

SOFO naturalist



Each quarter SOFO features eco-links, written by a member or friend of the Museum. If you wish to submit an article, please contact us.

eco links

Re-establishing *Eastern Long Island's Oyster Reefs*

by Bob Tymann



American Oyster *Crassostrea virginica*. Photo: SOFO

Oysters date back to prehistoric times, with some scientists believing the first oysters appeared in the Triassic period during the time of dinosaurs. They have been a source of protein since the dawn of humans, with evidence showing that early man roasted their oysters, as they lacked a proper oyster knife. They have been cultivated since 2000 BC in Japan. Oysters were considered a delicacy for the Greeks and Romans, a must-have for the early aristocracy in the United States, and a source of affordable protein in late 19th-century New York and Boston.

My oyster journey began in my mid-fifties when I finally developed an appreciation for delicious, plump, raw oysters. Eventually, my newfound love of oysters led me to the Town of East Hampton oyster gardening program, which gave me the tools to raise my own oysters. Through the oyster gardening program, I met Barley Dunn, the Director of the East Hampton Shellfish Hatchery. He was aware of my background as an educator. He asked me to work with the South Fork Sea Farmers, a small group of people committed to educating the public and fostering community action to improve the aquatic ecosystems of East Hampton. As an administrator, former social studies, and biology teacher about to retire, this seemed like the perfect opportunity. I immediately began studying oysters and their place in our local waters.

That tasty, tiny bivalve is a keystone species, providing a foundation for the aquatic ecosystem by keeping algae populations in check and providing structural habitats for diverse species. Mature oysters also filter fifty gallons of water daily—yes, fifty! When we hear “filter,” we think of removing dirt or impurities, but oysters eat one-celled animals and plants called phytoplankton. These tiny organisms are always present, but balance is vital to all healthy ecosystems. The phytoplankton ingests nitrates and phosphates, converting them into proteins, fats, and carbohydrates. This is the base of the aquatic food

chain. The system becomes unbalanced when excessive amounts of nitrates, phosphates from fertilizers, and fecal matter are added to the water. These excess nutrients in warm waters cause the phytoplankton population to dramatically and rapidly increase or “bloom.” A harmful algae bloom (HAB) can destroy the ecosystem in shallow waters by depleting the oxygen supply and blacking out sunlight below the surface. This is where oysters come in. They consume the phytoplankton on a large enough scale to maintain the ideal balance in the ecosystem.

Oysters, by nature, cluster on older shells, rocks, and underwater hard surfaces, forming reefs. These reefs provide a habitat for many aquatic plants, crustaceans, and juvenile finfish. Think of the coral reef that protected little Nemo; oyster reefs perform the same function in colder waters. Reefs can also absorb the energy of waves and currents, preventing the erosion of our shorelines. Once ubiquitous in New York's bays and estuaries, these reefs have been eliminated due to mismanagement and environmental deterioration. Cue oyster farming, which brings many of the reef benefits back to the ecosystem, including filtering and removing those excess nutrients. As reefs balance the system and bring more clarity to the water, the plant life begins to repopulate at the bottom of the bay. All said and done, reefs attract life, making the oyster a keystone species.

Reef Restoration

My new understanding of the opportunity and benefits of oyster habitat restoration led to discussions with Barley on building oyster reefs in our local waters. The Shellfish Hatchery staff and the South Fork Sea Farmers Board all favored the project. Keeping with the Sea Farmer's mission to educate the public, we contacted East Hampton High School for interns. Students in the science research program, particularly those interested in marine biology, were a great fit and eager to help.

Building an oyster reef requires understanding the body of water in which it will be built, clarity on the desired function of the oyster reef in the ecosystem, and a pile of paperwork. Step one is the all important location, location, location! We are looking for an area with a hard bottom to keep the reef from getting silted over. It is not too close to the mouth of the harbor, so the larvae can “set” or stick to the hard surface where they will remain and are not swept out to open waters by the tide. Also, we would prefer a location in waters that are “uncertified” for shellfishing—at least part of the year—where the natural filtering system is most needed. Finding these ideal locations usually requires several kayaking trips to test the harbor bottom for density in areas that meet the other criteria.

