



COALITION Quarterly

Nantucket Sound Under Attack



BCleanWater.org

**RESCUE
MISSION**

A Note from The Helm

After a cool, wet spring, summer finally arrived, just in time for the July 4th holiday. Unfortunately, the warm weather also delivered some unwanted visitors: cyanobacteria in our lakes and ponds, and algal blooms in our bays and Nantucket Sound.

The photograph on the cover of this newsletter shows dead and decaying algae (seaweed) on the beach at the Wianno Club in Osterville. This massive mat of algae stretched for miles along the beach bordering Nantucket Sound and as it dried and decayed in the sun, it released a noxious smelling gas noticeable for hundreds of yards inland. This gas could potentially be harmful depending on the species of seaweed and is a grim reminder of the dangers of this type of event.

In Naples, Florida and along the Mississippi coast, red tides and other harmful algal blooms have caused beach closures lasting for weeks and even months. The Florida algal blooms are mainly due to agricultural runoff of nitrogen and other nutrients. Here on the Cape, these blooms are mainly caused by nitrogen coming from septic systems, which most of us are using. The Cape Cod Commission estimates that 80% of the nutrient overload (nitrogen and phosphorus) in our fresh and saltwater bodies come from our own septic systems. Urine contains nitrogen that flows from septic systems into our groundwater.

In our Spring Coalition Quarterly, we described a series of pilot projects that are designed to intercept excess nitrogen at the source or in the waterbody and turn



it into a harmless gas. Earth's atmosphere consists of approximately 78% nitrogen gas. High levels of liquid nitrogen in saltwater act as fertilizer causing the kind of outbreak of algae growth pictured in Nantucket Sound.

Sadly, this summer also saw closures of beaches at many lakes and ponds in Barnstable that had rarely or never been closed before due to cyanobacteria blooms. This included iconic lakes like Wequaquet and Crystal.

Learn more about the algae, both macro and micro, in our waters, our latest work, and what you can do to help, in the pages ahead.

See you on the water!

A handwritten signature in black ink, appearing to be 'Ze'.

CAPE COD BEER PRESENTS

**Barnstable
CLEAN WATER
Wednesdays**

What's up with Cape Cod's water?
Join the experts for a beer and
learn more.

Topics & Dates

Sept 11th: Oysters
Oct 16th: Cranberry Bogs
Nov 13th: Sea Level Rise

This is a FREE Educational Event co-hosted
by Barnstable Clean Water Coalition

Purchase a Clean Water Wednesday 20oz glass and get a 20oz pour
for the price of 16 oz EVERY Wednesday! #CleanWaterMatters

Join experts for a beer at our free monthly educational series, Clean Water Wednesdays, with Cape Cod Beer. We will dive deep into topics related to Cape Cod's most pressing water quality issues.

Where: Cape Cod Beer
1136 Phinney's Lane
Hyannis

When: 6:30 to 8:30 p.m.

Hyannis Harbor Oyster Upweller Project

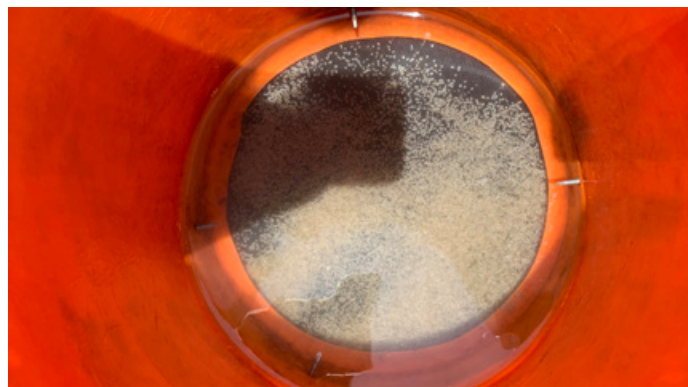
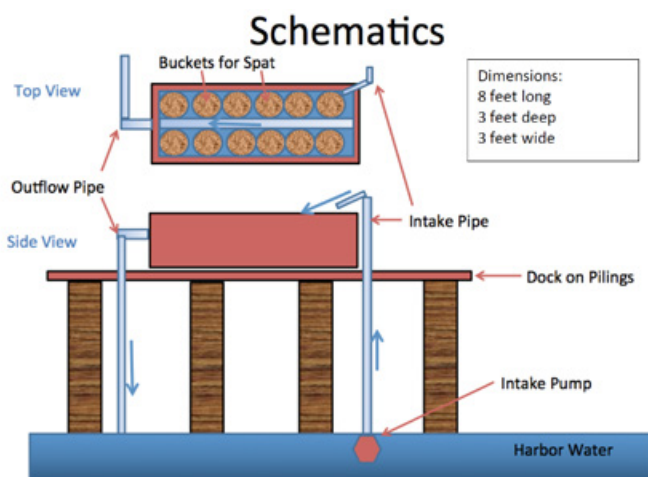
BCWC is working with the Massachusetts Oyster Project and the Town of Barnstable raising oysters in an upweller tank at Gateway Marina in Hyannis Harbor. This is the second year of this partnership which showcases the importance of oysters for improving water quality, clarity and biodiversity.

