



Friends of
Pleasant Bay



FALL 2023



CONTENTS

- 3 President's Letter
- 4 Restoring Sipson Island
- 6 Cape Cod Native Plants
- 8 Pleasant Bay Community Boating Projects
- 9 Sugar Kelp
- 11 Beach Grass
- 13 Cape Friendly Landscaping
- 14 Grant Acknowledgements
- 15 In Memoriam

Illustrations on page 2 and 14 by Marcy Ford



A NOTE FROM THE PRESIDENT of FoPB

Dear Members,

As I write this letter, the seasonal wheel is turning toward the Fall Equinox, when light and dark are equally balanced. In a world that sometimes feels as if it is hopelessly off-kilter, 'balance' is a state to be savored, if only for a moment. At this still point, we hold on to the last warm days of summer, while looking forward to the slower quiet of winter.

But inevitably the wheel keeps turning: summer, fall, winter and back to spring again—the cycle inviting us to reflect on and prepare for change.

We experience the seasonal wheel turning in so many ways around our beloved Pleasant Bay—but especially in the plants along the shoreline, under the water and across the watershed. The beach grass that was so young and green just a few months ago is turning a tawny gold; dried eel grass marks the water line in the wake of Hurricane Lee; the shiny green leaves of the black oak are becoming brittle, rattling in the wind; bees swarm among the fading summer blooms, building their winter stores of nectar in preparation for winter; and the native wildflowers are going to seed—what doesn't feed the birds will be carried by the wind, ensuring next year's flowers, perhaps where we least expect them.

This Fall we are welcoming four new board members to the board, while we say goodbye to four others—Haley Cedarholm, Robin Davis, Suzanne Leahy,

and far too soon, to Corliss Primavera.

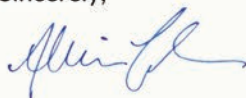
Even here: change and balance. A remembrance of Corliss is on p. 15. Introductions to the new members are on our new website:

<https://www.friendsofpleasantbay.org>.

I am excited to work with new and returning board members as we set our goals for the year.

Your gifts to Friends of Pleasant Bay are like Fall bulbs planted in anticipation of early spring blooms—an investment in a promising, beautiful future. Due to your generosity, we are able to provide grants to educators to bring their students to the Bay to study the plant and animal life in and around it; bring you information from scientists studying the health of the eel grass and the creatures that depend on it, as well as the water quality on which we all depend; and support our partner organizations to carry out programs that provide access to the Bay and its wonders for young and old alike. Thank you for your deep commitment to preserving Pleasant Bay and for your generosity in sharing it with others. I hope the articles in this newsletter will sustain you with warm memories of the Bay as we move into autumn and winter. May all things find their way into balance for you this season.

Sincerely,



Allison Coleman

Restoring the Natural Communities of Sipson Island

By Betsy Furtney, Land Management Committee Chair & Board Member, Sipson Island Trust

The plant communities that compose Sipson Island's flora are typical of Pleasant Bay but also reflect the island's unique history and its shaping by water and wind. At the north and south ends are rocky intertidal shores, where only nonvascular plants like seaweeds grow in the daily tides. There's a small coastal dune barrier beach at the north end and tidal flats at the south. Coastal-bank bluffs dominate the island's east and west sides, the steepest slopes home to kingfishers and swallows. On the more gently sloping north end, which was restored after storm damage in 2015, grow smooth and salt-meadow cordgrass intermingled with bayberry, bear oak, and beach plums.

Pitch pine-oak woodland — the island's largest native community — is found throughout the upland area, with many mature specimens of pitch pine, red cedar, and oak trees. Sadly, the understory is dominated by invasive plants—mainly bittersweet, vine and shrub honeysuckle, autumn olive, and privet. And these invasives have migrated from the uplands into some of the coastal bluffs, while birds

have deposited invasive seeds everywhere.

Yet in terms of acres, the most ground is covered by a so-called natural community that the state's Department of Environmental Protection calls "cultural grassland." Before colonial settlement, Indigenous people probably maintained open areas of native grasses and shrubs by controlled burning. The colonists who acquired the island in 1710 most likely brought grazing animals and planted cool-season, non-native grasses for them. We know that in the late 1800s, cows were herded across the Narrows to the island to graze. When the first house was built in 1920, lawn grasses and non-native ornamental plants were introduced to the landscape, further displacing natives. As dwellings proliferated, so did the extent of cultural grassland and exotic trees and shrubs.

