DUXBURY BEACH RESERVATION, INC.℠

2024 Impact Report

Photo by: Laurie Wenham

PRESERVE. PROTECT. ENJOY.

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DUXBURY BEACH RESERVATION, INC.

Executive Director Summary

2024 Coastal communities around the world experience flooding every day and Duxbury Beach is no exception. As a barrier beach helping to protect the shorelines of Duxbury, Kingston and parts of Marshfield and Plymouth, this dynamic coastal landform also plays an important recreational role for residents of Duxbury and across Eastern Massachusetts.

Increased frequency and intensity of storm events compound local tides with storm surge. Sunny day flooding inundates low-lying areas at the southern end of our property during extreme high tides. These occurrences impact beach width, coastal biodiversity and beach access.

DBR is no stranger to the need for coastal resilience projects to address coastal storms and flooding. For more than a decade, DBR has pursued climate adaptation and nature-based solutions focused on the protection, management, and restoration of Duxbury Beach. This approach not only counteracts coastal erosion and preserves coastal functions, but also provides space for recreation.

In the past, DBR's focus was to maintain and restore the barrier. Now with strong professional staff, clear strategy and permits in hand, the emphasis has turn towards proactively stabilizing the barrier, prioritizing areas of concern. Sand nourishment projects are crucial for Duxbury Beach's sediment starved system due to armoring to the north. With sand being a largest export in Massachusetts and supplies dwindling, DBR faces strong competition for limited resources. This challenge is not going away. DBR is implementing innovative solutions, such as partnering with land developers and construction companies to secure sand, obtaining a 10-year permit for nourishment in anticipation of future projects and designing auditor-approved protocols for substantial in-kind donations.

Municipal resiliency planners and beach managers alike are seeing significant competition for funding for coastal resiliency projects on a state and federal level. DBR cannot solely rely on grants, nor can we expect fundraising to exclusively support Duxbury Beach. The organization needs to continue exploring opportunities to diversify and increase our income streams to ensure stability of the barrier beach and the organization for the next 100 years.

Community outreach is key to addressing many of our challenges. Building strong relationships with nonprofit organizations, state and town officials, construction firms, and local residents is essential to our mission. DBR's leadership, both in actions and advocacy, plays a vital role in guiding the Town's coastal resilience efforts.

As I often say, as floodwaters recede, so do memories. With countless news stories vying for attention, it is DBR's responsibility to educate and engage residents on the critical importance of preserving Duxbury Beach to safeguard the Duxbury way of life.

Thank you for being part of this important work.

DUXBURY BEACH RESERVATION, INC.

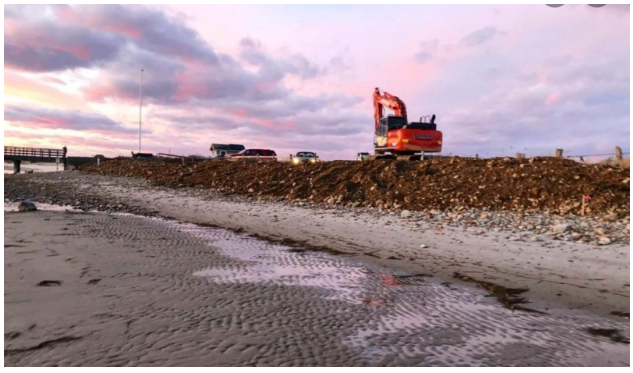
Management Report

DBR FY24 Management Achievements

- Successfully completed a fully **privately- funded dune nourishment** project between the Powder Point Bridge and Crossover 1.
- Secured over 108,375 tons of privately donated materials, resulting in **$1,463,073 in DBR cost savings** ($13.50/ton).
- Secured a unique 10-year federal permit, allowing DBR to place 738,000 cubic yards of compatible material within a 110-acre footprint **below the high tide line**.
- Awarded the **Platinum Seal of Transparency** from Candid GuideStar, a national three-party evaluator of financial transparency of non-profits.

Platinum Transparency 2024

Candid.



Photos from the winter 2024 dune nourishment project provided by Duxbury Construction

Key Program & Department Accomplishments

- **Strategy:** Finalized Duxbury Beach Reservation (DBR)'s 3-5 year strategic plan
- **Community Outreach:** Organized two public forums focused on Duxbury Beach Access, Coastal Protection, and Community Resilience
- **Development:** Created a strategic approach for the Executive Director to engage high-potential donors, including personalized site tours and one-on-one meetings to gauge interest and cultivate relationships, ultimately leading to donations
- **Management:** Advanced efforts to address legal concerns and clarify property boundaries

2024 Special Project: Earth Removal and In-Kind Donation Program

- Constructed a DBR protocol to engage with contractors to secure compatible material through permitted development plans
- Developed an IRS-approved protocol for accepting material as an in-kind donation
- Engaged a coastal engineering firm to determine an opinion of cost for sourcing compatible sand for Duxbury Beach

Photo from our January 2024 Community Forum

Winter 2024 project photo by Stewart Ting Chong

Regional Partnerships

- Authored several DBR proposals to collaborate with the Town of Duxbury
- Facilitated the Massachusetts Beach Managers group which met monthly to share objectives, best practices, and insights
- Secured partnerships with multiple South Shore towns to explore alternative material sourcing for future nourishment projects

DUXBURY BEACH RESERVATION, INC.

Innovative Solutions

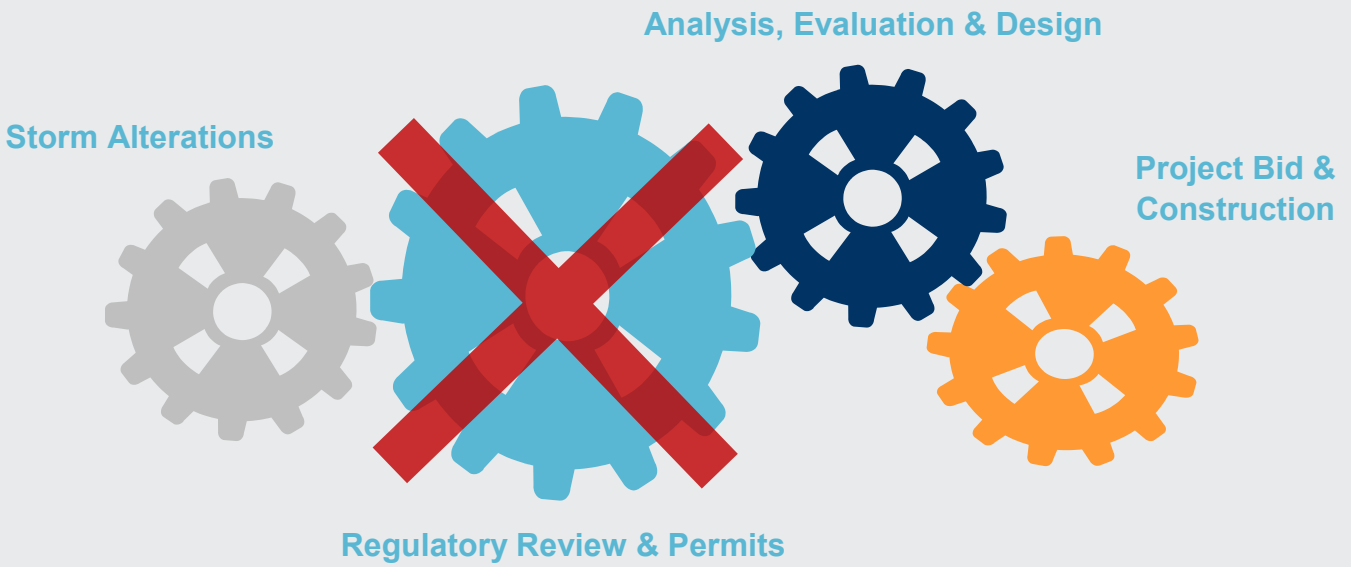
Looking to the Future

Innovation is what sets DBR apart from other organizations. Striving to be **flexible** with our barrier beach management. **Seizing** opportunities when they arise and **creating** opportunities when they don't exist.

