

Illustration credit: Robert Golder

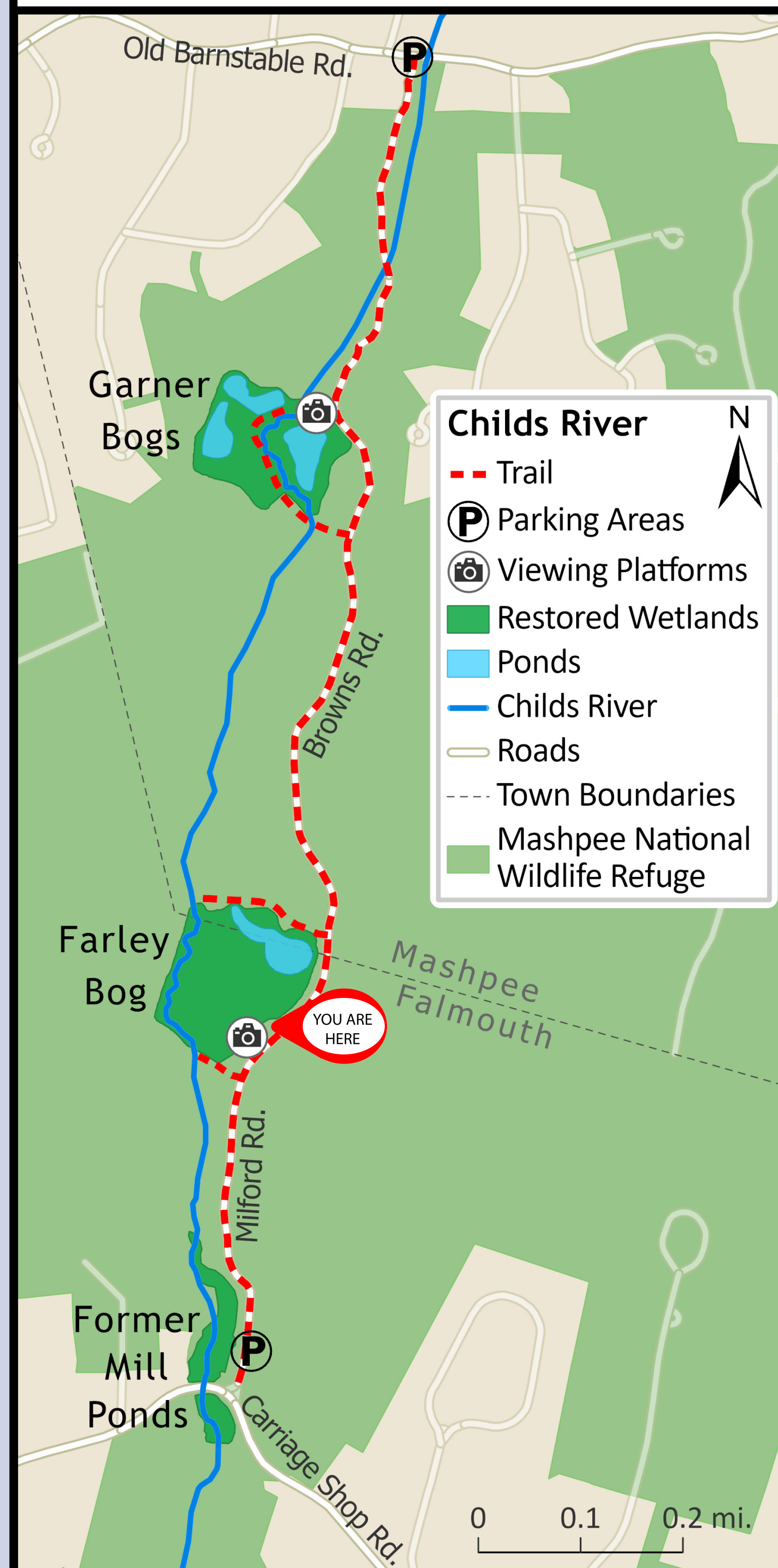
Retired Cranberry Bog to Restored Wetland: Farley Bog and the Childs River