Once we have a spot, I work with the interns to prepare the application and presentation for the East Hampton Town Trustees. This requires precise coordinates for the reef's location, a description of how the reef will be constructed, and illustrations of the reef's design, shape, and conditions of the area. The shape varies depending on cir-

Continued on next page

Continued from page 1

cumstances. It can be serpentine to mitigate wave energy that causes erosion, squares to minimize obstruction for duck hunters or a trapezoid to circumvent boat traffic. The possible shapes are limitless, but all reefs must be less than fifty square yards, as the NYS Department of Environmental Conservation (NYS DEC) requires. The interns will present our proposal to the trustees at a public meeting that is televised locally. Preparing and delivering this is a great deal of pressure for a high school student, but it prepares them for life outside the confinements of traditional schooling. An experience that—in an ideal world—every student should experience in their field of interest. The Trustees always support our efforts and work to find solutions for any unanticipated hurdles, such as conflicting locations of duck blinds or adjacent homeowner approval.

After local approval, we tackle the paperwork required by the state. This begins with completing the Joint Application Form, a four-page document that requires the same information presented to the Trustees, with additional illustrations and photos of the proposed location. When completed, this is sent to NYS DEC, the US Army Corps of Engineers, the NYS Department of State, and the NYS Office of General Services. Each agency eventually replies, requesting additional information relevant to their area of responsibility. (We are currently working on permits for our fourth reef, so we know what to expect.) The most time-consuming part of the process is conforming to the requested revisions. These can range from distance to the marsh edge, adjacent landowner approval, or a total reef relocation. The paper process, from local approval to DEC Permit, usually takes a year. Then, we get to do the fun part—reef creation.



Oyster reef project interns. Photo: Bob Tymann

Building a Better Foundation

From this point on, the process has become a symbiotic relationship between the South Fork Sea Farmers and the East Hampton Shellfish Hatchery. The interns and I spend a few weekends at the Montauk hatchery for each oyster reef, filling 700 mesh bags with three to four shovel fulls of clam and oyster shells each. These biodegradable mesh bags give temporary structure to the reef. Half of the bags will contain just shells and make up the bottom layer of the reef. The top layer will contain “spat-on-shell,” which is oyster larvae attached to other oyster shells. This layer of growing oysters is essential to the reef-building process.

This is where the staff at the Shellfish Hatchery use their expertise to manipulate nature to help restore the bays. Bags of shells are placed in large tanks inside the facility. Next, mature oysters are “tricked” into spawning in a separate tank by gradually raising the temperature of the water. Once the gametes (reproductive cells) have combined to form larvae, they are monitored until they are ready to “set.” The larvae are then added to the tanks with the bags of shells, where they eventually set on them. After about four weeks,

baby oysters are visible to the naked eye, growing on the shells. Now, we are ready to build.



Layering oyster bags on the reef. Photo: MontaukDroneStar.com



Building a reef is a two-day process, one layer each day. The tides dictate the time and month, with a low tide during the middle of the day being optimal. The mesh bags are loaded on trailers and transported to a predetermined site, where we put them on boats for the ride to their final destination. Once at the reef site, each bag is individually handed to someone in the water and placed in the approved pattern on the bottom. This is an exhausting process, which we've completed in both perfect summer weather and December snow. All said and done, coordinating the hatchery staff, the South Fork Sea Farmers, our interns, and additional volunteers into a team successfully building three reefs in Accabonac Harbor has been a gratifying experience.

Creating these oyster reefs will continue to provide significant benefits, both ecologically and anthropologically. They are a fulcrum for aquatic habitat restoration that provides a home for numerous species, turning barren bay bottoms green and balancing the ecosystem. They are also an opportunity to build community across generations, passing along the responsibility of the stewardship of our planet. While long and frustrating, this process gives the individuals involved a tangible sense of productive accomplishment that can be difficult to find in today's world. There is also a sense of hope that comes from watching these high school students who show passion, intelligence, and a work ethic that we often do not associate with their generation. Contrary to much of the rhetoric you hear today, I believe our future is in good hands.

Bob Tymann is a resident of East Hampton and a trustee with the South Fork Sea Farmers. A retired educator, he advocates systemic innovation in schools and environmental restoration through collective action.

**Oyster Shells
can be dropped off
at SOFO
for the oyster reef
restoration project.**

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A full description of each program is listed on the SOFO website:

www.sofa.org/calendar

October, November, & December

For SOFO members: programs are free, unless otherwise stated.

Level of membership indicates the number of people entitled to a free program.

For SOFO non-members: there is a fee.

