

North Carolina Coastal Federation
2011 Jockey's Ridge State Park Community-based Shoreline Restoration
Contract No. 4437

Final Report To
Albemarle-Pamlico National Estuary Program
September 10, 2012

Summary

The Roanoke Sound estuary is a rich, brackish-water coastal estuarine ecosystem. Fringing coastal marshes containing giant cordgrass (*Spartina cynosuroides*), smooth cordgrass (*S. alterniflora*), black needlerush (*Juncus roemarianus*) and salt meadow hay (*S. patens*) and provide essential habitats for many fish and waterfowl. Within Jockey's Ridge State Park, this marsh system is healthy along approximately forty percent of the park's one mile estuarine shoreline, but is experiencing significant erosion elsewhere. The marsh protects the adjacent riparian barrier island trees, shrubs and grasses classified as of regional and state significance and harbors rare species of plants and animals. Fringe marsh also provides vital spawning, nursery, and feeding areas for most of the region's important coastal fishery species.

Protecting and replanting the marsh along the northern section of the park has been the focus of restoration activities in recent years. Before restoration this area suffered severe shoreline erosion due to wind and wave-generated forces as well as damage from vehicular and pedestrian traffic. Grants awarded to the North Carolina Coastal Federation in FY 08 and 09 from the SARP program and a USFWS grand program have led to the highly successful implementation of two shoreline restoration projects.

Phase I and II of the restoration restored or protected approximately 1.5 acres of coastal marsh along 725' of the park's shoreline with an off-shore bagged oyster shell sill. In July 2011, the restored marsh appeared health and the oyster sill was effectively dissipating wave energy at the site. Blue crabs and juvenile fish were observed in the newly created marsh and waters behind the sill and there was an increase in the number of wading birds observed foraging in the marsh. In late August 2011, Hurricane Irene passed over Dare County, bringing heavy rainfall, strong wave energy, and, most damagingly, a large storm surge, which uprooted some of the most recently restored marsh areas. This current phase of the project aims to replant marsh grasses and riparian vegetation in the restore areas and add an additional layer of oyster shell bags to the sill enhancing the shellfish and finfish habitat on site. Given the initial project success, the federation and the park are motivated to continue cultivating the coastal marsh in this restored area and bring the project site to its fullest restoration potential.

Project Benefits

This project is part of a multi-year effort for the federation and Park. It implements a living shoreline restoration project that restores lost and degraded marsh along the park's shoreline, protects it with an oyster sill, thereby creating essential fish habitat and involves the local community in its implementation to foster a better understanding of the unique ecosystems that the park and Outer Banks support and cultivates a new generation of environmental and coastal stewards.

Objectives/Progress: July 1, 2012– September 15, 2012

The Jockey's Ridge State Park Community-based Shoreline Restoration in Nags Head, NC project goal is to restore and maintain a living shoreline, which consists of a bagged oyster shell sill and marsh grass plantings along 725' of the parks shoreline by engaging community volunteers and student groups in the restoration effort. The project is complete but monitoring efforts will continue for the next two years as part of the permit requirements.

The following work was completed to meet the project goals and objectives during this reporting period:

- The federation staff led a site visit for the North Carolina Aquarium on Roanoke Island's Aquatic Adventure Camp. The students toured the site and drew pictures of the shoreline demonstrating their learning and understanding of this important estuarine habitat.
- The federation staff led 6 interpretive programs at the NC Aquarium's Jennette's Pier in July and August. This program was open to the public and focused on the importance of estuaries and their habitats. The restoration project at Jockey's Ridge was featured. Over 200 residents and Outer Banks visitors were educated as part of the program.
- The federation and park staff led a day of restoration at the Park on July 9, 2012. Students from the River City Community Development Corporation Youth Build Program, based out of Elizabeth City, assisted with shell bag placement. They returned again on September 6, 2012 for the final day of sill maintenance and project restoration efforts.- Liability on file with the federation.
- A troop of 13 girl scouts and 5 adults from Plymouth assisted with shell bag placement on July 21, 2012.-Liability on file with the federation.
- The federation staff led a vegetation monitoring session with ten student's participating in the NOAA Monitor National Marine Sanctuary Youth Working Group Program. The students monitored the vegetation growth in the Phase I project area on August 9th. Ten students and four adults from Chesapeake, Virginia assisted with the monitoring effort.- Liability on file with NOAA.
- The federation staff monitored the vegetation in Phase II of the project area on August 29, 2012.
- The federation staff created a plaque and new signs for the project site. These will be used to promote the project, partners and funders in various outreach/educational venues. Pdf of sign available here:
<https://www.yousendit.com/download/TEhWeFVRT01OMURIRHNUQw>

- Youth Build Program issued a press release about their community service efforts at Jockey's Ridge State Park and a second federation project site on Hatteras Island. The Coastland Times ran the article on July 26, 2012. Pdf of article attached.