The 2017 Woods Hole Group's (WHG) Coastal Processes Study and Resiliency Report proposed nine nature-based projects to protect both ecological and recreational uses while enhancing storm damage protection. Duxbury Beach Reservation (DBR) adopted the plan as part of its Coastal Resilience Strategy, completing the first project in 2019. However, the two-year timeline proved unrealistic due to the beach's constantly changing conditions.

Opportunity Knocks...

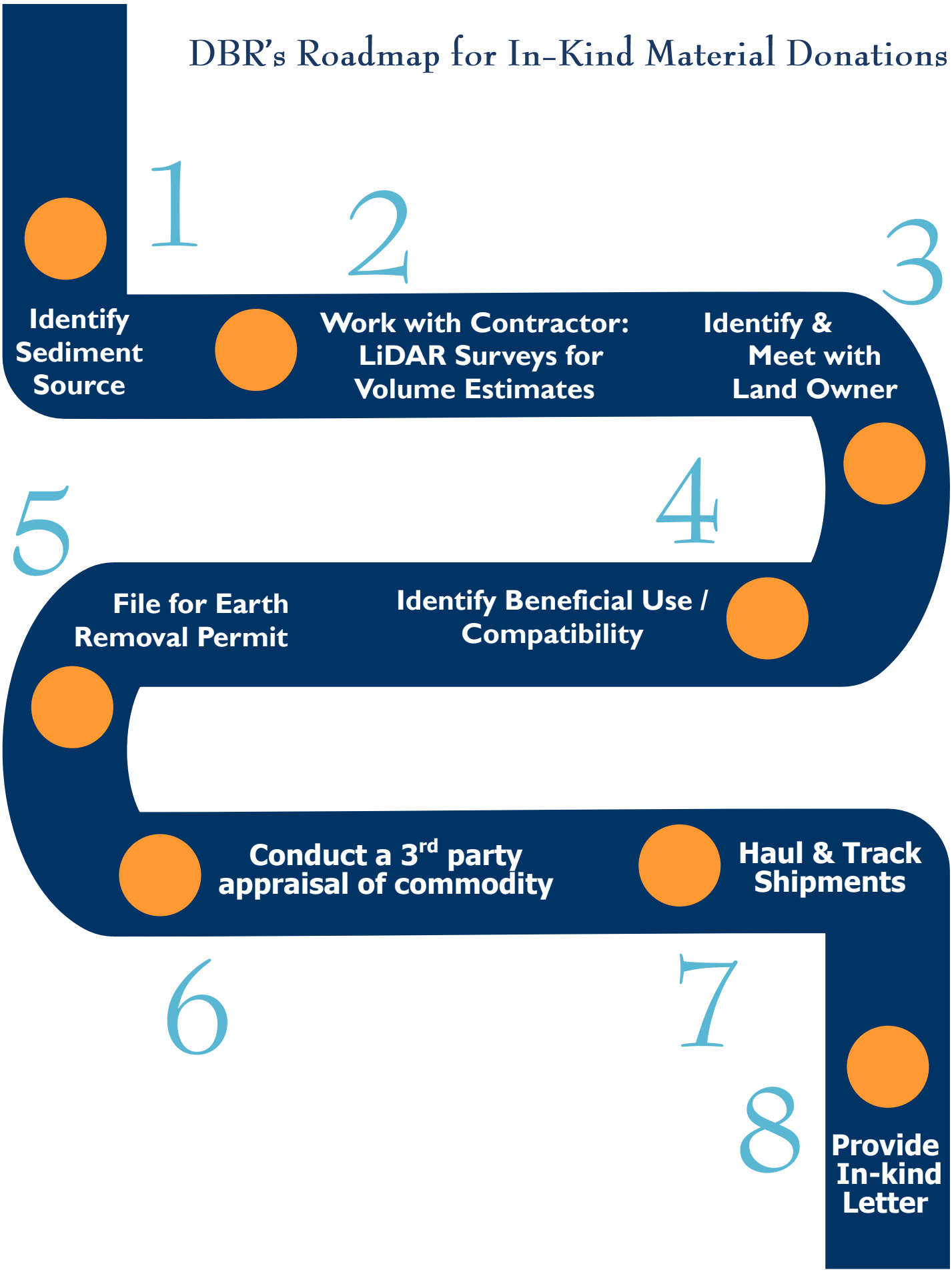
To ensure we could act swiftly when materials or funding become available, DBR needed to obtain permits in advance. These opportunities are time-sensitive and demand immediate action. The existing multi-year project process would cause DBR to miss out on these critical opportunities.



The solution was to file with multiple State and Federal agencies requesting permits simultaneously. In 2020, DBR secured a CZM grant and began the process with WHG to acquire permits covering 3.8 miles of beach. In September 2024, after three and a half years, the final Army Corps of Engineers' permit (extendable up to 10-years) was secured.

Thus, DBR has eliminated the longest step in the coastal resilience management process!

