

GREAT POND FOUNDATION™

ANNUAL REPORT 2024



GREAT
POND
Foundation®



Annual Message from the Foundation

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Carly Inghram
Science Communications Manager

Dear Pond Community,

To the many stakeholders of Great Pond Foundation, we're happy to send you our greetings and the accompanying annual report.

Our Executive Director, Emily Reddington, has suggested that some consideration be given here, in keeping with the direction she has given to the annual report itself, to the importance of life on the Vineyard ponds over and between generations of inhabitants. At the outset, the ponds and nearby waterways were important as fisheries, and even today that remains an aspect when the ponds are healthy ecosystems. Shoreside settlement and development for residential and leisure has replaced the emphasis on fishery activity, but these uses put strains on the pond ecosystems, which only a) appropriate monitoring of sources of contaminants, b) careful observation of the ponds themselves, and c) continual steps to maintain the water quality at the best level attainable can relieve. And the pressures and strains only increase over time, making vigilance essential. To some degree, this is the way it has always been, with cuts from the ponds to the sea to allow flushing and tidal interchange having long been useful. Today, dredging on a regular or periodic basis, is seen as necessary for successful cuts, and it has become clear that dredging to create channels to aid water flow makes an enormous difference in the ultimate success in reducing contaminants and increasing salinity.

The job of today's community is to leave for future generations ponds which are as healthy or healthier than in the past, and to foresee ways in which health can be maintained or bettered in the future notwithstanding even greater ecosystem strains than are today at hand. That way, families using the ponds in the decades (or longer) to come will inherit a resource which has been kept with them in mind. Great Pond Foundation works with stakeholders of all generations, but sees its programs designed for younger community members as particularly important. Our Maria Ventura and Carly Inghram plan youth-outreach programs, and have developed an interactive curriculum for Vineyard third-graders which will launch in pilot form this June and for middle schoolers in September. Ben Chester is our new Resilient Ecosystem Mentee, with the support of **Martha's Vineyard Community Foundation** — this is an early-career position designed to help train young scientists. With assistance from the **Mass Cultural Council**, we've enhanced our annual Seine Science Day, in collaboration with Friends of Sengekontacket and Island Spirit Kayak.



And now, for a round-up of other recent news of the Foundation:

- New offices at 21 Mechanic Street, Vineyard Haven, are a pleasure in which to work and your visits are welcome; let us know if you'd like to schedule a visit;
- Carly Inghram has joined the Foundation's full-time staff working with the science and communication branches in her new role as Science Communications Manager;
- Owen Porterfield is leading field and laboratory programs as he begins his fourth field season with the Foundation; and
- We're sad to report that David Bouck, after four years of valuable service, concluding with the position of Director of Science and Collaboration, stepped down in February — he has our enormous gratitude for his many contributions and all our good wishes going forward.

A hearty thanks is due to the **Edey Foundation** for supporting MV CYANO™, to the **Rotary Club of Martha's Vineyard** for helping outfit our laboratory, and the **Farm Neck Foundation** for enabling the purchase of equipment needed for our programs. And, lastly, an equally hearty thanks for each of you, our readers and community members, for your interest in and contributions to the Foundation and its many efforts.

Sincerely,

AC Greer
Chair of the Board of Directors

The job of today's community is to leave for future generations ponds which are as healthy or healthier than in the past...



Living Waters, Thriving Island

Change is a natural and inevitable part of life. Our power lies in how we respond to change. Living in a place where nature is at our doorstep is a privilege. If we want to preserve and sustain the life in our waters, making sure that future generations experience the profound beauty and abundance of these vital waters, we need to alter the trajectory of change and prioritize water and watersheds.

Celebrate the life in our waters at our annual summer seine event, see page 12.



We know the challenges facing our ponds, estuaries, and waterways: nutrient pollution and the pressures of a changing climate. What is less clear is what we can do locally to trigger the inflection point that tips our waters back from impairment to a course of restoration.

The actions our community takes in the next decade will have a profound impact on the fate of the Island’s living waters. The land upon which we stand, grow our food, and build our homes is interconnected with the health of our waters. The rate of development is astounding. It is also unsustainable if our terrestrial and aquatic ecosystems are to remain intact and functional. See *A Changing Watershed* on pages 8-9 for a perspective on landscape change in the Edgartown Great Pond watershed over the past 20 years.