Please contact us at: info@sofo.org for fee information or refer to the SOFO website at: www.sofa.org.

If you are not already a member, we invite you to join the museum.

Find out about membership levels at www.sofa.org/membership.

For full information on the South Fork Natural History Museum (SOFO), including entrance fees and hours of operation, please refer to the website: www.sofa.org. Advanced registration is required for all programs.



**Join SOFO in Spreading
Holiday Joy
by Donating to Help Wildlife**
**The Evelyn Alexander
Wildlife Rescue Center**



will be the recipient of SOFO's 2024 Holiday Donation Drive.

Animal rehabilitation and care supplies will be gratefully accepted at the SOFO museum from October 21, 2024, until December 1, 2024.

To view the center's Amazon wish list, go to <https://a.co/cThMvO7>

About The Evelyn Alexander Wildlife Rescue Center

Our mission at the Evelyn Alexander Wildlife Rescue Center is to preserve and protect our region's native wildlife by providing rehabilitation services and education to raise public awareness of the factors that threaten its abundance and diversity.



Calendar At A Glance

Key: A-Adults T-Teens C-Children F-Family AA-All Ages

A full description of each program is listed on the SOFO website at www.sofo.org/calendar.

Advance reservations are required for all programs.

October

- Saturday, October 5, 10:00AM:** Andy Sabin's Annual Salamander Log Rolling: F
- Saturday, October 5, 2:00-3:00PM:** Evelyn Alexander Wildlife Rescue Center, Raptors, and More!
Wildlife Presentation: AA
- Sunday, October 6, 1:00-3:30PM:** FREE, A Day in the Life of a SOFO Pond - Last of the Season
Pop-up Exhibit: AA
- Saturday, October 12, 9:30AM:** Eastern Lead-backed Salamander Search: A/T/C5+
- Saturday, October 12, 10:00AM-1:00PM:** FREE, Long Pond Greenbelt 25th Annual Celebration:
AA
- Sunday, October 13, 8:00-11:00AM:** Birding with Joe Giunta-Fall Migration at Promised Land: A
- Sunday, October 13, 10:30AM:** Autumn Beach Walk: AA
- Monday, October 14, 7:00PM:** Owl Prowl with Joe Giunta: A
- Wednesday, October 16, 1:00-3:00PM:** SOFO's East End Outdoor Nature Education with Crystal at
Montauk State Park, Montauk Point: C3-7
- Thursday, October 17, 6:30PM:** FREE, Full Hunter's Moon Hike with Friends of the Long Pond
Greenbelt: AA
- Saturday, October 19, 10:00AM:** FREE, SOFO's Young Birders Club Meeting: Ages 8-18
- Saturday, October 19, 10:30AM:** Celebrate National Fossil Day: Make Your Own Fossil Dig: A/T/C8+
- Saturday, October 19, 1:00-3:00PM:** SOFO's East End Outdoor Nature Education with Crystal at
Montauk State Park, Montauk Point: C3-7
- Saturday, October 26, 10:30AM:** SOFO Young Environmentalists Society (YES!) Meeting:
Ages 10-16
- Saturday, October 26, 10:30AM:** East Hampton Shellfish Aquaculture Field Site Adventure with tour
guides Rockfish Rob & John "Barley" Dunne: A/T/C9+
- Sunday, October 27, 10:30AM:** SOFO Story Time: Meet Our Local Frogs: F

November

- Saturday, November 2, 9:45AM-1:00PM:** Nature & Bird Watching Cruise Onboard the SoMAS
R.V. Peconic: A/T/C10+
- Friday, November 15, 5:00PM:** Full Frost Moon Hike with Friends of the Long Pond Greenbelt: AA
- Saturday, November 16, 10:00AM:** FREE, SOFO's Young Birders Club Meeting: Ages 8-18
- Saturday, November 16, 10:00-11:00AM:** FREE, New York Marine Rescue Center Cold Stun Sea
Turtle Training Workshop: A/T/C8+
- Saturday, November 16, 10:30AM:** Celebrate National Hiking Day: Explore the Trails of
Southampton: A/T/C8+
- Saturday, November 16, 12:00-1:00PM:** FREE, New York Marine Rescue Center Cold Stun Sea
Turtle Field Training at Sagg Main Beach: A/T/C8+
- Wednesday, November 20, 1:00-3:00PM:** SOFO's East End Outdoor Nature Education with
Crystal at Inlet Pond County Park, Greenport: C3-7
- Saturday, November 23, 10:30AM:** Harmful Algal Blooms, Plankton Collecting, and Oyster
Gardening with hosts Rockfish Rob & Peconic Baykeeper
Pete Topping: A/T/C9+
- Saturday, November 23, 1:00-3:00PM:** SOFO's East End Outdoor Nature Education with Crystal at
Inlet Pond County Park, Greenport: C3-7
- Saturday, November 23, 4:00-5:00PM:** FREE, East End Environment Series: Re-establishing
Eastern Long Island's Oyster Reefs with Bob Tymann:
A/T/C10+
- Sunday, November 24, 10:30AM:** SOFO Story Time: Turkey Stories & Craft: F
- Friday, November 29, 10:00AM-12:00PM:** Southampton Trails Preservation Society's Annual Walk
It Off Walk: AA

