

QUAHOG BAY CONSERVANCY

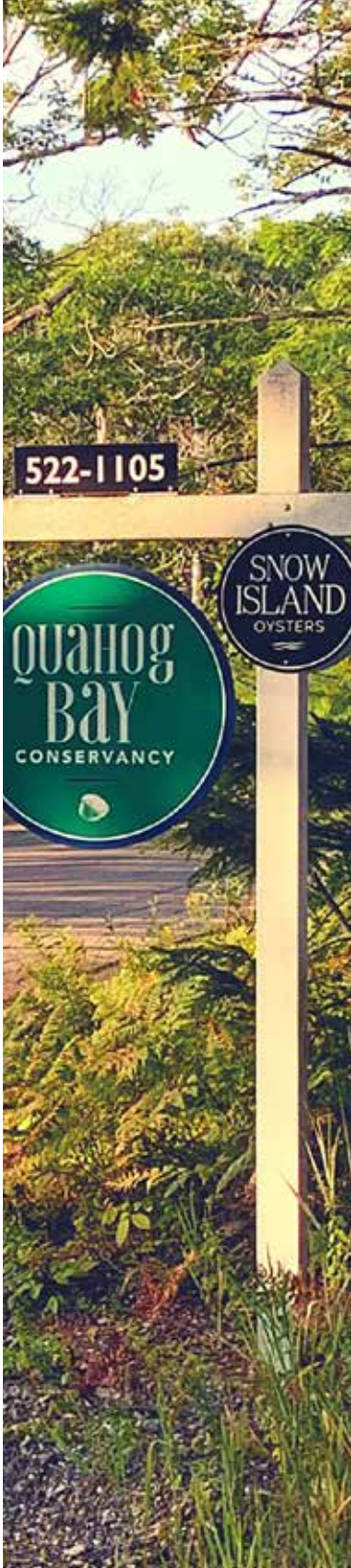


2021
RESULTS



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DIRECTOR'S STATEMENT

We are excited to share our first annual results and accomplishments. Despite the challenges of the last few years, we have continued to be stewards keeping the waters of Quahog Bay sustainable.

QBC saw an increase of activity on the bay during the last two years, making our programs even more important. From Oyster Aquaculture, Water Quality-Monitoring Pollution Remediation, Invasive Species Removal, Marine Debris and Trash Removal, College Scholarships, Internships, to Community Outreach all are beneficial for a thriving future and working waterfront.

This year QBC partnered with the Harpswell Heritage Land Trust and the Maine Trails Association to complete a marine debris removal from Quahog Bay. We filled three boats with about 20 yards (5 dumpsters) of trash retrieved from the bay and shoreline.

During the summer of 2021 QBC partnered with Bowdoin College to perform an evaluation of the interaction between eelgrass and oysters. The experiment investigated what drives eelgrass-oyster relationships to determine if these aquaculture practices could stimulate eelgrass restoration and enhance oyster fields.

Three college interns were selected last summer and brought on to aid with the oyster farms and general lab work to ensure protection of Quahog Bay for generations to come.

As we look forward to 2022 it becomes even more important to support QBC programs to ensure continued growth and success for Maine's working waterfront.

**PATRICK
SCANLAN**

Executive Director



NONPROFIT STATUS

The Quahog Bay Conservancy (QBC) is a registered 501(c)(3) non-profit organization. All donations are 100% tax deductible. 100% of every dollar raised goes towards funding our programs and paying the staff who implement them. We are an extremely lean and efficient organization.

QBC is funded in part by generous individual donors, private foundations, and state grants. The balance of our revenue comes from QBC's sustainable oyster farm, which grows hundreds of thousands of oysters each year, selling them to restaurants and wholesale buyers.

The donated funds and 100% of the proceeds from the sale of Snow Island Oysters go to QBC's programs, ensuring that we protect the ecological integrity of the bay.

OUR BAY. OUR RESPONSIBILITY.

The mission of Quahog Bay Conservancy is to revitalize the ecosystem of Quahog Bay to a robust and resilient state for all communities that depend on it. Through sustainable aquaculture, ecosystem monitoring, and community education, we aim to conserve natural habitat, protect native wildlife, foster environmental stewards, and support Maine's working waterfront.



CONTACT INFORMATION

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CONSERVANCY

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LEARN WITH QBC

Education and outreach. The program works by engaging community members with the natural environment and marine ecosystem in a meaningful way to promote and enhance environmental stewardship. We also work with local high schools to create hands-on opportunities for the next generation.