Science and conservation are racing against the clock to save nature; documenting the sources of impairment and preserving native landscapes and waterways. Policy and permitting seem to be lagging behind. Time is of the essence, as the more we do now, the better the outcome of restoration efforts. We need to be nimble, coordinated, informed, and proactive in our response to the crisis facing our waters. We need to be the voice of water, the voice of the ecosystem.

If enough community members speak up and advocate for the fate of our waters at planning board meetings, at conservation hearings, and at annual town meetings, there will be ripples in decision making that spread out like a safety net for our waters. For each change proposed, please consider 1) how it may impact water and watersheds and 2) if those changes fulfill critical needs of the community, as development will always have an environmental consequence.

We all have a part to play in the protection of our waters. As a small organization, GPF must be very thoughtful about how to have the most positive impact on the Island’s waters. Over the past several years, in collaboration with the Marine Biological Laboratory in Woods Hole, MA, we have been measuring the concentration of nutrients (nitrogen & phosphorus) entering ponds via groundwater, identifying its source (wastewater vs. fertilizer), and locating high-concentration nitrogen plumes.



Winter on Edgartown Great Pond

When we find nitrogen hot spots, we identify the best places to deploy mitigation technologies and maximize nitrogen reduction.

To learn more about the watershed and legacy nutrients, see pages 10-11 for *The Legacy Beneath Our Feet* by MBL Scientist, Dr. Javier Lloret

GPF’s work models a path forward for ponds across the Island: monitoring the health of our ponds, identifying concentrated nutrient plumes (source of impairment), and working with pond communities to incorporate recent data into management and remediation activities. Living waters are the heart of the Island’s spirit and economy. The focus of our Foundation’s work is keeping the life in our waters, because with living waters the Island thrives.

Emily Reddington
Executive Director

GPF MISSION
To cultivate the resilience of our coastal pond ecosystems through science, collaboration, and education.

- OBJECTIVES**
1. understand the ecological health of our coastal ponds, providing scientific resources
 2. educate and engage our community about their role in pond and watershed health
 3. prepare for climate challenges by cultivating ecosystem resilience
 4. identify sources of impairment and support data-driven mitigation
 5. advocate for scientifically informed pond management
 6. foster collaboration

Meet the Seasonal Field Crew

Nicola Colossale is a senior majoring in geosciences at the University of Texas in Austin, with a minor in business and a concentration in coastal systems. Growing up along the Connecticut coast, she developed a deep appreciation for the ocean, sparking her passion for understanding its geological processes. Her current research at UT Austin explores the geologic history of the Andes and major South American river systems, as well as the identification of benthic foraminifera to examine how ancient marine life responded to environmental changes. Beyond academia, Nicola can be found fishing, hiking, or simply enjoying the coastline. She looks forward to applying the knowledge gained at GPF to future endeavors!



Teaghan Duff is a senior at Oberlin College studying Geology along with Environmental Studies with a focus in Biology. Growing up in coastal Massachusetts and spending summers on Martha's Vineyard has given her a love for wetland and marine ecosystems. At Oberlin, Teaghan works as a research assistant in a geoscience sediment lab investigating sediment age using fallout radionuclide dating. She plans to pursue estuarine ecology work following graduation. Teaghan is grateful to GPF for the opportunity to steward MV ecosystems, to better understand the island, to be out and involved in the field, and to gain the experience to continue similar work. She was delighted to be back with GPF for a second year!



Carly Inghram grew up in Bethlehem, New Hampshire where she learned to love the environment and appreciate all it has to offer. She graduated from Saint Michael's College in 2023 earning a B.S in Environmental Science with a minor in Biology. Her academic journey complemented by immersive experiences has contributed to her growing interest in marine ecosystems and conservation. Throughout her college career Carly has participated in several labs studying Lake Champlain's habitat and watershed. She also had the opportunity to study abroad in Panama where she focused on coral reef and fish conservation, allowing her to work with local communities to strengthen these fragile ecosystems and address environmental challenges. Carly is passionate about long-term sustainability and is excited for the opportunity to be a part of monitoring the ecosystem health of Martha's Vineyard coastal ponds.



MV CYANO™



Algal mat



Bright green surface scum

In 2021, the Great Pond Foundation™ (GPF), in response to the rising incidence of cyanobacteria blooms and in recognition of the need for baseline monitoring data, designed and spearheaded the launch of a cyanobacteria monitoring program on Martha's Vineyard: MV CYANO. MV CYANO is a collaborative initiative among Island Boards of Health and scientists from GPF, resulting in a comprehensive cyanobacteria monitoring program that greatly increases the local capacity to detect and respond to cyanobacteria blooms.