Under the Conservation Restrictions that guide management of the island's resources, Sipson Island Trust (SIT) plans to restore the island to its "natural, scenic, and undeveloped

condition.” This poses big challenges, which SIT and our contractor partners are tackling stepwise as we embark on “rewilding.” Before and during the demolition phase (removing dwellings and septics), we will protect native trees and shrubs from heavy equipment, remove some invasives, and, following in the path of removal, restore about 1 acre of the island’s ground plane with native forbs and perennials. It’s a start.

with sandplain grassland or sandplain heathlands, featuring native warm-season grasses like little bluestem. Other areas will be restored with native shrubs to provide shelter, food, and nesting habitat for birds and mammals on the island. By encouraging native pollinator perennials within the grasslands, we can expand the variety of insects, butterflies, and birds that call Sipson Island home.

A master plan for restoration will aim to maintain existing natural communities, strengthen biodiversity, increase the island’s capacity to store carbon, and potentially reestablish natural communities suppressed by anthropogenic forces. We will continue to remove invasive species and replant with a mix of native understory plants. To maintain the integrity of sloping bluffs, we need to restore natives there as soon as possible after invasives are removed. Parts of the “cultural grasslands” will be replaced

This work will never really end: Sipson will always need to be managed to prevent non-native seeds and plants from regaining a foothold. But the more quickly and densely we cover the soil with native plants, the quicker Mother Nature will re-exert her self-sustaining systems. Our role is to wisely shepherd this transition so that wild things can thrive and humans who love beautiful natural places can more deeply experience the spiritual quality of this island realm on Pleasant Bay.



Coastal erosion on Sipson Island



Bittersweet hedge among the cedars



American Copper (*Lycaena hypophlaeas*)
butterflies on field goldenrod



Beach Pea
(*Lathyrus japonicus*)



White Heath aster
(*Symphyotrichum ericoides*)

Cape Cod **Native Plants:** The Cornerstones of a Thriving Pleasant Bay Ecosystem By Dorothy Bassett

Cape Cod's natural beauty has long captivated residents and visitors alike. The region's picturesque landscapes, tranquil waters, and diverse wildlife make it a haven for nature enthusiasts. But beneath this charming facade lies a fragile ecosystem intricately tied to its native plants, including some species highlighted in the pioneering work of Douglas Tallamy.

Douglas Tallamy, a renowned ecologist and author, has illuminated the pivotal role native plants play in supporting local ecosystems. His research emphasizes that indigenous plant species have evolved alongside local wildlife over millennia, resulting in unique relationships that provide essential food sources and habitats. In particular, he developed the concept of

keystone species to describe the native plants that support the most caterpillars, and thus are one of the best food sources for baby birds. The keystone species for Cape Cod include the oaks (*Quercus* spp.), willows (*Salix* spp.), and cherries (*Prunus* spp.), which are all vital to the health and sustainability of the islands and surrounding lands that form Pleasant Bay.

The significance of these keystone species cannot be overstated. Oaks, which include species like the Northern Red Oak (*Quercus rubra*) and White Oak (*Quercus alba*), are essential providers of acorns, a critical food source for numerous bird species, including turkeys, woodpeckers, and jays. Their dense canopies also create ideal nesting sites for birds, and their leaves support more than 500 different species of caterpillars.

Cherries, represented by the Black Cherry (*Prunus serotina*) and Chokecherry (*Prunus virginiana*) on Cape Cod, produce fruits that are an essential food source for numerous birds, including robins and waxwings. These trees also support over 400 species of Lepidoptera (butterflies and moths) caterpillars, which serve as crucial protein-rich sustenance for

local birds during breeding seasons. To aid residents and landowners in incorporating these crucial native plants into their landscapes, the Association to Preserve Cape Cod (APCC) has developed a valuable resource—the Cape Cod Native Plant Initiative. This initiative includes a user-friendly plant resource website designed to help people find the native plants best-suited for specific sites. By using the dropdown menu, individuals can search for plants based on criteria such as Plant Type, Sunlight, Soils, Bloom Month, Size, and Nature Benefits.

