

Keyport Environmental Commission (KEC) Minutes for April 22, 2024 – Conducted in Keyport’s Borough Hall

Call to Order

Meeting called to order at 8:00pm by Chair Joe Sheridan.

Sunshine Law was Read

Salute to the Flag

Roll Call

	NAME	STATUS	TERM EXPIRES	PRESENT	ABSENT
1	JOE SHERIDAN (JS)	COMMISSIONER, CHAIR/SECRETARY	12/31/2026	X	
2	MIKE PALMISANO (MP)	COMMISSIONER, VICE CHAIR	12/31/2024	X	
3	ROY JIMENEZ, Sr. (RJ)	COMMISSIONER	12/31/2024		X
4	DON PACHECO (DP)	COMMISSIONER	12/31/2025	X	
5	LYNNE KOSOBUCKI (LK)	COMMISSIONER, 2-YEAR ALTERNATE #1	12/31/2025	X	
6	MIKE LANE (ML)	COMMISSIONER	12/31/2025	X	
7	DOUG WEIDER (DW)	COMMISSIONER	12/31/2026	X	
8	HEATHER BRADY (HB)	KEYPORT BOROUGHS COUNCIL LIAISON	12/31/2023	X	
9	KATHLEEN BULL DE LOS REYES	RESIDENT	-	X	
10	ROSE ARANEO	KEYPORT MAYOR	-	X	
11	KIMBERLY HUMPHREY	KEYPORT BOROUGHS ADMINISTRATOR	-	X	
12	TREVOR TAYLOR	KEYPORT BOROUGHS ENGINEER	-	X	
13	LUISIANA VALERIO	-	-	X	
14	MARKY VALDEZ	-	-	X	
15	LUISA DIAZ	-	-	X	
16	DR. JUN CHENG	KEAN UNIVERSITY ASSOC. PROFESSOR	-	X	

KEAN UNIVERSITY CAPSTONE CLASS TEAM		
	NAME	TEAM ROLE
1	MATTHEW WOLFE	PROJECT MANAGER
2	MADDISON GONZALES	ASSISTANT PROJECT MANAGER/TECHNICAL EDITOR
3	GABBY REESE	PERMIT AND LICENSING LEAD
4	CLAUDIA BAYDAR	SPECIES IDENTIFICATION CO-LEAD
5	ALONDRA VALERIO	SPECIES IDENTIFICATION CO-LEAD
6	TOLANEY ANDERSON	AQUATIC TEAM CO-LEAD
7	CARLOS MARTINEZ	AQUATIC TEAM CO-LEAD
8	JULIANNA COFINAS	GLOBAL INFORMATION SYSTEMS SPECIALIST

Special Presentation: Final Plan Client Presentation for Upper Dune/Living Shoreline Project at Cedar Street Park by the Kean University Capstone Class of Dr. Daniela Shebitz, Chair and Professor, Environmental and Sustainability Sciences, Dorothy and George Hennings College of Science, Mathematics, and Technology, Kean University, Union, N.J. (See attached Powerpoint)

- Discussions were had throughout presentation on all the different topics presented by the Kean Students.

8:58pm: JS called for a 5-minute break to let those that came for those present for the presentation only to exit.

9:04pm: JS called for the Environmental Commission Meeting to continue.

Corrections to the March 25, 2024 KEC Minutes:

Page 4: LK comment should be: 'Marine Science Camp will be contacted by KEC.'

Review/Approval of Meeting Minutes:

Minutes of the March 25th, 2024, meeting; Motion to Accept by Mike Palmisano (MP); Mike Lane (ML) 2nd; No comments/Edits; Minutes Unanimously Approved.

Action Item Recap

1. **JS:** Continue to work with the BA, Liaison Brady, and Planning Board Secretary Nellis on providing current updates on the Keyport Borough Council Update List and correspondences. Ongoing.
2. **ALL:** To identify a new Environmental Commission Member. Ongoing.
3. **HB:** To research Keyport's Lead Pipe Grant Status. Ongoing.

Keyport Borough Council (KBC) Item Updates:

The Agenda offered the following KBC items for KEC discussion:

- 1. Mariner's Village**
- 2. Deputy Ventures (formerly Mystic at Keyport (44 Beers Street)**
- 3. 31 W. Front Street (restaurant and Residential Units)**
- 4. Aeromarine Issues**
- 5. Beach Park Outfall Pipe/Flooding Issues**
- 6. Port 149 Bulkhead Progress**

(JS):

- Still waiting on clarification of February 8, 2024 letter received from Atlantic Shores Offshore wind joint venture 50/50 with EDF-RE Offshore Development sediment boring.

(MP)

- Discussed New Jersey Licensed Site Remediation Professionals (LSRP) Report from August of 2023. The site was combined into two lots – contaminated soil was put in one lot to be disbursed.

- **ACTION** to provide link on report.

(HB)

- **ACTION** to assist in research of current status.

Mike Lane's Observations on KBC Items:

- No report given this month due to vacation.

(LK)

- Spoke about the capstone project with Kean.

(Dr. Cheng):

- Spoke about the wave guide working well – peak wave was identified to be 2' high. Wave guide data will be used to calibrate computer flood models.

New Business:

(ML)

- Discussed Planning Board projects 39 Maple Place – Operations occurring outside their building; Keyport Yacht Club – insufficient parking; 80 West Front Street – discussions of scope.

(LK)

- Asked if the Environmental Commission wanted to maintain a table during the Keyport Garden Walk.

(MP)

- Spoke of the Green Team's Horseshoe Crab Tagging Presentation...but **MORE** people are needed to come and listen!
- Spoke about the success of the Clean Ocean Action Beach Sweep on April 13th. See data in Attachment #2.

(JS)

- Spoke of e-mail received from Holmdel Environmental Commission's Karen Strickland regarding her desire for all the Bayshore environmental commissions to meet regarding a regional approach to flooding issues, and how the Keyport Environmental Commission will definitely be involved. The first meeting is on Thursday, May 23rd at 7:30pm at Bell Works.

(LK)

- No permits are needed to clean out the planters behind the softball field fence at Cedar Street Park.

(HB)

- Asked if there were any long-term plans for those planters, but there are no plans yet.

(DW)

- Made the Motion not to have the Monday, May 27th Environmental Commission Meeting due to the date being Memorial Day. LK 2nd. Unanimous.

Open to the Public

9:46pm: JS opened the meeting to the Public.

- **Resident Kathleen Bell de los Reyes** asked Matt Wolfe if he was going to continue with the Keyport Living Shoreline Project and he responded that he may check on it in the future.

Close to the Public

9:49pm: JS closed the meeting to the Public.

ACTION ITEMS LIST

1. **MP:** To provide LSRP link.
2. **ALL:** To identify a new Environmental Commission Member.

ATTACHED ITEMS LIST

1. Kean University's Final Plan for Upper Dune/Living Shoreline Project at Cedar Street Park, Keyport, New Jersey Powerpoint Presentation
2. Clean Ocean Action April 13th Beach Sweep Data Card

Meeting Adjourned 9:49pm: Motion to Adjourn by **MP; LK 2nd**; Unanimous Approval.

The next meeting will be held on **Monday, June 24th, 2024, at 8:00pm, at Keyport Borough Hall Council Chamber.**

Minutes submitted by Joe Sheridan.



FINAL PLAN FOR UPPER DUNE/LIVING SHORELINE PROJECT AT CEDAR STREET PARK
Cedar Street Park, Cedar St, Keyport, NJ 07735

CONTACT:

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Assistant Project Manager/Technical Editor: Maddison Gonzales, gonzmadd@kean.edu

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Species Identification Team Leads: Claudia Baydar, baydarc@kean.edu, Alondra Valerio, valeralo@kean.edu

Aquatic Team Leads: Tolaney Anderson, andersto@kean.edu, Carlos Martinez, marcarlo@kean.edu

Global Information Systems Specialist: Julianna Cofinas, cofinasj@kean.edu

Dear Members of the Keyport Environmental Commission,

We want to thank you again for the opportunity to work on the Cedar Street Park Living Shoreline Project. As students of ecology, we understand the importance of actively working towards the benefit of our natural communities. This project and its many necessities allowed us to pursue a multi-faceted approach. Through this we gained experience and tested our skills in writing, research, data analysis, field work, permitting and licensing, ground mapping, and community involvement, among others. It was a pleasure to be involved in such an important, and achievable project. Please do not hesitate to contact the team with questions or concerns moving forward.



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ABSTRACT

Cedar Street Park in the Town of Keyport, NJ, faces ecological threats from rising sea levels and increased storm damage associated with climate change, severe erosion, and the abundance of invasive plant species that actively displace native vegetation. Past restoration efforts conducted by Keyport's Environmental Commission in Cedar Street Park have included the planting of native species as well as the installation of Christmas trees horizontally into the sand as a means to fill the swale behind the dune to limit erosion. Following this initial plan, our student-led team focused on further developing a restoration plan for the town of Keyport that includes the identification and removal of invasive species found at the site and other methods of fortifying and growing the dunes to combat storm damage. We have used Global Information Systems (GIS) to develop a map of where invasive species are found in Cedar Street Park and create a restoration plan using local plant resources. Necessary permits and restoration methodology for mitigating the impact of waves on the coastline were also researched.