2024 MV CYANO STATS

19 PONDS

Regular WQ Monitoring: Chilmark Pond, Crackatuxet Pond, Edgartown Great Pond, Jacobs Pond, Tisbury Great Pond

Regular BOH Sampling: James Pond, Mink Meadows Pond, Seth's Pond, Squibnocket Pond

As Needed: Jones' Ponds, Lagoon Pond, Lamberts Cove Beach, Little Homer's Pond, Looks Pond, Mink Meadow Yacht Basin, Nashaquitsa Pond, Senegekontacket Pond, Watcha Pond, Wilfrid's Pond

5 TOWNS

Chilmark, Edgartown, Oak Bluffs, Tisbury, West Tisbury

1,199 SAMPLES

Definitions

Cyanobacteria (a.k.a Blue-Green Algae): Photosynthetic microorganisms that live in habitats both on land and in water. There are many types of cyanobacteria with varied forms including unicellular, colonial, and filamentous.

Harmful Algal Bloom (a.k.a HABs): When colonies of cyanobacteria grow out of control or "bloom" and produce toxins that can affect people, fish, shellfish, marine mammals, birds and pets.

Cyanotoxins: Some cyanobacteria species can produce toxins known as cyanotoxins. There are over 100 types of cyanotoxins which can be divided into those affecting the liver (hepatotoxic), nervous system (neurotoxin) and skin (dermatotoxin).

Commonly Asked Questions

What causes a bloom? Specific environmental conditions cause cyanobacteria, blooms and macroalgae to grow rapidly. These environmental conditions include warm temperatures, excess nutrients (nitrogen/phosphorus), and low salinity (waters with <15 ppt). Blooms also occur when cyanobacteria and algae physically accumulate by currents in a localized area.

What does a bloom look like? While it varies based on the type of cyanobacteria, blooms often turn the water bright blue-green and can form a surface scum or mat. If you see any discolored water with a layer of scum on the surface, contact should be avoided.

What do you do if you come into contact with cyanobacteria? If you have come into contact with a cyanobacteria bloom and are having adverse health symptoms, please contact your physician immediately. If your pet or livestock has come in contact with a cyanobacteria bloom, please contact your veterinarian immediately. ***In all cases please also follow up with your local board of health.***



MV CYANO is supported in part by the **Edey Foundation.**

For more information and weekly cyanobacteria updates between June and October please visit www.greatpondfoundation.org/mvcyano/

A Changing Watershed

By Owen Porterfield, Scientific Program Manager

The landscape of Martha’s Vineyard has long reflected the coexistence between a unique coastal ecosystem and a way of island life. However, this delicate balance has become increasingly skewed over the decades with the continued development of previously untouched land. This isn’t to say that continued development is unjustified; historical changes in land use largely tell the story of a community adapting to meet the needs of a growing population. But even as added development acts to meet many of the challenges faced by future generations, it also poses a threat to many of the natural resources that have been enjoyed by islanders for decades.

Among these threatened resources are the Vineyard’s coastal ponds, including GPF’s home base of Edgartown Great Pond (EGP). Over time, it’s become increasingly apparent that heightened development pressure within the EGP watershed (i.e. the area of land that drains to the Pond) is negatively impacting the health of the ecosystem. Perhaps the most notable impact of development on pond health is increased nutrient loading via septic discharge, fertilizer runoff (both agricultural and residential), and stormwater flow. This in turn has induced excessive phytoplankton growth within the Pond, degrading habitat quality in the process.