For more information and to explore this valuable tool, visit the APCC website directly at <https://capecodnativeplants.org/>. By planting native species like oaks, willows, and cherries, you can contribute to the restoration of essential habitats within the Pleasant Bay ecosystem while enhancing the beauty of your Cape Cod landscape. Through the combined efforts of researchers like Tallamy and organizations like the APCC, we can ensure the preservation of these essential species and, in doing so, protect the unique beauty and ecological integrity of Cape Cod for generations to come.

Pleasant Bay Community Boating Projects to Support Native Aquatic Plants

By Jamison Nye | Pleasant Bay Community Boating, Science Coordinator

Eelgrass (*Zostera marina*) is a submerged aquatic plant that is vitally important to the Cape Cod ecosystem. It creates important habitat reserves for scallops and juvenile fishes and crabs, functions to improve water clarity, and acts as a carbon sink. The rhizomes (horizontal underground stems) and root web-like network of eelgrass beds helps hold sediment in place, which decreases turbidity, and provides an environment for carbon sequestration that is almost double that of terrestrial plants. Eelgrass beds are also our first line of defense for erosion management by dampening wave action.

The eelgrass populations in Pleasant Bay have been declining due to a variety of factors: ocean temperature rise, physical destruction through boats and high trafficked areas, and eutrophication. There is a great need for action in order to preserve this critically important species.

Pleasant Bay Community Boating partnered with National Seashore's Holly Plaisted and PBCB-sponsored AmeriCorps member Lily Gooding to start an eelgrass rehabilitation program. The first goal of the project

was to monitor eelgrass populations in Pleasant Bay and collect the flowering shoots of the aquatic plant before the seeds drop onto the seafloor. The seeds have now been stored in PBCB's upweller, where they have a constant flow of water and can avoid predation. Once the seeds are ready to be planted, they will be placed in small cotton "teabags" and added to existing eelgrass populations to help them expand.



The second goal of the program was to grow public awareness and knowledge of eelgrass, and get the public involved in collected citizen science data monitoring eelgrass in Pleasant Bay. This was done through publicly advertised eelgrass walks, where participants learned how to identify eelgrass, learn its importance and the threats to it, while also learning how to collect citizen science data, as well as

through PBCB's speaker series.

Please look at the video on our website [youtube.com/watch?v=0JtV0eRx00Q](https://www.youtube.com/watch?v=0JtV0eRx00Q) to see how PBCB is actively engaged in a variety of activities supporting Pleasant Bay.

Currently the seeds are awaiting the planting phase, and will be planted late this fall.

Sugar Kelp in Pleasant Bay

Eutrophication, the result of excessive amounts of nutrients, has been a problem for years in the shallow, sandy bottom estuary of Pleasant Bay. Eutrophication can cause suffocating algal blooms, and decreases the amount of light penetrating to our native seagrass and algal communities. Shellfish, as filter feeders, seagrass and algae, as photosynthesizers, help reduce the amount of nutrients in the water through assimilation in their tissues. Because their contributions are not always sufficient to offset the amount that we continue to add to our waterways in the form of runoff and other anthropogenic means, both shellfish and algal aquaculture have the potential to help augment nutrient removal.

Pleasant Bay Community Boating set out to test the feasibility of growing Sugar Kelp (*Saccharina latissima*) in Pleasant Bay to assess its potential as a

viable winter crop to assist in local bioremediation, as well have uses in our daily lives. While growing, it sequesters carbon and assimilates nitrogen into its tissues. Once harvested, kelp can be used for food, organic fertilizer, and cattle feed, which helps reduce methane production. There is also potential in its application in biofuels. Beyond these uses, Sugar Kelp aquaculture could provide the opportunity for winter work for shellfishermen, fishermen or others, to grow a beneficial crop. With all of the associated gear and equipment going in and being taken out before boating season begins, it has great potential for use in Pleasant Bay.

Historically, Sugar Kelp has been grown in deep, cold, nutrient rich waters. However, in recent years, new farms have found success in shallow, sandy bottom estuaries. Pleasant Bay Community Boating set out to test if Sugar Kelp could be successfully grown

in Pleasant Bay to open up the potential for its local bioremediation uses.

The 7-month study began by consulting the many agencies that are tied to Pleasant Bay, including the Friends of Pleasant Bay, as well as the Town of Harwich, and the Massachusetts Division of Marine Fisheries. From there, mature Sugar Kelp was collected locally and spored (spawned) in a laboratory setting and placed into our fabricated kelp nursery where it would attach itself to small twine and grow sufficiently until ready to be outplanted into Pleasant Bay

for the next 4 months.

