



Shore Lines

Newsletter of the Association to Preserve Cape Cod Winter 2020



TROUBLED WATERS

APCC's second annual **State of the Waters: Cape Cod** report documents continued water quality problems across the Cape, with growing concern about the health of our ponds.

APCC ecologist, Kevin Johnson, samples for the presence of cyanobacteria in Brewster's Upper Mill Pond.

An advisory notice was posted at the pond in 2019 due to a documented cyanobacteria bloom.

Photo: Gerald Beetham





PRESENTING

2020 State of the Waters: Cape Cod Report

By Andrew Gottlieb, Executive Director

The year 2020 was a difficult, yet productive year for all of us at APCC. Our staff had to figure out, on the fly, how to work differently to ensure that we met our commitment to you to preserve and protect the resources of Cape Cod. I am proud to say that despite all the obstacles, APCC had a good year and we thank all of you for the support that made it all possible.

Of the many things we were able to do, I am especially proud of our ability to build on our success with the State of the Waters: Cape Cod report. As expected, we saw estuarine water quality decline more as we measured the effect of another year of largely unattenuated nitrogen loading. Drinking water remained of high quality. The most revealing findings related to the almost 1,000 freshwater ponds. The available data on pond water quality was so limiting that grading of only 29 ponds was possible. Fortunately, APCC's cyanobacteria monitoring provided the ability to rate an additional 81 ponds. The lack of data is a real impediment to not just understanding what is happening with our ponds, but also to implementing the management steps to improve and protect water quality.

Getting Cape Cod moving down the road of responsible pond management is a top priority for APCC in 2021. It is our intention to work with Barnstable County, through the Cape Cod Commission, to fund and launch a program to improve baseline pond monitoring, evaluate nutrient management techniques and approaches, assess and categorize ponds based upon their vulnerability to external versus internal nutrient loads, and develop a funding mechanism to help towns preserve and protect these fragile environmental jewels. Freshwater ponds have been neglected while the focus has been on estuaries. The analysis in State of the Waters and summarized in this *Shore Lines* shows the time is now for ponds to get the attention they warrant.

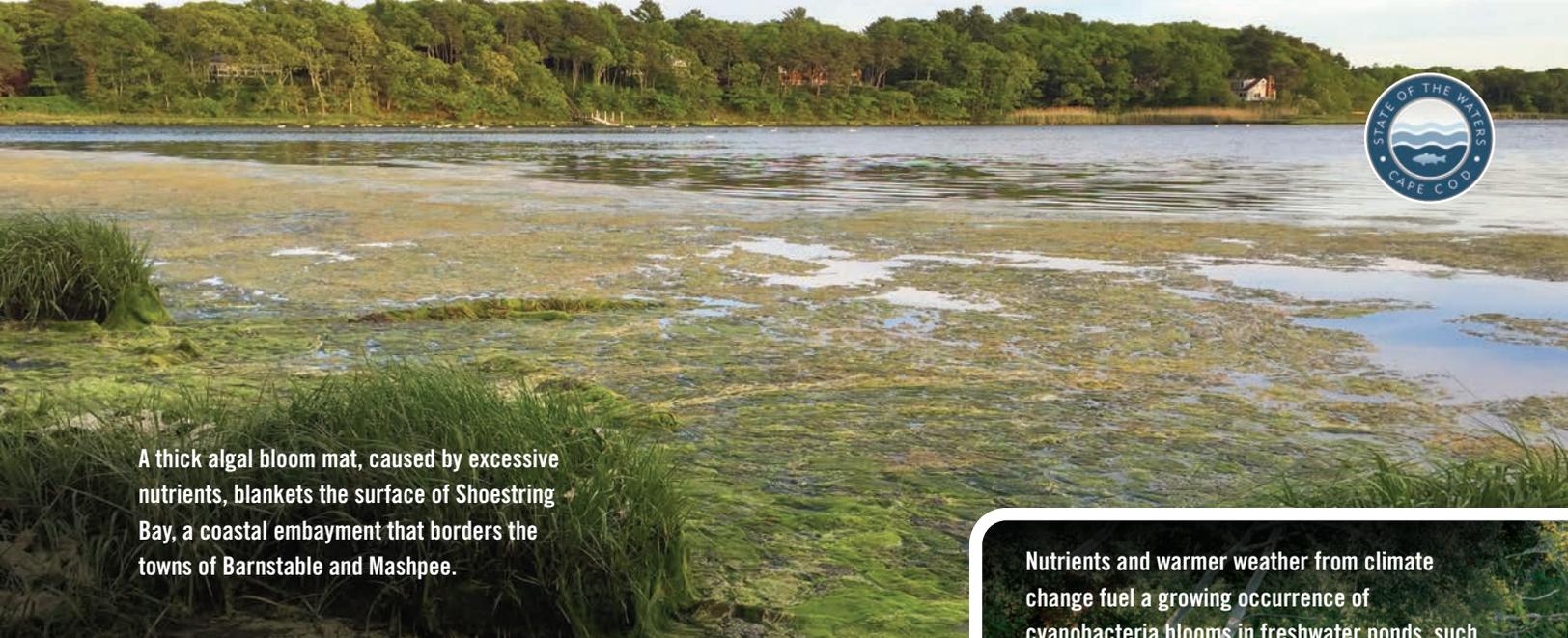
I can't imagine life on Cape Cod without healthy lakes and ponds. We are committed to making sure such a thing never occurs.