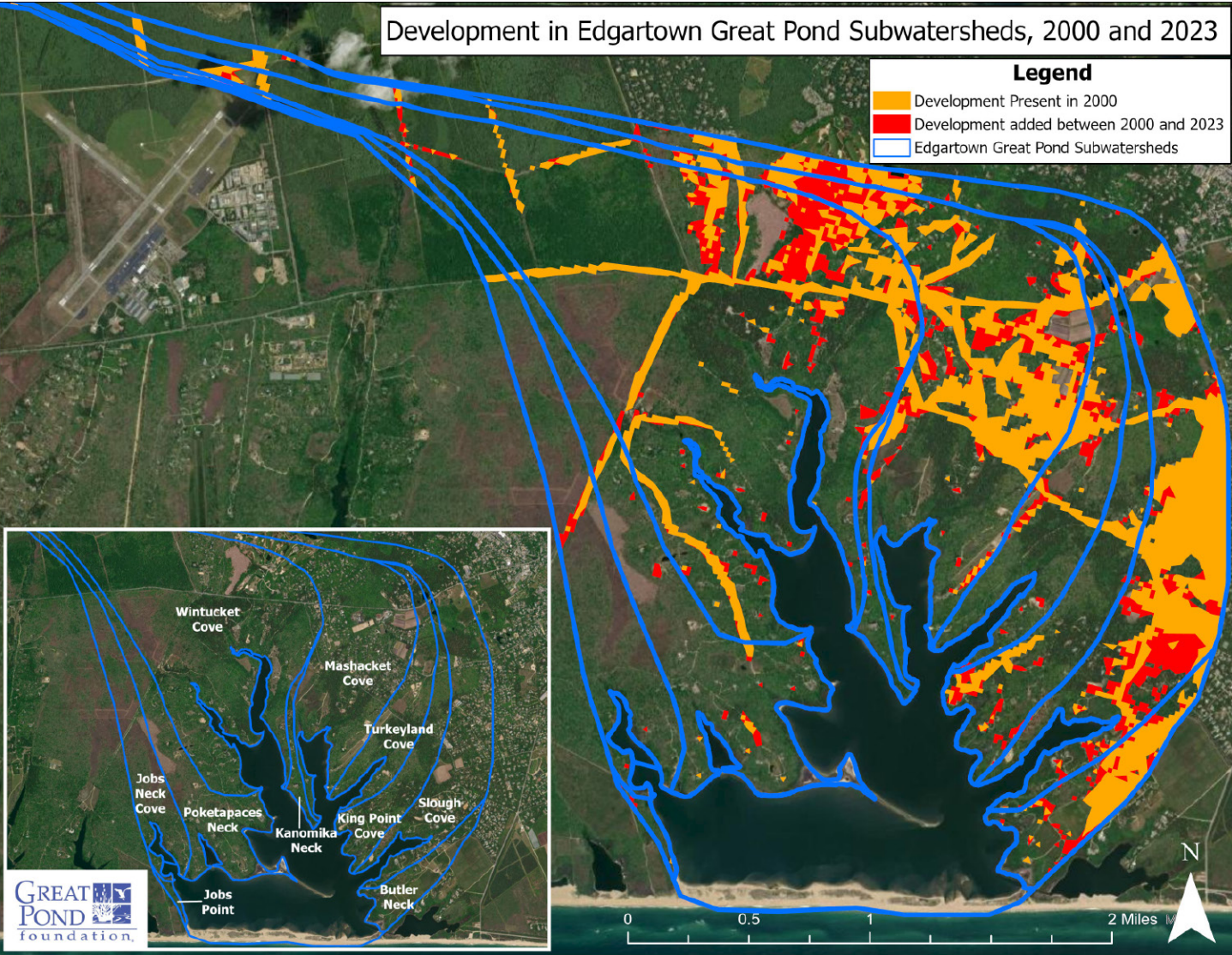
In an attempt to gain a better understanding of how the EGP watershed has changed over time, GPF undertook a project analyzing the change in developed land area between 2000 and 2023. This was done using spatial data obtained from the National Land Cover Database (NLCD). Changes in developed land area were looked at for both the EGP watershed as a whole, as well as for each of its component subwatersheds.

For this analysis, “developed” land was defined as buildings, impervious surfaces (paved and dirt), manicured lawns, and agricultural land. It should be noted that the resolution of the NLCD dataset is not super precise, as a single land use code is assigned to each 30 x 30 meter area within the watershed. Developed land area calculations are therefore likely to be overestimated.

Regardless, this analysis revealed that the EGP watershed has experienced a notable increase in development since 2000, potentially up to 35.3% as of 2023. Additionally, the results support the preliminary findings of GPF’s multi-year groundwater study, those being that the majority of nitrogen delivered to EGP enters through Slough and Mashacket Coves. Out of the Pond’s 10 subwatersheds, these 2 coves saw the second and third most added development

Change in developed land area between 2000 and 2023 by EGP subwatershed.