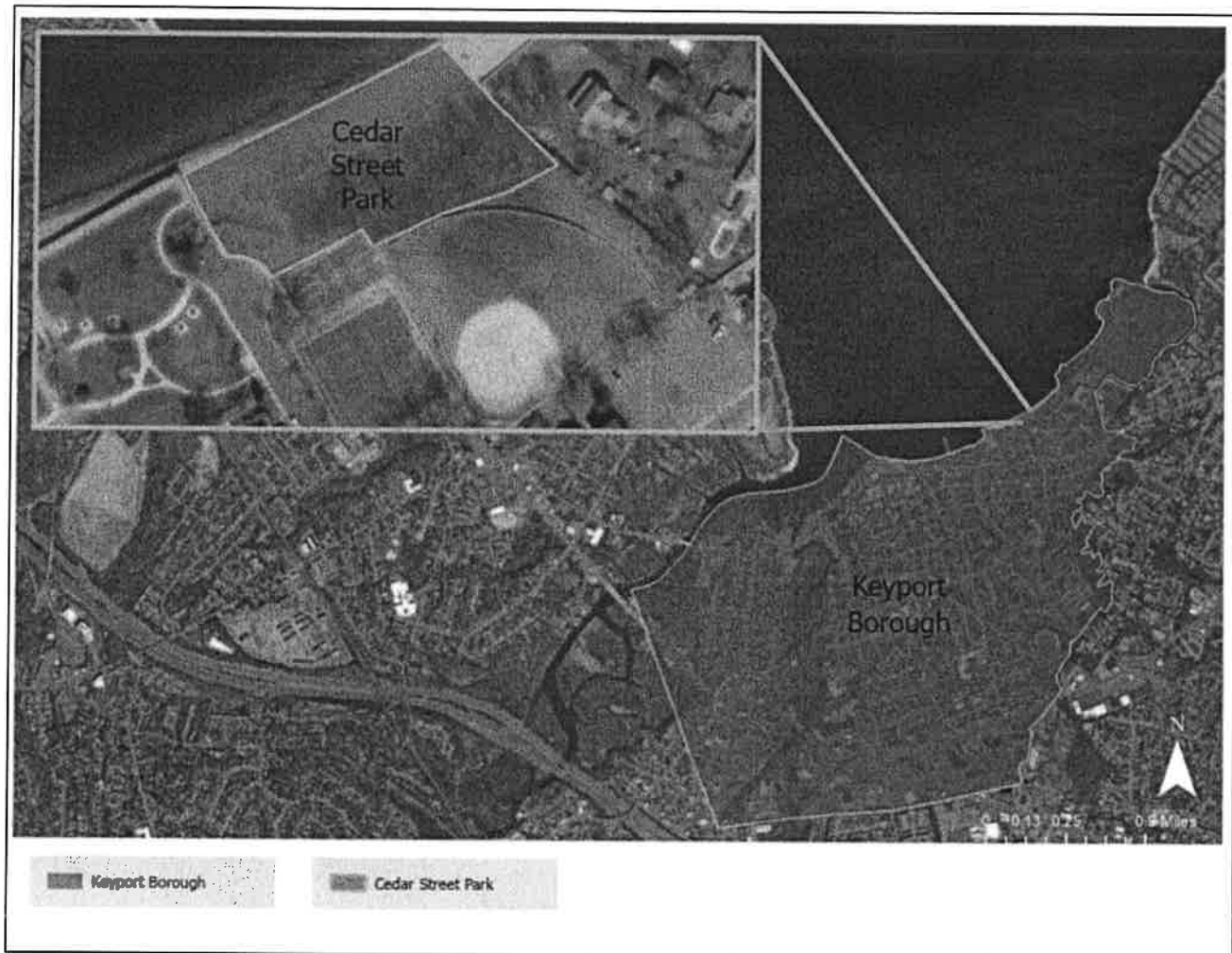


Figure 1. Cedar Street Park focus area within Keyport Borough



VEGETATION ASSESSMENT

The goal of the vegetation assessment was to identify all the current species present at Cedar Street Park. All identification was assisted by The Audubon Society Field Guide to North American Trees: Eastern Region, Winter Tree Finder: Identifying Deciduous Trees of Eastern North America by Their Bark and Twigs, and Inaturalist. In accordance with the Department of Environmental Protection (DEP) standards, the New Jersey Invasive Species Strike Team (NJISST) list of invasive species was used to determine the status of identified plants. Coordinates were recorded for each species to determine their location at the site. Using the coordinates, distribution maps were created to show the extent of both native and invasive species. Options for removal were then researched for the most prevalent invasive species.

Native Species List for Cedar Street Park:

- American Beachgrass (*Ammophila breviligulata*)*
- Beach Plum (*Prunus maritima*)*
- Black Cherry (*Prunus serotina*)
- Black Locust (*Robinia pseudoacacia*)**
- Blackjack Oak (*Quercus marilandica*)
- Goldenrod (*Solidago spp.*)*
- Northern Bayberry (*Myrica pensylvanica*)*
- Northern Catalpa (*Catalpa speciosa*)
- Prickly Pear (*Opuntia humifosa*)
- Red Maple (*Acer rubrum*)

*Species previously planted by the Keyport Environmental Commission

**Black Locust is very aggressive despite being a species native to New Jersey, and may displace desirable vegetation if not properly managed (*USDA Plants Database*, n.d.)

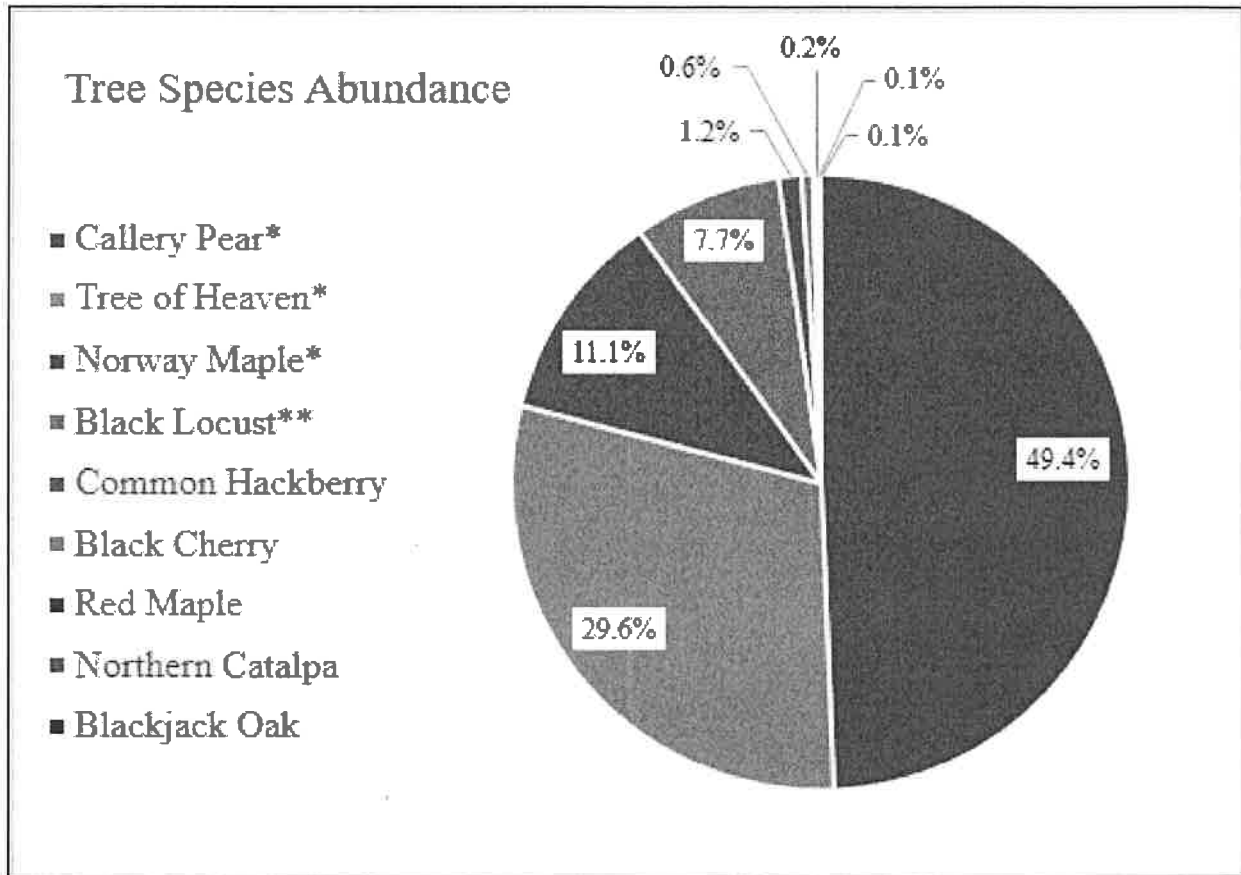


Figure 2. A pie chart showing abundance of tree species at Cedar Street Park.

*indicates invasive species

**indicates Black Locust, a naturalized species that outcompetes and displaces native species



Invasive and Non-native Species Identified in Cedar Street Park:

- Asiatic Sedge (*Carex kobomugi*)
- Chickweed (*Stellaria media*)*
- Common Mugwort (*Artemisia vulgaris*)
- English Ivy (*Hedera helix*)
- Field Garlic (*Allium vineale*)
- Forsythia (*Forsythia suspensa*)*
- Garlic Mustard (*Alliaria petiolata*)
- Japanese Honeysuckle (*Lonicera japonica*)
- Japanese Knotweed (*Reynoutria japonica*)
- Multiflora Rose (*Rosa multiflora*)
- Periwinkle (*Veronica spp.*)
- Sweet William Leaves (*Dianthus barbatus*)*
- Tree-of-heaven (*Ailanthus altissima*)
- Callery Pear (*Pyrus calleryana*)

*Non-native naturalized species



Figure 3. Map of native (green) and invasive (red) plant species found at Cedar Street Park



Removal Plan:

Following general invasive plant control concepts, removal should be conducted initially from the least affected areas, then move ascendingly towards the most affected areas. Removal of adult trees in the upper dune area, especially in sloped portions, will result in instability and erosion from lack of tensile reinforcement. Because of this, even invasive tree removal is highly discouraged until the area is fortified with adult native trees.

NOTE: Removal of any dune vegetation (invasive or otherwise) requires a permit in the state of New Jersey; N.J. Admin. Code § 7:7-9.16 (“ In addition, the removal of vegetation from any dune, and the excavation, bulldozing, or alteration of dunes is prohibited, unless these activities are a component of a Department-approved beach and dune management plan”).

Removal Techniques:

Asiatic Sedge (*Carex kobomugi*): removal may be done mechanically through hand pulling. Leaves may be used as compost in inadequate growing conditions. If seeds are present, they should be bagged and removed, or allowed to die before being returned to soil. Chemical herbicide use must be conducted every two weeks and monitored monthly.

Common Mugwort (*Artemisia vulgaris*): removal may be done mechanically through hand pulling and cutting. In the case of cutting, the shoots should be covered with biodegradable cardboard and sediment. Chemical herbicides require two rounds of mowing before application for best results. Cutting and covering should be monitored yearly, with replacement covers being applied wherever necessary. *A. vulgaris* seeds may stay dormant for upwards of four years.

Callery/Bradford Pear (*Pyrus calleryana*): mechanical removal may be done by cutting the tree at waist height or lower. With this method new growths must be monitored and cut off, starving the tree of energy. Young sprouts can be hand pulled, however this is only effective if the entire root system is removed. Entire stumps can be removed as well, requiring a depth of six to twelve



inches to avoid regrowth. Chemical removal can be done alongside cutting, by adding herbicide up to a maximum of ten minutes after the cutting.

Multiflora Rose (*Rosa multiflora*): Uprooting the plant entirely is considered the primary removal method. A secondary method is cut and leave: in larger specimens, the main stump can be cut, and new growths will form that can, in turn, be cut again, starving the plant of energy. Chemical methods are similar, involving cutting the main stump in large specimens and applying herbicide solution.