After harvesting, the kelp was measured and dried to obtain data on nitrogen uptake and carbon uptake. In one small 30ft-horizontal line, over 17lbs of kelp was harvested. After that, it was enjoyed as food and fertilizer for friends and family.

The success of this project indicates great potential for the use of kelp as a winter crop for Pleasant Bay. It remains to be seen at what scale this may be pursued, but the potential is there.



First signs of seed development of eelgrass reproductive shoots display a braided pattern (April 2023)



Sugar sea kelp a month away from harvest (April 2023)

American Beachgrass and Its Vital Role in Pleasant Bay

By Bob Zaremba

Animals usually get the most attention in any ecosystem, but it is really the plants that do the hard work. Plants, of course, capture the energy of the sun that drives the entire system, but in the case of Pleasant Bay, American beachgrass (*Ammophila breviligulata*) also defines the structure and much of the character of the system. Without beachgrass there would be no dunes, the barrier beach erosion and inlet formation cycle would be very different, and there would be more sedimentation within the Bay from the mass of sand moving along our shoreline during storms. Also, salinity in the Bay would be higher with greater tidal influence.

Beachgrass is well suited to build dunes. It has the ability to grow outward both laterally and vertically. Beachgrass is dormant in the winter, beginning to regrow in April. It expands by an underground stem or rhizome that extends outward from the previous year's growth into new sandy areas and vertically through any sand deposited on top of the plant during the winter. Beachgrass has been known to grow through as much as four feet of sand, reestablishing plants on the new surface. Once established, beachgrass can, over only a few years, produce a significant dune that can limit sand movement across a barrier

beach during stormy weather.

Beachgrass is not tolerant of salt water flooding during the growing season. Each year, the newly developed underground stem produces two fleshy, white roots at each node. Rhizomes develop at the interface between the surface dry sand and the permanently damp sand at about 4 to 5 inches below the surface. This is the area we all are seeking with our feet when we can no longer tolerate burning hot summer sand. Water from the fully saturated depth below the barrier beach evaporates and condenses at this level leaving a moist, well aerated, but not saturated layer of sand. These fleshy beachgrass roots produce a carbohydrate surface that is colonized by bacteria that can fix atmospheric nitrogen which is available for plant growth. Salt water flooding during the growing season kills the bacteria and inhibits water absorption by beachgrass.

Those areas with the greatest level of sand deposition have beachgrass plants with the longest rhizomes, the most roots, and the highest levels of nitrogen. These are the areas with the most vigorous growing beachgrass with the most flowering. Areas with little or no sand accumulation have few new rhizomes, fewer new roots, and less vigorous plants. We have all seen

struggling beachgrass plants in the flat areas behind dunes where no new sand accumulates.

Beachgrass also has a well established means of colonizing new areas. Each fall during September and early October, beachgrass goes dormant for the winter months. It forms a short section of rhizome with multiple undeveloped leaves that do not expand. It looks a little like an elongate, hand-rolled joint about 6 to 10 inches long, tapered at both ends. If not disturbed through the winter, these rhizome sections develop in early April as new plants with already formed leaves expand. If, however, winter storms erode the dune and overwintering plants are loose, some collect in upper driftlines during storm events or high spring tides. This drift material is often partially buried by wind-blown sand and in April plants grow from these rhizome packages. Only rarely does American beachgrass reproduce by seed. Only once in the 6 years that I studied dune development on the Nauset Spit System did I see beachgrass seedlings that survived more than a few damp weeks. Beachgrass is so successful at expanding from these fragments that

some dunes may be made up of only one or two genetically different individuals.

We can facilitate dune development with plantings. In the 1970s, the Army Corps of Engineers sought the most vigorous individuals of beachgrass to propagate for dune restoration. Beachgrass grows naturally from NC to the Canadian Maritimes, but is most vigorous in New England. Plants from Sandwich were selected as best for restoration and were produced in the thousands for dune projects. Plants are developed until the winter dormant stage and then harvested and planted with the base of the overwintering unit set near the wet/dry sand interface. As long as these areas are not flooded by the tide during the growing season, a new dune can be established quickly.