Subwatershed	Developed Land Area in 2000 (acres)	Developed Land Area in 2023 (acres)	Change (acres)	% Change
Butler Neck	52.2	67.6	+15.4	29.4%
Jobs Neck Cove	9.0	14.8	+5.8	63.8%
Jobs Point	0.2	1.0	+0.8	387.4%
Kanomika Neck	4.9	7.7	+2.8	56.1%
King Point	26.8	38.5	+11.7	43.8%
Mashacket Cove	245.1	314.6	+69.5	28.4%
Poketapaces Neck	13.7	20.6	+6.9	50.6%
Slough Cove	245.4	320.8	+75.4	30.8%
Turkeyland Cove	33.2	49.2	+16.0	48.1%
Wintucket Cove	183.0	265.6	+82.6	45.1%
Overall EGP Watershed	813.5	1100.4	+286.9	35.3%



Developed land area present within the EGP watershed in 2000 (orange) and added between 2000 and 2023 (red). Subwatersheds are overlayed in blue.

since 2000, and ultimately encompass EGP’s 2 most developed subwatersheds (see table to left).

As the Island community continues to expand its footprint within the EGP watershed, it’s imperative that future development is planned with the health of the Pond in mind. This will likely require a combination of technological (e.g. nitrogen reducing septic systems, riparian buffers), institutional (e.g. town bylaws), and educational (e.g. community outreach) tools in order to be achieved. The location of future landscape changes is also important, as developing already impaired areas may push the Pond’s ecosystem beyond its capacity to rebound. Ultimately, a sustainable approach to future growth within the EGP watershed is necessary if a balance between island living and the health of the Pond is to be restored.



The Legacy Beneath Our Feet

By Dr. Javier Lloret, Marine Biological Laboratory and University of Maryland

Some 14,000 years ago, during the last ice age, the world was a very different place. Southern New England lay at the edge of massive ice sheets that covered much of the northern hemisphere. As these glaciers moved south, they scraped away rock and soil, carrying the eroded materials with them. When the ice finally began to melt, it left behind the materials it had gathered, depositing vast amounts of sand, gravel, and silt. This process shaped the Cape and the Islands, creating the very land we stand on today.

These glacial deposits make up the foundation of Martha's Vineyard. Unlike many other regions, where rainwater runs off into rivers and streams, the sandy, porous soil here allows water to seep directly into the ground. This water replenishes an underground aquifer, which slowly flows toward the sea at a rate of about one foot per day. This slow movement of groundwater has profound consequences for the health of our coastal ponds.

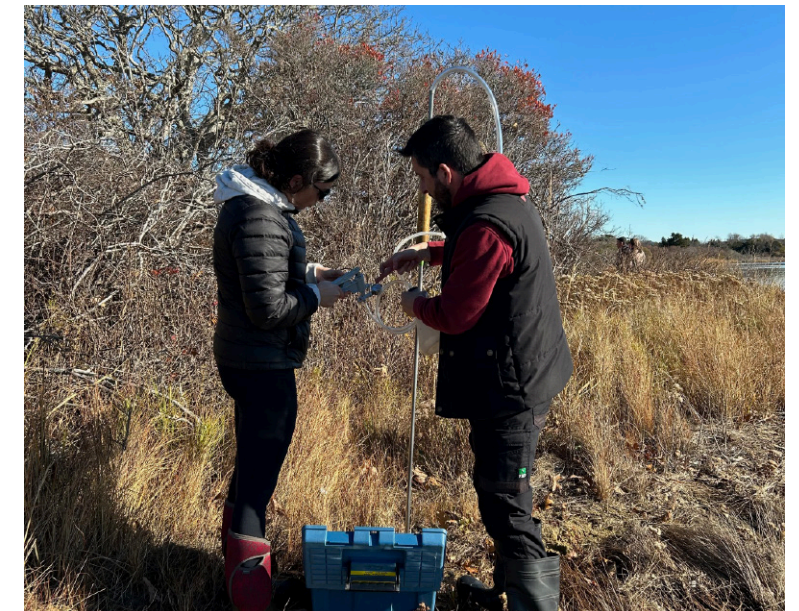
For decades, human activity has introduced excess nutrients—especially nitrogen and phosphorus—into the aquifer. These nutrients come from household wastewater, fertilizers, and other sources. Once they reach coastal waters, they fuel the growth of algae and plankton, which can degrade water quality, trigger harmful algal blooms, and even lead to fish and shellfish kills. The challenge we face today is that much of the nutrient pollution now affecting our ponds was introduced years—sometimes

decades—ago. The environmental issues we see today are in part the legacy of past pollution.