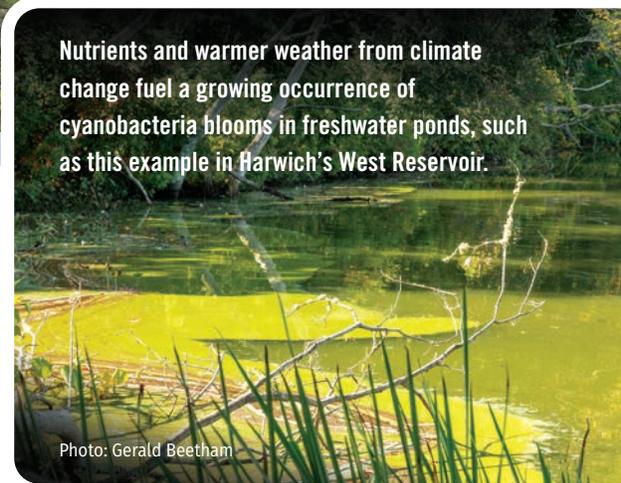
The APCC State of the Waters: Cape Cod report is funded by a grant from the Massachusetts Environmental Trust.

MET is one of the Commonwealth's premier environmental philanthropy organizations and is mainly funded by environmental license plate revenues. Proceeds from the sale of over 50,000 environmental license plates have funded more than \$16 million in environmental protection and restoration projects. Please consider purchasing an environmental license plate to support MET. Environmental license plates are available from the Registry of Motor Vehicles. Visit MET's website at www.mass.gov/orgs/massachusetts-environmental-trust to learn more about MET, the programs it supports, and the specialty license plate offerings.





A thick algal bloom mat, caused by excessive nutrients, blankets the surface of Shoestring Bay, a coastal embayment that borders the towns of Barnstable and Mashpee.



Nutrients and warmer weather from climate change fuel a growing occurrence of cyanobacteria blooms in freshwater ponds, such as this example in Harwich's West Reservoir.

Photo: Gerald Beetham

2020 STATE OF THE WATERS: CAPE COD

Report shows continued decline in embayment and pond water quality and identifies actions that need to be taken

The trend continues to be troubling. APCC's second annual State of the Waters: Cape Cod report documented an increase from last year in the number of coastal embayments and freshwater ponds graded "unacceptable" for water quality. The good news is the quality of the Cape's public drinking water supplies continued to score as "excellent."

The report is a comprehensive assessment of water quality in the Cape's coastal embayments, freshwater ponds and public water supplies. The predominance of "unacceptable" water quality grades for embayments and ponds reflects the impact of excessive nutrients on the Cape's water resources. Septic systems are the greatest source of nutrients, with stormwater runoff and fertilizers being other major contributors.

As with the 2019 State of the Waters report, APCC collected existing information on water quality compiled over years

of water sampling and monitoring across the Cape and translated the information into grades. Data from the most recent year of sampling were added to update the 2020 report. Three grading systems—one each for coastal embayments, freshwater ponds and drinking water—were used and grades of either "acceptable" or "unacceptable" water quality were given.

The report includes an updated State of the Waters Action Plan for restoring and protecting the Cape's water quality. In addition to once again recommending towns make water resource protection and restoration a high priority, the action plan calls for a robust water quality monitoring program for ponds and for a regional pond management plan akin to the Section 208 Area Wide Water Quality Management Plan for coastal embayments adopted in 2015.



