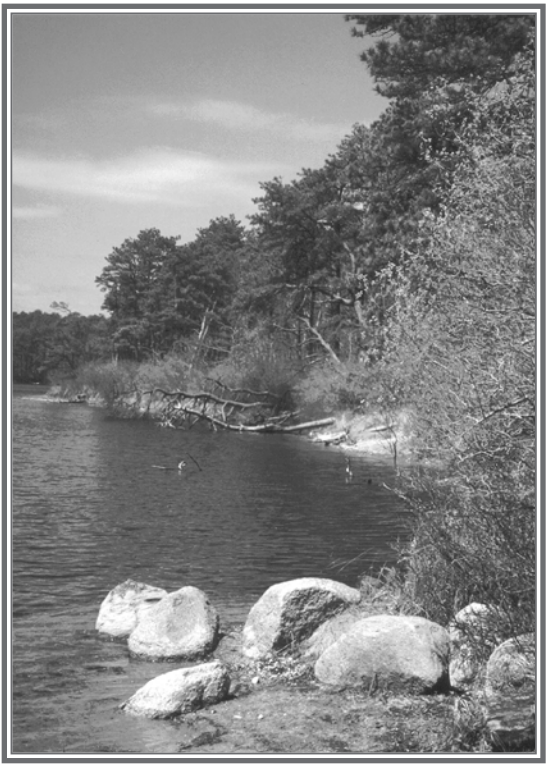
Hathaways Pond
Conservation Area

Interpretive Trail



Barnstable
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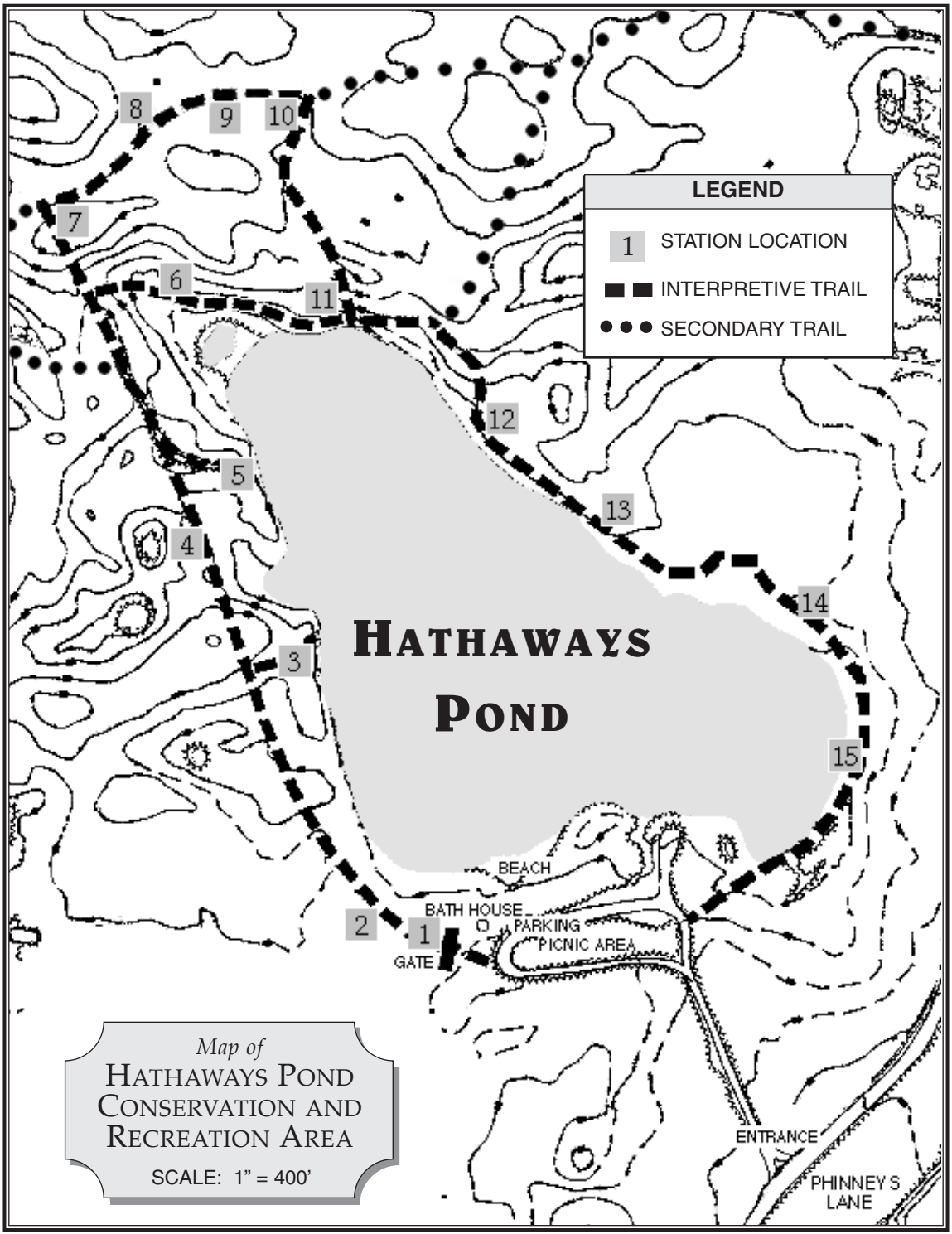
Hathaways Pond Conservation Area