Water gets pumped from Hyannis Harbor into the upweller, which contains the baby oysters (spat). They filter the water, feed on plankton and remove sediment and nutrients, including nitrogen, from the water before it flows back into the harbor. The tiny oysters get to grow and avoid predation in the tank while helping us clean the water.

Last summer, BCWC grew 50,000 oysters in the upweller. Those oysters were placed in mesh grow-out bags in September to overwinter in Cotuit Bay. There they continue to mature and filter plankton and nutrients from our local waters for another 18 months. In addition, the oysters benefit the local economy as part of Barnstable's Shellfish Propagation Program because once they have matured and reached a length of three inches, they then can be harvested by the town's licensed recreational shellfishers.

This year, BCWC's summer intern Tatiana Chinitz is overseeing the growth of 120,000 oysters in the tank –double the number from last year. Tatiana is responsible for the daily maintenance of the tank, along with caring for and sorting the oysters from tiny spat (1mm) to juvenile size (25mm). As the oysters grow, they are sorted into separate buckets based on size to help with water flow allowing for better filtration by the oysters. While at the upweller, Tatiana and other BCWC staff also get a chance to educate people about oysters and their importance to our local waters and economy.

BCWC is proud to be participating in this joint project. An adult oyster can filter up to 40 gallons of water daily. Working to keep as many oysters as possible in our local waters is another approach at reducing the nutrient pollution in our waters.

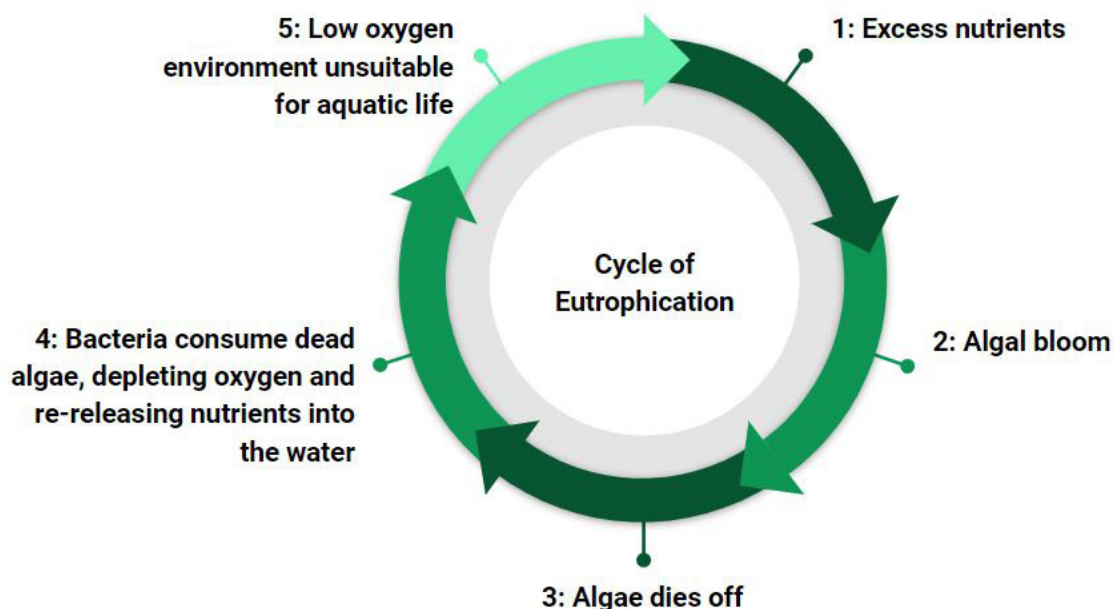
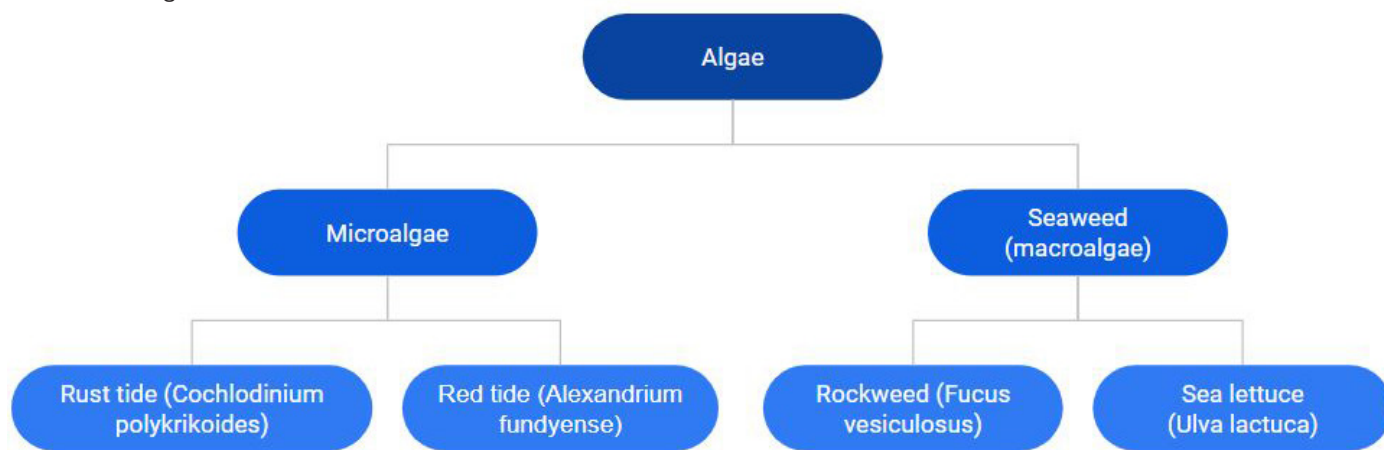