DBR's Roadmap for In-Kind Material Donations



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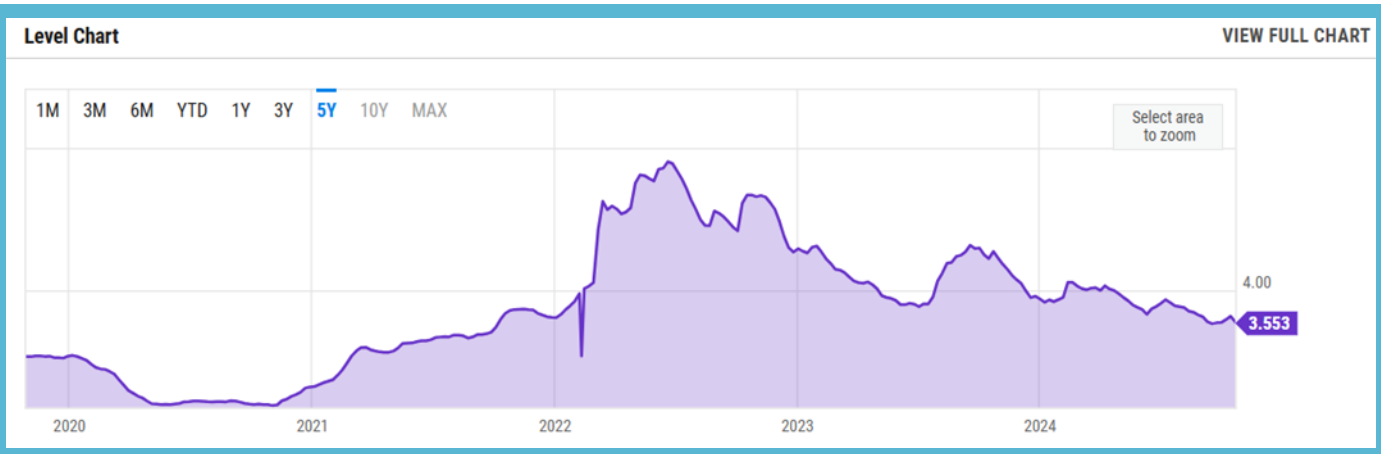
Industry Spotlight

Sandy Facts:

- Sand and aggregates are the most extracted materials on earth
- Supply decreasing, leading quarries to hold out to the higher buyers
- Competitive market encompassing multiple industries
- Towns are executing moratoriums
- Shopping malls are a thing of the past



Retail diesel price 2020-2024.

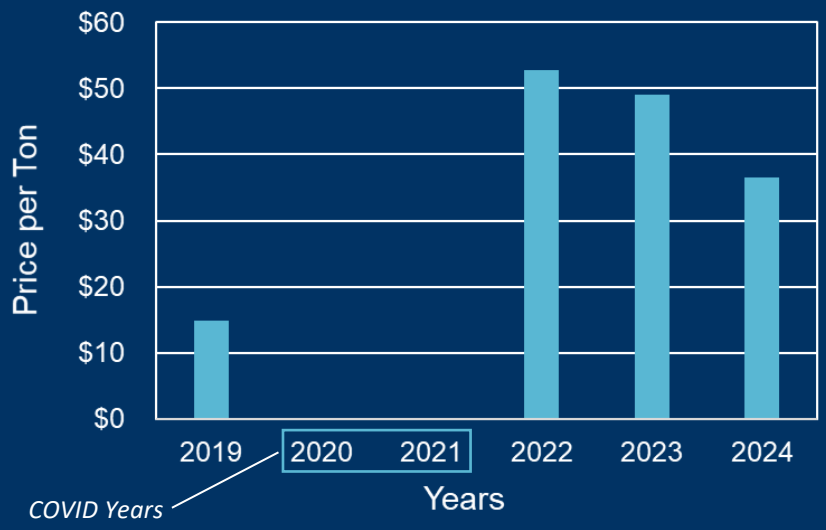
Delivery = Distance x Diesel

Retail diesel price saw a significant jump from a $2.39/gal in May 18, 2020 to a high of $5.81 in June 27, 2022. The increase has not dissuaded buyers from traveling in excess of 100 miles (round trip) to acquire product.

Cobble in the mid-size range (4”– 6”) which Duxbury Beach looks to acquire for bayside nourishment has also seen an increase in price. However, the more difficult step is to source it. Cobble size and shape matters and if quarries are not sieving sand, then the required cobble quantities are not readily available.

Material Costs

Over the past five years, the price per ton of compatible sand in Duxbury has risen significantly. Since materials can account for over 80% of total project costs, even small price increases can have a substantial impact.



The Need for Coastal Resilience Projects

Coastal resiliency projects are carried out to enable a shoreline to "bounce back" and adapt to changing conditions. This technique can basically be thought of as storm risk management projects.

Material costs tend to rise following regional emergencies, as increased demand and competition drive up prices. Beach managers are often forced to source materials from more distant locations, further increasing the price per ton due to the added transportation costs. After Super-storm Sandy, sand per Ton costs saw a dramatic price increase but that was not the only concern. When beach managers were able to source sand, the largest growers of American Beach Grass (*Ammophila*) ran out of product. This dominant plant in the Northeast is critical as the dense, clumped shoot allow for great sand accretion and are considered the "rebar" of the dune, maintaining the dune structure.

OPPORTUNITIES DON'T HAPPEN, YOU CREATE THEM

Sand Scarcity	→	Find Different Sources
Prices Increasing	→	Create Alternative Payments
Delivery Distance Increases	→	Look Locally

DUXBURY BEACH RESERVATION, INC.

DBR Programs

BEACH OPERATIONS AND ACCESS: With multiple access points over several ecosystems, the Reservation continuously works to maintain and improve pedestrian and roadway access. Projects include a boardwalk and water access opportunities for people with mobility issues, fencing to guide visitors away from sensitive habitats, and maintaining pathways, crosswalks, and parking areas. A building at High Pines serves as the storage and maintenance center, housing vehicles, fencing materials, and historical records. This Reservation-owned property is the on-site home base for 45+ seasonal employees of the Coastal Ecology Program where they attend training and review data collection.

COASTAL RESILIENCE: DBR utilizes a green infrastructure approach to coastal management. This approach involves coastal resiliency projects to create living shorelines using native vegetation, dune, and beach nourishment to reduce wave and wind velocity and minimize storm alterations. To proactively strengthen and preserve the barrier beach, the Reservation works with partners to monitor changes in the barrier beach, model future predictive processes, and analyze outcomes. Large-scale projects are undertaken, supported by data-driven analysis. This continuous maintenance includes materials from fine sand to cobble, beach grass to woody vegetation, and fence installation where appropriate.

COASTAL ECOLOGY: The coastal ecology program researches and manages projects that preserve the beach and salt marsh, and protect the native vegetation and wildlife. Projects include invasive plant management and native plantings; species inventorying to determine baseline populations and species habitat usage on-site; and maintenance of multiple ecosystems – from rocky intertidal and mudflats to dunes and salt marshes. An important focus of the coastal ecology program is the protection of state and federally listed species on Duxbury Beach. DBR has developed an extensive and robust training, monitoring, and reporting program to track and manage listed species.

COMMUNITY OUTREACH AND EDUCATION: DBR works year-round to ensure visitors, local communities and other stakeholders understand and appreciate the importance of Duxbury Beach as a barrier that protects the shoreline. This messaging is vital as the intensity and frequency of storms increase due to climate change. This work is accomplished through Reservation supported, on-site public education programs in partnership with South Shore-based organizations ranging from municipal school systems to environmentally-focused non-profits. The Reservation's mission is supported through community outreach, including events, education programs, communications, and volunteer opportunities.

DUXBURY BEACH PARK: Duxbury Beach Park is located at the beach's northern end and is open to visitors for a daily parking fee. Folks come to bike, swim, paddle or simply rest on the beach and enjoy the outdoors. Located on-site is a full-service bathhouse along with a snack shop and restaurant open during the summer months. The Reservation maintains a guarded swimming area, the building, and the parking lots, all of which offer ADA accessibility. The natural shoreline is preserved through coastal resiliency projects including vegetation and dune/beach nourishment.

