Galveston Bay Oyster Shell Recycling Program: Reclaiming the Resource

GLO Contract No: 13-037-000-6904

FINAL REPORT
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Prepared By:

17330 Hwy 3
Webster, TX 77598
281.332.3381
www.galvbay.org

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PROJECT SUMMARY

The Galveston Bay Foundation operates upon the mission to preserve, protect, and enhance Galveston Bay and its tributaries and oyster reefs are an extremely important part of the Galveston Bay ecosystem. Recent studies (Beck et al 2011) show that oyster reef is the most threatened marine habitat worldwide, with 85% loss on a global scale. Prior to 2008, Galveston Bay accounted for 80% of all oysters harvested in Texas. However, as a result of Hurricane Ike in 2008, nearly 60% of Galveston Bay's oyster reefs were destroyed as sediments from the storm deposited on reefs and smothered oysters; East Bay lost 80% of its reefs. Because of this tremendous loss of this critical marine habitat, the Galveston Bay Foundation (GBF) reinstated its Oyster Reef Restoration Program in 2009.

To support the oyster restoration efforts, the Galveston Bay Foundation partnered with local restaurateur Tom Tollet, owner of Tommy's Restaurant and Oyster Bar, to begin reclaiming oyster shell served in his restaurant for use in local oyster restoration projects. Instead of the shells going in the dumpster it was collected in bins behind the restaurant where GBF staff collect and transport the shell to a remote property where it is then cured in the sun for at least six months before being used in restoration projects.

The pilot program with Tommy's provided many learning experiences for oyster shell recycling and these lessons learned were applied to the expansion of the program starting in the fall of 2012. The expansion of the program included recruiting new restaurants to the program and also developing and distributing outreach materials to educate the public about the importance of oysters to the ecosystem.

Shell obtained from GBF's Oyster Shell Recycling Program will be used for future projects that benefit ecosystem services of Galveston Bay and the health and sustainability of the native oyster population. Studies have shown, and GBF and TPWD have evidenced, that oyster shell is one of the most highly preferred hard substrates for oyster larvae to attach (Coen and Luckenbach 2000) and the collection and placement of shell back into the environment provides a sustainable resource to help maintain oyster reef habitat. Various uses of the recycled shell may include small-scale or large-scale restoration projects, community outreach oyster gardening projects, and/or shell bags for shoreline protection projects. By participating in the shell recycling program, restaurants will earn "green" publicity and advertisement, save on waste-related weight costs, and help to restore a commercial fishery that is essential to their business.

INTRODUCTION

The restoration of existing oyster reefs and the construction of new reefs have many benefits including improved water quality, shoreline protection, enhanced fish habitat, and increased commercial and recreational value. Though many different materials can be used for reef construction, oyster shell is the ideal substrate for construction as it is the natural substrate in the bay. Unfortunately, for the most part, once oysters are harvested, the shells are discarded and not returned to the bay to create new habitat. The Galveston Bay Oyster Shell Recycling Program helps to amend this by working with local restaurants to collect shell that will then be used to restore reefs in Galveston Bay.

This project involved several parts including recruiting restaurants, collecting oyster shell, and developing and distributing educational materials to educate patrons and promote the program.

Through the pilot program, GBF had a good understanding of how to coordinate shell collection, but the expansion of the program raised additional questions such as how will the additional shell be transported and where will the additional shell be stored?

PROJECT IMPLEMENTATION

Task 1; development and distribution of educational materials and Task 3; expand shell collection efforts were in progress prior to executing a contract/sub grant agreement with the General Land Office (GLO). Upon execution of the agreement, GBF continued these efforts with Coastal Management Program (CMP) funding administered by the GLO as well as local/third party match provided by GBF and the Port of Houston Authority (POHA). The purpose of developing and distributing educational materials was to promote the shell recycling program and to instill a sense of value for oyster shell as an important coastal natural resource. A two-sided rack card highlighting the program was created. An electronic version of the rack card was uploaded to the shell recycling webpage on the GBF website. A four-panel brochure was also created, that elaborates on the shell recycling program and provides information on how the reclaimed shell is used in Galveston Bay. The four-panel brochure provides a full-circle view of the shell recycling and oyster restoration process. The rackcard and brochure have been distributed through various venues and events throughout the duration of the grant. This included distribution at the participating restaurants as well as meetings about conservation programs that GBF is active in and also at our annual Bay Day event which introduces thousands of visitors to Galveston Bay each year.