Seaweed vs. Algae

Deteriorating conditions in Nantucket Sound mean that our coastal communities must be prepared for further toxic algae outbreaks. Nitrogen overload from our septic systems is the main culprit. Action is needed now! Read more about the life cycle of algae, what to look for, and what to expect, below.

Algae, or photosynthetic aquatic organisms, come in all shapes and sizes. Microalgae are so small that you need a microscope to see them, as they are only visible to the naked eye when there is a bloom. This can change the color of our coastal waters to rust or red. Other species of algae are much larger. Macroalgae, on the other hand, are always visible to the naked eye. A common misconception is that algae and seaweed are different. In fact, seaweed are macroalgae. So, while not all algae are seaweeds, all seaweeds are algae.

Like all photosynthetic organisms, algae can grow dramatically when fertilized. You fertilize your lawn to make the grass grow thick and lush. When you fertilize a body of water, the same thing happens with algae. Through the continuous release of excess nitrogen and phosphorous from septic systems over the past few decades, we have been continually overfertilizing our waters. Blooms of sea lettuce and microalgae are on the rise as a result of this overfertilization of our local waters, known as eutrophication (see diagram below). These blooms make it harder for seaweeds and seagrasses to grow and thrive. See the accompanying photos to get an idea of what species of algae are washing up on our shores.





Rust tide (*Cochlodinium polykrikoides*): Creates a compound that damages gill tissue in fish and shellfish. If the bloom is large enough, it can turn the water a rusty color. Decomposition may reduce oxygen in water and lead to fish kills.



Sea lettuce (*Ulva lactuca*): Globally considered a sign of eutrophication, sea lettuce blooms have become a common occurrence in Warren's Cove and Prince Cove. In May 2018 blooms were so large that sea lettuce was harvested and used as a soil additive.



Cyanobacteria: Although often referred to as a blue-green algae, Cyanobacteria is in fact a bacteria and not an algae. Cyanobacteria blooms have been prevalent in our ponds and lakes this summer, leading to many beach closures across the Cape. Contact with cyanobacteria can cause skin and eye irritation to humans. In addition, water contaminated with cyanobacteria can pose health risks to dogs and other animals, as well as small children.



healthy rockweed

Rockweed: Rockweed is an example of a seaweed that is harmed by the overfertilization of a water body. Under normal conditions, rockweed grows healthy and strong (above) because it does not have to compete for light and nutrients. While you may think that this species would also benefit from the increased nitrogen in our waters, it does not compete for resources as well as other algal species. Blooms of other algae can block out the light required for photosynthesis. As a result, too much fertilizer in our waters leads to a less healthy rockweed (below).



unhealthy rockweed

Field Notes from Meg

DNSI Update

This past winter, BCWC, the Town of Barnstable, and Massachusetts Audubon Society completed phase one of the dredging on the western tip of Dead Neck Sampson's Island (DNSI). Years of erosion and longshore drift caused sand from the eastern tip (Dead Neck) to move down the island and over time be deposited at the western tip (Sampson's). The sediment from this dredging operation was used to create beach nourishment and critical nesting habitats throughout the island.

