



Three Bays Preservation, Inc.  
864 Main Street  
P.O. Box 215  
Osterville, MA 02655  
[www.3bays.org](http://www.3bays.org)

Our success depends  
on your support.  
If you haven't  
donated to our  
Spring Appeal,  
please do so today!

*Thank you!*

## THREE BAYS PRESERVATION, INC.

President:  
Michael Egan

Staff:  
Lindsey B. Counsell  
Executive Director  
[lcounsell@3bays.org](mailto:lcounsell@3bays.org)

Judy Heller  
Program Manager  
[jheller@3bays.org](mailto:jheller@3bays.org)

864 Main Street  
P.O. Box 215  
Osterville, MA 02655

Phone: 508.420.0780  
Fax: 508.420.4489

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## THREE BAYS PRESERVATION EVENTS

**FREE! Bayside Explorers** – Explore the aquatic wonders at low tide! Dowses Beach, Osterville on Wednesdays at 9 AM on 8/3, 8/17, 8/24; and 3 PM on 8/10.

**NEW! Paddleboard Excursions\*** – Led by Amy Hotchkiss of Stand Up & Paddle Cape Cod, and Melissa Jansen, Melissa Jansen Yoga:

**Yoga Paddle** – 8/11 & 8/25; **Birding Paddle** – 8/12; **Shellfish Paddle** – 8/6 & 8/20

\*Excursions begin at 7 AM. A pontoon boat available for Birding & Shellfish Paddles; Yoga Paddle is SUP only.

**FREE! Cape Cod Wildlife Festival** – A great family event at Mass Audubon's Long Pasture Sanctuary, Bone Hill Road, Cummaquid; Saturday, 9/10.

**Paddle Dinner & Auction** – Kick off RACE Cape Cod and support the work of Three Bays Preservation; Friday, 9/16 at 6 PM.

**Paddle for the Bays: RACE Cape Cod** – Our annual celebration of the Three Bays will be held on Saturday, 9/17, Ropes Beach, Cotuit.

*~ For details about all the events, visit [www.3bays.org](http://www.3bays.org) ~*



## HOW DOES YOUR RAIN GARDEN GROW?



**H**ave you noticed anything new at the Cotuit Town dock lately? Just a few feet from Cotuit Bay are two “rain garden” bioretention beds on the north side of the parking lot. The beds are part of a green infrastructure pilot program, developed by Three Bays Preservation and the Barnstable Department of Public Works as an alternative to traditional storm drainage sewerage.

Four Cape Cod Academy students, along with Executive Director Lindsey Counsell and Water Resources Consultant Scott Horsley spent several days in May installing the 50'-long by 3'-wide beds with gravel, soil and peat moss, into which they planted eight species of indigenous, salt-tolerant plants and a subsurface drip irrigation system. Storm runoff goes into the beds and the bacteria in the plants' roots get to work, removing a significant amount of the nitrogen, pathogens, oils and other pollutants before the treated stormwater heads to the bay via the subsurface groundwater system.

A unique facet of this bioretention project is a solar-powered water pump, which re-cycles water back to the plants via the irrigation system. A series of wells have been installed, which recapture the stormwater that has filtered through the beds and then recycles it back to the plants for additional processing and treatment.

“This recycle system has two roles,” Horsley explained. “It helps keep the plants alive, and also cycles nutrients and pollutants back to the plants multiple times for enhanced treatment. With most systems, water flows into the rain garden once, but the pump allows the water to circulate through for more filtration.”

The initial challenge was how to run the pump. “I was intrigued by this,” said Cotuit resident Vern Grabel, who has a background in electrical engineering, and had some ideas about running the pump with solar energy. “I poked around to see what we could buy and couldn't find anything,” he added, “so I said, ‘Let's build it.’” And build it he did, repurposing a bilge pump. “There have been advancements in the last decade that have driven the price down dramatically. What would've cost \$10,000 is now a few hundred dollars.”

The system began running in mid-June. “My hope was that at least half the plants would survive and we'd replant,” Horsely said. Happily, seven of the eight plants are thriving and the eighth is rebounding.

Grabel also designed a Bluetooth program that downloads data to determine how the irrigation cycle is working. Testing and monitoring is underway to record how frequently and how long the pump runs, amount of water the plants get, and nutrient levels before/after circulating through the beds. The ultimate goal is to decrease the amount of pathogens entering the Three Bays ecosystem, lessening the negative impact of wastewater and its harmful impacts on our waters.

“I applaud Three Bays Preservation for doing this,” Grabel added. “This is a good project that opens all kinds of possibilities of how to apply electronic technologies to needs like this. It's real science.”



(upper left photo) Rainbed construction: Students Carter Pemberton, Truman Rountree, John Wetzel & Meg Wilson; (above) Lindsey Counsell & the students begin planting

The Newsletter of  
Three Bays  
Preservation, Inc.