Visit capecodwaters.org

View interactive maps with water quality scores for embayments, ponds and drinking water, along with the State of the Waters Action Plan, a description of the study's findings, and a new Atlas of Water Restoration Needs and Solutions.



2020 STATE OF THE WATERS: CAPE COD

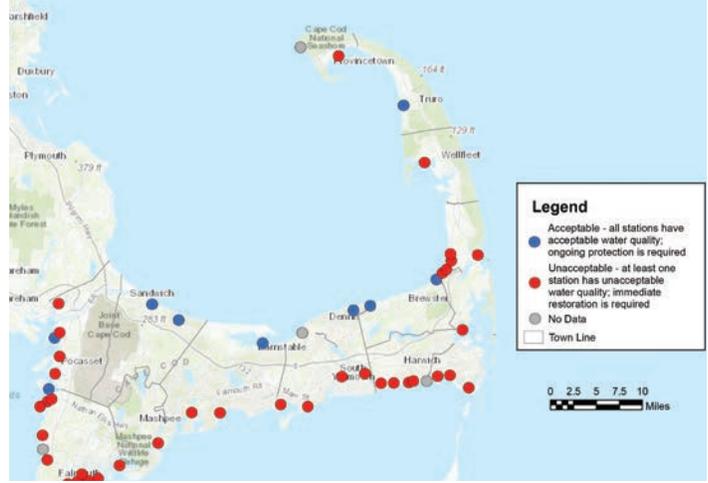
Coastal Embayments

The results from the 2020 report show more coastal embayments are being adversely impacted by nutrients. No embayment in the updated report showed an improvement in water quality.

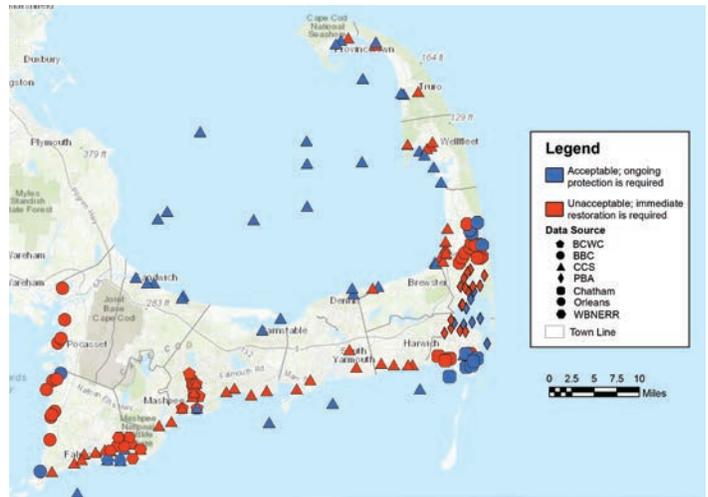
Of the embayments graded, 79 percent, or 38 of 48 embayments, had “unacceptable” water quality, up from 68 percent, or 32 of 47 embayments, in 2019. Clearly, a shift in the wrong direction.

The increase in unacceptable embayments is due to five embayments facing Buzzards Bay, Cape Cod Bay and Nantucket Sound changing from “acceptable” in 2019 to “unacceptable” in 2020. One embayment facing Vineyard Sound with no available data for the 2019 report was graded as “unacceptable” in 2020.

The 2020 report looked at 152 monitoring stations within the embayments. Seventy percent had “unacceptable” water quality. This is an increase from the 2019 report, when 64 percent had “unacceptable” water quality.

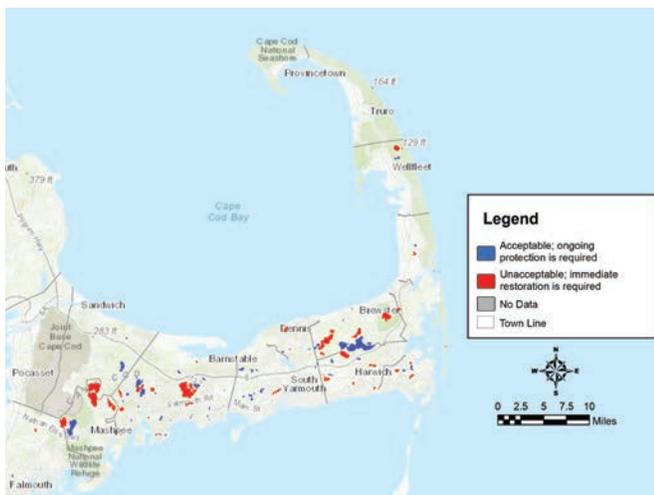


EMBAYMENT STATUS: Red indicates embayments where at least one monitoring station showed unacceptable water quality; blue indicates embayments where water quality is acceptable.