DUXBURY BEACH RESERVATION, INC.

Beach Operations & Access

2024 Overview

DBR continued efforts in 2024 to improve beach access through facilities and infrastructure work, beneficial updates to recreational permits, coordination with Town of Duxbury staff, and increased communication with access stakeholders. Due to extensive predation of eggs and chicks as well as hot weather throughout July, temporary closures for chicks crossing the roadway as well as restrictions to recreational oversand driving were less impactful compared to recent years. New initiatives meant to reduce nesting bird impacts were partially implemented in 2024 but may prove beneficial in 2025.

2024 Timeline

Dec '23	DBR submits new COI permit including new addition: escorting
Jan	Beach Ops and DBR begin meeting to prep state-required escorting materials
March	DBR, Beach Ops, and SDB begin coordinating deterrence efforts
April	Work with volunteers to deploy pallets and flagging in deterrence area. Beach Ops & DBR begin raking.
June	DBR receives state approval for escorting
July	OSV beach reopens
Aug	COI implementation ends

Walk-on & OSV Access

COI Permit DBR continued to take advantage of the state's Habitat Conservation Plan to improve access despite an increasing population of nesting birds. The town requested DBR add "escorting past chicks" to the permit. This option has been available and discussed with the town previously. Unfortunately, the Town was unable to roll out the escorting program in 2024 to enable earlier OSV access. Due to enforcement concerns in 2023, the state gave DBR a 1 year permit for 2024 (typically 3 years) and mandated monthly check-ins with DBR and the Town of Duxbury. An updated enforcement plan was enacted to address state concerns.

Nesting Deterrents "Reduced proactive fencing around nests" (deterrence) is part of DBR's COI in the state's Habitat Conservation Plan. This has been used by DBR at the DBP overflow lot (unsuccessful) and the Resident Beach (successful) previously. DBR was limited to 2 acres of area, despite requests for an increase, and chicks may not be deterred. This limits the activity's potential effectiveness for opening up sections of the OSV. While it was not successful in 2024, it could be beneficial in future years.

Access Coordination

After April 1 beach work must be monitored by DBR Endangered Species staff to meet Mass Wildlife requirements. Access related work throughout the year requires close coordination with Beach Operations and other town staff:

- Monitored for **lifeguards chair** and **mobility mats install**
- Monitored for DPW maintenance of **Crossovers** 2 and 3
- Coordinated with Beach Ops, Duxbury Construction, and the Labor Day Party Committee to ensure access and set-up for the Town's annual **Labor Day Party**
- Contracted Duxbury Construction to ensure space for overflow parking in the Duxbury Beach Park overflow lot for the **Labor Day Party**
- Worked with Beach Ops to remove **fencing**, **mobility mats**, **boardwalk**, **northern guardhouse**, **pallets**, & **speed bumps**

Access Discussions with the Community

Duxbury Officials

- Select Board presentations about access and predator management
- Calls & meetings about access during the summer
- Weekly email updates to Town Manager

Beachgoers

- Weekly updates to Duxbury Clipper
- Updates on access concerns on DBR website
- Preparation for an access-focused forum in Dec 2024

Access Groups

- Pre-season meetings to answer questions
- Regular email updates & on-site meeting during the summer
- Post season discussion and 2025 planning

Gurnet & Saquish

- Regular email updates about roadway, Boathole, and Saquish crossover access during the nesting season
- Meeting with Gurnet Saquish Corp's Right of Way Committee

Infrastructure Maintenance & Improvements

- Installed new platform in front of the door at High Pines
- Ensured regular maintenance of DBR trucks which are vital to DBR summer operations
- Installed solar power cameras at High Pines to improve security
- Graded or spot-graded the roadway 2 times
- Repaired roadway post and cable and pathway sand
- Made large scale repairs to Crossover 1 prior to the beach season as part of the dune nourishment project
- Worked to remove large debris from the beach following storms
- Approved the addition of a second guardhouse at the north end of the Resident Parking Lot.

Images by: Joey Negreann (front), Brynna McGlathery (back)

DUXBURY BEACH RESERVATION, INC.

Coastal Resilience

2024 Overview

New Englanders are all too familiar with the damaging effects of winter nor'easters, but Duxbury Beach Reservation (DBR) must increasingly turn its attention to the bayside of the barrier where a swift moving channel, run-off from intense rainfall events, and flooding due to SSW storms are eroding the narrow berms and dunes. In 2024 DBR worked on several bayside focused projects, including restoration and monitoring, in addition to ongoing oceanside nourishment, fence maintenance, and dune plantings.

Proactive Planning & Protection

Winter 2024 Dune Nourishment DBR utilized existing plans and permits for large scale dune nourishment to take advantage of local, donated sediment to nourish a narrow and vulnerable section of the barrier beach. The nourishment continued the work done in 2023 and bolstered the area where the bay channel cuts close to the barrier, making oceanside nourishment vital.

Permitting Updates

- Woods Hole Group, on behalf of DBR, submitted permit extensions for the Orders of Conditions for the large scale oceanside nourishment and bayside erosion
- Control project as well as the roadway resiliency improvements project
- DBR received an Army Corps of Engineers Individual Permit (10 year permit) for beach nourishment amounting to 738,158 cubic yards over 110 acres below the high tide line.

2024 Dune Restoration Specs

4,300ft
Dune nourishment from the Bridge to Crossover 1

108,000 tons
Locally sourced, donated sand

16.5-17.5ft NAV-D88
Dune elevation

35-45ft
Dune crest width

24,000
Culms of American beach grass

320
Woody shrubs

$2million
Through private donations

Importance of Bayside Restoration

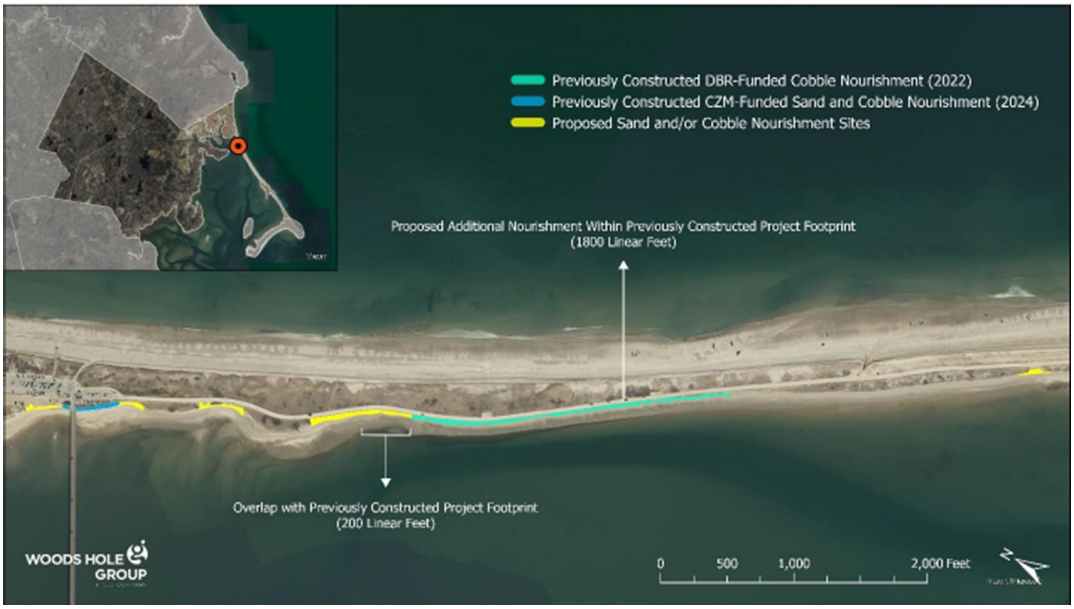
PRIOR TO RESTORATION

POST RESTORATION WORK

- **Dissipates wave energy**, allowing water to percolate through the large spaces between stones and reducing erosion
- Focuses on a section of bayside shoreline impacted by **adjacent high velocity in the bay**
- **Protects** the parking lots and roadway access

