

**Ecologically Unique and Globally Rare Habitat --
The Cape's Coastal Plain Ponds**

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Coastal plain ponds are ecologically unique and a globally rare habitat. We have coastal plain ponds here on Cape Cod, proving once again that we live in a very special place.

The Cape's freshwater ponds are connected to groundwater, which is recharged by the rain and snow that falls and soaks into the ground. Unlike other parts of the country where streams and rivers fill the ponds and lakes, it is precipitation that replenishes our freshwater on Cape Cod. When we experience less than normal precipitation, the groundwater lowers and so does the level of water in the ponds and vice versa. It is this natural fluctuation of water levels that has created a special habitat niche for a remarkable plant community associated with coastal plain ponds.

The annual highwater level, usually observed in the spring and year 'round in some wetter years, inundates the pondshore. This limits the common woody shrubs found around a pond to this elevation as they don't like to be in standing water on a regular basis. Typical shrubs include high bush blueberry, leatherleaf and willow. Usually by late summer the water level in the pond drops and more of the shoreline is exposed. Like a bathtub ring, a band can be observed on the shoreline and this is where the specialized plant community comes to life.

Some of these plants produce seeds and others will remain rooted, only to become submerged beneath the pond's water with the winter and spring precipitation. But they will patiently wait, dormant for a year or maybe several years will pass before the next low water opportunity exposes the shoreline. Only then can the seeds germinate and the plants grow and flower.

The plants that are characteristic of this specialized habitat include both commonly found species and globally restricted. Globally restricted means they are found in very few locations worldwide. Coastal plain pondshores are known to have an abundance of state-protected and globally restricted rare plants. An example of this is the Plymouth gentian (*Sabatia kennedyana*), which is found in significant populations, but only in these limited coastal plain pond shorelines that have not been altered. The Plymouth gentian is commonly found growing with the yellow flat-topped goldenrod (*Euthamia tenuifolia*), pink tickseed (*Coreopsis rosea*) and golden pert (*Gratiola aurea*). Numerous kinds of rushes and sedges, boneset (*Eupatorium perfoliatum*) and purple gerardia (*Agalinis purpurea*) are commonly found with the state-listed rare New England boneset (*Eupatorium novae-angliae*) and the Maryland meadow beauty (*Rhexia mariana*).

The zonation of the coastal plain pond plant community is often described and is an observable gradation of plant species starting with a pitch pine-oak forest in the upland, followed by a shrub border dominated by highbush blueberry (*Vaccinium corymbosum*), sweet pepperbush (*Clethra alnifolia*) and green briar (*Smilax rotundifolia*). The next area around the pondshore, when exposed with lower water levels, is dominated by the coastal plain flat-topped goldenrod, pondshore rush (*Juncus pelocarpus*), pink tickseed, golden pert and, hopefully, the Plymouth Gentian. Next, at a slightly lower elevation

around the pond in the semipermanently flooded zone, you will find pipewort (*Eriocaulon aquaticum*). Easy to miss, the flower is a tiny white ball held above the water on a slender stem. In deeper water, you may see the yellow water-lily (*Nuphar variegata*) and the white water-lily (*Nymphaea odorata*). Not every pond has every zone and zones vary in width and species composition from year to year.

The coastal plain pond is also important habitat for numerous animal species, some of which are protected by the state as species of special concern, threatened or rare. The associated fauna includes over 45 species of dragonflies and damselflies and for the painted, musk, spotted, snapping, and the federally endangered Plymouth red belly turtles. Coastal plain ponds support warm-water fish and freshwater mussels. The smaller ponds can function as vernal pool habitat when fish are absent.

Cape Cod's coastal plain ponds have been said to be the best examples of these specialized coastal plain pond plant communities in New England. Observing the remnants of these coastal plain pond shorelines in flower is memorable, but could be fleeting as development pressure and human use threaten the vitality of the coastal pond habitat. Heavy human use, such foot traffic, off road vehicles and creation or enhancement of beaches, severely impacts plant growth and can result in total decimation of this fragile irreplaceable ecosystem. It's been documented that even a few walking trips can create a dead zone where none of these distinctive plants will ever grow again.

Good water quality is important to preserve coastal plain pond habitat. Excess nutrients from fertilizer use, stormwater runoff, septic systems, and even large flocks of overwintering Canada geese (not a natural occurrence) serve to put a pond chemistry off balance and cause accelerated eutrophication. The surplus of nutrients results in excessive growth of algae and encourages other pond vegetation to grow, which can crowd out the special coastal plain pond plants. And because the wells for our drinking water are drawing from the same water table that creates these ponds, excessive drawdown of town wells for water consumption can influence the water levels. An unnatural fluctuation of water levels in the pond may result in upland habitat encroaching further into the pondshore, reducing the area of this specialized habitat. Invasive species, such as phragmites, can quickly take over and crowd out the little plants.

One of the most beautiful natural sights to see is a shoreline of one of these ponds in late summer. If you find yourself in the presence of these delicate beautiful plants, take a closer look, but please walk around.

For more information about coastal plain ponds:

- <http://www.mass.gov/eea/docs/dfg/nhosp/species-and-conservation/nhfacts/sabatia-kennedyana.pdf>
- <http://www.mass.gov/eea/docs/dfg/nhosp/natural-communities-facts/coastal-plain-pondshore-commun.pdf>

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