EMBAYMENT MONITORING STATIONS: The map shows the grades of individual monitoring stations for 48 Cape Cod coastal embayments. Red indicates unacceptable water quality.

Freshwater Ponds



Freshwater ponds also continue to be impacted by nutrients, with the percentage of ponds with “unacceptable” water quality increasing in 2020. Of the ponds graded, 42 percent, or 39 of 93 ponds, were graded as “unacceptable,” up from 39 percent in 2019.

The lack of available data has made a comprehensive assessment of current pond health difficult. For many ponds, the most recent water

POND STATUS: The map shows the grades for 93 freshwater ponds. Red indicates unacceptable water quality; blue indicates acceptable water quality.



samples collected are five or more years old. Only 29 of the Cape’s 996 freshwater ponds had sufficient data to enable grading.

To help fill that gap, APCC added the 2019 data collection results of our Cyanobacteria Monitoring Program, along with data collected by towns, for the 2020 report. Cyanobacteria blooms provide another indicator of excess nutrients in ponds. Ponds that produced high levels of cyanobacteria were added to the ponds receiving an “unacceptable” water quality grade. The inclusion of cyanobacteria monitoring data brought the total number of graded ponds to 93.

Public Water Supplies

Water quality for public drinking water supplies in the 2020 report were once again graded as “excellent.” Grades were determined by the publicly available Consumer Confidence Reports for 2019, with scores based on whether water quality meets existing state and federal drinking water standards. All 20 of the Cape’s public water supplies received a score of “excellent.”

Per- and polyfluoroalkyl substances, or PFAS, a class of widely-used chemicals associated with human health risks, were not part of the analysis in this year’s report. APCC is monitoring the implementation of new regulations for PFAS in Massachusetts and will add data on PFAS to the grading when the regulations go into effect.



PUBLIC WATER: Municipal efforts to protect drinking water, including open space preservation in public water supply areas, have been effective in safeguarding water quality.

Updated State of the Waters Action Plan

The 2020 State of the Waters: Cape Cod report includes an updated State of the Waters Action Plan for protecting and restoring the Cape’s water resources.

The action plan underscores the urgency for Cape towns to invest in water quality restoration efforts for coastal embayments and freshwater ponds. A new emphasis was given to actions for ponds. The 93 ponds where sufficient monitoring data existed is a distressingly small percentage of the Cape’s 996 ponds. The lack of up-to-date pond water quality monitoring data, the percentage of ponds with “unacceptable” water quality and the increasing occurrence of cyanobacteria blooms prompted APCC to call for a county-led regional management plan for Cape Cod ponds.

Read the action plan at capecodwaters.org to learn more about what homeowners, businesses, and local and regional governments can do to improve Cape Cod water quality.

APCC’s programs depend on **YOUR SUPPORT!**

If you haven’t responded to APCC’s Year End Appeal, please take a moment to mail in your contribution or make a secure online donation at APCC.org

Thank you!

Monitoring effects of cyanobacteria blooms on aquatic ecosystems

APCC is expanding the focus on cyanobacteria and its impact on human and pond ecosystem health. APCC recently received a grant from the Massachusetts Environmental Trust to study whether harmful cyanobacteria algal blooms, or cyanoHABS, are affecting river herring.

The increase in cyanoHABS in Cape ponds, and river herring populations crashing within the same timeframe, have raised questions about potential connections between the two. By documenting water quality conditions, occurrence of cyanoHABS and trends in herring run sizes, APCC will assess possible impacts to river herring from cyanoHAB events. The study will help inform river herring managers in their management efforts. And by raising awareness of cyanoHABS and their impact on aquatic ecosystems and at-risk fish species, the project will help draw attention to the issue and motivate efforts to reduce nutrients that fuel the proliferation of cyanoHABS.

See page 2 for information about the Massachusetts Environmental Trust.



Photo: Gerald Beetham

Kevin Johnson, APCC ecologist, collects a sample from Upper Mill Pond in Brewster, one of the ponds tested in APCC's Cyanobacteria Monitoring Program.



An aerial view of the Childs River restoration in progress at the Garner bogs. The newly created stream channel, designed with a natural meandering flow, can be seen outlined temporarily in light sand on the left.