November **Friday, November 29, 11:30AM-1:00PM:** Community Beach Clean Up, Co-Sponsored with the Office of Suffolk County Legislator Ann Welker and Surfrider Foundation: AA
continued

Saturday, November 30, 10AM-4:00PM: Thanksgiving Open House: AA

Saturday, November 30, 10:30AM: SOFO Young Environmentalists Society (YES!) Meeting: Ages 10-16

December **Saturday, December 7, 10:30AM:** Celebrate National Slime Day: Make Your Own Slime: A/T/C5+

Sunday, December 8, 10:30AM: Help Winter Wildlife: Make a Bird Feeder: AA

Saturday, December 14, 10:30AM: The Science of Flight – Design and Build a Paper Glider with STEAM'ing Rockfish Rob: A/T/C9+

Saturday, December 14, 11:30AM: Seal Walk at Cupsogue Beach County Park, Westhampton: A/T/C6+

Sunday, December 15, 5:00PM: Full Cold Moon Hike with Friends of the Long Pond Greenbelt: AA

Wednesday, December 18, 1:00-3:00PM: SOFO's East End Outdoor Nature Education with Crystal at Elizabeth Morton Wildlife Refuge: C3-7

Saturday, December 21, 10:00AM: FREE, SOFO's Young Birders Club Meeting: Ages 8-18

Saturday, December 21, 10:30AM: FREE, East End Environment Series: Eastern Tiger Salamander Tracking Research Update: A/T/C10+

Saturday, December 21, 1:00-3:00PM: SOFO's East End Outdoor Nature Education with Crystal at Elizabeth Morton Wildlife Refuge: C3-7

2024 December School Break Week

One Hour Outdoor Nature Adventures for Children of all Ages

In Vineyard Field behind the museum, with

SOFO Environmental Educators, 10:30-11:30AM

Monday, December 23 – Winter Birds at the SOFO Bird Feeders

Thursday, December 26 – Winter Bingo

Friday, December 27 – Tracks & Scat

Saturday, December 28, 10:30AM: SOFO Young Environmentalists Society (YES!) Meeting: Ages 10-16

Sunday, December 29, 10:30AM: SOFO Story Time: Meet Our Salamanders: F



Luna Moth Caterpillar



Black-capped Chickadee



Eastern Box Turtle



Thick-billed Murre

Shark Awareness Fundraiser

We had a wonderful turnout at the Shark Awareness Event and fundraiser at the Suffolk Youth Jewish Community Center (SYJCC) in Commack in July. Eagle Scout Candidate Kyle Johnson organized the event, and the proceeds will help purchase shark tags for the SOFO Shark Research and Education Program. Thank you to Kyle and all the volunteers who made this possible!



Greg Johnson, Kyle Johnson, Greg Metzger (SOFO Shark Research Chief Field Coordinator), John Petrone (SOFO Shark Research Team), Melanie Meade (SOFO Education Director)

Film Screening of Baby Sharks in the City

A National Geographic Channel & SOFO Collaboration

On August 14, 2024, SOFO Museum and SOFO Shark Research Project presented a free showing of the National Geographic film *Baby Sharks in the City* at the Sag Harbor Cinema. The film is a documentary featuring the SOFO Shark Research and Education Team and the Atlantic White Shark Conservancy as they place a state-of-the-art camera tag on a baby white shark for the first time. This film highlights both the existence of a white shark nursery in the waters off Long Island and the habits and movements of young-of-the-year white sharks. Thank you to our collaborators in this research and public awareness effort: National Geographic Channel, Passion Pictures, Wild, The Atlantic White Shark Conservancy, and the Sag Harbor Cinema.