English Ivy (*Hedera helix*): For mechanical removal, cut vines from chest height down and remove them, especially those entwined around trees, as vines above this point will eventually die. Cut and leave the vines on the ground, then manually pull up ground patches, starting with a rake in denser areas to loosen roots for easier pulling. This approach minimizes regrowth. Pile the removed vines and let them dry to hinder re-rooting, or bag them for disposal. For chemical removal, follow the same initial steps of cutting and removing the vines, focusing on chest height down.

Tree-of-heaven (*Ailanthus altissima*): For the removal of Tree-of-heaven it is most important to control the roots. Young sprouts can be hand pulled, but any part of the root system that is not pulled up can resprout. Large trees can be cut down close to the ground. Cutting is best done between June and early July. Trunk girdling is another method that effectively kills off the Tree-of-heaven. This method consists of cutting the outer and inner bark around the entire tree, six inches above the ground, which disrupts the transfer of nutrients(*Trees Atlanta*).

Invasive Species Removal Costs

Given the nature and quantity of invasive species present in the maritime forest area of Cedar Street Park, we recommend that the majority of removal be done manually using volunteer labor. Herbicides when used appropriately are effective at removing invasive species, but they



pose high risks that are even more significant given the vegetation is in a maritime forest. Herbicides are often expensive and would require more permits and hiring a DEP certified professional to apply the herbicides. However, if the Keyport Environmental Commission feels that herbicides best fit the needs of the invasive removal project, a budget for the most common and effective herbicides used to control invasive species. Glyphosate is a commonly prescribed herbicide that is non-selective and kills everything it comes into contact with. (*Invasive Plant Control Methods*, n.d.). Triclopyr, another commonly prescribed herbicide, is selective and does not kill or harm monocots such as grasses. (*Invasive Plant Control Methods*, n.d.)

The average cost of application for glyphosate and triclopyr given by the United States Environmental Protection Agency are as follows (Hawkins et al., 2019):

Glyphosate: 13\$ per acre x 1.13 acres = \$14.69/per application (requires maintenance)

Triclopyr: 18\$ per acre x 1.13 acres = \$20.34 /per application (requires maintenance)

NOTE: We do not recommend any herbicide use at the site. Options and pricing are given as courtesy for future reference.

Revegetation Plan:

For the initial stage of the revegetation plan, three reference sites were chosen. Based on the current vegetation at the site, it was determined that late successional maritime forests would be the best comparison for Cedar Street Park. Plants present at these sites are more likely to survive and thrive in the sandy soil and salt spray conditions.

Reference site 1 (Sandy Hook): is a pristine late successional maritime forest with dense American Holly (*Ilex opaca*) and Eastern Red Cedar (*Juniperus virginiana*). A plant list from the Sandy Hook Herbarium is supplied below:

- American Holly (*Ilex opaca*)
- Bayberry (*Myrica spp.*)



- Beach Plum (*Prunus maritima*)
- Black Cherry (*Prunus serotina*)
- Blackjack Oak (*Quercus marilandica*)
- Eastern Red Cedar (*Juniperus virginiana*)
- Hackberry (*Celtis occidentalis*)
- Pitch Pine (*Pinus rigida*)
- Red Maple (*Acer rubrum*)
- Sumac (*Rhus spp.*)

Reference site 2: Bradley Beach Maritime Forest. This site was used because of its success as a primarily human-made maritime forest that sees high amounts of foot traffic. It also incorporates a walking trail and educational signage that are planned to be included at Cedar Street Park as well. Bradley Beach Maritime Forest is primarily American Holly, and Eastern Red Cedar. Japanese Knotweed removal is also regularly conducted at the site.

Reference site 3: Cattus Island. This site, like Sandy Hook, is a large maritime forest with a mix of Pitch Pine, Eastern Red Cedar, and American Holly. This site is regularly inundated during flooding and tidal events, which acts as a strong measure of the resilience that a mature maritime forest possesses.

Revegetation should target the species most commonly found in these locations: American Holly, Eastern Red Cedar, and Hackberry as primary living shoreline and erosion control species. Additionally, the method for revegetation should include the planting of shrubs and grasses. American beachgrass remains the best option for the upper dune area. The forested area and surrounding open sections would benefit from the continued planting of Goldenrod (*Solidago spp.*), Bayberry (*Myrica pensylvanica*), and Beach Plum (*Prunus maritima*). To maintain genetic diversity within species, it is recommended that three to four species within each group of grasses, shrubs, and trees, are chosen from the aforementioned lists and planted in large numbers. Promoting genetic diversity this way will allow for healthier vegetation and a stronger more resilient ecosystem.



Edible Plants

In an effort to include wild food options for the local community, research was conducted into suitable fruit producing plants that could survive at Cedar Street Park. Unfortunately, the proposed species of Common Pawpaw (*Asimina triloba*), and American Persimmon (*Diospyros virginiana*) are not tolerant of high salinity environments (Gilman 2023). However, there are already fruit producing plants that exist at the site, primarily Beach Plum (*Prunus maritima*) and Prickly Pear (*Opuntia humifusa*), both of which are suitable for human consumption. Also, while not a native species, Beach Rose (*Rosa rugosa*), can be harvested for its rosehips, or have its flowers boiled into a tea for medicinal purposes.

Cost and Supplier Options

Two suppliers were chosen based on availability of native plants, growing methods, and credibility. Pinelands Nursery starts plants in soil typical of southern and coastal New Jersey, promoting healthy growth after transplantation. Toadshade Wildflower Farm offers a variety of buying options including individual tree purchases and seeding options. Below is a table comparing costs and options between both suppliers for the recommended species:

Species		Type	Cost					
			Pinelands Nursery/Pinelands Direct			Toadshade Wildflower Farm		
Common Name	Scientific Name		Quantity	Dollar Amount	Cost per 1 Plant	Quantity	Dollar Amount	Cost per 1 Plant
American Holly	<i>Ilex opaca</i>	Seed	32 Tubelings (25in)	\$94.40	\$2.95	1 Packet	\$5.00	-
Eastern Red Cedar	<i>Juniperous virginiana</i>	Seed	-	-	-	1 Packet	\$5.00	-
Eastern Red Cedar	<i>Juniperous virginiana</i>	Plants	32 Tubelings (25in)	\$94.40	\$2.95	1 Pot (<6in to 6-12in)	\$14.75 to \$15.25	\$14.75 to \$15.25
Pitch Pine	<i>Pinus rigida</i>	Plants	32 Tubelings	\$94.40	\$2.95	-	-	-
Hackberry	<i>Celtis occidentalis</i>	Plants	32 Tubelings (25in)	\$94.40	\$2.95	1 Pot (6-12in)	\$18.25	\$18.25
Hackberry	<i>Celtis occidentalis</i>	Plants	10 Containers	\$170.49	\$2.99	1 Pot (1-2ft)	\$20.75	\$20.75
American Beachgrass	<i>Ammophila breviligulata</i>	Plants	2in Plug	-	-	-	-	-
Seaside Goldenrod	<i>Solidago sempervirens</i>	Plants	50 2in Plugs	\$67.50	-	-	-	-
Goldenrod (other)	<i>Solidago spp.</i>	Seed	-	-	-	1 Packet	\$5.00	-
Goldenrod (other)	<i>Solidago spp.</i>	Plants	-	-	-	1 Pot	\$12.25	\$12.25
Beach Plum	<i>Prunus maritima</i>	Plants	32 Tubelings	\$94.40	\$2.95	1 Pot (6-12in)	\$20.25	\$20.25
Beach Plum	<i>Prunus maritima</i>	Plants	32 Tubelings	\$94.40	\$2.95	1 Pot (12-24in)	\$22.25	\$22.25
Northern Bayberry	<i>Myrica pensylvanica</i>	Plants	32 Tubelings	\$94.40	\$2.95	-	-	-
Northern Bayberry	<i>Myrica pensylvanica</i>	Plants	10 Containers	\$170.49	\$2.99	-	-	-

Figure 4. Table of cost comparison for native species of interest.

EELGRASS

Research into possible eelgrass (*Zostera marina*) implementation into the site was conducted, eelgrass beds can trap sediment, stabilize substrate, reduce the force of wave energy, and reduce coastal erosion and these seagrass beds are also well known to clean the ecosystem that they inhabit. Eelgrass was previously abundant in the Raritan Bay, however due to the wasting disease most of these seagrass beds were decimated in the 1930s. Since then populations of eelgrass and all seagrasses in general have been on a steady decline. Active restoration of eelgrass in New Jersey has been successful, and the majority of New Jersey's seagrass beds can be found in Barnegat Bay so future transplantation efforts could look into Barnegat Bay as the source site.

Eelgrass restoration/implementation can be done using one of two methods; transplants or seeding. Transplants involve the harvesting of the seagrass from existing meadows in this case Barnegat Bay and in most cases this method requires the shoots to be anchored until the roots of the seagrass can take hold (Rens et al., 2022). Seeding requires the harvesting of reproductive shoots and holding them in flowing seawater tanks until the seeds are released, these seeds are collected and then released at the site (Rens et al., 2022).



The successful implementation of eelgrass can lead to natural development of eelgrass in the future without the need for active restoration to take place as water quality is extremely important regarding the success of eelgrass restoration and the seagrass has the ability to regulate and clean the water it inhabits. Ideally good site characteristics for eelgrass restoration include water with low turbidity, low algal growth, and a low crab density (Beheshti et al., n.d.).

OYSTER CASTLES

Oyster castles are structures of man made concrete and rocks that oysters will colonize and grow on, ultimately aiding in erosion prevention, and helping filter the surrounding water. (USGS). Research into similar oyster castle projects have revealed a successful project in Gandys Beach, New Jersey. This particular project assessed the effectiveness of oyster castles in reducing erosion of a coastal segment of a salt marsh via wave attenuation. It was found that living shoreline structures, such as oyster castles, were effective in reducing overall shoreline erosion rates. However, it was also found that to most significantly reduce shoreline erosion, the oyster castles should be constructed at such a height that maximizes the time the structure is above water in concurrence with the local tides to reduce wave energy in proximity to the shore. (USGS) On the other hand, to maximize the quantity of oysters that colonize the structure, the structure should be built at a height that allows for sufficient submersion during intertidal conditions for the oysters to grow. (USGS)

The addition of living shoreline structures naturally requires permits from the Department of Environmental Protection. Foremost, a shellfish lease must be acquired first before planting the structures. Secondly, under New Jersey Administrative Code §7:7-4.17, an “oyster spat”, or anything that oyster larvae attach themselves to, must include a predator screen.

It should be noted that there are localized areas in the Raritan Bay that are classified as superfund sites, in which it is not permitted to plant oyster castles due to poaching concerns. The shoreline of Cedar Street Park should be eligible for the implementation of oyster castles.