Least terns, piping plovers, American oystercatchers, and even skimmers have all been observed utilizing these new habitats over the course of the spring and summer. DNSI has seen many piping plover and least tern fledglings, more than triple the amount that fledged last season. With the next dredging phase scheduled to happen this winter, we hope to see continued positive results from nesting shorebirds in 2020.



Meet Nancy...

Nancy Curran is not only a professional yoga instructor teaching Yoga on the Beach in Popponesset, but she has become a supporter of the work we are doing at Barnstable Clean Water Coalition.

The morning after our annual Open House on June 27th, we received an enthusiastic e-mail from Nancy letting us know how thrilled she was to see over 150 people attend the meeting, all wanting to learn and create change that improves our local waters, community and planet. More importantly, she presented an idea for us to consider that is modeled after a program she was involved with in Key West, Florida.

Nancy's proposal is to design a community recognition program for those residents and businesses that are currently doing great things to improve water quality in Barnstable. The program, tentatively called the "Blue Wave", would also be used as a platform to educate and inspire others to implement similar strategies and practices. As we all know, it takes ALL of us to make a difference to restore and preserve clean water in our beautiful Cape Cod villages.

Nancy and BCWC are seeking like-minded people to volunteer and explore the possibilities and options for a "Blue Wave" program. Please share your thoughts and interests by e-mailing us at info@bcleanwater.org.



Meet Our Summer Water Stewards

Morgan Clark

Morgan is entering her senior year at the University of Massachusetts/Dartmouth studying biology with a concentration in marine science. This job has given Morgan the chance to engage more with the public and educate them on water issues in their own backyard. Morgan likes walking her dog, cooking, and spending time with her family.



Carter Teed

Returning for his second year at BCWC, Carter has lived on Cape Cod his entire life and seen the changes to our local waters. He will be an incoming freshman at the University of Massachusetts/Amherst this fall and is interested in studying animals and technology. Carter's interests include basketball, taekwondo, and the great outdoors.



Maddy Wendell

Maddy grew up spending her summers on Cape Cod. As a recent graduate of Colby College with a degree in environmental policy and a minor in English, Maddy has been able to incorporate her education into her role at BCWC this summer. She finds that educating the public on clean water and environmental issues to be the most satisfying part of her job. In her free time, Maddy enjoys running, reading, and painting.



Tatiana Chinitz

Tatiana grew up in Massachusetts and recently graduated from Eckerd College in Florida with a Bachelor of Science degree in marine science with a focus on biology. As an intern at our oyster upweller in Hyannis, Tatiana realizes the importance of talking to people and raising awareness about improving water quality in the bays and how oysters can help achieve that. In her free time, Tatiana sails and spends time with friends and family.



Graham McOsker

Born and raised in Massachusetts, Graham is entering his senior year at Hamilton College. Majoring in environmental studies with a focus on economics has made him realize the importance of educating and engaging the public on environmental issues. When not out on the water for BCWC, Graham enjoys baseball and the beach.



Get Involved #CleanWaterMatters

Join us at our upcoming events:

10th Annual Cape Cod Wildlife Festival (9/7)

**9th Annual Paddle for the Bays:
RACE Cape Cod (9/14)**

**2nd Annual Shuck!
A Day of Oysters and Beer! (10/5).**

Visit BCleanWater.org for more information.



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BCleanWater.org

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Mission Statement

*Barnstable Clean
Water Coalition
works to restore and
preserve clean water
in Barnstable. BCWC
utilizes science as its
foundation to educate,
monitor, mitigate and
advocate for clean water.*

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Photo Credits: BCWC Staff, Heather Fone

Herring Run Strong in Marstons Mills River

Beginning on April 1st and running through May 31st, fifty-five dedicated volunteers spent 61 days counting river herring swimming up the fish ladder into Mill Pond. The final count tally of 4,521 herring was sent to the Massachusetts Division of Marine Fisheries (MADMF) scientist John Sheppard, who uses the data collected (# of fish, # of counts, etc.) to mathematically determine an estimate of the number of



herring travelling up the Marstons Mill River via the Mill Pond fish ladder. In 2019, approximately 35,092 herring (+/- 2,456) were estimated to have made the trip upriver and into Mill Pond. That's a significant increase over the 2018 estimate of 10,306 herring. Special thanks to all the herring count volunteers for their time and efforts in collecting this important data for MADMF.

**We Are Always in the Race for Clean Water! Please support
BCWC today with a donation online at**

BCleanWater.org



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