

This publication supported and approved by the partners below. For a more in depth "Roadmap to Living Shorelines" consult the resource links provided.



UF/IFAS is a partnership between state, federal, and county governments to provide scientific knowledge and expertise to the public.



Sea Grant is a program within IFAS Extension that provides education on coastal and marine activities. Sponsor of Bringing Back the Bayou seminars.

Escambia Tel 850.475.5230
<http://escambia.ifas.ufl.edu>
 Santa Rosa Tel 850.623.3868
<http://santarosa.ifas.ufl.edu>



State agency responsible for environmental management and stewardship. Northwest Aquatic Preserves is the office who provides guidance on living shorelines.

Tel 850.595.8300
www.dep.state.fl.us/northwest/Ecosys/section/living_shorelines.htm



A U.S. Fish and Wildlife Service program providing financial and technical assistance for habitat restoration and protection projects.

www.fws.gov/panamacity



A local non-profit encouraging the community to be responsible environmental stewards by promoting litter awareness, recycling, and beautification.

Tel 850.438.1178

www.KeepPensacolaBeautiful.org/oyster



A cooperative effort between FDEP and Keep Pensacola Beautiful to provide clean recycled oyster shell for oyster reef substrate with shell collected from local restaurants.



A local non-profit focusing on public education, and encouraging public involvement in social and environmental issues.

www.earthethics.us



A Northwest Florida non-profit citizens conservation organization promoting healthy ecosystems through water quality monitoring and habitat preservation from inland systems to the bays.

www.breamfishermen.org

Where can I see a Living Shoreline?

Every living shoreline is different based on a variety of factors including length, width, wave energy, materials, etc. It can be very helpful to observe a living shoreline that is representative of what you can do on your shoreline. We encourage you to visit the City of Pensacola Living Shoreline Project along Bayou Texar at Bayview Park. The project consists of 22 oyster reefs constructed out of bagged, recycled oyster shells, and native, salt tolerant grasses. Prior to the installation of salt marsh plants, nuisance species were removed from the shoreline. The project is visible between the boat launches and educational signage is provided.



More help and information

Roadmap to Living Shorelines

A more detailed document found on each partner's website

Permit Applications

www.dep.state.fl.us/water/wetlands/index.htm

Northwest District Shoreline Stabilization Guidelines with links and Example Drawings

http://publicfiles.dep.state.fl.us/dwrm/slerp/erphelp/mergedProjects/erphelp/Subject_Discussions/Living_Shorelines.htm

Native Nurseries

Arc Gateway Plant Nursery, 1112 East Fairfield Dr, Pensacola, FL

(850) 469-0849 dbonelli@arc-gateway.org

Rancho La Orquidea, Inc., Milton, Florida (850) 983-8948

orchidfarm@aol.com

Southern Native Plants Specialties, Inc., Milton, Florida

(850) 983-9121 sonative@yahoo.com

Other Resources

www.dep.state.fl.us/water/wetlands/swerp/

A guide for Escambia/Santa Rosa
 County, Florida property owners
 Provided by your UF IFAS Extension Agent



LIVING SHORELINE - Can it work for your property?



Shorelines are essential components of our natural world that affect our water quality and support our wildlife.



Shoreline buffer zones prevent pollution, stop erosion, and protect intertidal habitats essential for fish and wildlife.



If you live on a coastline, river, bayou, or even a stormwater conveyance, one of the most effective conservation measures is to maintain or restore the natural shoreline.

What is a Living Shoreline?

Many shorelines are reinforced with seawalls or rock. A Living Shoreline (LS) is an environmentally friendly alternative to stabilize your waterfront property. This involves returning a shoreline to a natural vegetative state by removing walls and other manmade structures. It has been shown that hardened shorelines (those with seawalls and bulkheads) can fail in 7-10 years. When a natural buffer of native plants is installed, an intertidal zone is restored providing habitat for fish and wildlife. A Living Shoreline may or may not include oyster reefs.



Wave action eroding your shoreline?