(b) Any area determined by the Department to be contaminated by toxins is excluded from this definition. The List of Water Quality Limited Segments (known as the 303(d) list), prepared by the Department pursuant to the Federal Clean Water Act, 33 U.S.C. § 1313(d), identifies these known contaminated areas. Also excluded from this definition are those sites for which the Department is presented with clear and convincing evidence that the sites lack the physical features necessary for the support of a shellfish population, excluding those waterways listed at N.J.A.C. 7:7-15.3 and (l) below.



REGULATIONS AND PERMITS

N.J.A.C.7:7 Relevant Sections

N.J.A.C.7:7-4.17 Oyster Spat Attraction Device (Shellfish lease)

N.J.A.C.7:7-4.21 Application of Herbicides at a Coastal Wetland

N.J.A.C.7:7-6.13 General Permit 13 Recreational Facilities (Trail)

N.J.A.C.7:7-6.17 General permit 17 – stabilization of eroded shorelines (Not Christmas trees)

N.J.A.C.7:7-6.24 General Permit 24 Living Shoreline (Removal and addition of vegetation)

N.J.A.C.7:7-6.32 General Permit 32 Application of Herbicides at a Coastal Wetlands

N.J.A.C.7:7-10.4 Dune Creation and Maintenance

N.J.A.C.7:7-12.23 Living Shorelines

N.J.A.C.7:7-25.1 Application Fees

Department of Environmental Protection (DEP) Pre-Application Process

The first step in receiving permits for any work to be done at Cedar Street Park is through the DEP Pre-Application Process. A list of requirements for the DEP to consider an application are listed below:

PRE-APPLICATION REQUEST SUBMITTALS

It is recommended that every request for a pre-application meeting include the items listed below. Please note that each Rule implemented by the Division of Land Use Regulation has specific requirements for pre-application meetings. Therefore, any pre-application meeting request that includes items as noted in the applicable rule will also be accepted.

- 1) A complete written description of the project and all proposed activities (the State Plane coordinates for the site should be included in this document).
- 2) A written meeting agenda with goals and objectives.
- 3) One copy of a USGS quad map with the site clearly outlined to scale.
- 4) One copy of the municipal tax map with the site clearly outlined to scale.
- 5) One color copy of an aerial photograph of the site.
- 6) One copy of the appropriate United States Soil Conservation Service map(s) with the site clearly outlined to scale.
- 7) One copy of each previous approval received from the Department concerning the site, if such approvals exist.
- 8) One set of color photographs depicting the entire project area, mounted on 8.5" x 11" paper and accompanied by a map showing the location and direction from which each photograph was taken.
- 9) One set of drawings depicting the proposed project.



Item 1: Project Summary

This project aims to restore a living shoreline along the Cedar Street stretch of beach, mitigate invasive species on the beach, restore the beach dunes, and the addition of educational signage to inform visitors of the ecology of the surrounding area.

To restore the living shoreline, we propose oyster castles. These structures would provide wave attenuation and habitat for oysters that would also contribute to filtering and cleaning the surrounding water.

Invasive species were identified in abundance in the stretch of maritime forest along the coast. There was a combination of invasive trees and shrubs. This project aims to gradually remove the identified trees and shrubs using a combination of chemical and mechanical removal methods. The sand dunes at this site are moderately eroded. To mitigate this, we are proposing the addition of native dune grass that over time, will grow and strengthen the dune to aid in erosion prevention. Finally, we propose the addition of educational signage along a nature trail to educate visitors on the surrounding ecology.

Item 2: Meeting Agenda

Discussion on the feasibility of a large scale, multi-faceted project at Cedar Street Park involving the following deliverables.

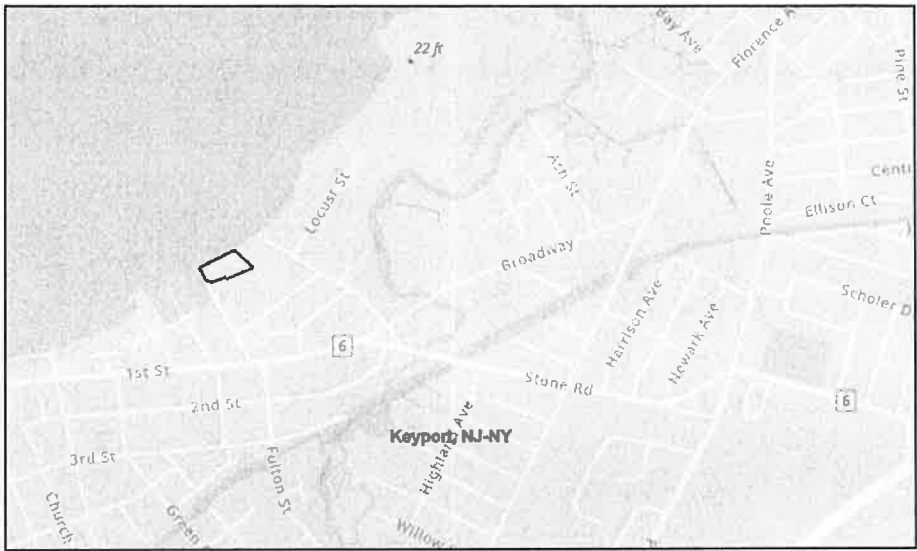
Goals/Objectives

Permits required for the:

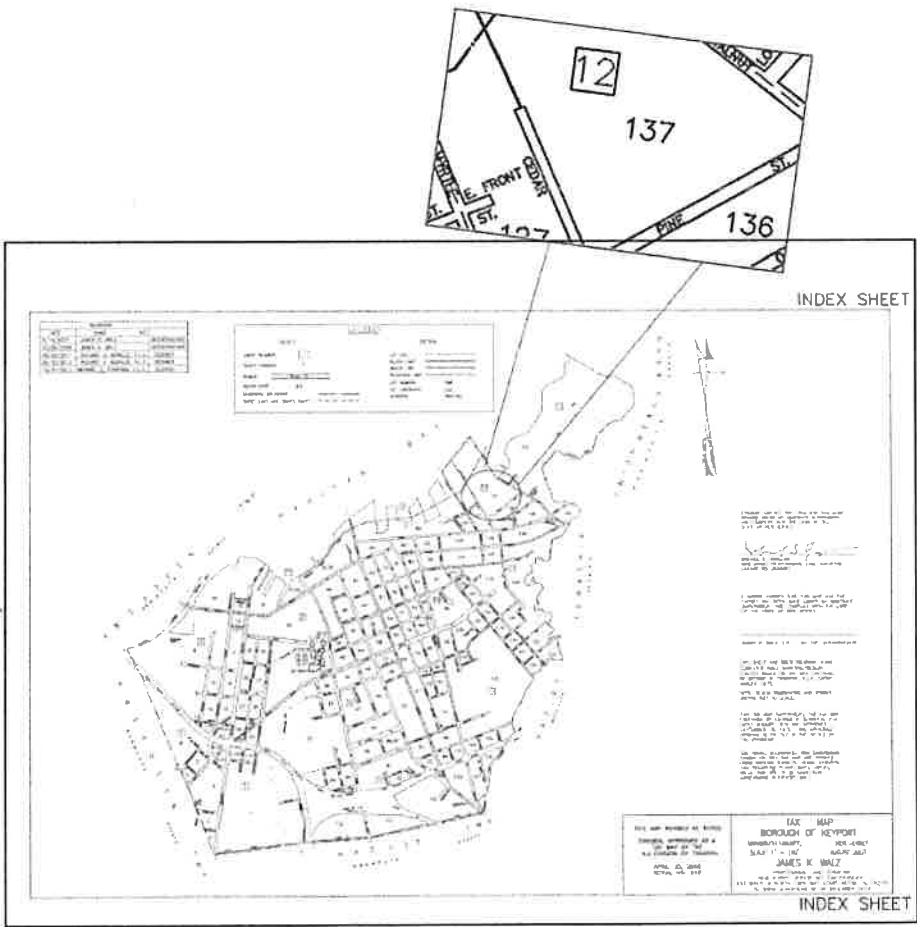
- Addition of Oyster Castles
- Removal of invasive shrubs and trees
- Planting of native vegetation on dunes and forested area
- Addition of walking trail loop
- Addition of educational signage



Item 3: USGS Quad Map



Item 4: Copy of Municipal Tax Map





Item 5: Color Copy of Aerial Photograph



Item 6) Soil Conservation Service Map





Pg.35 N.J.A.C. 7:7

7:7-2.1 When a permit is required

(a) No person shall engage in a regulated activity subject to this chapter without a coastal permit. Initiation of a regulated activity without a coastal permit is considered a violation of this chapter and shall subject the person or persons responsible for the regulated activity to enforcement action in accordance with N.J.A.C. 7:7-29.

(b) A person undertaking any regulated activity under this chapter shall do so only in accordance with:

1. A permit-by-rule, pursuant to N.J.A.C. 7:7-3 and 4;
THIS IS A COURTESY COPY OF THIS RULE. ALL OF THE DEPARTMENT'S RULES ARE COMPILED IN TITLE 7 OF THE NEW JERSEY ADMINISTRATIVE CODE. 36
2. An authorization under a general permit-by-certification, pursuant to N.J.A.C. 7:7-3 and 5;
3. An authorization under a general permit, pursuant to N.J.A.C. 7:7-3 and 6;
4. An individual permit, pursuant to N.J.A.C. 7:7-8; or
5. An emergency authorization, pursuant to N.J.A.C. 7:7-21.

(c) Certain activities under CAFRA and the Waterfront Development Law are exempt from the requirement to obtain a coastal permit under this chapter. The exemptions and process for obtaining an exemption under CAFRA are set forth at N.J.A.C. 7:7-2.2(c) through (f) and under the Waterfront Development Law at N.J.A.C. 7:7-2.4(d), (f), and (h).

(A Permit-by-rule "PBR" is a permit whose terms and conditions are set forth in the Coastal Zone Management Rules at N.J.A.C. 7:7-4.1 et seq. No prior written approval from the Department is necessary in order to undertake the specified regulated activity, provided all conditions of the Permit-by-rule are satisfied)

N.J.A.C. 7:7-8.1 Requirements to obtain an individual permit

A person shall obtain an individual permit under this subchapter in order to undertake any activity that does not meet the requirements of a permit-by-rule pursuant to N.J.A.C. 7:7-4, an authorization under a general permit-by-certification pursuant to N.J.A.C. 7:7-5, or an authorization under a general permit pursuant to N.J.A.C. 7:7-6.

(You may want to look into General Permit (GP) 32 and Permit-by-rule (PBR) 21 as well as PBR 15 for the Placement of sand fencing to create or sustain a dune)

Coastal Zones by permits;

NJDEP| Watershed & Land Management | The Coastal Zone



Forms and Documents;
NJDEP| Watershed & Land Management | Forms

.....