Internship Program. A comprehensive summer internship program for undergraduate students and recent graduates has been established. Interns support our staff on projects focused on the fishery ecosystem as well as community and education programs.

Scholarships. To encourage Maine's future marine scientists, QBC supports senior-level research projects by undergraduate students attending any university in the state. We allocate \$15,000 from our annual budget to support student capstone projects.



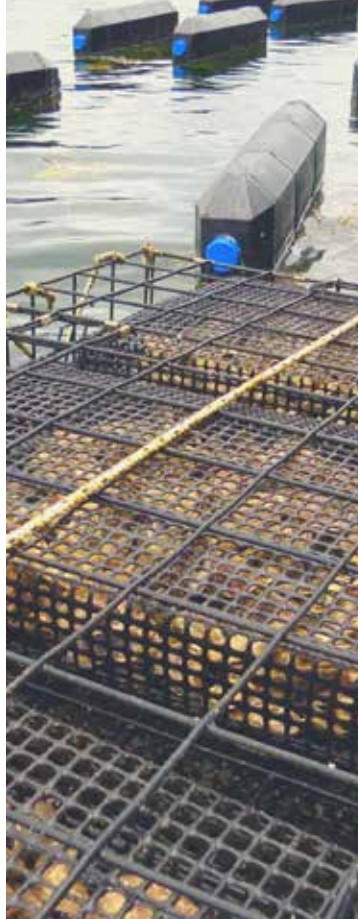
OUR PROJECT OVERVIEW



BOWDOIN COLLEGE PROJECT

QBC partnered with Bowdoin College to perform an experimental evaluation of the interaction between eelgrass and oysters in a rapidly warming Gulf of Maine. The experiment will investigate the specific mechanisms that drive eelgrass-oyster interactions determining whether multi-tropic aquaculture practices could stimulate eelgrass restoration and enhance oyster fields.

Bowdoin students and QBC team members created structures called 'floating arrays' to collect data on oysters and eelgrass. Below are images from the construction process.



One of eight completed floating arrays.



INTERNSHIP & SCHOLARSHIP PROGRAM

Internship. QBC has established a formal, competitive summer internship program for undergraduate students and recent graduates. Interns support our staff on a portfolio of projects focused on fishery ecosystem research as well as community and education programs. The internship will provide an opportunity to gain valuable work experiences at sea and in our lab.

Scholarship Program. To encourage the development of Maine's future marine scientists, QBC supports senior-level research projects in marine science by students attending a university in New England. We allocate \$15,000 from our annual budget to support student marine science related projects.

For more information on internships and the scholarship program, visit our website (www.quahogbay.org) and download an application.



Emily Rottino, University of New England;
Degree in Marine Biology; **Summer Intern 2021:**

"I really enjoyed getting to work at QBC this summer, I learned so much about the working waterfront and about the Maine landscape. I gained invaluable work experience and fell more in love with working on the ocean than I thought possible. I was hesitant to apply for the internship at first because I had no previous experience in aquaculture, but this was the perfect learning experience, with well-seasoned oyster farmer veterans willing to teach me. This job was the perfect mix of getting to learn new skills like aquaculture and getting to build on my existing conservation skills such as invasive species and trash removal. Getting to spend every day on the water reminded me of what we stand to lose with all the threats that our environment is facing and renewed my enthusiasm for advocating for its protection."



INTERNSHIP & SCHOLARSHIP PROGRAM

— CONTINUED

Emma Hooper, *Maine Maritime Academy* Degree for Marine Biology/Small Vessel Operations Major
Summer Intern 2021:

"Everyday at QBC was a new experience and I was continuously learning. I had the opportunity to work on the water while building relationships with an amazing crew. Definitely a summer I'll never forget!"



Allie Moulton, *Colby College class of 2021*
Environmental Science Major
Summer Intern 2021:

"I'm a recent graduate of Colby College, where I majored in environmental science with a concentration in aquatic and marine sciences. At Colby, I conducted research on the Maine aquaculture industry, but QBC's internship allowed me to get valuable hands-on experience working in the industry. I really enjoyed learning how to work on the water—especially driving the boat! From planting oyster seed, to tumbling, sorting, and harvesting marketable oysters, I was able to explore every aspect of the farming process, which gave me a comprehensive understanding of how oysters are raised on a commercial scale. Another highlight of the summer was helping the Harpswell community through QBC trash clean ups and boat pumpouts. I'd like to thank the entire QBC team and Pat for making this experience possible and providing me with unforgettable memories!"