Community Involvement July 2012- September 2012



Students from NOAA Monitor National Marine Sanctuary Youth Working Program assist with vegetation monitoring at Jockey's Ridge State Park August 9, 2012.



Students and Teachers from River City Community Development Corporation, Youth Build Program assisted with shell bag placement July 9 and September 6, 2012

In Kind Services, Volunteer Hours and Leverage

- Students and teachers from River City CDC Youth Build Program donated \$4,052.94 worth of in-kind services to this project through their volunteer efforts of building the oyster shell bag sill on two different occasions.
- A local Girl Scout troop donated 90 hours of their time worth \$1,961.10 of in-kind services to this project.
- Volunteers from NOAA-Monitor Sanctuary program donated 98 hours of their time worth \$2,135.42 of in-kind services to this project.

CCMP Goals, Outcomes, Objectives and Actions Addressed

This project addresses the following 2012 CCMP Goals and Outcomes

Goal 1: A region where human communities are sustained by a functioning ecosystem

Ecosystem Outcomes:

e. Opportunities for recreation and access to public lands and waters are protected and enhanced.

Goal 2: A region where aquatic, wetland, and upland habitats support viable populations of native species

Ecosystem Outcomes:

a. The biodiversity, function, and populations of species in aquatic, wetland, and upland communities are protected, restored, or enhanced.

This work supports the following 2012 CCMP Objectives and Actions

Objective B3: Utilize natural and constructed “living” shorelines to maintain estuarine and riverine ecosystem processes

Objective C1: Restore water quality by eliminating targeted sources of water pollution.

Action C1.3: Facilitate the restoration of riparian and estuarine shorelines.

Objective D1: Foster environmental stewardship.

Action D1.1: Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP’s mission.

Objective D2: Conduct targeted environmental education efforts regarding sustainable use, habitats, and ecosystem services.

Action D2.1: Provide and promote opportunities for outdoor experiences that connect individuals with the Albemarle-Pamlico ecosystem.

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YOUTHBUILD STUDENTS traveled from Elizabeth City in May to assist with a project in Hatteras where they planted nearly 3,000 marsh grasses at a site on Durant's Point. On a second visit to the Outer Banks this month, the students helped create an off-shore sill made of oyster shell bags. This sill protects the shoreline and newly restored marsh at Jockey's Ridge State Park. (photo courtesy River City YouthBuild)

YouthBuild students participate in Outer Banks shoreline projects

By PAT HOLLINGSWORTH
River City YouthBuild Instructor

River City YouthBuild students recently participated in two community service projects on the Outer Banks where they assisted the North Carolina Coastal Federation with two Living Shoreline Projects.

Living Shorelines are alternatives to bulkheads that protect shorelines while creating needed habitat for coastal fish and plant

species.

They involve creating a low-profile off-shore sill, often made of either oyster shell bags or granite, which protects the shoreline, and are then planted with native marsh grass to further protect the shoreline and create needed habitat.

The federation has implemented more than 20 living shoreline projects in the state.

In early May, students trav-

eled from Elizabeth City to assist with a project in Hatteras. In a single afternoon, they planted nearly 3,000 marsh grasses at a site on Durant's Point. This project was designed to restore marsh that had eroded and protect Hatteras Harbor, which is very important to the local culture and economy.

On a second visit to the Outer Banks in July, the students helped create an off-shore sill made of oyster shell bags. This sill protects the shoreline and newly restored marsh at Jockey's Ridge State Park.

Historic damage to the sand dunes had allowed sand to blow directly on the fringing salt marsh, making it susceptible to wave and wind erosion. The oyster sill and marsh grass plantings are designed to restore the lost marsh and protect the shoreline

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YOUTHBUILD
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from future erosion. These environmental projects increased YouthBuild students' awareness of how fragile North Carolina's coast is as well as man's responsibility to protect it. River City Community Development Corporation, in partnership with the North Carolina Coastal Federation, plans to sponsor future opportunities for community service for YouthBuild students creating an invaluable hands-on experience for partici-

Event Oyster Shell Deployment
 Date 9-Jul-12
 Location Jockey's Ridge State Park

Last	First	Group	Address	City	State	Zip	Time	Travel	Total Hours
Ashton	Ben	River City		Elizabeth City	NC	27909	3	2.5	5.5
Bennett	Domonic	River City		Elizabeth City	NC	27909	3	2.5	5.5
Garcia	Felicia	River City		Elizabeth City	NC	27909	3	2.5	5.5
Griffin	Spencer	River City		Elizabeth City	NC	27909	3	2.5	5.5
Jones	Edward	River City		Elizabeth City	NC	27909	3	2.5	5.5
Jones	Jerald	River City		Elizabeth City	NC	27909	3	2.5	5.5
Kavui	Ezekiel	River City		Elizabeth City	NC	27909	3	2.5	5.5
Mackey	Lenora	River City		Elizabeth City	NC	27909	3	2.5	5.5
Mackey*	Arianna	River City		Elizabeth City	NC	27909	3	2.5	5.5
Moore	Arsenio	River City		Elizabeth City	NC	27909	3	2.5	5.5
Pendley	Makayla	River City		Elizabeth City	NC	27909	3	2.5	5.5
Spence	Oscar	River City		Elizabeth City	NC	27909	3	2.5	5.5
Thomas	Ann	River City		Elizabeth City	NC	27909	3	2.5	5.5
Wills	Angie	River City		Elizabeth City	NC	27909	3	2.5	5.5
	Trequan	River City		Elizabeth City	NC	27909	3	2.5	5.5
15		Volunteers					45	37.5	82.5