This pollution legacy presents a major challenge for managing and restoring our coastal ponds. Because groundwater moves so slowly, even if we stopped all nutrient pollution today, the excess nutrients already in the aquifer would continue to reach our waters for years to come. This delayed response means that despite our current efforts and investments in improving water quality, noticeable improvements may take decades to appear.

However, there are solutions. Reducing the amount of nutrients currently entering the aquifer is, of course, essential, but addressing the legacy pollution already in the system is equally important. Strategies such as restoring wetlands and other vegetated coastal habitats can help filter and absorb nutrients before they reach the ponds. In some cases, installing permeable reactive barriers—designed to intercept and remove nutrients from groundwater—can also be effective. A comprehensive approach that combines both prevention and remediation is the best way forward.

By taking action now, we can ensure that Martha's Vineyard's coastal ponds remain vibrant and healthy for future generations. If we succeed, our legacy will not be one of pollution, but of restoration and stewardship—preserving the waters we treasure for years to come.



2024 Community Engagement

Join Us!

Our 2025 BEACH SEINE SCIENCE DAY will be on – July 12th with a rain date of July 13th at Little Bridge at State Beach.

While this event is geared toward our younger pond advocates, people of any age are encouraged to join us!

Full details will be available via GPF's newsletter and website www.greatpondfoundation.org



Seine Day

Great Pond Foundation continued our commitment to education by hosting Beach Seine Science Days in summer 2024. This is building off a successful collaboration with Friends of Sengekontacket Pond and Island Spirit Kayak that began in 2021.

In July 2024, dozens of families participated in our Beach Seine Science Day to learn about the fish and invertebrates found along the pond's shoreline. This event centers on GPF's 30-foot beach seine net, which is dragged across shallow water and captures animals throughout the water column, from the bottom of the pond up to the surface, replicating our scientific field work. GPF uses this net to study biodiversity in an ecosystem, as data generated from beach seine hauls can be used to track changes in species composition and abundance over time. This net is an excellent outreach tool, as it allows members of the community to be hands-on with critters in our ponds while learning about the array of life that each pond supports.

Get in the water with GPF! Beach seines are one of the best ways to see the life in our ponds.

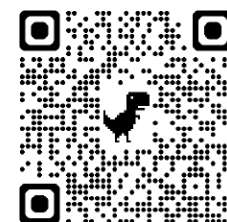


Earth Day Conservation Festival

Great Pond Foundation participates in the Annual Earth Day Conservation Festival hosted by the MV Museum. This event brings together many Island organizations that are committed to protecting and preserving Martha's Vineyard's natural ecosystems. Great Pond Foundation uses this outreach event as an opportunity to provide hands-on activities and equipment demonstrations to connect the community to our ponds.

MV Charter School Pond Chemistry Field Trip

In the fall of 2024, the GPF team met with students from the Charter School at Sepies-sa Point to teach the students about what makes a healthy pond. The team enjoyed the knowledge and enthusiasm of the students as they discussed how abiotic factors influence the health of the coastal ponds of Martha's Vineyard. Students were given the opportunity to have hands-on experience with some of GPF's tools of the trade! These tools include: Secchi disk, handheld water quality meter (YSI), Van Dorn Bottle, refractometer. We are looking forward to growing our community engagement with Island youth!

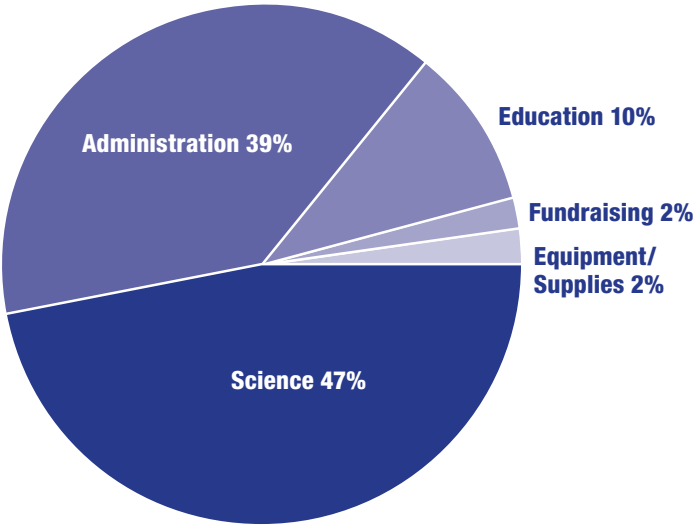


Join GPF's mailing list to stay up to date on events, projects, collaborations and pond updates!



