



# Cape Cod Ponds

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November 8, 2023 | CAPE COD COMMISSION



CAPE COD  
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# Cape Cod Ponds by the Numbers



CAPE COD PONDS AND LAKES

**890**  
POND S

**171**  
10+ Acre Ponds

**395**  
Named Ponds

## LARGEST PONDS *by area*

1. Long Pond  
Brewster and Harwich
2. Mashpee-Wakeby Pond  
Mashpee and Sandwich
3. Wequaquet Lake  
Barnstable

## DEEPEST PONDS *with data available*

1. Cliff Pond  
Brewster
2. Hamblin Pond  
Barnstable
3. White Pond  
Chatham

**27** 

Fish Stocked Ponds

**107** 

Ponds Adjacent to Cranberry Bogs

**22** 

Ponds that Cross Town Boundaries

**96** 

Ponds with Public Access\*

**30%** 

Protected Open Space within pond 300ft buffer

**14%** 

Impervious Surfaces within pond 300ft buffer

\*Includes public beaches, boat ramps, and launches



## | WIDE RANGE OF SIGNIFICANCE

- Cultural traditions
- Economic
- Environmental
- Wildlife habitat
- Source of food
- Recreation
- Aesthetics



# Lack of Consistent and Consecutive Data Collection

Limited data prevents our ability to gather a clear understanding of pond health. Consistent and consecutive data collection, is needed to inform pond management/improvement strategies.

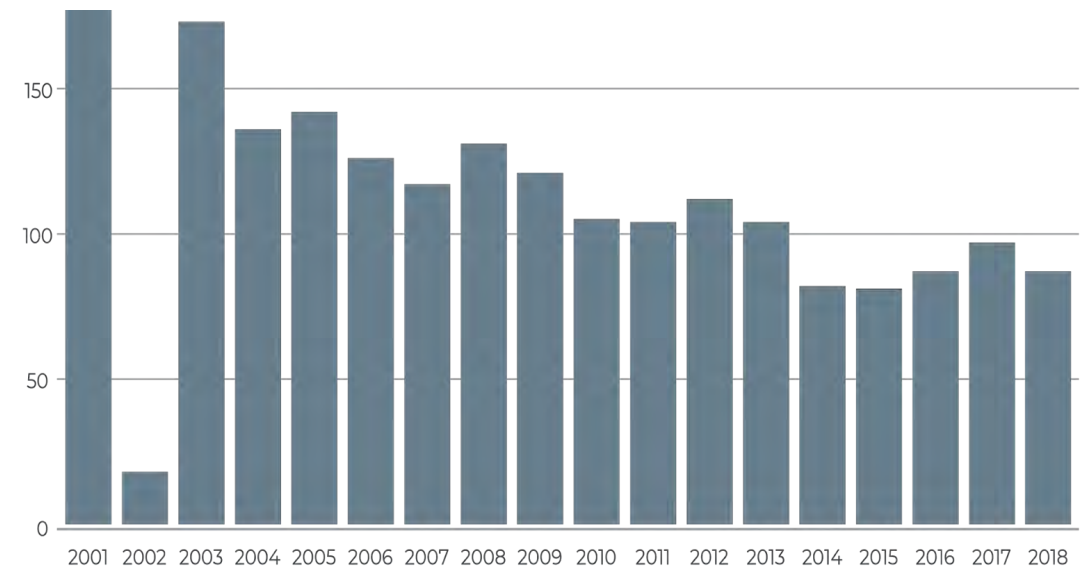
less than **10 %**

OF CAPE COD'S PONDS AND LAKES  
ARE MONITORED

just **4 %**

HAD SUFFICIENT RECENT WATER QUALITY  
DATA TO GRADE POND HEALTH IN 2021

Ponds Monitored by PALS



Independent pond groups collect water quality data, but the ponds monitored change year to year, and many are sampled without a Quality Assurance Project Plan (QAPP), complicating needed long-term and regional analysis.