WATER QUALITY MONITORING

On a weekly basis the QBC team collects water samples at nine different sites in Quahog Bay. Surface water is collected at each location to process and analyze in our lab.

Key measurements reported:

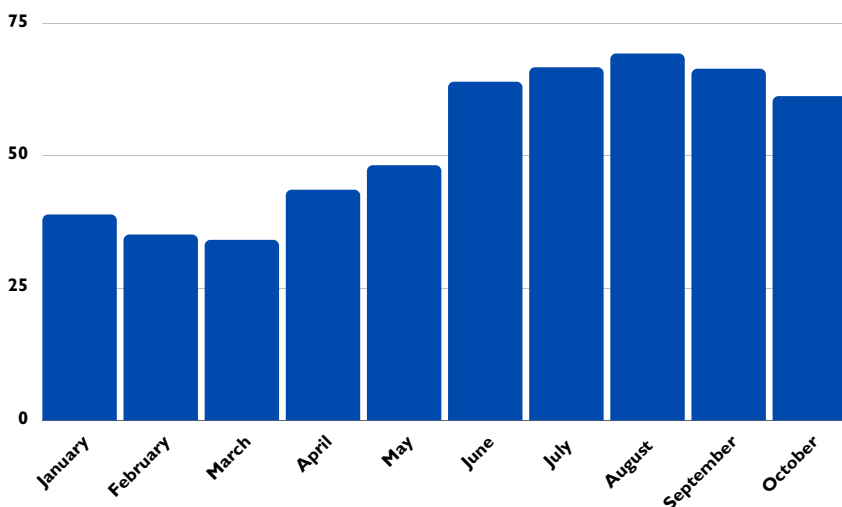
- water temperature
- salinity
- conductivity
- dissolved oxygen
- acidity
- turbidity

Another key component is monitoring the levels of bacteria and various species of phytoplankton to track harmful algal blooms, commonly known as “red tide.”

Together these components tell us a lot about the water quality and if the presence of disease-causing organisms has caused water contamination.



2021 Water Temperature Averages in Quahog Bay



WATER QUALITY MONITORING

—CONTINUED



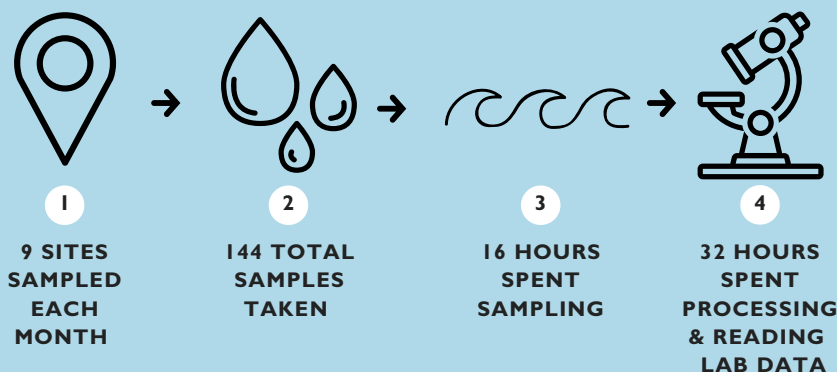
Water sample from Quahog Bay



Water sample testing



2021 Water Quality Overview



MARINE DEBRIS REMOVAL

Thousands of cubic yards of debris have been removed from Quahog Bay since inception of the Quahog Bay Conservancy in 2014.

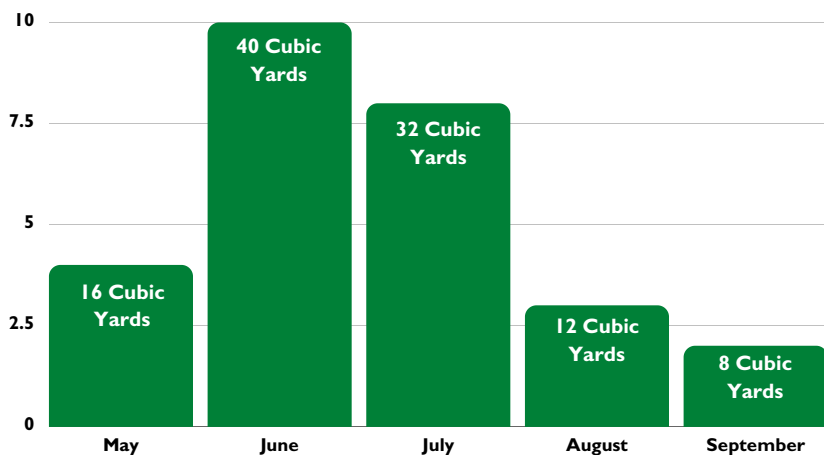
Types of debris eliminated from the bay:

- fishing gear
- rope
- rubber gloves
- tires
- car batteries
- cigarette butts
- bottles & cans
- derelict docks & parts
- plastics
- styrofoam
- party balloons
- dock debris

If we see trash, on the water or shore, we retrieve it. Educating the community about the impact of trash in the bay and the health of the marine life is also a priority for QBC.



Dumpsters of Trash Removed, Summer 2021



Total of 108 cubic yards of trash collected 2021 season

MARINE DEBRIS REMOVAL

— CONTINUED

**Priscilla Seimer, Harpswell Heritage Land Trust
Stewardship Coordinator:**

On June 24 of this year, MITA, the Quahog Bay Conservancy, and the Harpswell Heritage Land Trust did a joint clean up of the shoreline along Little Yarmouth Island Preserve.

The Conservancy brought one of their boats, the Snow Haul, which the group filled with trash that included a partially buried old paddle boat that had made its way into the woods years ago. Two MITA boats were also quickly filled with trash. Thanks to everyone who made the clean up a huge success!



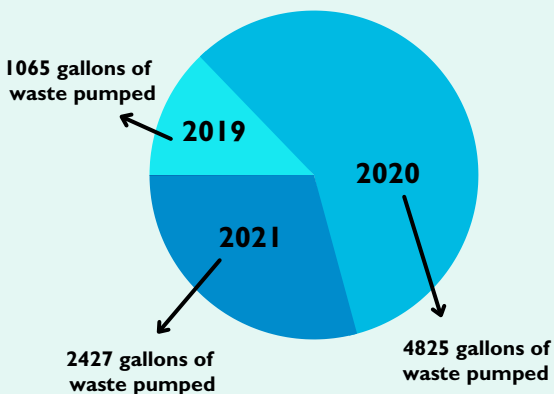
OVERBOARD DISCHARGE

An ounce of prevention beats a pound of cure. To that end, QBC offers free on-call pump-out service to any boats anchored in Quahog Bay. We pump it and then transport the waste to a licensed local facility, thereby potentially preventing thousands of gallons of brown and gray wastewater from being discharged into the bay every year.

QBC also created an education program to make sure boaters know about our free service and to encourage them to take advantage of it.



Gallons of Waste Pumped Per Year

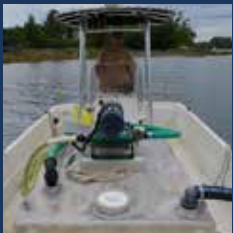
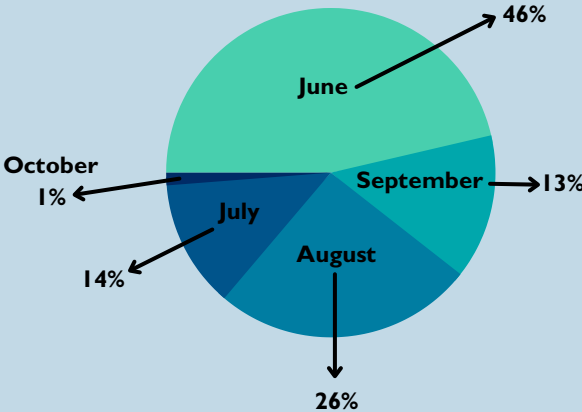


OVERBOARD DISCHARGE

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**Percentage of Waste
Pumped Per Month in 2021**



IT'S ALL ABOUT THE PUMP-OUT BOAT

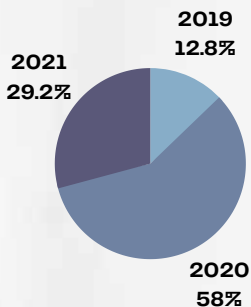
PROGRESS

Since QBC has started in 2014, our crew has pumped more than **10,000 gallons** of waste. That's 10,000 gallons of waste prevented from entering the bay.