Checklists are going to be used for each section wanted;

These are checklists to consider in order to start the process of this project:

(General Permit 2) Activities on Beach/Dune checklist:

https://dep.nj.gov/wp-content/uploads/wlm/downloads/caf/cp_gp02.pdf

(General Permit 24) Habitat Creation/Restoration/Enhancement/Living Shorelines Checklist

[cp_gp24.docx \(nj.gov\)](#)

[njac7_7.pdf](#)

Pg.62 N.J.A.C. 7:7

7:7-4.3 Permit-by-rule 3 - placement of public safety or beach/dune ordinance signs on beaches or dunes and placement of signs on beaches or dunes at public parks

(a) This permit-by-rule authorizes the placement of:

1. Public safety or beach/dune ordinance signs on beaches and dunes, provided no footings are required; and
2. Signs on beaches or dunes at public parks by governmental entities.

pg. 77 N.J.A.C. 7:7

7:7-6.2 General permit 2 – activities on a beach and dune

(a) This general permit authorizes the following activities on a beach and dune:

1. Routine beach maintenance activities performed in accordance with N.J.A.C. 7:7-10.2;
2. Emergency post-storm beach restoration performed in accordance with N.J.A.C. 7:7- 10.3;
3. Dune creation and maintenance performed in accordance with N.J.A.C. 7:7-10.4; and
4. The construction of dune walkovers constructed in accordance with N.J.A.C. 7:7-10.4(e) and(f).

(b) The activity shall not be conducted in any wetlands.

(c) Public access to the beach shall be provided in accordance with the lands and waters subject to public trust rights rule, N.J.A.C. 7:7-9.48, and the public access rule, N.J.A.C. 7:7-16.9.

(d) The activity is conducted in accordance with the Operation and Maintenance Manual associated with the Federal or State project, or where such manual does not exist, the activity does not compromise the design template of the engineered beach and/or dune.



(e) The activity complies with any applicable management plan for protection of State and Federally listed threatened or endangered species, as approved by the Department and the USFWS, and/or the endangered or threatened wildlife or vegetation species habitat rule, N.J.A.C. 7:7-9.36.

(f) As of November 5, 2015, the Department shall not approve authorization under this general permit to any municipality that does not have a Department-approved municipal public access plan in accordance with N.J.A.C. 7:7-16.9(c) through (m)

.....

Compliance Alert: Coastal and Land Use Enforcement

Conduct Beach/Dune maintenance Activities:

[2023-25.pdf \(nj.gov\)](#)

.....

Dune creation standards:

7:7-10.4 Standards applicable to dune creation and maintenance

(a) Dune creation and maintenance includes the placement and/or repair of sand fencing (including wooden support posts), the planting and fertilization of appropriate dune vegetation, the maintenance and clearing of beach access pathways less than eight feet in width, and the construction or repair of approved dune walkover structures. Bulldozing, excavation, grading, vegetation removal or clearing, and relocation of existing dunes are not authorized pursuant to this section.

(b) All dune creation and maintenance activities should be conducted in accordance with the specifications found in Guidelines and Recommendations for Coastal Dune Restoration and Creation Projects (DEP, 1985), and/or Restoration of Sand Dunes Along the Mid-Atlantic Coast (Soil Conservation Service, 1992). The Department will provide site specific technical assistance for dune creation and maintenance projects, upon request.

(c) All proposed dune vegetation shall be native to New Jersey and should be limited to the following coastal species, to the maximum extent practicable: American Beachgrass (*Ammophila breviligulata*), Coastal Panicgrass (*Panicum amarulum*), Bayberry (*Myrica pensylvanica*), Beach

217

.....

State/Federal restrictions on installing rib mussels or oyster castles... (P24 and or 54)

Nationwide Permit 54: Living Shorelines

[Nationwide Permit 54 \(army.mil\)](#)

.....

Coastal Areas Facilities Act (CAFRA) Permit

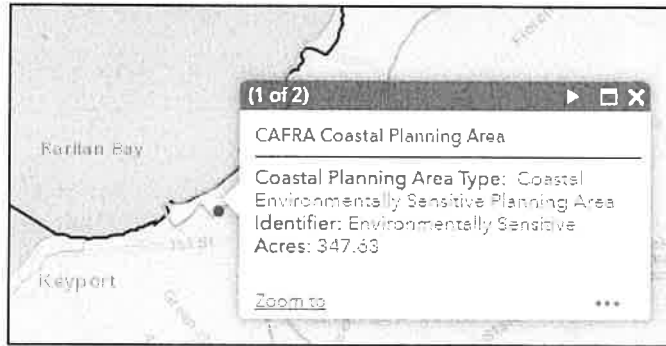
Per N.J.A.C. 7:7-2.2(c) through (f), the Cedar Street Park Project will not be exempt from CAFRA if there are any plans made to excavate or landfill.



(Sometimes there is an exemption for CAFRA)

[cp_003.pdf \(nj.gov\)](#)

Coastal Planning Area: (Coastal Metropolitan)



[Land Resource Protection Web Application \(arcgis.com\)](#)

Pg. 36

7:7-2.2 CAFRA

(a) Subject to the interpretation and definition of certain statutory terms as provided at

(b) below and subject to the exemptions identified at

(c) below, a CAFRA permit shall be required for:

1. Any development located on a beach or dune;
2. A development located in the CAFRA area between the mean high water line of any tidal waters, or the landward limit of a beach or dune, whichever is most landward, and a point 150 feet landward of the mean high water line of any tidal waters or the landward limit of a beach or dune, whichever is most landward

CAFRA Individual Permit (checklist)

[cp_011.docx \(nj.gov\)](#)

COSTS:

[*lur_022.pdf \(nj.gov\)](#)

Pg.6, Section 3-Coastal Projects:

- General Permit 24→ **No Fee**
- All other General Permits → **\$1,000**
- CAFRA individual permit for a commercial, industrial, or public development **\$3,000** per acre of the site (or fraction thereof)
- Minor technical modification of a waterfront development, coastal wetlands, or CAFRA general permit authorization or individual permit **\$500.00**
 - Major technical modification of a waterfront development, coastal wetlands, or CAFRA general permit authorization or individual permit **30 percent of the original application fee or \$500.00, whichever is greater**



TimeFrame:

N.J.A.C. 7:7-8.2 Duration of an individual permit

- (a) An individual permit for any activity waterward of the mean high water line is valid for five years from the date of issuance, and may be extended one time for five years pursuant to N.J.A.C. 7:7-27.3,
- (b) Except as provided in (c), (d), and (e) below, an individual permit for any activity landward of the mean high water line is valid for five years from the date of issuance

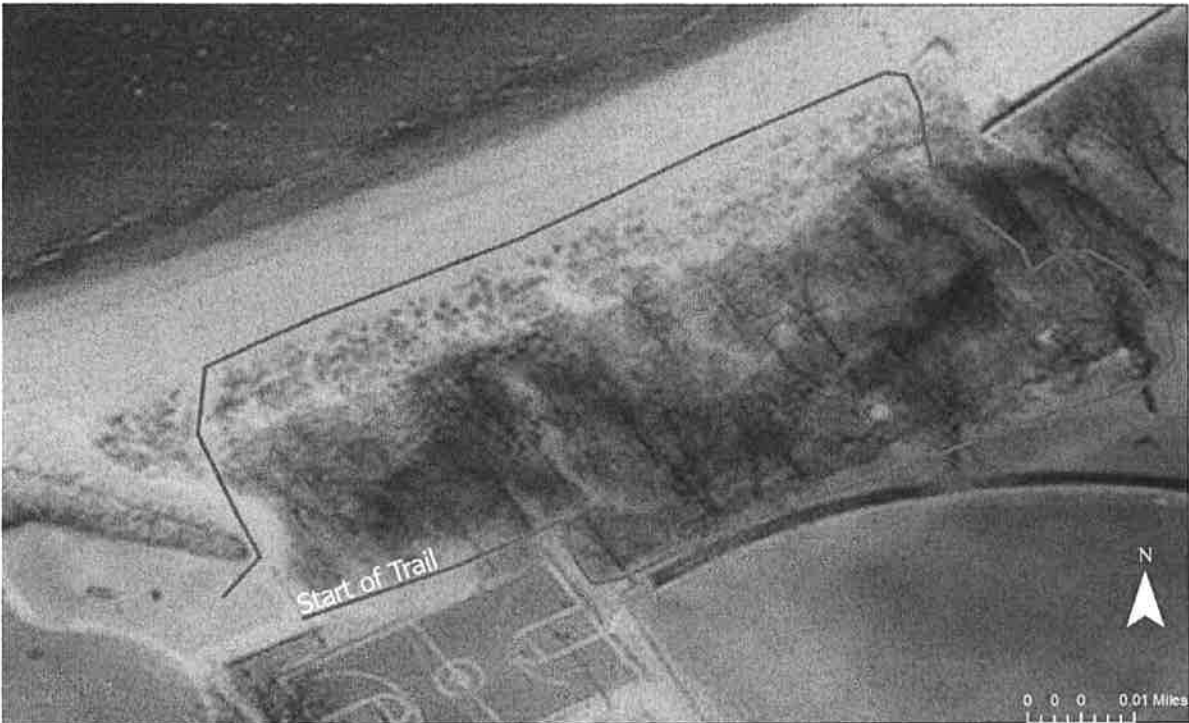
TRAIL LOCATIONS AND SIGNAGE

Trail locations were marked based on two existing footpaths that travel around the park. Trail option 1 travels through the middle of the forested area, winding around trees parallel to the dunes and the Raritan Bay. It then leads out into the beach on the far eastern end of the park and loops back to the beginning near the western beach access of the park. Trail option 2 travels alongside the back of the baseball field alongside the large cement planters, and cuts through the woods on the far eastern side into the same opening on the beach as trail option 1. It also loops back along the beach to the western beach access entrance.



Legend

— Trail 1



Legend

— Trail 2

Educational Signage

Informative signages will display and highlight the ecological functions of maritime forest, dunes, native and non-native species to engage the Keyport community and visitors. These signages can be strategically placed along popular walking paths or near key landmarks. They offer concise yet engaging descriptions of the local ecosystems. By fostering a deeper appreciation for the natural environment and its diverse flora, these educational signages would enhance community awareness and promote environmental stewardship and conservation efforts in Keyport.

