Juncus* spp.), sedges (Cyperaceae species), bonesets (*Eupatorium perfoliatum*), and purple gerardia (*Agalinis purpurea*). Vegetation zonation is correlated with flooding regime. A characteristic zonation pattern from dry to waterline is as follows: 1. upland oak/pine forest; 2. shrub border dominated by highbush blueberry (*Vaccinium corymbosum*) associated with sweet pepper-bush (*Clethra alnifolia*) and green briar (*Smilax rotundifolia*); 3. an intermediate area of beach providing habitat for most of the species of the Coastal Plain Pondshore Community: an emergent exposed pondshore dominated by slender-leaved flat-topped goldenrod (*Euthamia caroliniana*), pondshore rush (*Juncus pelocarpus*), rose coreopsis (*Coreopsis rosea*), golden pert (*Gratiola aurea*), beaksedges (*Rhynchospora* spp.), lance-leaf violet (*Viola lanceolata*), and dwarf St. John's-wort (*Hypericum mutilum*); 4. semi-permanently flooded zone characterized by one or more of the following: bayonet rush (*Juncus militaris*), spike-rushes (*Eleocharis* spp.), or pipewort (*Eriocaulon aquaticum*); and 5. hydromorphic rooted vegetation in deeper water including yellow water-lily (*Nuphar variegata*), white water-lily (*Nymphaea odorata*), and Robbins' spike-rush (*Eleocharis robbinsii*). Not every pond has every zone, shores within ponds vary, and zones change width and species composition from year to year.

Differentiating Occurrences: Coastal Plain Pondshore Communities are in the coastal plain, generally on sand around ponds in closed basins that intersect groundwater affecting pond levels. The seasonally and annually fluctuating water table typically leaves an exposed shoreline by late summer that supports common and rare, often coastal or southern, herbaceous species. Coastal Plain Pondshore Communities - Inland Variant also occur in closed basins in sandy outwash, but are in the Connecticut River Valley. Some, but fewer, coastal plain species grow in them. Acidic Pondshore/Lakeshore Community is broadly defined, variable, and includes shorelines not explicitly included in coastal plain pondshores, the inland variant, or calcareous ponds. The shoreline is often not distinct, merging into marsh or other wetlands. Many ponds have inflow or outflows. Calcareous Pondshores /Lakeshores occur in the Marble Valleys of Berkshire County, around ponds that have calcium in the water. Freshwater Mud Flat Communities are within ponds rather than along shores. Mud flats in Coastal Plain Ponds are treated as part of the pondshore community.

Associated Fauna: Coastal plain pondshores and ponds provide habitat for a number of state-rare animal and plant species, many of which occur only on coastal plain ponds. Coastal plain pondshores are important habitat for dragonflies and damselflies (over 45 species are known to occur on coastal plain ponds and several of those species are rare). They are also important turtle habitat, for painted, musk, spotted, and snapping turtles, and the federally endangered Northern red-bellied cooters. Larger ponds and pondshores are used by migrating and wintering waterfowl, including common and hooded mergansers, goldeneye, and bufflehead. Coastal plain ponds support warm-water fish and freshwater mussels. They can function as vernal pool habitat when fish populations are absent.



- Public Access:** Myles Standish State Forest, Carver; Hyannis Ponds WMA, Barnstable; Nickerson State Park, Brewster.
- Threats:** Multiple threats affect coastal plain pondshore communities. The greatest threat is from overdevelopment of coastal Massachusetts which impacts pondshores directly through housing and recreation and indirectly through water withdrawal. Shrub and tree encroachment threaten pondshore vegetation in areas with heavy water withdrawal and lessened inundation of the upper shore.
- Management Needs:** Natural hydrology needs to be maintained. Periodic high water prevents tree and shrub encroachment, and seasonal low water is necessary to expose the pondshore. Vehicle use should be prohibited along pondshores.
- USNVC/NatureServe:** The following USNVC/NatureServe associations are known to occur in Massachusetts, and are included within the broad category of coastal plain pondshore community. They are listed according to the zones in which they occur (as described above). Shrub border (zone 2) includes *Vaccinium corymbosum/Sphagnum* spp. shrubland [CEGL006190] and a typically narrow band of *Calamagrostis canadensis-Dichanthelium meridionale* herbaceous vegetation [CEGL006243]. The emergent exposed pondshore (zone 3) is characterized by one or more of the following: *Rhexia virginica-Panicum verrucosum* herbaceous vegetation [CEGL006264]; *Rhexia virginica-Crotalaria sagittalis* herbaceous vegetation [CEGL006300]; and *Rhynchospora capitellata-Sabatia kennedyana* herbaceous vegetation [CEGL006210]. The semipermanently flooded zone (zone 4) has *Lysimachia terrestris-Dulichium arundinaceum* herbaceous vegetation [CEGL006035]; *Juncus militaris* herbaceous vegetation [CEGL006345]; *Eleocharis (obtusata, flavescens)-Eriocaulon aquaticum* herbaceous vegetation [CEGL006261]; and *Eleocharis flavescens-Xyris difformis* herbaceous vegetation [CEGL006400]. Open water (zone 5) is common to other ponds in MA and includes *Nuphar lutea* ssp. *advena* herbaceous vegetation [CEGL004324] and *Nymphaea odorata-Eleocharis robbinsii* herbaceous vegetation [CEGL006086].