Farley Bog before restoration (2017)

Geologic Context and the Legacy of the Last Ice Age

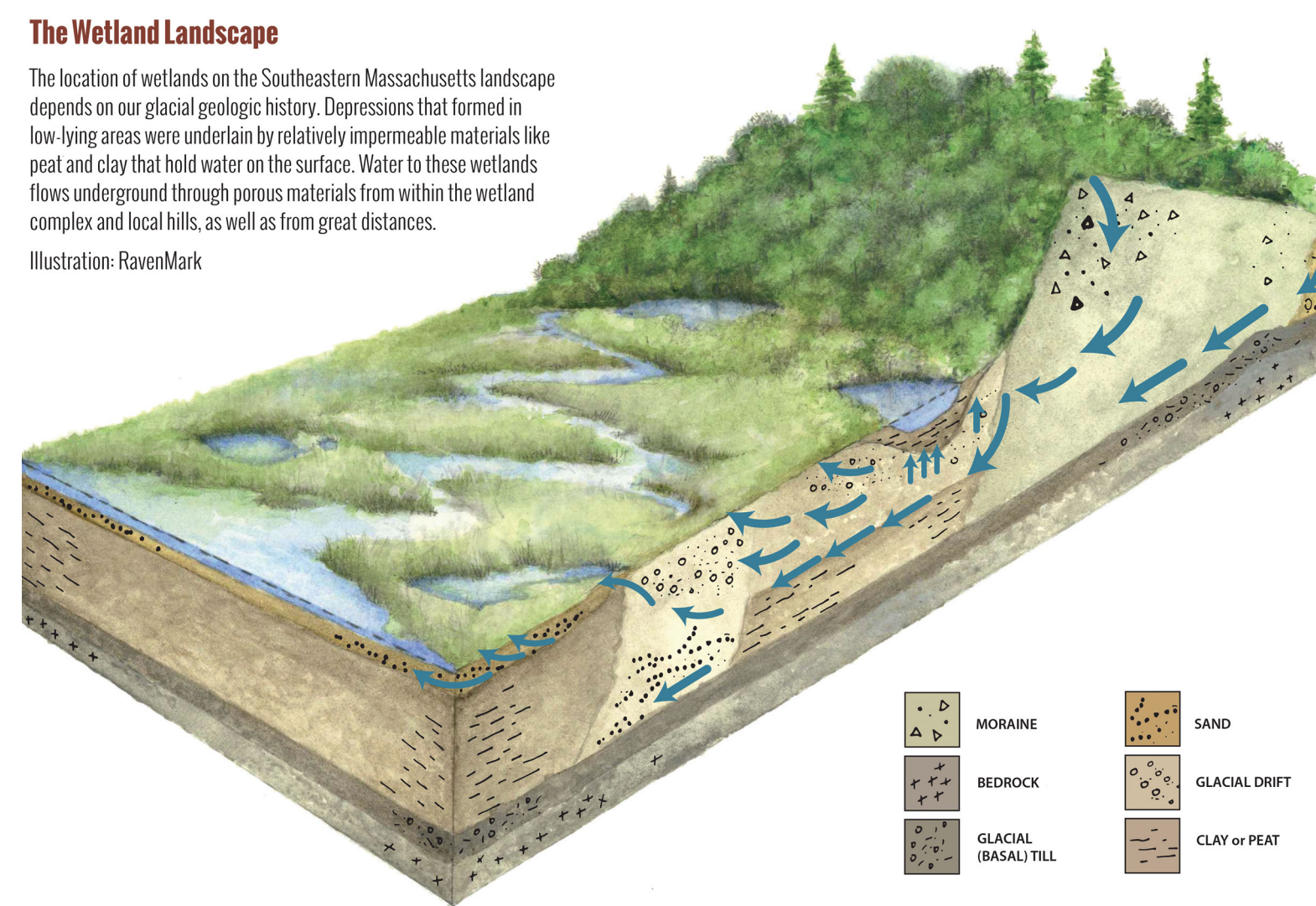
Cape Cod is a large moraine that was created by the Laurentide Ice Sheet depositing sediments into an elongate ridge. When the last Ice Age ended, approximately 16,000 years ago, and the ice sheet began to retreat from Cape Cod, torrents of meltwater transported and sorted these sediments into deposits of sand and gravel. At the same time, large chunks of ice were left behind and buried under this sediment. When these ice chunks melted, they left depressions called kettle holes. The kettle holes became kettle ponds that, over time, filled up with clay and organic materials. Wetlands formed on these filled-in kettles, accumulating decaying plant matter, which ultimately became peat deposits.