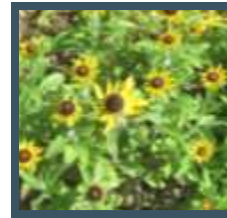
Consider an oyster reef to serve as a breakwater

Oyster reefs function as a natural breakwater. They absorb powerful wave energy before it reaches and erodes the shoreline. The reef can also shield the area until newly planted vegetation becomes established. Oysters filter water and can remove sediments and improve water quality. One simple test to see if an oyster reef is potentially suitable is to check around pilings, debris, and other hard surfaces for oyster growth. Their presence indicates there is a supply of oyster larvae that will naturally attach to recycled shell. Oyster shell is netted in bags prior to deployment to a permitted reef site.

What plants are recommended?



Native trees and shrubs, muhly grass, dune sunflower, and Indian Blanket flower are desired for areas above high tide. Grasses like black needlerush, saltmeadow cordgrass, and smooth cordgrass are planted in the intertidal and tidal zones. All grasses are adapted to a wide range of salinities and form dense, protective mats. Spring is the best time to plant grasses because it gives the plants the entire growing season to become established and take firm hold before winter sets in.



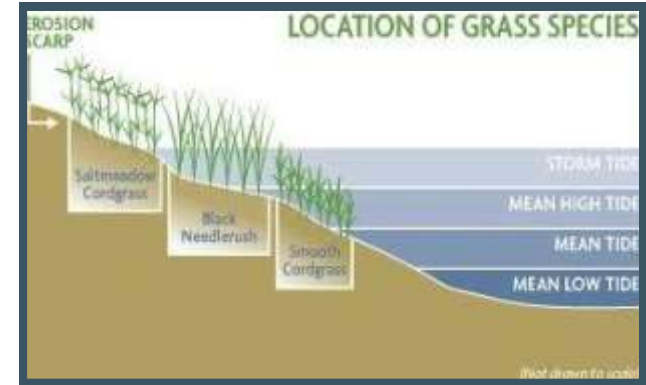
By trapping sediment, the grasses will grow wider and actually push the high tide away from the base of the bank. It is essential that native species be used. Plantings are normally done when tides are very low. A list of local nurseries, appropriate grasses, and upland plants are found in this document.



What Living Shoreline technique is best applied on my property?

There are many steps involved with installing a living shoreline, and while the ambitious property owner can try this themselves, it is easier when the experts are involved. We all recognize the need to provide more living shoreline education, guidance and resources to our residents, and while a 'cookbook' or one stop guide is desirable, no two properties are alike. Property owners should conduct more in depth research by visiting each of the agencies websites to thoroughly understand what is necessary and desired for their property before requesting a preliminary site assessment by a professional.

Where are grasses planted?



What is the next step?

To install any materials, natural (plants) or unnatural (reefs) waterward of the mean high water line, a property owner must obtain authorization from the State of Florida Department of Environmental Protection (FDEP) and the United States Army Corp of Engineers (USACE). The FDEP will forward applications to USACE once submitted, so only one application is necessary. Permit rules are governed by the Florida Administrative Code, Chapter on Environmental Resource Permitting (Ch. 62-330). Most LS projects can be authorized under the exemption found in Ch. 62-330.051 (12)(e), provided the project meets the restrictive parameters outlined; for example, length of project, distance from shore, scope of work, etc. If more extensive work is needed than outlined in the exemption, an applicant can apply for an individual permit (visit resource list for more information). Permit options do vary in costs and complexity based on the scope of work and the site. To view this permitting exemption visit <https://www.flrules.org/gateway/RuleNo.asp?title=ENVIRONMENTAL%20RESOURCE%20PERMITTING&ID=62-330.051>. Click "view rule" and scroll down to (12)(e) to the exemption language. The FDEP has regulatory staff that can assist with making decisions on which path to take as well as online permit assistance.