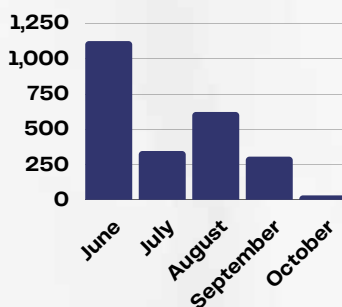


PAST 3 YEARS

Nearly **83%** of our total, has been pumped just in the past three years.



In the past three years, QBC has pumped **8,317 gallons** of waste, with a total of **2,427 gallons** in 2021 from June – October.



THIS YEAR

This year alone we pumped **2,427 gallons** of waste, with **1,125 gallons** pumped in June alone.

RECAP

In 2020 numbers rose drastically as we saw an increase in boaters in the bay due to COVID-19, therefore there was more of a need for this service. We also helped Friends of Casco Bay during this time, because they were unable to provide those services due to the virus.

INVASIVE SPECIES

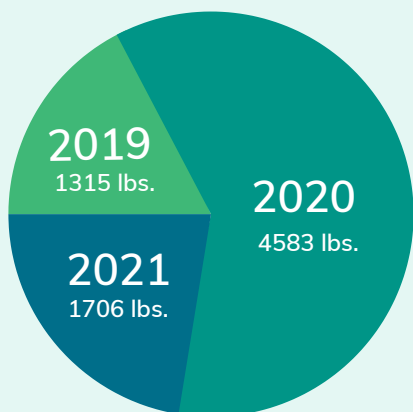
An aggressive and invasive predator, the European green crab (*Carcinus maenas*) is the most ecologically and economically damaging predator. With the rise of water temperature in the Gulf of Maine, green crab populations are rapidly expanding.

Green crabs devastate and consume nearly everything in their paths including mussel beds, clam flats, and scallop stocks. In addition, green crabs slice through eelgrass habitat and burrow in salt marshes, causing increased erosion in bays and estuaries.

New strategies are needed to mitigate the ecological and socioeconomic impacts of green crabs. QBC developed a localized management plan that investigates and collects data on green crab population dynamics to learn more about the species. Since the beginning of our efforts, we have observed an increase in soft shell clams throughout many parts of the bay.



Total Green Crab Weight Per Year



Green crab

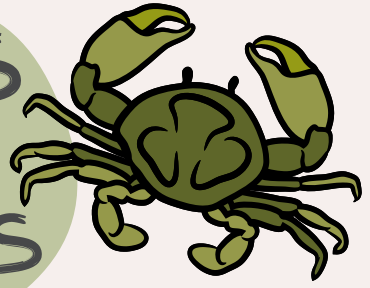


Egg bearing female green crab

FUN FACTS

about

GREEN CRABS



Green Crabs originated from Europe and reached U.S. shores in the mid 1800s in the ballast water on ships.

Green crabs have become incredibly invasive and threaten many important species in marine ecosystems.



You can EAT them!
Some people also use them for fertilizer and/or bait.

A single female green crab can lay up to 185,000 eggs in one year!



Not all green crabs are actually green. They vary in color and can be any shade of green, yellow, brown or red.