Upcoming Bayside Projects

- Total Project: $225,000
- Site survey, grain size analysis, and engineering design work
- Amend existing OOC for nourishment
- Construction of 1,250 linear feet of sand and/or cobble nourishment (and re-nourishment), est. 2,025 tons



Proposed locations for bayside restoration work in winter 2025 to protect the roadway, parking lots, and other beach infrastructure.

Site Monitoring

- In conjunction with WHG, DBR finished a two year FY23 CZM Coastal Resilience grant project focused on monitoring and education tools for cobble berms.
- DBR completed its first round of comprehensive drone surveys on the beach performed by the Center for Coastal Studies.
- DBR worked with Woods Hole Oceanographic Institute to set up an agreement that allowed for the installation of equipment that will measure ocean surface currents, waves, and winds at high resolution in the area offshore of Duxbury Beach and benefit both Duxbury Beach Reservations and the town of Duxbury's coastal resiliency planning and research on Massachusetts Bay's circulation.

Images by: Stewart Ting Chong (front), Woods Hole Group (back)

DUXBURY BEACH RESERVATION, INC.

2024 Coastal Resilience Project

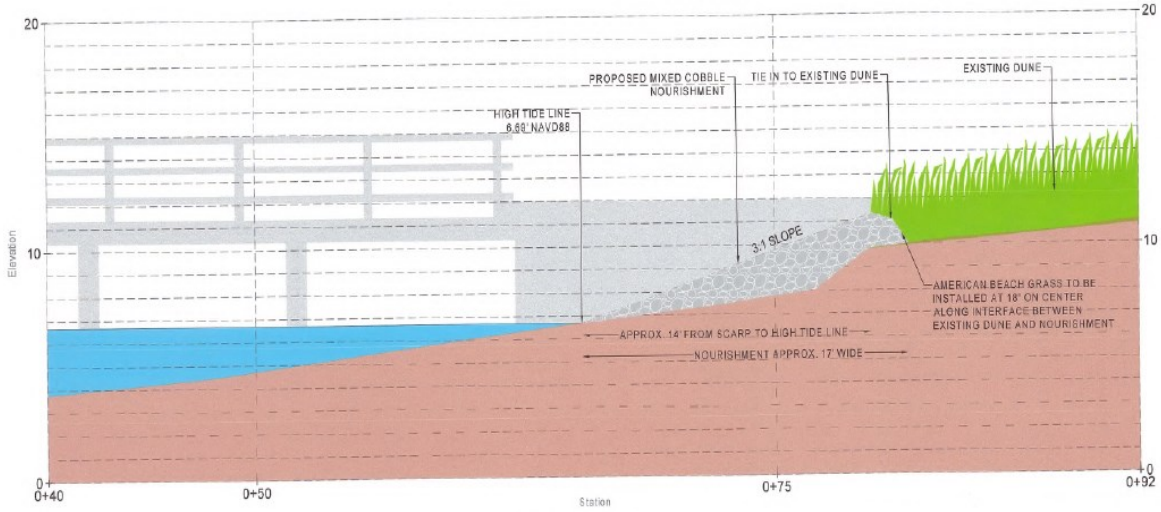
Project Overview

New Englanders are all too familiar with the damaging effects of winter nor'easters, but Duxbury Beach Reservation (DBR) must increasingly turn its attention to the bayside of the barrier where a swift moving channel, run-off from intense rainfall events, and flooding due to SSW storms are eroding the narrow berms and dunes. And so, as erosion continues from both oceanside and bayside, the barrier becomes ever narrower, prompting the need to plan for long-term maintenance of vulnerable areas. One such area exists north and south of the Powder Point Bridge on Duxbury Beach, threatening the parking lots and bridge abutment. DBR received a Coastal Zone Management (CZM) Coastal Resilience grant to fund 75% of a project to restore and protect this area through construction of a mixed sediment berm and two stormwater swales to reduce run-off. Both components were completed in winter 2024.

Project Benefits

- **Dissipates wave energy**, allowing water to percolate through the large spaces between the stones and reducing erosion
- Focuses on a specific section of bayside shoreline impacted by the **adjacent high velocity channel**
- **Provides flexibility** for periodic maintenance with smaller nourishment projects
- **Protects** the parking lots and access to the southern two-thirds of Duxbury Beach

Bayside Berm Restoration



One of several berm profiles used to re-nourish the bayside mixed sediment berm on Duxbury Beach. During the design process, it was important to keep the toe of the berm above the high tide line to adhere to permits and keep material out of the swift moving channel.

Project Specs

3:1

Slope established for bayside berm

744

Tons of material—a mix of sand and cobble to match existing conditions

$42,124

Matching grant funds by DBR

300ft

Total bayside shoreline restored

700

Culms of American beach grass

2016 sq. ft

Infiltration area provided by swales

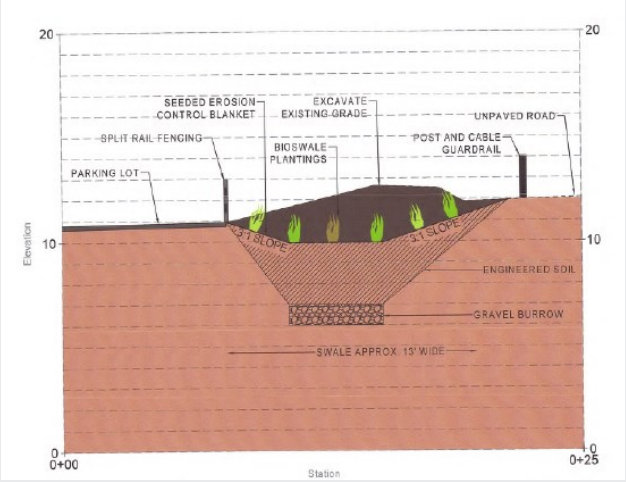
150 plant plugs

Native vegetation in swales

Before & After Restoration

Stormwater Swales

Following several episodes of heavy rainfall in July 2023, it became clear that the bayside south of the Powder Point Bridge was endangered not only by erosional forces in the bay but also from stormwater flowing off the Resident Parking Lot. Two swales were added to the project design to address this secondary source of erosion. The .05 acres of area provide suitable infiltration capacity for up to 1.3" of rainfall, which will lessen the run-off reaching the bayside berm. The swales are connected by a pipe to maximize capacity. Coastal salt tolerant plantings, including American beach grass, little bluestem, switchgrass, and seaside goldenrod were planted throughout each swale.