Black Locust (*Robinia pseudoacacia*)



Bark



Leaves



Flowers

Black locust is a nitrogen fixing tree and is part of the legume family. Although it is native to parts of North America, it is considered an aggressive species. It is widely used for erosion control and reclamation purposes in the United States and serves as windbreaks. Its flowers also serve as a source of nectar for honey production. Though it is aggressive, black locust is valuable in developing wildlife habitats as it provides cover for birds and squirrels, and attracts white-tailed deer for browsing. Mature black locust trees also support woodpecker nesting cavities, further demonstrating its ecological importance.

Reference

Nicolescu, VN., Rédei, K., Mason, W.L. *et al.* Ecology, growth and management of black locust (*Robinia pseudoacacia* L.), a non-native species integrated into European forests. *J. For. Res.* **31**, 1081–1101 (2020). <https://doi.org/10.1007/s11676-020-01116-8>

Tree-of-Heaven (*Ailanthus altissima*)



Leaves



Bark with Lanternflies

Tree-of-heaven is an invasive deciduous tree native to Asia. Through a mechanism called "allelopathy", they secrete chemical toxins in the soil that can inhibit the growth of native species. Furthermore, the tree-of-heaven is also a habitat for the spotted lanternfly (*Lycorma delicatula*), an invasive insect causing significant damage to crops and trees in North America. It has adapted to withstand many soil types and conditions, including polluted areas. Their seeds can germinate on the side of roads, sidewalk cracks, and nutrient-poor soils. The tree-of-heaven is a highly invasive species that significantly threatens native ecosystems and biodiversity. Efforts are being made to control its spread and prevent further environmental damage. However, due to its extensive and deep root systems, this tree has the ability to control erosion and uptake large amount of water.

Reference

Castro-Díez, P., Alonso, Á., Saldaña-López, A., & Granda, E. (2021). Effects of widespread non-native trees on regulating ecosystem services. *Science of the Total Environment*, 778, 146141. <https://doi.org/10.1016/j.scitotenv.2021.146141>

Black Cherry (*Prunus serotina*)



Flowers



Black Cherries



Bark

The black cherry tree is a prominent native species with great ecological importance. It is an ideal habitat for over 84 bird species, providing both a nesting ground and a source of food. The tree's white, sweet-scented flowers are a natural attractant for a diverse range of moths, butterflies, and birds, making it a popular spot for birdwatchers and nature enthusiasts. The bark of the black cherry tree is being used for medicinal purposes by the Lenape tribe for hundreds of years. It is used to treat diarrhea and combined with other roots to create a tonic. Interestingly, the cherries are also being used by the tribe to make cough syrup. In European countries, the black cherry tree is utilized for a different purpose. The extraction of its flowers and leaves with a combination of methanol and water is used to make a homemade liquor. The resulting drink is said to have a distinct taste and aroma that captures the essence of the tree's natural fragrance.

References

<https://delawaretribe.org/wp-content/uploads/LENAPE-MEDS.pdf>

Brozdzowski, J., Waliszewska, B., Gacnik, S. *et al.* Phenolic composition of leaf and flower extracts of black cherry (*Prunus serotina* Ehrh.). *Annals of Forest Science* 78, 66 (2021). <https://doi.org/10.1007/s13595-021-01089-6>

Callery Pear (*Pyrus calleryana*)



Flowers



Fruits

Commonly known as Bradford Pear, is an exotic tree species that was originally introduced to North America as an ornamental tree during the 1900s. Its spring blossoms make it a popular choice for gardeners, as it attracts numerous pollinators such as bumblebees, honey bees, and butterflies. However, the fruit produced by this tree is small and lacks the nutritional value of fruits produced by native trees, resulting in its consumption by generalist bird species, including invasive birds like the European Starling (*Sturnus vulgaris*). These birds spread the tree's seeds in native habitats such as prairies, disrupting and altering the natural ecosystems. In this way, the Bradford Pear has become a non-native invasive species, posing a threat to the biodiversity of native plant and animal species.

References

Woods, M.J., Dietsch, G. & McEwan, R.W. Callery pear invasion in prairie restorations is predicted by proximity to forest edge, not species richness. *Biol Invasions* 24, 3555–3564 (2022). <https://doi.org/10.1007/s10530-022-02861-z>

Sharma, P. (2023). *Study of Morphological and Physiological Properties and Pollinators of the Invasive Callery Pear* (Order No. 31014284). Available from ProQuest Dissertations & Theses Global. (2913078324). <https://kean.idm.oclc.org/login?url=https://www.proquest.com/dissertations-theses/a-study-morphological-physiological-properties/docview/2913078324/se-2>

Mugwort (*Artemisia vulgaris*)



Leaves

Mugwort, scientifically known as *Artemisia vulgaris*, is a fascinating herbaceous plant that boasts a wide range of medicinal properties. Originally from Asia, it has now spread to North America, where it is considered an invasive species. Mugwort has been used in traditional medicine for centuries to treat various gastrointestinal and gynecological conditions. Thanks to scientific studies, we now know that it also possesses antioxidant, analgesic, and antibacterial effects. Apart from its medicinal benefits, mugwort is also a popular culinary spice. Its essential oil gives it a pleasant aroma and flavor that is used in various dishes worldwide. Mugwort is also widely used in cosmetics for its skin-soothing and calming effects. To cultivate mugwort, modern biotechnological methods such as micropropagation have been explored. These methods offer a more sustainable and efficient way of producing this valuable herb.

Reference

Ekiert, H., Pajor, J., Klin, P., Rzepiela, A., Ślesak, H., & Szopa, A. (2020). Significance of *Artemisia Vulgaris* L. (Common Mugwort) in the History of Medicine and Its Possible Contemporary Applications Substantiated by Phytochemical and Pharmacological Studies. *Molecules*, 25(19), 4415. <https://doi.org/10.3390/molecules25194415>

Guardians of the Shoreline: Exploring the Ecological Functions of Coastal Dunes

Coastal dunes are ecosystems that perform vital ecological functions crucial for the health and resilience of coastal areas. They act as natural buffers, protecting inland areas and infrastructure from erosion, storm surges, and flooding. These dunes offer diverse habitats for numerous plant and animal species, including specialized dune flora and fauna uniquely adapted to the harsh coastal environment. Additionally, coastal dunes provide nesting sites for various bird species, contributing to local biodiversity.

The vegetation found in these dunes plays a crucial role in stabilizing sand, preventing its migration inland, and accumulating sand through natural processes, thereby maintaining beach nourishment and coastal landforms. Moreover, coastal dunes act as carbon sinks, storing organic matter and sequestering carbon dioxide from the atmosphere, which helps mitigate climate change. Beyond their ecological functions, these dunes also provide recreational opportunities, support tourism, and offer educational value, making them integral components of coastal

Reference

Sigren, J. M., Figlus, J., & Armitage, A. R. (2014). Coastal sand dunes and dune vegetation: Restoration, erosion, and storm protection. *Shore & Beach*, 82(4), 5-12.

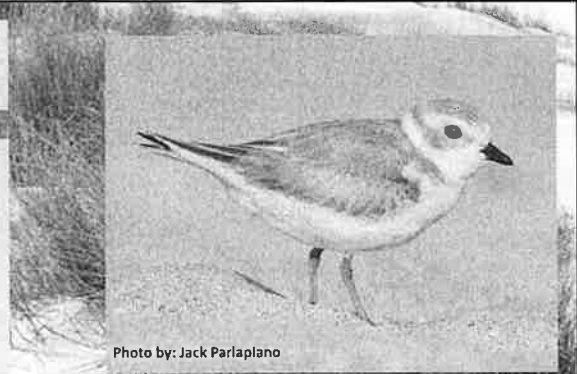


Photo by: Jack Parlapiano

Piping Plover (*Charadrius melodus*)

Piping plovers are threatened shore birds according to the International Union for Conservation of Nature (IUCN) that depend on coastal dunes for nesting sites, where they can find safety and protection from predators and human disturbance. Preserving coastal dune habitats is essential to protect the piping plover population and maintain the ecological balance of coastal ecosystems.

The Vital Role of Maritime Forests: Sustaining Wildlife Communities and Ecosystem Health

Hey there! Did you know that maritime forests are incredibly unique ecosystems that are home to a diverse range of plant and animal species? They provide essential habitats for various wildlife, including birds, mammals, and insects. Not only that, but they also offer numerous ecosystem services, such as carbon sequestration, erosion control, and water filtration, which contribute to the overall health of coastal environments. Maritime forests are also important as migration stopover sites for birds and refuge areas for various wildlife, making them integral components of migratory routes and local ecosystems. Additionally, their native plant diversity helps them to withstand climate change impacts, such as storm surges and sea-level rise. Given their recreational value and educational opportunities, it's important to implement collaborative management strategies for conservation purposes. This will ensure the long-term sustainability of maritime forests and their associated wildlife for generations to come. So, let's work together to protect these amazing ecosystems!

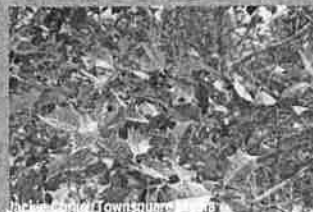
Reference

Woods, N. N., Tuley, P. A., & Zinnert, J. C. (2021). Long-Term Community Dynamics Reveal Different Trajectories for Two Mid-Atlantic Maritime Forests. *Forests*, 12(8), 1063. <https://doi.org/10.3390/f12081063>



Red Knot by B.N. Smith

Red Knot (*Calidris canutus*)



American Holly by J. Townsquare

American Holly (*Ilex opaca*)



NPS Photo/Owens

Maritime Forest



GRANT SOURCES

Bunbury Company Grant→ Area of interest focuses on Environmental programs that help conserve threatened farmland, habitat or waterways and regional planning efforts that help advance these goals. Also fund educational and community building projects.

- Monmouth county is an add-on for eligible regions relative to this grant
- Quarterly deadlines, including March, May, August and November.
- Grant size average is \$15,000. Providing general support, building funds, challenge grants or matching funds, and funds for special programs to 501(c)3 nonprofits.

The current status of the ecological well being at Cedar Street Park qualifies this project for the consideration of this grant. Also covering environmental education program support, this grant closely aligns with the objectives of this project.

Cape Branch Foundation→ Area of interest is for the environment and education, with support for general operating, project support, building funds, and equipment.

- National
- Time Frame is ongoing
- Grant size range: \$2,000-\$385,000 provided to nonprofits. No application forms or deadlines. Interested applicants should submit a written request that includes a description of the organization, the purpose for which funds are being requested, and the amount of the request. Also include a copy of the IRS letter confirming tax-exempt status.

This grant applies to multiple parts of this project, such as educational signage, removal of invasives, and associated equipment.

Community- Based Restoration Grants→ Area of interest which funds marine and coastal habitat restoration projects that benefit fish and shellfish around the coastal U.S.