STAFF									
Fleckenstein	Erin	NCCF		Manteo	NC	27949	3	0.5	3.5
Hallas	Sara	NCCF		Manteo	NC	27949	3	0.5	3.5
2		Staff					6	1	7

* Under 18

Event Oyster Shell Deployment
Date 21-Jul-12
Location Jockey's Ridge State Park

Last	First	Group	Address	City	State	Zip	Time	Travel	Total Hours
Collier	Grace*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Smith	Claire*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Davenport	Megan*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Spruill	Reagan*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Luton	Kellee*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Mizell	Makenzie*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Smith	Kaila*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Smith	Klara*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Faulk	Brianna*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Horton	Marisa*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Smith	Emma*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Downing	Alexus*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Barsanti	Eliza*	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Faulk	Phyllis	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Smith	Kelly	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Mizell	Michelle	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Spruill	Corie	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
Davenport	Clara	Plymouth Girl Scouts		Plymouth	NC	27962	2	3	5
18		Volunteers					36	54	90

STAFF									
Fleckenstein	Erin	NCCF		Manteo	NC	27949	3	0.5	3.5
Hallas	Sara	NCCF		Manteo	NC	27949	3	0.5	3.5
2		Staff					6	1	7

* Under 18

Event **Shoreline Monitoring**
 Date **9-Aug-12**
 Location **Jockey's Ridge State Park**

Last	First	Group	Address	City	State	Zip	Time	Travel	Total Hours
Adams	Mike*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Hahn	Samantha*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Heesemann	Lauren	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Hill	Kaelan*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Morrison	Evan*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Mullen	Coral*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Ricles	Shannon	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Smotts	Cailey*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Tyndall	Christina*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Wiles	Brendan*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Wood	Aidan*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Yaden	Amanda	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Zminkowski	Tyler*	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
Zminkowski	Kim	Monitor National Marine Sactuary Youth Working Group	NOAA	Newport News	VA	27909	2	5	7
14		Volunteers					28	70	98

* Under 18

Event Oyster Shell Deployment
Date 6-Sep-12
Location Jockey's Ridge State Park

Last	First	Group	Address	City	State	Zip	Time	Travel	Total Hours
Aston	Ben	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Batty	Matthew	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Bogamer	Bobbie	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Brinley	Nathaniel	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Douglas	Samantha	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Garcia	Felicia	River City Youth Build Program	Teacher	Elizabeth City	NC	27909	2	2.5	4.5
Glover	Tavon*	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Goodman	Andre	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Gregory	Chanelle	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Harris	Allan	River City Youth Build Program	Teacher	Elizabeth City	NC	27909	2	2.5	4.5
Johnson	Samona	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Kee	Terrence	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
McKellon	Scott	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Shifflett	Joseph	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Spence	Oscar	River City Youth Build Program	Teacher	Elizabeth City	NC	27909	2	2.5	4.5
Thomas	Ann	River City Youth Build Program	Teacher	Elizabeth City	NC	27909	2	2.5	4.5
White	Shardasia*	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
White	Latisha	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Williams	NaQuana	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Williams	Solita	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
Wills	Angle	River City Youth Build Program	Teacher	Elizabeth City	NC	27909	2	2.5	4.5
Wrighten	Trequan	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
	Kimberly	River City Youth Build Program		Elizabeth City	NC	27909	2	2.5	4.5
23		Volunteers					46	57.5	103.5
STAFF									
Fleckenstein	Erin	NCCF		Manteo	NC	27949	3	0.5	3.5
Hallas	Sara	NCCF		Manteo	NC	27949	3	0.5	3.5
2		Staff					6	1	7

* Under 18

Match

Volunteer (In-Kind Match)		Match Type	Date	Total Number	Total Hours	Rate	Total
River City Youth Build		In-Kind	7/9/2012	15	82.5	\$21.79	\$1,797.68
Plymouth Girl Scouts		In-Kind	7/21/2012	18	90	\$21.79	\$1,961.10
Monitor National Marine Sanctuary Youth Working Group		In-Kind	8/9/2012	14	98	\$21.79	\$2,135.42
River City Youth Build		In-Kind	9/6/2012	23	103.5	\$21.79	\$2,255.27
						Total	\$8,149.46