The Wetland Landscape

The location of wetlands on the Southeastern Massachusetts landscape depends on our glacial geologic history. Depressions that formed in low-lying areas were underlain by relatively impermeable materials like peat and clay that hold water on the surface. Water to these wetlands flows underground through porous materials from within the wetland complex and local hills, as well as from great distances.

Illustration: RavenMark

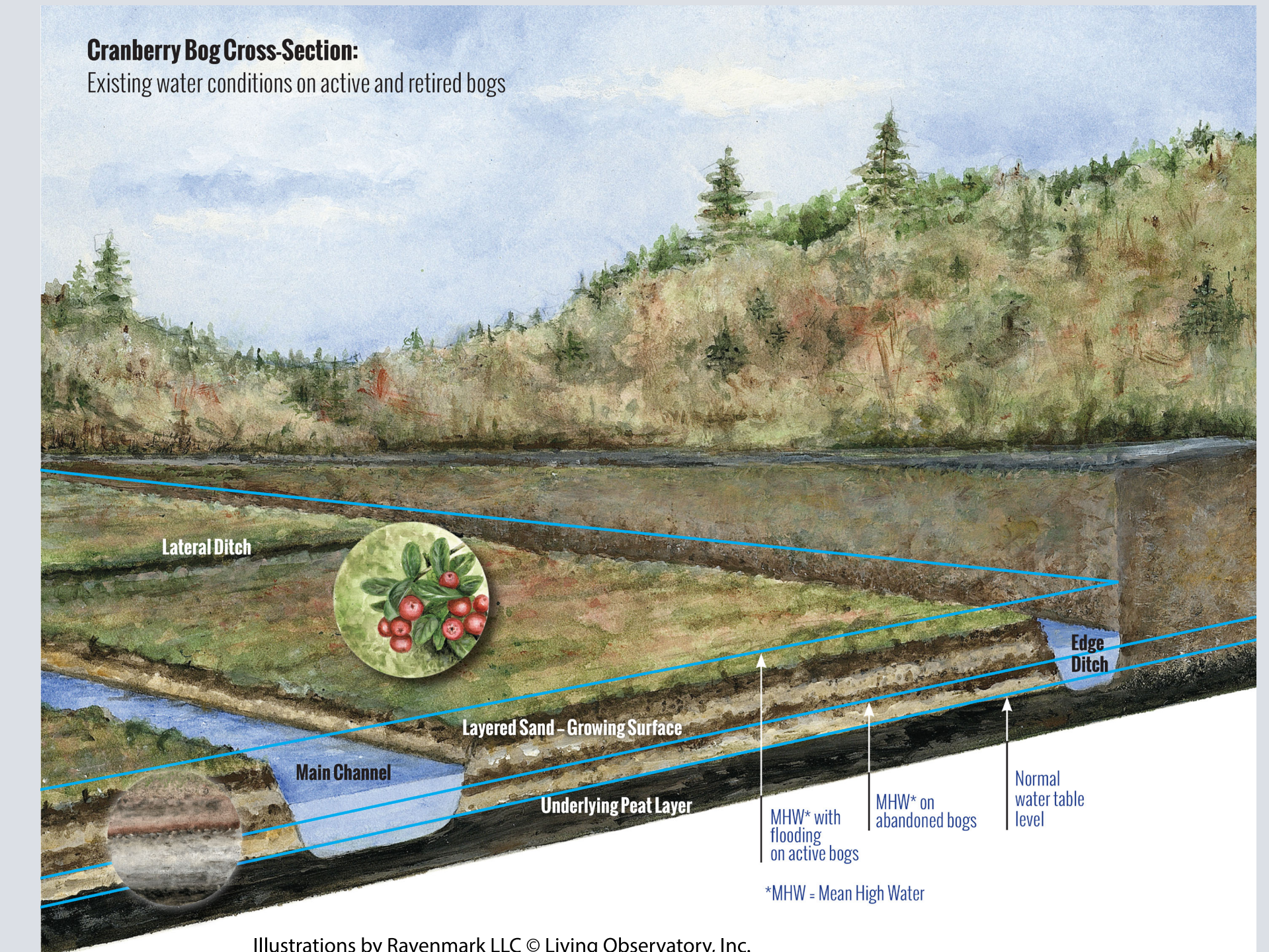


Cranberry Cultivation and its Impacts

The American cranberry (*Vaccinium macrocarpon*) is a native wetland plant that was harvested for thousands of years by the Wampanoag people and European colonists alike. In