Each barrier beach inlet cycle at Nauset/North Beach moves the barrier beach farther west at a rate of 6 to 8 feet cumulatively over time. From one summer to the next the beach may look the same to the periodic visitor, but much happens in the intervening months—much that is engineered by beachgrass and its remarkable properties.





Black eyed susan



New England aster



Common blue violet

Cape-Friendly Landscapes

By Kristin Andres | Associate Director for Education & Informational Services, APCC

What we each do on our own piece of Cape Cod has a cumulative impact on the natural resources we all value and that are the heart of Cape Cod. Water, our most precious resource, has been negatively impacted by wastewater, stormwater runoff, and use of yard fertilizers and pesticides. Excess nutrients fuel algal blooms in our coastal waterways and degrade the marine habitat. Pesticides are not species specific—they kill pollinators and other beneficial insects. Choices we make in how we design our landscapes, what we choose to plant, and how we care for our properties all make a difference in the health of Cape Cod's natural environment.

Vegetation, especially along the coastline, is important for holding soils and preventing erosion, intercepting stormwater runoff, and supporting wildlife. Native plants are the best choice as they are well-adapted to our poor soils, and many are salt spray and drought tolerant. Native plants support endemic insects and wildlife.

CapeCodNativePlants.org is an online plant selector to help you choose the best native plants for your site.

Densely plant native species landward from the top of a coastal bank, salt marsh, or lowland and allow to naturalize. Lawns do little for managing stormwater and have no wildlife value. Scaling back lawns and planting a diversity of appropriate native shrubs in wide swaths between developed areas and the bay or even roadways will help manage stormwater and support nature.

Guidelines for Cape-friendly Landscapes is a new publication by the Association to Preserve Cape Cod (APCC) for those who wish to learn how to be better land stewards. The Guidelines provides landscape choices in design and land care that each homeowner can take that will contribute to the protection of water quality, support of pollinators and birds, and local food webs. Purchase online or read online at APCC.org.



Fall 2023 Grant Acknowledgements



FOPB is pleased to announce the receipt of a \$4,000 general support grant from the Cape and Atlantic Challenge Fund of the Cape Cod Foundation. One aim of The Challenge Fund is to support maritime youth adventures, which the FOPB does through its educational grants and through its support of Pleasant Bay Community Boating.

The Cape Cod Foundation is a community foundation that was established in 1989, and currently manages over 300 funds with assets exceeding \$90 million. We are grateful for this support in forwarding the excellent work of FOPB.

FOPB is also pleased to support the PLEASANT BAY CLIMATE ADAPTATION FORUM – which was held on October 21, 2023 at the Chatham Community Center, which included presentations and engagement about ongoing projects in Pleasant Bay, understanding the environmental threats, and how individuals and groups can provide feedback on solutions.

In Memoriam

Corliss Primavera passed away suddenly and unexpectedly on July 22, 2023. Corliss was an FOPB board member and a dear friend to many of us on Cape Cod and beyond. Her passing leaves a gaping hole in our hearts and in the environmental advocacy community on Cape Cod.

Corliss was a proud member of the Nickerson family, and lived on a property along the Bay that had been in the family since the 1600's. Those of us lucky enough to spend time there were struck by the beautiful paintings on the wall, most crafted by either Corliss or her mother Jean, by the stacks of books that always surrounded Corliss, and by one or more cats who never wanted to leave her side. No meeting or social event with Corliss was complete without her delicious homemade treats.

Corliss grew up outside of Washington, DC, and lived many years outside of Boston before retiring to Pleasant Bay in East Harwich to care

for her parents Thomas and Jean (Nickerson) Primavera. She is survived by her brother Gary Primavera and his wife Christine, and nieces Stephanie and Kendra. Corliss was a proud graduate of Denison University in Granville, Ohio, where she received a strong liberal arts education with a concentration in French literature. She had a storied career in the enforcement division of the Securities and Exchange Commission, where she was beloved for her cool demeanor under trying conditions.

Corliss leaves behind scores of friends from her long list of affiliations driven by her diverse interests. Friends from her painting classes marvel at how quickly she gained expertise. Her yoga companions were inspired by her flexibility and her willingness to try anything. Her work colleagues have missed the compassion and humanity she brought to the workplace every day. People all over the Northeast will notice an empty seat at a poker game, a concert, a ballet performance or a board meeting, and think about Corliss and her ever-present smile.



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