2025 Calendar Photos

Thank you to all the students who submitted images for our 2025 monthly calendar. There were many wonderful images to choose from. Photos will be featured in SOFO's 2025 monthly calendar, available at the museum gift shop in October.

Autumn Word Search

Find these words: APPLES, AUTUMN, CHLOROPHYLL, COLORS, COOL, FOLIAGE, HALLOWEEN, HARVEST, HIBERNATION, HURRICANES, LEAVES, MIGRATION, PUMPKINS, SOFO, THANKSGIVING

* Words can go SE, N, SW, W, NE, and NW.

G Q H U R R I C A N E S Z R T J
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 X G U U J S B O K A C P S I H Z
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Solution on back page





Wild Turkeys

Gobblers

by Jim Ash, Vice President, SOFO Board of Directors

As I left the house on an incredibly mild morning late in October I remember thinking — what happened to fall? It seemed as if summer was not going to end this year, and something else was also amiss. Along the entire length of my 500-foot driveway through the woods, all of the leaf litter had been scraped up and tossed about as if a dog had been snuffling through it looking for rodents. What in the world had done this? I've been living in Northwest Woods for 30 years and have never seen any animal sign like that before.

As I reached the end of the driveway the culprits came into view. There, to my amazement, was a flock of thirty Wild Turkeys busily scratching through the leaf litter looking for food. The flock consisted of four adult females and twenty-six poult of different size and age. I suddenly remembered the gobbling male turkey I had heard through the open bedroom window early one morning this past spring, a sound I had never heard before in the woods around my house. Apparently I was seeing the fruits of his labor.

The Wild Turkey (*Meleagris gallopavo*) was one of the first animals to be eliminated from Long Island by the European colonists. Being a large ground-dwelling bird that can reach 24 pounds in weight they were, and still are, much valued as human food. The females are smaller than the males and usually lack the tuft of feathers (beard) that hangs from the breast. Both sexes have large fan-shaped tails, short, rounded wings, a red wattle that hangs down from the throat and a wart-like projection of skin attached to the upper part of the forehead. In spring the polygamous males attract females by gobbling and strutting with their tails fanned out, their wings lowered and dragging on the ground, their back feathers erect, their heads thrown

back and their crops inflated. At this season the males also have heads that are colored with red, blue and white.

A few years ago the New York State Department of Environmental Conservation decided to reintroduce the Wild Turkey to eastern Long Island. Avoiding the mistake of previous attempts at reintroduction they made sure that the birds were from truly wild stock that was transported from upstate. Birds with domestic bloodlines are notoriously stupid and never seem to survive the rigors of life in the wild. Truly Wild Turkeys always roost in trees at night. Judging from the reports we receive the latest reintroduction seems to have been a resounding success, with turkeys being reported from all over the South Fork.

The Wild Turkey is a uniquely North American bird even though it has been exported to many countries around the world in its domesticated form. The only other bird that is similar is the Oscillated Turkey, indigenous to the Yucatan Peninsula of Central America. In June of 1782 when the U.S. Congress approved the Bald Eagle for the official seal of the United States, Benjamin Franklin argued that the turkey would have been a more appropriate symbol, it being a more respectable bird and a true native of America.

Fortunately for the turkey, and us, reintroduction programs and controlled hunting have once again made the Wild Turkey an abundant bird in many parts of the country.

I think Mr. Franklin would be pleased.

This article was originally published in the Winter, 2008, SOFO Naturalist Newsletter. Wild Turkeys' status as of 2023: According to the NYS DEC, since the introduction of 75 wild turkeys from upstate New York in the mid 1990's the Suffolk County population has rebounded and is now estimated at more than 3,000 birds and growing.

Autumn Word Search Answer Key: APPLES S @ (12, 9), AUTUMN S @ (10, 11), CHLOROPHYLL S @ (13, 5), COLORS S @ (6, 8), COOL E @ (4, 14), FOLIAGE S @ (11, 10), HALLOWEEN S @ (5, 5), HARVEST S @ (10, 2), HIBERNATION S @ (15, 3), HURRICANES E @ (3, 1), LEAVES S @ (3, 9), MIGRATION NE @ (1, 10), PUMPKINS S @ (16, 8), SOFO S @ (14, 9), THANKSGIVING S @ (9, 4)

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