2024 Highlights

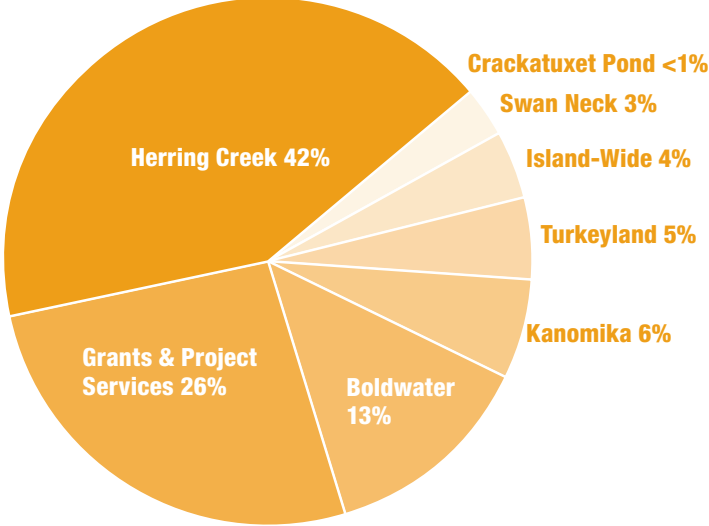
2024 TOTAL EXPENSES \$848,442



In 2024 GPF incurred extraordinary expenses in connection with a CFO and outside auditing firm transition, due to retirements.

All figures are preliminary and subject to audit.

2024 TOTAL REVENUE \$821,231



2024 TOTAL REVENUE \$959,192
(excludes contributed services, dividends & market value change on investments)

Contributed Goods/Services \$29,633
Fund Earnings \$108,329



2024 Donor Recognition List

Leadership Circle
\$10,000 +

Lisa & Michael Bronner
Edey Foundation
Herring Creek Farm Landowners Association
Cindy & AJ Janower
Terry Kassel & Paul Singer
Pam Kohlberg & Curt Greer
Debroah & Joseph Loughrey
Anne & Brian Mazar
Yael & Zeev Pearl
Kimball Prentiss & Gerry Downes
Leah & Bob Rukeyser
Bette & Richard Saltzman
Catherine Samuels & Jeremy Henderson
The John & Signe Stafford Foundation

Blue Carbon Society
\$5000 to \$9999

Anonymous (3)
Tracey Braun & Chris McIsaac
Christine M. Campbell & William R. Massa
Jennifer & Michael Corbo
Sarah & Fergus Henderson
Susan & Stephen Howell
Marchand CFO
Caroline & Robert Maruska
Martha's Vineyard Community Foundation
Kimberly & Richard McCaslin
Jacqueline Morby
Rosabeth Moss Kanter
Dr. and Mrs. Alan Muney
Heather & Jonathan Roberts
Melissa Vail & Norman Selby
Marie & Craig Vought
Mary & Timothy Walsh
Gail & John Wasson

Ecosystem Sustainers
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David & Dalia Blass
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Deborah & Glenn Larsen
Martha's Vineyard Bank
Charitable Foundation

Massachusetts Cultural Council
Linda & Michael Purvis
Beth & Eric Schlager
Susan & James Snider
Joshua Sohn

Clean Water Coalition
\$1000 to \$2499

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Jane Bradbury
John Brannen
Brush Flanders Moriarty LLC
Joanne Cheng
Lynn de Rothschild
Alison Devore & Ross Levinsky
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Robert McLaughlin & Gabriella Morizio
Kate & Patrick O'Keefe
Deborah Porter
Victoria Riskin & David Rintels
Amy Salzman & Randy Milch
Amy & Howard Seife
Bruce Tomason

Blue Crab Crew
Up to \$1000

Nicholas Bayer
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Hadley Laney Boyd & John Victor Parachini
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Tim Rockwood
Marc Rosenbaum
Rotary Club of MV Inc.
Kristina West
Susan Whiting
in memory of Ginny Jones





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