# Monitor



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## Students Get a Close Look at Our Water Quality Challenges

**T**o nurture environmental knowledge and stewardship and raise awareness about the Cape's water issues, Cape Cod Academy hosted its 2nd Annual Water Day this spring. The brainchild of Keith Lewison, CCA humanities teacher and Environmental Club advisor, Water Day supports Lewison's belief that "interdisciplinary education is one of the best ways for students...to care about and save places that sustain us."

Seventy-three students, grades 9-11, visited four programs in green technology, designed and developed by Three Bays Preservation and consultant Scott Horsley. Sites included the picturesque Mill Pond in Marstons Mills, which is significantly impaired by long-term sedimentation; the North Bay Aquaculture Project, expanding the use of shellfish to help filter nitrogen from our waters; the Cotuit Town Dock Project, where newly-installed rain gardens remove pollutants from

water runoff before it flows into Cotuit Bay; and a fertigation project in a small area on the Cape Cod Academy campus, in which human urine diluted by water will be used in lieu of conventional and often-toxic fertilizer.

"Water Day gives students a chance to learn about important water-related issues in Barnstable," Lindsey Counsell explained, "and have a hands-on experience about how we measure the impacts and extent of the problem in our embayment and waterways." Events like Water Day may inspire students to seek meaningful careers in the environmental field. "We want to teach students to be responsibly engaged with the world," said Cape Cod Academy Head of School Tom Trigg, as he praised the ingenuity of Water Day and the innovative projects sponsored by Three Bays Preservation.



Cape Cod Academy students get ready to visit Three Bays Preservation's green technology projects.

## Well, the River Herring Did Come Back...

**B**ut it was "a really weird counting season this year," said Judy Heller, Three Bays Preservation's Program Manager. Although the annual Marstons Mills River Herring Program got off to an early start in April, ultimately the counts were low. The final count for the 2016 season was 2,043 herring – compared to 3,500 last year and more than 6,000 in 2014. The strange spring weather apparently was the culprit.

Temperatures rose for about three days toward the end of April and there were some good counts. But then more wintry temperatures made an unwelcome comeback and everything slowed. "Strangely, there wasn't much to see by way of river herring at the run at Mill Pond," Judy added, "but there were herring galore at the flume at Middle Pond." The fish, she surmised, must have been traveling at night.

Our thanks to all the volunteers who stuck with it during this challenging spring. Your efforts help determine the status of the river herring population and the connected bodies of water that support them.

And there's always next year. Let's keep our fingers crossed for spring 2017!

Info & photos are at: [www.3bays.org/marstons-mills-river-herring-count-project](http://www.3bays.org/marstons-mills-river-herring-count-project)

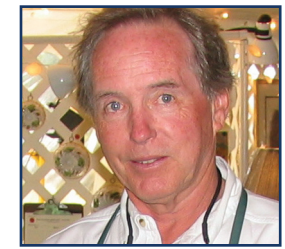
"Spring" on Cape Cod: No wonder the river herring weren't back in droves



[photo: Betsey Godley]

## In Memoriam

### ~ Richard Largay ~



All of us at Three Bays Preservation are saddened by the passing of Richard Largay, who died of a brief illness on April 26, 2016. He was 68.

Although Richard was born in Connecticut, he spent every summer on Cape Cod. "I was born on May 24th," he said in an interview for *Monitor*, "and I think my mother had me on the Cape by June 15th."

Richard served as a Board member of Three Bays Preservation for 18 years before taking the reins as President when Bill Gahagan stepped down in 2013. Passionate about the three bays, where he fished and sailed for years, Richard identified water quality as our biggest challenge. He focused much of his efforts on finding alternatives to solve this serious problem.

A highly respected attorney, Richard was a significant part of the Cape's legal, business and civic communities for more than 35 years. In addition to Three Bays Preservation, he donated much of his time and talents to organizations such as the Alliance to Protect Nantucket Sound and Barnstable Land Trust (BLT), where he served as a Board member for six years. In recognition of his countless hours of legal expertise on complicated land preservation projects, in 2013 BLT honored Richard with its Founders' Award, an annual award given to those who have "...the vision to empower the people of Barnstable to preserve the essence of Cape Cod – its open spaces and natural resources, wetlands, woodlands and wildlife."

Richard will be greatly missed.

### ~ Sally Davis ~

Sarah "Sally" Davis, passed away on March 31 at the age of 93. She is the wife of Holbrook Davis, a founder and former Treasurer of Three Bays Preservation. Sally and Holbrook were married for 70 years and lived in Osterville since 1975. In addition to her husband, Sally is survived by two sons and a daughter, seven grandchildren and six great-grandchildren.

We extend our deepest condolences to the Davis family.

## Three Bays Preservation Scholarship Winners

This year Three Bays Preservation awarded scholarships of \$1500 each to two Cape Cod Community College students. Commencement Scholarship awardee, **Molly Mahoney**, received an Associate's degree with a concentration in Environmental Studies; she plans to pursue a Bachelor's degree in that field.

**Jennifer Hanley**, who has another year at 4C's, received the non-commencement scholarship. She is pursuing an Associate's degree in Environmental Technology and certificates in Coastal Zone Management and Horticulture; her career goal is to work in the coastal field. *We wish Molly and Jennifer the best of luck!*