the early to mid 1800s, the commercial cultivation of cranberries became an important economic and cultural part of southeastern Massachusetts and Cape Cod. This came at an ecological cost. Creating cranberry bogs involved deforesting, ditching, draining, leveling, and damming wetlands to control water levels and establish a cranberry monoculture. Farmers also discovered that sand could enhance cranberry growth and depress weeds, and they began applying sand to the bogs every year. This practice resulted in thick layers of sand topping many present-day cranberry bogs, which further separate the bog surface from the groundwater.

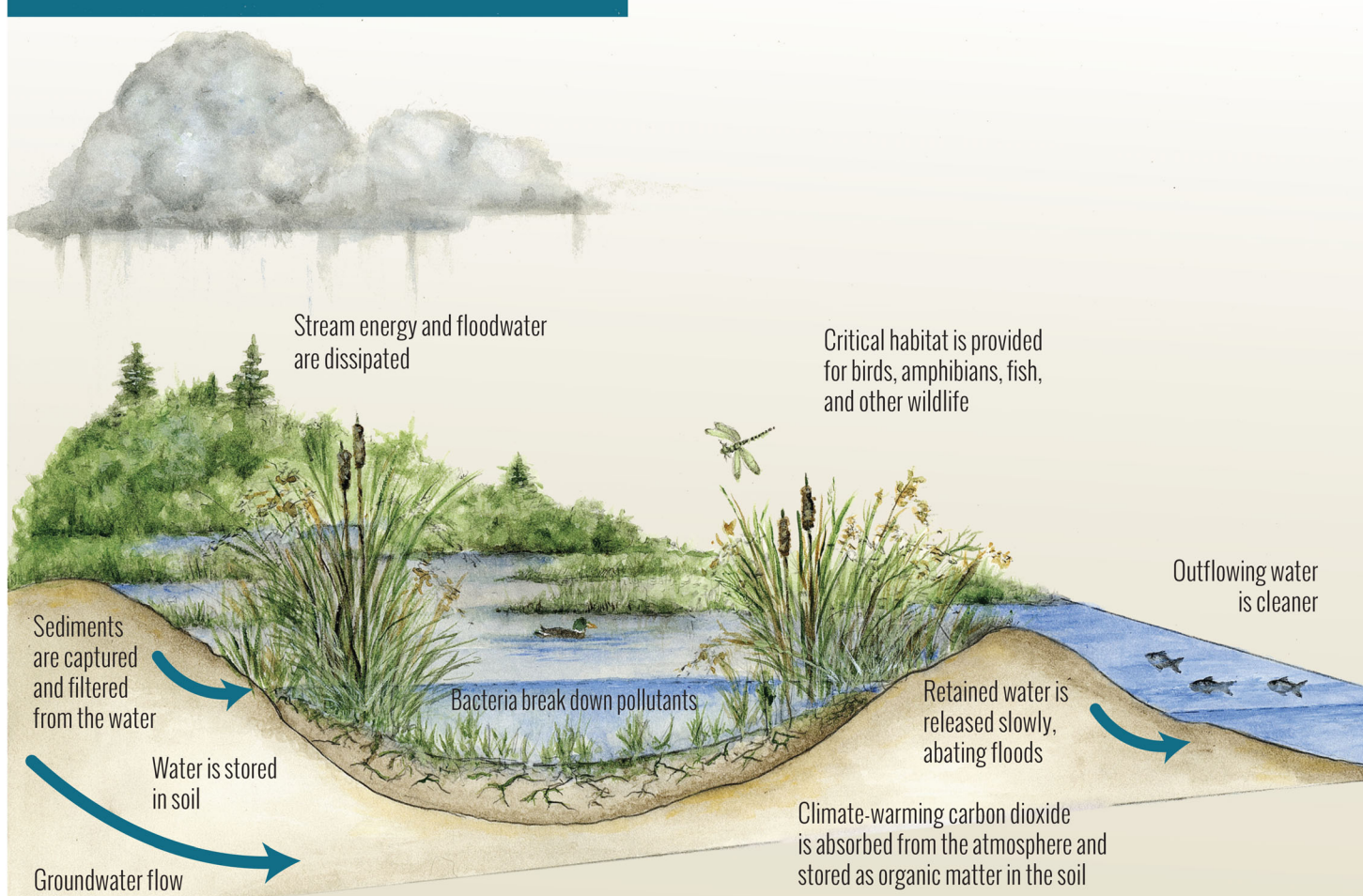
Cranberry Bog Cross-Section:

Existing water conditions on active and retired bogs



Illustrations by Ravenmark LLC © Living Observatory, Inc.

How Wetlands Work



Why Restore Wetlands?

Water Purification

The unique plants and soils of wetlands can filter, absorb, and remove sediment and pollutants from the water.

Flood Resilience

The sponge-like nature of wetland plants and soils helps prevent floods by giving floodwater a place to go and releasing it back into streams and groundwater slowly.

Climate Benefits

Wetlands help moderate global climate conditions by storing large amounts of carbon and water.

Biodiversity

Wetlands improve biodiversity by providing critical habitat, breeding grounds, and sources of food for many types of animals and plants that cannot survive without them, including dragonflies, frogs, birds, and other wildlife that eat mosquitoes!

Recreation

Wetlands are ideal places to enjoy time in nature for hiking, birdwatching, photography, and relaxing.

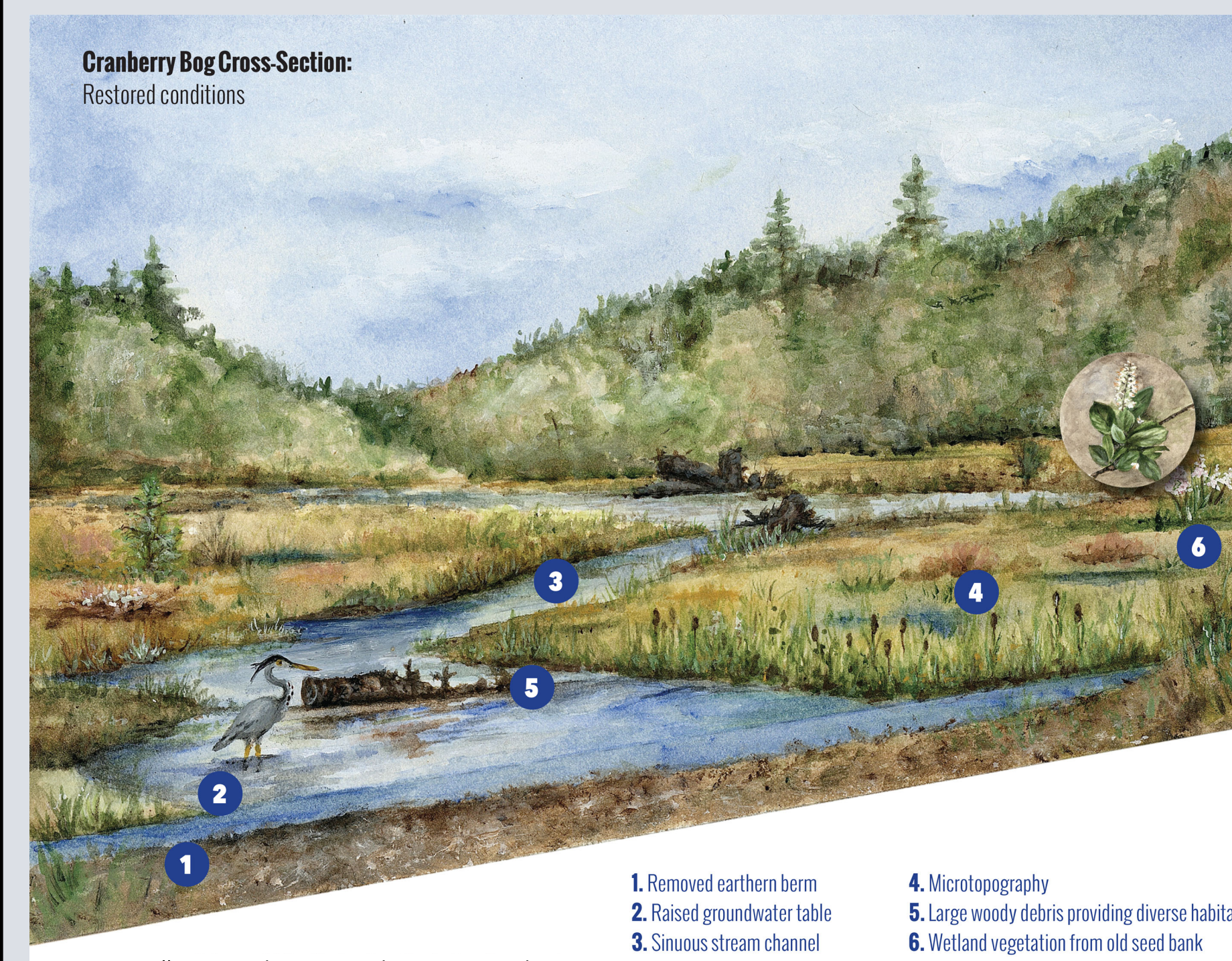
Exploration & Learning

Wetlands are excellent places to learn about how nature works, including how to improve the practice of ecosystem restoration.

Illustrations by Ravenmark LLC © Living Observatory, Inc.

Cranberry Bog Cross-Section:

Restored conditions



Illustrations by Ravenmark LLC © Living Observatory, Inc.

Restoration Goals and Methods