Hathaways Pond and the surrounding landscape attest to the glacial genesis of Cape Cod. The last advance and retreat of a 10,000 foot high sheet of ice sheet from northern Canada occurred between 15,000 and 25,000 years ago. Cape Cod was formed where the northward retreat of the glacier stalled for a few thousand years as the rate of melting along the ice front was counteracted by the advance of new ice. Hathaways Pond is one of hundreds of "kettle" ponds on Cape Cod, formed where rock debris carried by the glacier and meltwater was deposited around colossal blocks of ice. Water from the aquifer now occupies the basins, creating ponds where fragments of the glacier once lay melting.

The rock debris deposited by the glacier ("glacial drift") forms the two prominent features of the Cape Cod landscape: moraines and outwash plains. The 60 acres composing the Hathaways Pond Conservation Area straddle the boundary between moraine deposits to the north and outwash plain deposits to the south. Walking the nature trail enables one to view these glacial features as well as the vegetation, wildlife, and unique habitats of this area. Total walking distance around the outer circuit is approximately 1.2 miles and involves an ascent of 70 feet. Trail markers are numbered sequentially traveling clockwise around the pond (see trail map).

1 Outwash Plain

Outwash plains are formed by water-borne deposits of glacial debris. Rock fragments of a size small enough to be transported by flowing water were carried away from the front of the glacier by meltwater streams. These streams carried a heavy load of sand and gravel and formed a "braided" network as they frequently changed course and formed new channels through accumulated deposits. Over time these streams built the broad and relatively flat landscape that characterizes most of Cape Cod. Outwash plain deposits are sorted ("stratified") into particular grain sizes that correspond to the velocity of the meltwater stream that carried them. The beaches of sand and rounded gravel seen here along the southern shore of Hathaways Pond are typical of outwash plain deposits.



Map of
HATHAWAYS POND CONSERVATION AND RECREATION AREA
SCALE: 1" = 400'

2 Greenbrier

Discouraging to anyone wishing to wander off the trail, the thorny vine growing here is called greenbrier or catbrier *(Smilax rotundifolia)*. Its clusters of small, green flowers give rise to blue-black berries that often remain on the plant through winter. Although it has earned the colloquial names hellfetter and blasphemy-vine from woodsmen, a variety of birds eat the berries or nest in the refuge of its tangled thickets.

3 Pond Overlook

Hathaways Pond has a surface area of 20 acres (8 hectares), a maximum depth of 56 feet (17.1 meters), and an average depth of 27 feet (8.2 meters). It has been intensively managed as a trout fishery since 1952 by the Massachusetts Division of Fisheries and Wildlife. Currently, catchable size fish are stocked each spring.

Hathaways Pond is typical of most kettle ponds on Cape Cod. The water in Cape ponds and the ground water beneath your feet are both part of a single aquifer system. Ponds are places where waters of the aquifer are visible because their basins intercept the water table. As components of the aquifer, pond processes such as fluctuation in water elevation, water inputs and losses, and nutrient balance are dominated by the influence of ground water. In contrast, the influence of the surface watershed or topographic catchment area is minimal due to the highly permeable soils of Cape Cod. Most kettle ponds have neither surface inlets or outlets.

4 Vernal Pool

The steep-sided hollow below you becomes a unique little world unto itself during spring when it holds water for several weeks. Known as a "vernal pool" because it fills with spring rain or snowmelt, it eventually dries up during the hot days of summer. Within the confines of this temporary pool of water, a remarkable community of animals lives out critical stages of their life cycles. Amphibian species of wildlife such as the wood frog (*Rana sylvatica*) and mole salamanders (*Ambystoma* sp.) depend on vernal pools as breeding habitat because, in permanent bodies of water, their eggs and larvae are preyed upon by fish.

5 Old Foundation

Associated with old building foundations at the top of this bluff are trees and shrubs which break the monotony of the surrounding pitch pine and oak forest. Plants growing conspicuously in this area are black locust (*Robinia pseudoacacia*), red cedar (*Juniperus virginiana*), staghorn sumac (*Rhus typhina*), Morrow's honeysuckle (*Lonicera morrowii*), and northern catalpa (*Catalpa speciosa*).

6 Hurricane Bob

On August 19, 1991 Hurricane "Bob" struck Cape Cod from the south with sustained winds of 100 mph and gusts up to 120 mph. Most of the trees felled in the Conservation Area during that storm are concentrated here and along the north shore of the pond because the open water "fetch" to the south exposed them to the winds' full fury.