Stormwater swale cross-section

Images by: Woods Hole Group

Coastal Ecology

2024 Overview

This year marked substantial changes for the Coastal Ecology Program, with newly promoted staff assuming the roles of Reservation Coordinator and Field Coordinator. Dedicated staff enhanced the DBR's holistic approach to coastal management with the addition of a seasonal vegetation technician and through collaborations with established environmental and engineering organizations.

A Snowy Owl at Duxbury Beach. Photo by George Morgan Photography

Removing Invasive Plant Species

Each year, DBR staff and volunteers work to remove invasive plants from the beach. Invasive species often outcompete native plants for space and have shallow root systems, which can increase erosion and weaken the barrier beach. This summer, DBR's vegetation technician mapped invasive plant patches and targeted seven species for removal. The primary focus was Japanese knotweed and spotted knapweed. A total of 370 hours were spent removing 93 contractor bags (24-gallon each) of invasive plants. By removing flowering plants, no new seeds are added to the seed bank, and over time, this effort helps reduce the presence of invasive species on the beach.

Before:

After:

A patch of Japanese knotweed (volunteer for scale) before and after removal work Photo Credit: Hannah Werdmuller

Weather Station Installation

The Woods Hole Oceanographic Institution placed a research station on DBR property at Duxbury Beach Park as one of 10 coastal beaches from ME to RI measuring offshore conditions. The experiment will run September 2024 through 2026. The equipment measures ocean surface currents, waves, and winds at high resolution in the area offshore of Duxbury Beach and benefits both Duxbury Beach Reservation. Understanding ocean currents and off shore waves can help DBR factor in site-specific weather conditions and impacts on sediment transport.

Partners in Science

Each year, Duxbury Beach Reservation (DBR) collaborates with various organizations to conduct scientific research on the beach, and this year was no exception. In 2024, DBR coordinated efforts with seven key partners: Woods Hole Group, Stone Living Lab, Manomet Conservation Sciences, Whale and Dolphin Conservation, the National Oceanic and Atmospheric Administration (NOAA), Woods Hole Oceanographic Institution (WHOI), and the North South River Watershed Association (NSRWA). These partnerships are invaluable, providing DBR with critical insights into the Duxbury Beach ecosystem and contributing to broader scientific research efforts across Massachusetts.

A saltmarsh sediment trap showing accretion at the northern marshes near Duxbury Beach Park. Photo Credit: Alex Mansfield

Horseshoe Crab Surveys

For the past 16 years, DBR has collaborated with Mass Bays and North South River Watershed Association to conduct horseshoe crab spawning surveys in Duxbury Bay. This year marked the first time that harvest closure regulations were implemented in Massachusetts waters, from April 15 to June 7, aligning with the crabs' spawning season to protect this critical stage of their life cycle. The 2024 surveys will help to evaluate the long-term benefits of these new measures for horseshoe crabs. Survey results showed that spawning activity peaked during the May new moon, and the highest density recorded during the May full moon. The total density of horseshoe crabs and spawning rates were similar to 2023.

Horseshoe crabs spawning on Duxbury Beach. Photo Credit:

Dunes revegetate naturally!

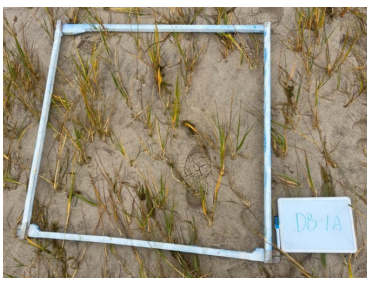
Following the 2024 dune nourishment project between the Resident Lot and Crossover 1, volunteers planted 24,000 beach grass culms and 320 woody plants (beach plum and bayberry). DBR's vegetation technician conducted a comprehensive inventory of plants that emerged on the nourished dune, yielding surprising results. A total of 74 plant species were identified, excluding the planted vegetation:

- 37 native species
- 34 non-native species
- 3 invasive species

Early detection of these invasive plants is critical for preventing future issues. These findings are remarkable for just one growing season!

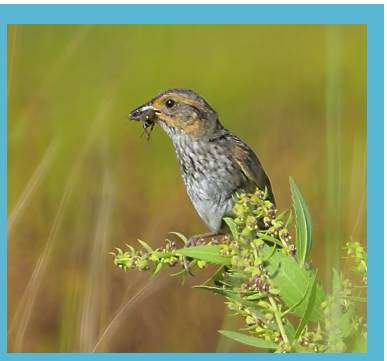
Cobble Berm Impacts

During 2023 and 2024, DBR participated in a study to assess the effectiveness of cobble berms and their impact on biodiversity. Stone Living Lab and graduate students from the University of MA, Boston and Colby College employed four primary sampling methods on Duxbury Beach: quadrat surveys, fish and crab traps, seine netting and Baited Remote Intertidal Videos. The findings suggested cobble berms may enhance overall species richness, with no net ecological loss.



Saltmarsh Sparrows Nesting at High Pines!

Since 2022 Volunteers Rusty and Peter Briggs have braved heat and greenheads to help survey for Saltmarsh Sparrows. The goal is to determine how this declining species may be using the saltmarshes on Duxbury Beach. Focusing on the saltmarsh north and south of High Pines surveys were preformed every few weeks. Through these surveys Saltmarsh Sparrows have been confirmed to be present during the summers of 2022 and 2023 but it was not until this season that breeding behavior was observed. In one survey an adult Saltmarsh Sparrow was seen carrying food (left, a behavior associated with nestlings) and on another a juvenile bird was documented!



A Saltmarsh Sparrow carrying food. Photo Credit: Rusty

Manomet International Shorebird Surveys at Duxbury Beach

In 2024, volunteers marked the 50th year of conducting International Shorebird Surveys (ISS) for Manomet. During an ISS, staff and volunteers cover as much of Duxbury Beach as possible, counting all migrating shorebirds observed. Since the program's inception in 1974, Duxbury Beach has been an ISS site. Data collected from the beach indicates that shorebirds are among the fastest-declining bird groups in North America. Over the past two years, Manomet has expanded the effort, coordinating surveys at nearby ISS sites crucial for migrating shorebirds. On August 5th, staff from DBR and Manomet, along with volunteers, conducted ISS simultaneously at Duxbury Beach, Saquish, and Plymouth Beach during the same high tide. High counts on Duxbury Beach included:

1,901	1,038	490	64	37
Semipalmated Sandpipers	**Semipalmated Plovers**	**Sanderlings**	**Ruddy Turnstones**	**Black-bellied Plovers**

Participating in ISS allows DBR to maintain accurate bird species counts, which helps determine eligibility for specific grants.