The restoration of a cranberry bog aims to undo the impacts of cranberry farming and return the system to a diverse ecosystem. This involves:

- removing water control structures to allow free-flowing surface water and fish passage
- reestablishing a meandering channel with large wood to slow flow and create habitat for fish and riparian species
- filling ditches and removing sand to raise the groundwater and create a wet bog surface
- microtopography (roughening) of the bog surface to create a range of surface conditions and promote diverse plant communities

These efforts are designed to jumpstart the restoration of the ecosystem and set it on a trajectory for a sustainable recovery. While some impacts are immediate, like a free-flowing channel, others take years to be fully realized, like the reestablishment of a wetland forest.



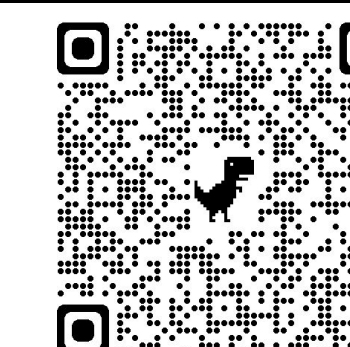
Pre-Restoration Video



Childs River Restoration Video



Sea Run Brook Trout Podcast



Healthy Wetlands Video

The Upper Childs River Restoration Project was supported in part by Southeast New England Program (SNEP) Watershed Implementation Grants, funded by the U.S. Environmental Protection Agency (EPA) through a collaboration with Restore America's Estuaries (RAE). For more on SNEP Watershed Implementation Grants, see www.snepgrants.org.