Photo: Inter-Fluve

Childs River: One example of improving water quality through environmental restoration

APCC is working with the Falmouth Rod and Gun Club to restore the Childs River. Construction began this fall to remove an earthen berm and failed fish ladder, reconstruct the stream channel, restore abandoned cranberry bogs to wetlands and construct new ponds.

While the primary goal is to provide new and improved habitat, another important objective is to improve water quality through uptake of nutrients in the restored wetlands and river floodplain. Inputs of pollution to surface water and groundwater throughout the watershed are contributing to poor water quality downstream. The river system flows to nutrient-impaired Waquoit Bay in Falmouth, which received an "unacceptable" score in APCC's State of the Waters report. Monitoring is underway to track the impact of the project on water quality, led by the rod and gun club, Waquoit Bay National Research Estuarine Reserve, MassWildlife and the Woodwell Climate Research Center.

The extent that projects like this can contribute to improved water quality is a research question being studied now, but utilizing nature-based solutions is one of several recommended actions supported by APCC.

A Solar Incentive

If you are thinking of installing solar, APCC has partnered with E2 Solar.

For every new customer who purchases and installs a solar array from E2 Solar and names APCC as the referring organization, E2 Solar will donate \$500 to APCC.



Call 508-694-7889 for a consultation, or visit e2solarcapecod.com.

Be sure to mention you were referred by APCC!



The connection between natural landscapes and protecting water quality

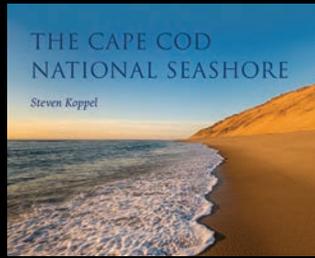


APCC's headquarters showcases native plants that do not require fertilizer and porous pavement that captures and filters stormwater.

We know that fertilizers and stormwater contribute about 20 percent to the nutrient problem that fuels algal blooms in saltwater embayments and cyanobacteria blooms in freshwater ponds on Cape Cod. In 2014, the Cape Cod Commission reported nearly 6 million pounds of fertilizers and 1.3 million pounds of pesticides are applied annually. This is why APCC promotes natural landscapes that don't require chemicals. Less turf lawn and more native plants help protect water quality. Grow healthy garden soils and incorporate landscape designs that are ecologically minded, conserve water and infiltrate rainwater to recharge the aquifer.

To help protect the Cape's water resources:

- **Eliminate the use of fertilizers and pesticides.**
- **Reduce lawn area and make room for more native plants, shrubs and trees.**
- **Make it a Cape Cod lawn with no irrigation, no chemical additions. Moss, clover, violets and a variety of whatever grows is acceptable.**
- **Establish native vegetation buffers at least 100 feet deep along coastal and pond waterfront property shorelines to reduce the potential for stormwater runoff.**
- **Work to achieve zero stormwater runoff. Direct roof runoff from downspouts away from paved areas. Install rain gardens or rain barrels to collect water. Maximize permeable areas and native plantings that help absorb stormwater.**



Fine art photographer Steven Koppel donates a portion of the sales from his images and his two books, **The Brewster Flats** and **The Cape Cod National Seashore**, to APCC and the EDI Institute.

To order copies of his books, or to find out more about Steven's work and the opening of his new gallery, Expressions, in spring 2021, visit expressionsgallery.com or stevenkoppel.com

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The Association to Preserve Cape Cod is a 501(c)(3) non-profit organization founded in 1968 to foster policies and programs that promote the preservation of natural resources on Cape Cod.

Support comes from thousands of members, and from gifts and grants from individuals, foundations and businesses.

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Learn more at [APCC.org](https://www.apcc.org)

Because of provisions in the Coronavirus Aid, Relief,
and Economic Security, or CARES Act

2020 may be an especially good year to give, tax-wise.

If you take the standard deduction, and you make a cash contribution to APCC by the end of the year, you can deduct up to \$300, or \$600 for couples.

If, on the other hand, you itemize on your tax return, you can deduct up to 100 percent of your adjusted gross income (this is up from 60 percent).

And, while the required minimum distribution (RMD) from your retirement account has been suspended for 2020, you can still make a qualified charitable distribution of up to \$100,000 from your IRA, and the direct distribution would not be included in your taxable income.

*Please note: This information should not be considered as legal, tax or financial advice.
Consult your professional advisor for further information and guidance.*

Photo: Eileen Powers