Duxbury Beach (173 Surveys)

Bin Start Start	1974	1978	1983	1988	1993	1998	2003	2008	2013	2018
Bin Year End	1977	1982	1987	1992	1997	2002	2007	2012	2017	2022
Black-bellied Plover	540	18	460		724	290	64		229	347
Dunlin	8500	0	540		355	145	450		816	1282
Red Knot	240	0	100		645	500	1		98	61
Ruddy Turnstone	115	0	650		98	50	38		373	338
Sanderling	800	0	1000		2150	431	300		2014	663
Semipalmated Plover	255	0	75		1131	220	30		1172	1727
Semipalmated Sandpiper	2600	0	800		4570	1380	833		3727	3927
Short-billed Dowitcher	390	100	80		297	272	0		241	261

Survey Data Historic ISS data from Duxbury Beach surveys. Darker green cells indicate higher numbers of birds and yellow are the high counts for that species.

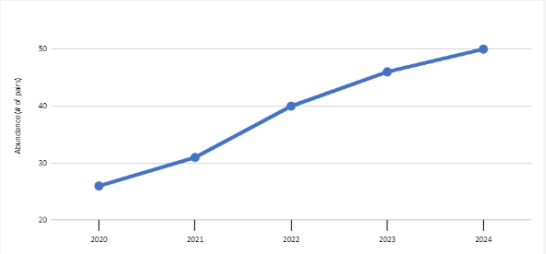
Endangered Species Program

2024 was notably difficult for both Piping Plovers and Least Tern nests and chicks due to increased predation by crows, coyotes, and weasels. On the brighter side "Pinky" a banded adult male Piping Plover with a pink flag around his leg returned for his seventh year of nesting at Duxbury Beach and successfully fledged two chicks! Pinky was joined by four other green flagged plovers. Birds with field readable "flags" help DBR shorebird staff to associate individuals with nests and increases data accuracy throughout the season. Pinky was originally banded in the Bahamas, three of the green flagged birds were banded in North Carolina during migration, and one green flagged bird was banded last summer on Fire Island on Long Island.

The green flagged adult male Piping Plover 40E at Duxbury Beach this

Piping Plover

In 2024, 50 pairs nested on Duxbury Beach. A record high and an increase from 46 pairs in 2023. Despite the increase in pair numbers overall productivity on Duxbury Beach was lower than in past years. Only 43 chicks fledged this season whereas 51 fledged in 2023.



Piping Plover pairs on Duxbury Beach 2020-2024.

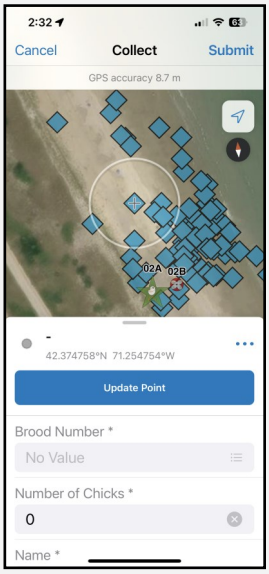
Least Tern

Historically, on Duxbury Beach Least Terns nest in six distinct colonies. This season some intrepid pairs pioneered a new colony on the bayside south of High Pines. Across these seven colonies a total of 385 pairs nested, similar to the 353 that nested in 2023. Least Tern productivity was poor with only 12 chicks fledged, compared to 130 in 2023.

Least Tern and chick. Photo Credit: Joey Negreann

Mapping for Management

In 2023, DBR staff began using ArcGIS field apps for in-field plover and tern data collection. In 2024 the process was expanded to improve in-field surveying for the DBR staff, while also providing staff real-time access to data. The timely availability of information allows for even more efficient management decisions for all recreational access.



Left—Data entry via the Field Maps app that DBR field staff used through the season.

Check out some more stats from the 2024 season:

Plover Brood Total Crossings	**60**	**American Oystercatcher Nests** (First time in many years!)	**1**
Max Crossings/day	**7**	**Common Tern Nests** (First time in two years!)	**2**

DUXBURY BEACH RESERVATION, INC.

Community Outreach

2024 Overview

In 2024, DBR took on several initiatives to improve community engagement, conservation, and beach management. Volunteers played a key role in various events, including the successful Fall Beach Cleanup, contributing hundreds of volunteer hours. Special projects included the install of Litter Stations and Big Belly trash cans to improve waste management. DBR worked on upgrading signage around parking areas and beach access points to enhance communication.

Education

DBR staff hosted a variety of educational opportunities throughout the year focused on introducing the community to our work and providing information about ongoing efforts and challenges. All programs at the beach are coordinated with Town Beach Ops.

School field trip at Duxbury Beach June 2024.

Summer Beach Programs

In its 39th year, DBR contracted Mass Audubon educators to offer drop-in programs for free in July and August, attracting 425 visitors. Program topics varied, including endangered species, climate change, and beach conservation, with outreach promoted through local senior centers, websites, and the Clipper calendar.

HCP Grant

Four underserved South Shore schools (387 students) visited Duxbury Beach under the grant. Mass Audubon and DBMS educators taught lessons on endangered species, and balancing regulations with beach access. The grant funded eight Beach Info Tables at two spots, featuring touchable items for children. 256 visitors stopped by the tables.

Programs

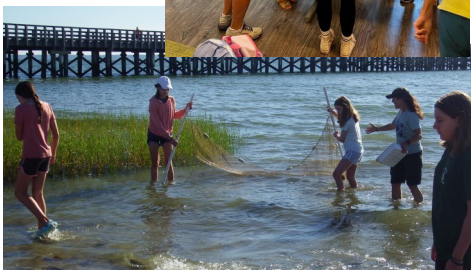
Two community forums were hosted by DBR in 2024. A total of 249 people attended the forums. Offered in-person and remotely, the forums addressed beach access concerns and beach nourishment projects and encouraged community interaction.

Schools

As part of a long standing town tradition, 500 students from four Duxbury school grades participated in beach-based outdoor learning. DBR staff led sessions during the Kindergarten field trip highlighting the significance of beach grass and vegetation.

Groups

Community Outreach DBR staff and volunteers engaged ~225 people at events like DBMS' Opening of the Bay, a library drop-in, and Out to See Duxbury (in conjunction with Duxbury Community Collaborative). Messaging and materials were developed to highlight DBR programs and efforts. DBR hosted 3 Duxbury Free Library "pop-ups" on the beach. Library staff were present to encourage summer reading and sign visitors up for library cards.



Community Groups In FY24, Duxbury Beach hosted 10 corporate and nonprofit outings. Staff coordinated and hosted 685 visitors for outdoor learning and social events.

Events & Volunteers

Volunteers play an integral role within the DBR organization. Events were scheduled during FY24 with a goal of reaching new volunteers and building our DBR community.