# Freshwater Initiative



## REMOTE SENSING

Investigating the use of satellite-derived imagery and existing pond water quality data to quantify changes in pond characteristics



## DATA MANAGEMENT AND ANALYSIS

Developing freshwater monitoring database, processing scripts for trend analyses, and accessible user interface



## PHYSICAL CHARACTERISTICS

Assessing, through the use of GIS and other data sources, characteristics that may contribute to changes in water quality, and determining potential internal and external drivers of water quality degradation



## PONDS AND LAKES ATLAS UPDATE

Completing an update to the 2003 Cape Cod Ponds and Lakes Atlas to serve as a resource for updated pond information and provide the basis for the Freshwater Initiative



## STRATEGIES DATABASE

Developing a pond-specific strategies database that includes a range of technologies, regulatory and voluntary options, and management approaches for protecting and restoring pond water quality



## ENGAGEMENT AND OUTREACH

Engaging stakeholders to develop a framework for identifying and implementing pond management strategies



## ECONOMIC ANALYSIS

Quantifying the costs and benefits of pond management strategies, including the cost of no action and the impacts of degraded freshwater quality on the regional economy



## LEGAL AND JURISDICTIONAL ANALYSIS

Reviewing federal and state laws relative to public and private interests in and around freshwater ponds, and identifying opportunities for local and regional action



## MONITORING PROGRAM

Expanding pond monitoring to collect data necessary to support management decisions and track performance



## ONGOING DATA MANAGEMENT AND ANALYSIS

Managing and maintaining accessible pond monitoring datasets and providing on-demand trend analyses through a web-based interface



CAPE COD FRESHWATER INITIATIVE  
POND STRATEGIES DATABASE

SCALE OF APPROACHES:

**WATERSHED**



Comprehensive watershed planning, land use regulations, land protection, advanced wastewater treatment

**POND SHORES**



Vegetated buffers, fertilizer management, septic setbacks, I/A septic systems

**IN POND**



Nutrient, algae, sediment, and vegetation management approaches

DATABASE INCLUDES:

Regulatory Approaches



Physical Approaches



Chemical Approaches



Biological Approaches

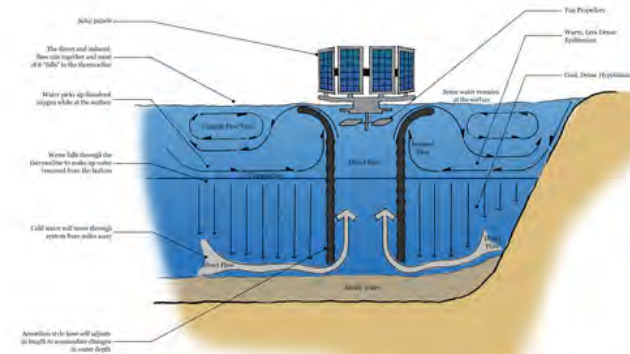




- Approximately 50 strategies
- Input from Technical Advisory Group
- Provides information on cost, permitting, applicability, and constraints
- Multiple formats – factsheets, interactive webpage, spreadsheet



## Pond Circulators



### Description

The circulation of pond and estuary water increases the oxygen concentration while reducing nutrients (nitrogen and/or phosphorus) concentrations, reducing odors, and enhancing fish habitat. The circulation is generally performed mechanically by installing solar or electric powered circulators.

Pond and estuary circulators work by reducing stratification in ponds and estuaries. Anoxic conditions can occur within the lower stratified layers leading to harmful algae blooms, fish kills and odors. Circulators mix these stratified layers, thereby increasing dissolved oxygen concentrations throughout the pond depths.

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This is a water body Restoration technology.



## In - p o n d   A p p r o a c h e s

### Macrophyte Harvesting



### Permeable Reactive Barrier (PRB)







## Pond Shore & Watershed Approaches

### Stormwater Management



### Erosion Control





# | SELECTING A STRATEGY

Understand  
Your Pond



Define Goals  
and  
Objectives




Identify and  
Understand  
Options



Implement  
&  
Adapt




# Cape Cod Pond Restoration Projects Viewer



## Cape Cod Pond Restoration Projects

by Strategy **by Town**

### Pond Restoration by Town



#### Pond Restoration points

**Town**

Show All

**Zoom To**

- Barnstable
- Harwich
- Mashpee
- Brewster
- Chatham



## Alum Treatment

**Problem:** High phosphorous concentrations, significant internal P loading

**Scale of Approach:** In-Pond

**Management Approach:** Nutrient Management (Inactivation)

**Cost:** Low

**Timeframe:** Quick results, longevity of application range from months to years, reapplication likely needed.



Lovell's Pond, Barnstable 2014



## District of Critical Planning Concern

Problem: Development Pressure

Scale of Approach: Watershed

Management Approach: Freshwater Pond Area Planning/Regulation

Cost: Low

Timeframe: Medium to long term regulatory planning, requires support for designation

Harwich Six Ponds Special District 2000





Thank you

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