ESCAMBIA COUNTY OFFER YOUR SHELL TO ENHANCE RESTORATION (OYSTER) PROJECT

		Task 1	Task 2	Task 3	Total
	Schedule	Year 1	Year 2	Year 3	
Personnel					
Staff 1	Project Manager	45240	45240	45240	135720
Staff 2	Environmental Planner	36400	36400	36400	109200
Worker 1	Driver (hourly)	6495	12990	12990	32475
Worker 2	Asst Driver (hourly)	5569	11138	11138	27845
Bene its					
All	Payroll Expenses -10%	9370	10577	10577	30524
Staff 1	Travel allowance	3000	3000	3000	9000
E ui ment					
	3/4 T truck w/ goose neck trl p	43000			43000
	van	24000			24000
					0
Tra el					0
	Mileage Veh 1 .575/per mile	2749	3540	3540	9829
	Mileage Veh 2	1725	1725	1725	5175
Materials & Su lies					
	Mesh Netting (200 ft roll)	5108	5261	5419	15787
	32 gal Trash cans	1550	1597	1644	4791
	Shipping/ mailing	500	500	500	1500
	push brooms/shovels/rakes	1000	1000	1000	3000
	Office supplies	1300	1000	1000	3300
	Plant Materials		1000	1000	2000
	Civitan Educational Signage		5293		5293
	Volunteer Recognition/support	2300	2300	2300	2300
	FirstAid kits/tool boxes	200			
Printing and Marketing					
	brochures	650	670	690	2010
	placemats	1000	1000	1000	3000

ESCAMBIA COUNTY OFFER YOUR SHELL TO ENHANCE RESTORATION (OYSTER) PROJECT

	vehicle wraps	1636			1636
	banners/signage				
Rent					
	Annual Rent	9600	9600	9600	28800
	Utilities	2280	2280	2280	6840
Insurance					
	Vehicle Insurance	2240	2240	2240	6720
	Libility Rider	110	110	110	330
Services					
	Port o let	900	900	900	2700
	Web Site maintenance	1000	1000	1000	3000
	graphic design	1000	1000	1000	3000
	Accounting	1200	1200	1200	3600
Maintenance					
	Bobcat service	750	750	750	2250
	Trailers	250	250	250	750
Other					
	Storage Shed	2500			2500
	vehicle registration	150	150	150	450
	Office Furnishings	3500	1000		4500
	Renovations	10000			10000
	Office computers/software	1500	1000		2500
	Bridge Pass	140	140	140	420
	Permit Civitan Park		730		730
Total		229912	166580	158783	555275

Escambia County Offer Your Shell To Enhance Restoration (OYSTER) Project

Budget Detail

1. Personnel Salaries and hourly pay were obtained from similar job postings and responsibilities from the Escambia County website and the State of Florida job site People First. Staff 1 □ Project Manager and Staff 2 □ Environmental Planner (Job descriptions and level of responsibility to be commensurate with pay) Driver/ asst driver estimate is 10 hours/wk (rate □12.49) (□10.71) first year and 20 hr week year 2 and 3
2. Benefits. Estimated at 10% to include workman's' comp, employer social security and payroll expenses
3. Vehicle allowance is for a □250 monthly allowance for mileage and travel associated with personal vehicle use for Staff Member □1
4. Equipment: □ Ton truck with a goose neck trailering package to haul a double axel or dump trailer; Small Cargo van for transporting equipment and supplies to volunteer events, educational programs, festivals, or reef builds. Also used for daily use for site visits and staff coordination. No expense in year 2 or 3.
5. Travel: Vehicles 1 & 2 Estimated annual mileage times the IRS vehicle rate of .575. Vehicle 1 4180/6156/6156 miles; Vehicle 2 3000 miles each year.
6. Materials and Supplies: Mesh netting is 25 rolls and □204/roll; plus expendable supplies as cans, rakes, brooms, shovels, tables, gloves, printing supplies, frames and certificate holders, List not all inclusive. Year 2 is the addition of 4 educational signs at 1323.25 each.
7. Printing and Marketing: Printing of brochures, placemats, banners and signage. Not all inclusive. Vehicle wrap for both vehicles.
8. Rent and Utilities: Estimated rent and utilities for an additional office building next door to KPB spaces to accommodate additional vehicles, staff, materials and supplies.
9. Insurance: Insurance for 2 vehicles for 1 year (□2240), Liability rider for PSC is □110.
10. Services: Port O let rental for oyster shell storage facility □75/mo for 12 months
11. Services Website: support for page postings and updates for the OYSTER project on the Keep Pensacola Beautiful Website (www.KeepPensacolaBeautiful.org)
12. Services Graphic Design: 25 hours @ □40/hr for graphic design work for update brochures/ placemats/signage, etc
13. Services Accounting: Additional accounting fees and Quickbooks accounting to accommodate the additional reports and accounts. 12 months @ □100/mo

14. Maintenance: Standard maintenance of equipment

15. Other: A storage shed is necessary at the oyster shell site for storage of equipment. Annual vehicle registration. Office furniture for new staff, plus computers, printer, and software (Microsoft Office, Adobe Acrobat and GisArc); Bridge Pass for 2 commercial vehicles; Office furnishings for staff; and renovations for rental building; Environmental permit for Civitan Park.