- Nationwide



- Time Frame is April
- Grant size ranging from \$25,000-\$85,000 and up to \$250,000

This grant could potentially fund the implementation of oyster castles on the shoreline at Cedar Street Park.

CSX Community Investment→ Focus on safety, wellness, community, and the environment (Teaching environmental stewardship, Planting eco friendly trees and plants, Leading and supporting environmental clean-ups, recycling and waste minimization, Promoting energy efficiency and carbon reduction)

- 26 states including New Jersey
- No deadlines
- Average grant size: \$5,000

This is an ideal grant to fund events similar to those facilitated by Clean Ocean Action, also supporting the mechanical removal of invasive species and replanting of native ones.

Doris Duke Charitable Foundation→ the mission of the Environment Program is to enable communities to protect and manage wildlife habitat and create efficiently built environments.

- Nationwide
- Letters of inquiry may be submitted at any time
- The foundation generally awards multi-year grants that range from \$100,000 to \$1 million.

Creating a maximum productive park environment addition, with minimum wasted effort or expense, will give an extra leeway of the project mission. It also shows the management steps taken and protection established to support education and habitat throughout.

Environmental Education Regional Grants (EE) → Supports locally-focused environmental education projects that enhance the public's awareness knowledge, and skills to make informed and responsible environmental decisions



- Nationwide
 - Eligible applicants include nonprofits, educational agencies, environmental agencies, and colleges and universities
- Proposal deadline has varied between March, April, and May
- \$15,000-\$100,000
 - Applicants must match 25%

Not only will this help advance the public's understanding of their community park, but also establish a potential structure for the future changes occurring shortly to make it an intriguing outlook. This grant can assist the outstanding efforts and attention soon to be approached more accurately.

Max and Anna Levinson Foundation→ Makes grants to nonprofit organizations committed to developing a more just, caring, ecological and sustainable world.

- Nationwide
- Deadlines are November 10 and March 10 each year
- No listed size

Sustainability can become common ground by encouraging environmental stewardship with the continuation of the aforementioned project. Gaining community wide support of ecologically and sustainably sound practices begins at the grassroots level.

National Environmental Education Foundation→ NEEF provides grants and awards to leverage the reach of our programs, implement our program goals, support the efforts of other organizations and strengthen the environmental education (EE) field as a whole.

- Nationwide
- Varies by Program
- Size not listed

This grant applies to a majority of objectives listed for this project.



National Recreational Trails Program→ Provides financial assistance for developing and maintaining trails and trails facilities. Trails can be non-motorized, multi-use and motorized purposes.

- New Jersey
- Applications due mid-February
- Maximum grant award is 24,000. Governmental and nonprofit organizations are eligible. Local agencies, special purpose districts, tribes, and non-profit organizations must provide 20 percent match for each project, and at least 10 percent of the total project cost must be from a non-state, non-federal contribution.

The creation and maintenance of the proposed nature trails meet the qualifications of this grant.

Rivers, Trails and Conservation Assistance Program (RTCA) → Conservation and recreation planning professionals partner with community groups, nonprofits, tribes, and state and local governments to design trails and parks, conserve and improve access to rivers, protect special places, and create recreation opportunities.

- Nationwide
- Applications are due by June 30th
- RTCA does not award monetary grants or loans. Instead, RTCA supplies a National Park Service staff person with experience in community-based outdoor recreation and conservation to work with partners

The addition of conservation and recreation planning professionals would ideally lessen the load on the members of the environmental commission and create recreation opportunities and events to attract community members.

New Jersey Office of Information Technology's NJMapp Initiative for community Access to Technology→ Donation of ArcView GIS Bundle to Nonprofit Organizations and Environmental Commissions

- New Jersey
- Ongoing



- See website for specific restrictions

GIS mapping systems are an extremely valuable tool in conservation and restoration efforts. The collection of information regarding natural and man made geographical features along with satellite imagery to help monitor the conditions of natural resources and habitats would allow the environmental commission members to personally monitor these characteristics. Having access to this information first hand would allow management decisions to be made at the first signs of ecological issues, potentially saving time and resources.

New Jersey Tree Foundation→ State-wide nonprofit organization dedicated to the promotion, enhancement and development of community forestry activities. Provides free trees, planting, and other related forestry restoration services.

- New Jersey
- N/A
- Provides trees and training

This grant aligns with the objective of planting native vegetation. The provision of free trees, planting and other forestry services should be capitalized upon. The organization may also have helpful knowledge of best forestry practices we are not aware of.

USEPA Environmental Education Grants Program → Sponsored by EPA's Office of Environmental Education supports environmental education projects that enhance the public's awareness, knowledge, and skills to make informed decisions that affect environmental quality

- Nationwide
- May 2nd as of 2011
- Grants of \$15,000-\$100,000 are awarded in EPA's ten regional offices. Applicants must provide non-federal matching funds of at least 25% of the total cost of the project

Environmental education is a critical first step in terms of cultivating a community's environmental stewardship practices. The support of environmental education under this grant



would continue to spread ecological awareness with the intention of encouraging people to make better informed decisions regarding their respective environment.

DUNE DEVELOPMENT

Use of Christmas Trees/Removal of Swale

Christmas trees have historically been used as dune filler, however recent dune creation and maintenance standards recommend against their use in these projects [N.J.A.C. 7:7-10.4 (g)]. Stating use for stabilization is “discouraged” and proposes the alternative of dune fencing. In the event that the Environmental Commission decides to use Christmas trees as dune structure, the aforementioned Admin Code requires only natural coniferous trees to be used, no other limbs, clippings, or other dead vegetation may be used. Additionally, swales were found to be a natural part of the dune formation cycle. As vegetation catches sand and builds the initial lead dune, a trough close to water level will begin to form behind the initial dune. Because of this, we do not recommend any attempt to fill or counteract the creation of the swale.

PLANTER PROJECT

There are forty planters at Cedar Street Park, all approximately five feet in height with a diameter of thirty six inches across. Four of the planters are mostly empty, while ten of them are approximately halfway full, with the rest being full. It would take about thirty five cubic feet of soil to fill an empty planter. A very rough calculation of the amount of soil required given the previous information is below:

35 cubic feet of space per container

4 empty containers

10 half empty containers

16 full containers

Soil required for refilling = $(35 \times 4) + (35 \times (10 \times 0.5)) = 315$ cubic feet of soil filler



OPPORTUNITIES FOR CITIZEN SCIENCE

Citizen science opportunities available through chronologs: grant supported tool that includes a weatherproof bracket to standardize photos, an instructional sign, an automated email service, and a public webpage displaying submitted photos.

CLOSING STATEMENT

Coastal conservation and restoration is a multifaceted pursuit, and this project has proven to be no different. Cedar street park faces two major challenges, invasive species and improper dune development/erosion. Avoiding the premature removal of invasive species is what we have found to be most important to this specific project. It is highly recommended that the majority if not all invasive species be removed through mechanical means only after the development of adult late successional maritime trees have become dominant in the area. A list of native species that are ideal for Cedar Street Park have been included in this report. To add, remove, or alter any physical aspects of maritime forests and dunes, permits are required from the Department of Environmental Protection. Such permits that this project requires have been listed, and materials that must be included in the permit applications have also been included. The process of applying for permits and following through with conservation and restoration projects can be costly. Grants that match this project's objectives have also been listed along with the grant's requirements and restrictions. Finally, we are also proposing the addition of oyster castles along the stretch of shoreline at Cedar Street Park for erosion control and wave attenuation along with water filtering. However, oyster castles or any shellfish cultivation is not currently permitted by the EPA given the toxicity of the Raritan Bay, making this a currently unachievable addition.

We would again like to thank the Keyport Environmental Commision for working with our group to devise a feasible conservation and restoration plan for Cedar Street Park.



REFERENCES

- Assessment of wave attenuation, current patterns, and ... (2021).
<https://pubs.usgs.gov/of/2021/1040/ofr20211040.pdf>
- Berman, G. (2020, December). *To tree, or not to tree: The use of discarded Christmas trees for Dune Stabilization*. Welcome to the NOAA Institutional Repository.
<https://repository.library.noaa.gov/view/noaa/45705>
- Beheshti, K., Cruz, S., Hughes, B., Boyer, K., State, F., Williams, S., & Davis, U. (n.d.). *Eelgrass Restoration Handbook: the how, when and where of restoring eelgrass habitat Funded by The Anthropocene Institute*. Retrieved April 22, 2024, from
https://mpa.protectedscas.net/resources/downloads/other/EelgrassHandbook_Beheshti_et_al.pdf
- Bologna, P. A. X., & Sinnema, M. S. (2012, January).
https://www.montclair.edu/profilepages/media/234/user/Bologna_and_Sinnema_2012_J_Coast_Res.pdf.
- Brown, C. B., & Sheu, M. S. (1975). Effects of deforestation on slopes. *Journal Geotechnical Engineering Division (ASCE)*, 101–2, 142–165.
<https://botanicgardens.uw.edu/wp-content/uploads/sites/7/2013/12/EffectsofWoodyVegRemovalon-HydrologyGeology.pdf>
- Carex kobomugi* | Lower Hudson Partnership for Regional Invasive Species Management. (n.d.).
<https://www.lhprism.org/species/carex-kobomugi#:~:text=Tilling%20will%20fragment%20roots%20and%20encourage%20re%20sprouting.&text=As%20with%20any%20other%20invasive.remove%20all%20below%20ground%20material>
- Cowan, R. S., & Little, E. L. (1981). The Audubon Society Field Guide to North American Trees: Eastern Region. *Taxon*, 30(2), 548. <https://doi.org/10.2307/1220177>
- Dune ecology: Secondary Dunes and beyond. (n.d.).
<https://njseagrant.org/wp-content/uploads/2016/05/Dune-Ecology-Secondary-Dunes-and-Beyond.pdf>
- Evans, S. (2023, April 25). *Ways to remove bush honeysuckle and why it's important for biodiversity*.
<https://www.quietvillagelandscaping.com/blog/ways-remove-bush-honeysuckle-important-biodiversity/#:~:text=Mechanical%20removal%20involves%20using%20heavy,only%20be%20done%20by%20professionals>
- Gilman, E. F., & Watson, D. G. (2023). *Diospyros virginiana* common persimmon.
https://hort.ifas.ufl.edu/database/documents/pdf/tree_fact_sheets/diovira.pdf



How to remove Callery pear | Trees Atlanta. (n.d.).

<https://www.treesatlanta.org/how-to-remove-callery-pear/#:~:text=Make%20your%20initial%20cut%20around,cut%20at%20waist%20height%20first>

How to remove English Ivy | Trees Atlanta. (n.d.).