7 Pitch Pine / Oak

The dominant forest trees in most areas of Cape Cod are pitch pine *(Pinus rigida)* and oak *(Quercus* sp.*).* Members of both the red oak (pointed leaf lobes) and white oak (rounded leaf lobes) groups are present. European settlers cleared the original forest of Cape Cod almost entirely to use the land for farming and grazing. By the early 1800's the soils of Cape Cod were depleted and eroding and the planting of pitch pine was promoted to stabilize them. This tree is adapted to the sandy soils of Cape Cod and seeded naturally over the landscape. The pitch pine is characterized by needles growing in groups of three, cones persistent on the tree and with sharp prickles, and a scraggy appearance. In some areas, shade-tolerant oak trees are gradually replacing the pines as the forest matures.

8 Glacial Erratic

Large boulders jutting out of the ground are a frequent sight on the moraine. The glacier plucked these from rock outcrops located to the north and carried them here. These glacial "erratics" were dropped intact, somehow escaping the vast grinding that reduced most rock to grains of sand. Many boulders are visible along the north shore of Hathaways Pond where wave action has eroded into the moraine and exposed them.

9 Trailing Arbutus

Displaying fragrant clusters of pink or white flowers in early spring, the trailing arbutus (*Epigaea repens*) has oval, leathery leaves that remain green through winter. The stems are hairy and creep or "trail" close to the ground. Often seen growing beside trails, this plant is the state flower of Massachusetts.

10 Moraine

A moraine is a ridge of rock debris amassed at the edge of "live" (moving) ice. At this point you are standing near the crest of the Sandwich Moraine which forms the topographic "backbone" of the Upper Cape from Sandwich to Yarmouth. The moraine is thought to have been built by a combination of two processes: the glacier acting as a "conveyor belt" and as a "bulldozer". The conveyor belt action occurs when the front of glacier melts away just as fast as the ice advances from behind. The advancing ice deposits its load of rock fragments into a growing pile as it melts along the stationary ice front. Temporary readvances of the ice front act like a bulldozer to pile up rock debris deposited earlier. Rock fragments composing a moraine are deposited directly by ice and, therefore, are an unsorted ("unstratified") mixture of all sizes ranging from clay-sized particles, angular stones, to huge boulders. Automobile traffic can be heard traveling along the crest of the moraine on Route 6.

11 Water Lily Basin

At this station one can view a small, shallow basin that has been separated from the main basin of Hathaways Pond by a sandy isthmus. Wind-driven currents along the pond shore carried sand to where it was deposited to form the isthmus between basins. The formation of spits along ocean shorelines results from a similar process on a larger scale. This small basin is the only shoreline area supporting a dense growth of rooted aquatic vegetation including yellow waterlily (*Nuphar variegatum*), white waterlily (*Nymphaea odorata*) and pickerel weed (*Pontederia cordata*).

12 Heath

This station affords a good view of the dense layer of shrubs that grow beneath the canopy of pitch pine and oaks. Most of these shrubs are members of the Heath family (Ericaceae) and typically dominate the shrub layer on the

sandy, acidic soils of Cape Cod. Common heaths in this area include lowbush blueberry *(Vaccinium vacillanis)*, teaberry *(Gaultheria procumbens)*, huckleberry *(Gaylussacia bacata)*, and sheep laurel *(Kalmia angustifolia)*.

13 Lichen

Splotches of gray or pale green color give the trunks of the oak trees a mottled appearance. These patches of color are lichens; a form of life consisting of a partnership between a fungus and a microscopic green plant called an alga. Close inspection of a few trees will reveal lichens growing as flat, crusty plates ("crustose") or leaflike with margins free and often lobed ("foliose"). A shrublike growth form ("fruticose") can be seen up among tree branches where beard lichen (*Usnea strigosa*) forms small tufts of hanging filaments.

14 Wildlife

Frequently heard along the shore of Hathaways Pond is the rapid-fire rattle of the kingfisher. Other bird species commonly observed along the trail include the chickadee, white-breasted nuthatch, downy woodpecker, tufted titmouse, golden-crowned kinglet, rufous-sided towhee, bluejay, robin, mourning dove, and cardinal. Sharp-eyed trail walkers may see mammalian wildlife such as whitetail deer, raccoon, opossum, red fox, skunk, grey squirrel, and chipmunk.

15 Pond Shore

Looking back along the northern shore of Hathaways Pond a dense perimeter margin of shrubs can be seen growing on the bank near the waters' edge. This shoreline shrub zone is composed principally of highbush blueberry (*Vaccinium corymbosum)*, fetterbush (*Leucothoe racemosa*), and sweet pepperbush (*Clethra alnifolia*). The fruits of the blueberry can be found from June through September and are sweet and juicy despite their many small seeds. ❑

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