SNOW ISLAND OYSTERS

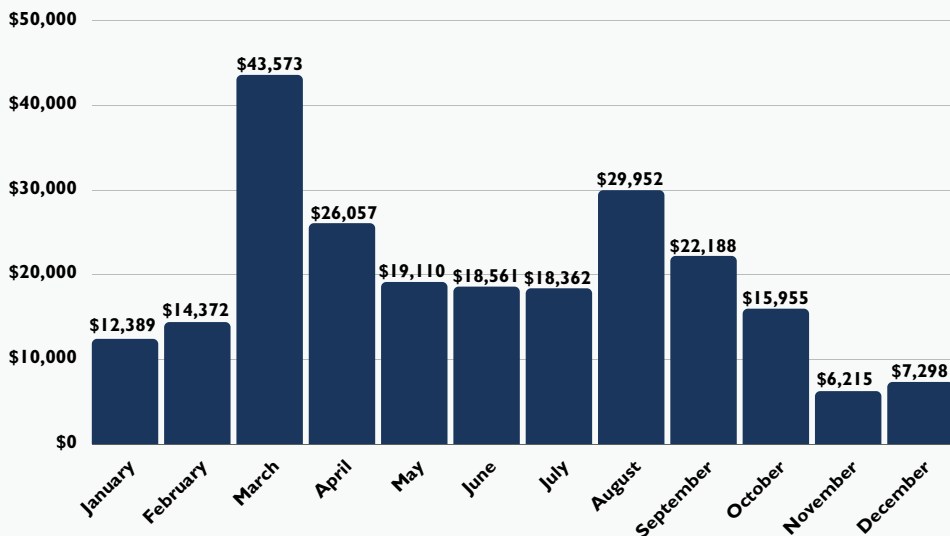


When QBC launched in 2015, water quality in Quahog Bay was so poor the state of Maine had a long-standing ban on all shellfish harvesting within its boundaries. As a direct result of our conservation programs and cooperative work with the Maine Department of Marine Resources, that ban was lifted within one year. To further improve water quality in the bay, QBC launched an oyster aquaculture program.

Oysters are filter feeders. By farming oysters in quantity, we have effectively installed a natural water treatment facility that cleans billions of gallons of seawater annually. They grow by filtering the nutrient rich waters taking from 14–20 months to reach marketable size. 100% of sales go back to QBC to provide a sustainable revenue to fund conservation initiatives.



2021 Oyster Income Breakdown

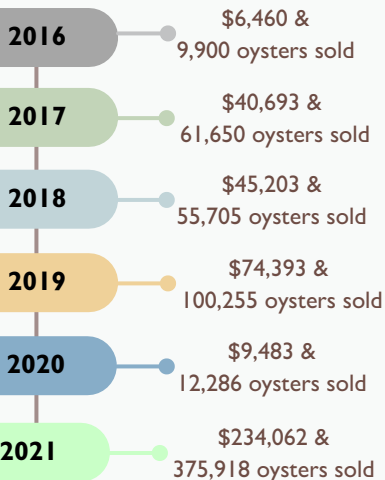


SNOW ISLAND OYSTERS

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QBC Yearly Oyster Income



IT'S ALL ABOUT THE

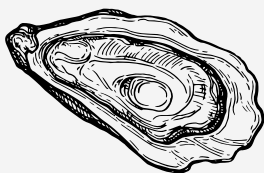
American Oyster

Crassostrea virginica

KEYSTONE SPECIES

A Keystone Species is an organism that helps define an entire ecosystem.

Oysters are considered a keystone species due to their incredibly important roles in the environment.



FILTER FEEDERS

Oysters are filter feeders which means that they feed by straining suspended food particles in the water.

WATER FILTRATION

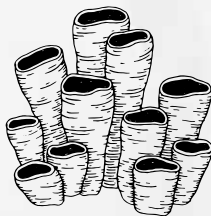
Because of their filtering abilities, a **single** adult oyster is able to filter up to **50 gallons** of water **per day**!



That means a **single** adult oyster can filter up to **18,250** gallons of water every **year**.

QUAHOG BAY

Our sustainable aquaculture lease contained about **1.2 million** oysters this summer.



That means that up to **60 million** gallons of water was filtered **every single day** in **2021**!

IMPORTANCE OF SUSTAINABLE OYSTER AQUACULTURE

Oysters are extremely important in marine environments. They help to keep waters clean and remove light-blocking algae, allowing more sunlight to penetrate the water, and allowing for the growth of important plant species like eelgrass. They also help facilitate the removal of excess nutrients from the water, providing a healthier environment for other organisms.

FINANCIAL OVERVIEW

Quahog Bay Conservancy's income is attained from three primary sources: contributions/grants, fundraising, and oyster sales.

Without generous contributions and grants, QBC could not exist. Fundraising efforts are done through yearly mailings, local events, and via social media to obtain financial support. Oyster sales generate the largest amount of capital acquired to assist our conservation efforts. Since 2016 we've seen an increase in oyster sales, until the 2020 coronavirus caused unanticipated consequences for many businesses and restaurants. 2021 began with a rebound in oyster sales as businesses and customers adjusted to a new way of life caused by the virus.

For more financial information please visit www.quahogbay.org.





Quahog Bay Conservancy Revenue and Expense Summary 2021 January – December

Expense Total
\$88,048

Support Services Total
\$40,542

Oyster Sales Total
\$234,062

Conservation — \$65,912

Fundraising — \$26,028

Oyster Expenses — \$99,151

Research & Development —
\$18,136

Overhead — \$14,514

Education & Outreach —
\$4,000





OUR BAY. OUR RESPONSIBILITY.

**286 Bethel Point Road
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www.quahogbay.org



GIVE A SHUCK.