<https://www.treesatlanta.org/how-to-remove-english-ivy/#:~:text=Use%20hand%20pruners%20to%20sever,tree%20it%20is%20growing%20on>

How to remove multiflora rose | Trees Atlanta. (n.d.).

<https://www.treesatlanta.org/how-to-remove-multiflora-rose/#:~:text=Cut%20and%20Leave%20%26%20Cut%20and,down%20the%20tree%20or%20shrub>

Invasive plant control methods. (n.d.). Doe.

[https://doe.dc.gov/page/invasive-plant-control-methods#:~:text=Most%20of%20the%20commonly%20known,BGone%E2%84%A2%20and%20Garlon%E2%84%A2\).](https://doe.dc.gov/page/invasive-plant-control-methods#:~:text=Most%20of%20the%20commonly%20known,BGone%E2%84%A2%20and%20Garlon%E2%84%A2).)

NJDEP-Compliance and Enforcement - Aquatic Pesticide Guidelines. (n.d.).

<https://www.nj.gov/dep/enforcement/pcp/bpo-aqguide.htm>

OAK OPENINGS REGION BEST MANAGEMENT PRACTICES. (n.d.). OAK OPENINGS REGION BEST MANAGEMENT PRACTICES.

https://www.oakopenings.org/wp-content/uploads/2019/09/BMP_CalleryPear_finalversion.pdf

Rens, Jimmy de Fouw, M.M. van Katwijk, Bouma, T. J., Heusinkveld, T., Dieuwke Hoeijmakers, Leon, & van. (2022). Seed- versus transplant-based eelgrass (*Zostera marina* L.) restoration success in a temperate marine lake. *Restoration Ecology*, 31(1).

<https://doi.org/10.1111/rec.13786>

Snyder, E. (2022, September 19). *Native Pawpaw Tree*. NC Cooperative Extension News.

<https://caldwell.ces.ncsu.edu/2017/09/native-pawpaw-tree/>

Stearns, S. (2023, December 15). *Invasive plant factsheet: Tree-of-heaven*. Integrated Pest Management.

https://ipm.cahnr.uconn.edu/invasive-species/invasive_plants_tree-of-heaven/#:~:text=A%20foliar%20spray%20of%20glyphosate,moving%20carbohydrates%20to%20the%20roots

Tree of Heaven: Control Strategies. (n.d.).

<https://extension.psu.edu/tree-of-heaven-control-strategies>

United States Department of Agriculture & Forest Service Alaska Region. (2007). *Japanese knotweed* [Report].

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd529922.pdf



USDA Plants Database. (n.d.). <https://plants.usda.gov/home/plantProfile?symbol=ROPS>

Walliser, J., & Walliser, J. (2020, November 3). *How to stamp out Mugwort in your garden*. Hobby Farms.
<https://www.hobbyfarms.com/how-to-stamp-out-mugwort-in-your-garden-2/>

Watts, M. T. (2024). *Winter Tree Finder: Identifying Deciduous Trees of Eastern North America by Their Bark and Twigs*. Nature Study Guild Publishers.

WMA huc14 Assessment Unit Number Assessment Unit ... (2020).
<https://www.epa.gov/system/files/documents/2022-01/nj-2020-303d-list.pdf>

Woods, N. N., Tuley, P. A., & Zinnert, J. C. (2021). Long-Term Community Dynamics Reveal Different Trajectories for Two Mid-Atlantic Maritime Forests. *Forests*, 12(8), 1063.
<https://doi.org/10.3390/f12081063>



BEACH SWEEPS

MASTER

ATTACHMENT #2

Please complete both sides

Thank you for participating in Clean Ocean Action's (COA) Beach Sweeps and completing this data card. **Data collection is the most important task and turns your dedication and volunteerism into a legacy of information we use to reduce litter and marine debris.** The data from this card is collected and analyzed to identify pollution trends in the waters off New Jersey's coast. The final results from Beach Sweep are incorporated into an Annual Report used to educate citizens and lawmakers about nonpoint source pollution. The Fall data is also forwarded to Ocean Conservancy, who maintains an international database for tracking trends of marine debris in world's oceans. For information on how to help raise funds, reduce pollution, and check out COA's Annual Beach Sweep Reports visit www.CleanOceanAction.org.

Consent: As a participant in the Clean Ocean Action Beach Sweeps, I/we understand that I/we participate at our own risk and that there may be photos and/or video taken that may be used by Clean Ocean Action.

CLEANUP SITE INFORMATION			
CLEAN UP SITE NAME	CITY/MUNICIPALITY	COUNTY	BEACH CAPTAIN NAME
CEDAR STREET PARK	KEYPORT	MONMOUTH	MIKE PALMISANO LYNNE KOSOBUCKI
Type of cleanup: ☒ Bay ☐ Shoreline/Beach ☐ Lake, Stream, or River			
DATE OF CLEANUP	NAME OF GROUP/SCHOOL		
04/13/2024	KEYPORT ENVIRONMENTAL COMM. KEYPORT MAYOR + COUNCIL; KEAN UNV; CME ASSOCIATES; INGEDION CORP. CUBSCOUTS; BSA#137		
NUMBER OF VOLUNTEERS WORKING ON THIS FORM	US CUSTOMS, KEYPORT HS		
80-85			
BEACH SWEEP VOLUNTEER INFORMATION Teams of two are encouraged			
VOLUNTEER 1		VOLUNTEER 2	
Name: _____	Name: _____	5 LARGE 55 GAL WHITE/CLEAR	
Street Address: _____	Street Address: _____	@ 40 LBS EA 200 LBS	
City, State, Zip: _____	City, State, Zip: _____	20 BLACK GARBAGE	
Phone: () _____	Phone: () _____	BAGS @ 25 LBS EA 500 LBS	
Email: _____	Email: _____	MISC: IRON PIPE + TRAILER FRAME, MATTRESS, PALLET ETC	
		TOTAL 1300 LBS	
BRAND NAMES Please list the brand names and items		MOST UNUSUAL ITEMS FOUND	
MILLERLITE, MODELO, GATERADE, KEYSTONE, FIRE BALL, DEWARS, BUDLIFE, JACK DANIELS		CELL PHONE, WADERS, PLANTER, PALLET, MATTRESS, BEDDING, RUG, LAWNCHAIR, SLEEPING BAG, 3 UNCOOKED HAMMS, UMBRELLA STAND, BACKPACK FULL OF BEERCANS, CONTAINER OF COINS.	
COMMENTS/OBSERVATIONS about the cleanup (including entangled animals)			
PLANTER FOUND UNDER PILING - DUG IT OUT.			
THANK YOU! IT IS AMAZING WHAT YOU DO AND DOESN'T GO UNNOTICED			

TIPS FOR A SUCCESSFUL SWEEP:

- Be careful with sharp objects
- Wear gloves
- Stay off dunes
- Respect wildlife
- Do not lift heavy objects
- Wear sunscreen
- Have fun!

BLACK BAGS ARE FOR GARBAGE WHITE BAGS ARE FOR RECYCLABLES

Volunteers can reduce the use of plastic bags by bringing their own bucket or reusable bag for trash collection.

Please return this Data Card to a Beach Captain or mail it to:
CLEAN OCEAN ACTION, 49 Avenel Blvd., Long Branch, NJ 07740



732-872-0111
CleanOceanAction.org
Info@CleanOceanAction.org
49 Avenel Boulevard
Long Branch, NJ 07740

Clean Ocean Action is a 501(c)(3)
tax exempt nonprofit organization



#COABeachSweeps



Make a tally mark on the line for each item found. Total the tallies in the box provided.

Most commonly found items are highlighted in orange.

Example:

Cups ||||| 23 Tires (piece) |||| (whole) 11 7 2

PLASTIC

Bags and Wrappers:

Food, Candy Wrappers/Bags 213

Store/Shopping Bags 42

Dog Waste Bags 6

Other Bags 14

Bottles:

Beverage/Soda Bottles 198

Other Bottles/Jugs 60

Bottle Caps/Lids

96

Cap Rings 10

Cigarettes

Filters

37

Lighters 3

Packaging 11

Cigar Tips

27

E-Cigarette Cartridges/Caps/Pens 8

Fishing:

Bait Bags/Containers 7

Line (tangle) 19 Line (piece) 2

Lures, Floats 6

Nets 3

Food Takeout:

Beverage Cups 28

Forks, Knives, Spoons 8

Food Lids 10

Straws/Stirrers

26

Takeout Containers 6

Health/Hygiene Products:

Cotton Swab Sticks 1

Dental Floss Picks 2

Diapers 4

Disposable Wipes 4

Syringes 4

Tampon Applicators 8

Miscellaneous:

Light Sticks 1

Pens 1

Pieces

89

Ribbon/Tape (no balloon) 7

Rope 11

6-Pack Holders 7

Sheeting 1

Shotgun Shells 1

Strapping Bands 1

Toys 3

Other Plastics (specify) HOOK, GRABND CLOTH 27

FOAM PLASTIC

Building/Dock Material 15

Cups 12

Packaging Materials 37

Pieces

110

BASKET BALL TENNIS BALL

Plates 2

Trays 3

Takeout Containers 3

Other Foam Plastic (specify) STYROFOAM,

SPONGE, YOGA MAT, ZIATFE 25

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Disposable Face Masks 3

Reusable Face Masks 1

Disposable Gloves 16

BALLOONS & RUBBER

Balloons

Mylar/Plastic 8

With String/Ribbon 2

Rubber/Latex 6

With String/Ribbon 1

Condoms 2 Rubber Bands 1

Reusable Gloves (Tally disposable under PPE) 4

Tires (piece) 3

(whole) 12

Other Rubber (specify) SOCCER BALL 1

METAL

Batteries (car) 1

(other) 70

Cans

Beverage Cans 433

Other Cans 3

Fishing: (hooks) 1

(sinkers) 1

Foil 7

Nails 2

Wire 6

Pieces 1

Pop Tabs 1

Other Metal (specify) PART OF SIGN 2

PAPER

Beverage Cartons/Boxes 6

Cardboard 26

Cups 7

Newspaper/Magazines 1

Paper Bags 9

Pieces 22

Plates 1

Other Paper (specify) LOTTERY TICKET 2

CLOTH

Blankets/Sheets/Towels 18

Clothing (specify) SOCKS, JACKET,

HOODIE, SWEATSHIRT,

SHAWL 26

Shoes/Sandals 16

String (no balloon) 3

Other Cloth (specify) CELL PHONE CASE

HAT GLOVE 10

WOOD

Ice Cream Spoon/Sticks 3

Lumber Pieces 1

Pallets 1

Other Wood (specify) 1

GLASS

Bottles/Jars:

Beverage Bottles 136

Other Bottles/Jars 14

Pieces 174

Other Glass (specify) CERAMIC TILE 20