Restaurant Partners:

Peg Leg Pete's
1010 Fort Pickens Rd
Pensacola Beach, FL 32561
850.932.4139

Grand Marlin
400 Pensacola Beach Blvd
Pensacola, FL 32561
850.677.9153

Shaggy's
701 Pensacola Beach Blvd
Pensacola, FL 32561
850.934.4852

Red Fish Blue Fish
5B Via Deluna
Pensacola, FL 32561
850.677.8899

Shux
501 S Palafox St
Pensacola, FL 32502
850.438.1999 #1

Additional Partners:



POSNER MARINE
UWF SCUBA Club

*Interested in Volunteering
or becoming a Project Partner?
Contact the OYSTER Project Team:
850.438.1178*

OYSTER Sponsors



NFWF



UF | IFAS Extension
UNIVERSITY of FLORIDA

PENSACOLA



3303 N Davis Hwy
Pensacola, FL 32503-7240

email: volunteer@KeepPensacolaBeautiful.org
www.KeepPensacolaBeautiful.org
[www.dep.state.fl.us/northwest/Ecosys/section/
restorationoyster.htm](http://www.dep.state.fl.us/northwest/Ecosys/section/restorationoyster.htm)



What is the OYSTER Project?

The Offer Your Shell To Enhance Restoration (OYSTER) Project is a cooperative effort between Keep Pensacola Beautiful, Florida Department of Environmental Protection (FDEP), Southern Company and the National Fish and Wildlife Foundation, our local sponsors and partners. The project seeks to collect oyster shell from local restaurant partners to be used as substrate to restore oyster reefs in the Pensacola Bay System.

Once deployed, oyster shells act as preferred substrate which attracts oyster larvae, or spat. Oyster spat are mobile during the larval stage and move with currents and tides until they select a place to settle or “set”. The larvae are selective and prefer a cleaner surface; this is why recycled shell is the preferred material.

How do oyster reefs benefit the environment?

Oysters filter nutrients, algae, bacteria, and fine sediments from the water, improving water clarity and quality. The adult oyster can filter 50 gallons of water in a 24 hour period. Oyster reefs provide habitat for many species of marine life. Oyster reefs act as natural breakwaters, protecting the shoreline from erosion due to waves and storms.



Where are the reefs within our local watershed system?

Since October 2005 FDEP has deployed hundreds of tons of clean recycled oyster shell into Northwest Florida estuaries to create oyster reefs in Blackwater Bay, East Bay, Bayou Texar, Bayou Chico, Bayou Grande, Perdido Bay, Choctawhatchee Bay, Bayou Garcon, and Rocky Bayou.



How does the collection process work?

The collection process is easy. Restaurants are supplied with containers for the discarded shell. Keep Pensacola Beautiful staff and volunteers routinely pick up of the oyster shell from participating restaurants. The shells are then transported and dried at a local staging area prior to deployment to each permitted reef site.



What is the history and status of the oyster project?

The partnership has evolved since July 2011 and is ongoing subject to funding and the continued support of our dedicated partners.

The Bayview Park project in 2012 saw 84 tons of shell collected from local restaurants and 22 oyster reefs restored at Bayview Park.

The Bayou Texar project in 2013 saw 136 tons of shell collected and 40 reefs built at 10 shoreline properties.

The Bayou Grande project is ongoing. We are projected to build 39 reefs on 5 adjacent shoreline properties with 125 tons of recycled shell

As long as there is shell to collect there will be habitat to restore. We are always looking for partners and volunteers of all kinds!

Living Shoreline Demonstration Area - Bayview Park, Bayou Texar

For more information on living shorelines visit our Living Shoreline Demonstration area at Bayview Park and our OYSTER webpage.



ESCAMBIA COUNTY OFFER YOUR SHELL TO ENHANCE RESTORATION (OYSTER) PROJECT

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