- Dog Days: this **new** outreach event had a very successful launch with approx. 100 furry participants and their owners
- Fall Beach Cleanup: **157 registered participants = 471 hours**; Trustees and staff hosted an Information Table with snacks and drinks
- Saltmarsh Sparrow Surveys: 2 volunteers = 28 hours
    - Surveys for presence of listed Saltmarsh Sparrows
    - Findings & Next Steps: Surveys found evidence of nesting near High Pines. Work will continue in 2025.
- Website updates**:** 1 volunteer = 20 hours

Special Projects

Litter Stations Litter Station have been a long time goal of DBR's and so staff jumped on the chance when approached by a Duxbury High School student interested in developing and installing one. The Litter Station consists of buckets that visitors can borrow for litter pickup as they walk the beach. Stations were installed at the Resident Lot and at Duxbury Beach Park. Funds were also raised to purchase and install 2 Big Belly trash cans at Duxbury Beach Park. These cans feature a compactor inside to more efficiently hold trash. The cans were installed in July. Results have been mixed and some finetuning is needed before next season.

Research Duxbury Beach continues to provide hands-on learning for college students. Building on last year's CAP project, Worcester Polytechnical Institute students developed and presented the final report on the feasibility and engineering of adaptable boardwalks for shifting sand and dunes. DBR met with the group to provide insights on dune restoration and wildlife impacts. In addition, the Northeastern University graduate student researching marsh grass genetics scheduled several site visits during the past year.

Signage DBR continues to work with Beach Ops and Duxbury Beach Park staff to upgrade signage around the parking lots. This year's focus was to reduce the number of signs at the crossovers and entrance to the back road while still communicating regulations.

DUXBURY BEACH RESERVATION, INC.

Duxbury Beach Park

2024 Overview

Duxbury Beach Park (DBP) has been a fixture on the South Shore for the past 85 years. Visitors come from communities across Massachusetts, most commonly, Boston and its western suburbs. Access to Duxbury Beach Park is open to all via parking for a daily fee. Amenities include restrooms, snack bar, restaurant, lifeguards, accessible boardwalk and parking for more than 400 cars in the main lot. Parking is open Memorial Day to Labor Day from 9am-8pm with lifeguards on -duty. The restaurant is open in the evenings.

The Duxbury Beach Park lot was built in 1931 when T. Waldo Herrick began managing the site. He was followed by Ralph & Thelma Blakeman, park managers for 38 years. DBR's current managers, Dana & Missy Battista, took over in 2001. The "Pavilion" or Blakeman's as it is commonly called, was build in 1941. The building was heavily damaged in 1991's No-Name storm.

During the summer months, staff is present at the building 24 hrs/day to provide security as the majority of the building is screened with easy access. Other security concerns include people accessing the parking lot after hours, fires on the beach, and off-hours group gatherings. DBP staff walk the beach each morning before opening to remove any debris that washed up or is left from the previous day. They also ensure that the parking lot is clean and trash cans emptied.

Community Engagement

In addition to offering free parking for residents during the annual Labor Day Bonfire, Duxbury Beach Park hosts school and summer camp groups. Offering restrooms and snacks, this draws groups from as far away as Belmont. A total of **7 groups with 332 visitors** enjoyed the site in FY24.

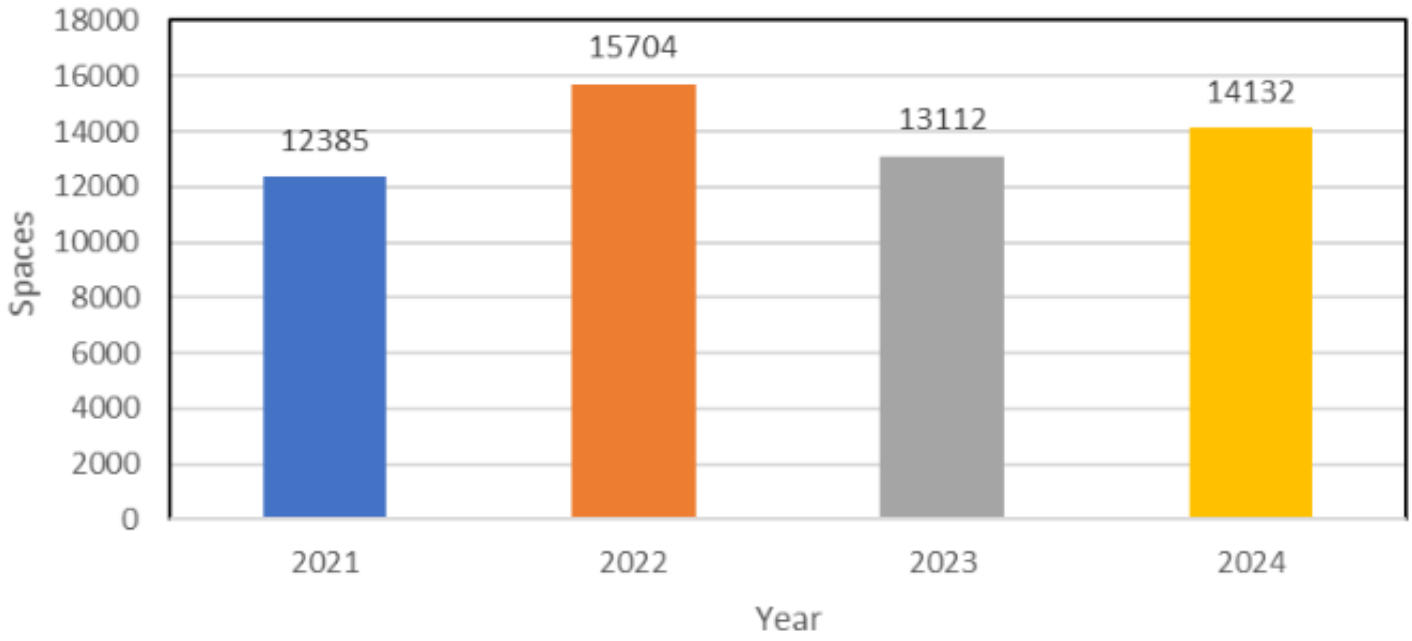
Blakeman's Restaurant also hosts several evening events as well as memorials and reunions when requested. Most events are for local non-profit organizations including: Duxbury Senior Center, Gridiron Boosters, Rotary Club and Duxbury Newcomers.

Parking Spaces Available

There are 415 spaces available in the DBP paved lot. Many visitors do not spend the entire day at the beach which means the same spot may be sold twice in one day.

There are two additional unpaved lots to allow for increased capacity. The DBP Overflow (western) Lot has a capacity of 480 vehicles and the DBP Caterer's (southern) Lot yields 121 spaces.

The graph below depicts number of parking spaces sold each year.



Looking Ahead

In an effort to improve budget planning and reduce emergency repairs, DBR is working with the DBP site managers to evaluate upcoming needs:

- Replace front screen doors (north side) and trim to eliminate rot and present a better first impression
- Replace building trim with PVC to prevent further rot and eliminate the need to paint
- Seal up gaps in siding to reduce impacts from weather
- Address need for accessible bathroom for public use
- Line painting for northern section of parking lot
- Install 2 ADA picnic tables for public use
- Ensure interior lighting is "up to code"

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