In addition to the rack card and brochure, two other outreach items were produced. A two-sided paperboard coaster was produced to distribute to the participating restaurants. The coaster provides general information about the program and identifies the respective restaurant as a project partner. Coasters were distributed to potential restaurant partners and have been well received in the community. An informational sign was created for the back of the oyster shell collection trailer. The sign highlights the program and serves to inform the public what the purpose of the program is and also provides GBF's contact information for anyone interested in more information.

Task 1 Deliverables

GBF Oyster Shell Recycling Webpage

GALVESTON BAY FOUNDATION

Home
About Us
Advocacy
Conservation
Habitat Conservation Blueprint
Invasive Species Control
Land Trust Activities
Living Shoreline
Marine Debris Removal
Marsh Mania
Oil Spill Response
Oyster Restoration
Oyster Shell Recycling
Wetlands Restoration
Education
Research
Events
Publications
Links
Volunteer
Contact Us

BECOME A MEMBER/ DONATE ONLINE

SIGN UP FOR GBF E-NEWS

Conservation

GALVESTON BAY
Oyster Shell Recycling Program

In 2011, the Galveston Bay Foundation partnered with Tommy's Restaurant and Oyster Bar to begin recycling oyster shell from the restaurant to be used in restoration projects in Galveston Bay. This project was sparked by the need to help restore and enhance Galveston Bay's oyster reefs, which were severely impacted by Hurricane Ike in 2008. Ike's storm surge deposited sediment and debris all across the bay bottom, smothering an estimated 50% of the reefs throughout Galveston Bay.

Oyster shell that is collected from local restaurants is cured for a minimum of 6 months in the sun that bleaches the shell, and kills of any bacteria and disease. This helps to prevent the introduction of unwanted organisms into Galveston Bay. After the curing process, the shell is used for a variety of restoration projects around Galveston Bay, providing the preferred substrate for oyster larvae (or spat) to attach to so they can develop into adult oysters.

Galveston Bay Foundation's Oyster Shell Recycling Program promotes sustainable, native oyster populations that clean and filter our bay waters, provide habitat for fishery species; and stabilize the bay bottom. For restaurants, this program will provide waste-hauling cost savings, positive "green" image, and exposure to new customers.

GBF IS EXPANDING THE OYSTER SHELL RECYCLING PROGRAM

The Galveston Bay Foundation is working to expand its oyster shell recycling program by partnering with additional restaurants to recycle oyster shell.

Additionally, we are looking for volunteers interested in assisting with shell recycling duties.

Please contact GBF Conservation Programs Outreach Specialist, Matthew Abernathy, if you are interested or would like more information.

(To view our brochure on Oyster Shell Recycling, click the graphic to the left)

THE SHELL RECYCLING PROGRAM

1. Oyster shell is placed in bins behind participating restaurants. These bins are collected by GBF staff to be transported to the curing site.

2. Shell is placed into piles at the curing site where it will be bleaches for at least 6 months. GBF staff and volunteers conduct periodic maintenance at the site to turn the shell, allowing for a thorough bleaching.

3. Once shell has been cured for 6 months it can be used in a variety of restoration projects around Galveston Bay.

- Oyster Gardening
- Oyster Bars
- Reef enhancement

RESTAURANTS

The following restaurants are currently participating in the oyster shell recycling program.

tommy's RESTAURANT & OYSTER BAR

Crazy Alan's Swamp Shack

The Aquarium - Kemah Boardwalk

The Flying Dutchman - Kemah Boardwalk

Landry's Seafood - Kemah Boardwalk

Topwater Grill

Number 13 - Pelican Rest Marina

Project Partners

This project is funded in part by a grant approved by the Texas Land Commissioner pursuant to National Oceanic and Atmospheric Administration Award no. NA12NOS4190164

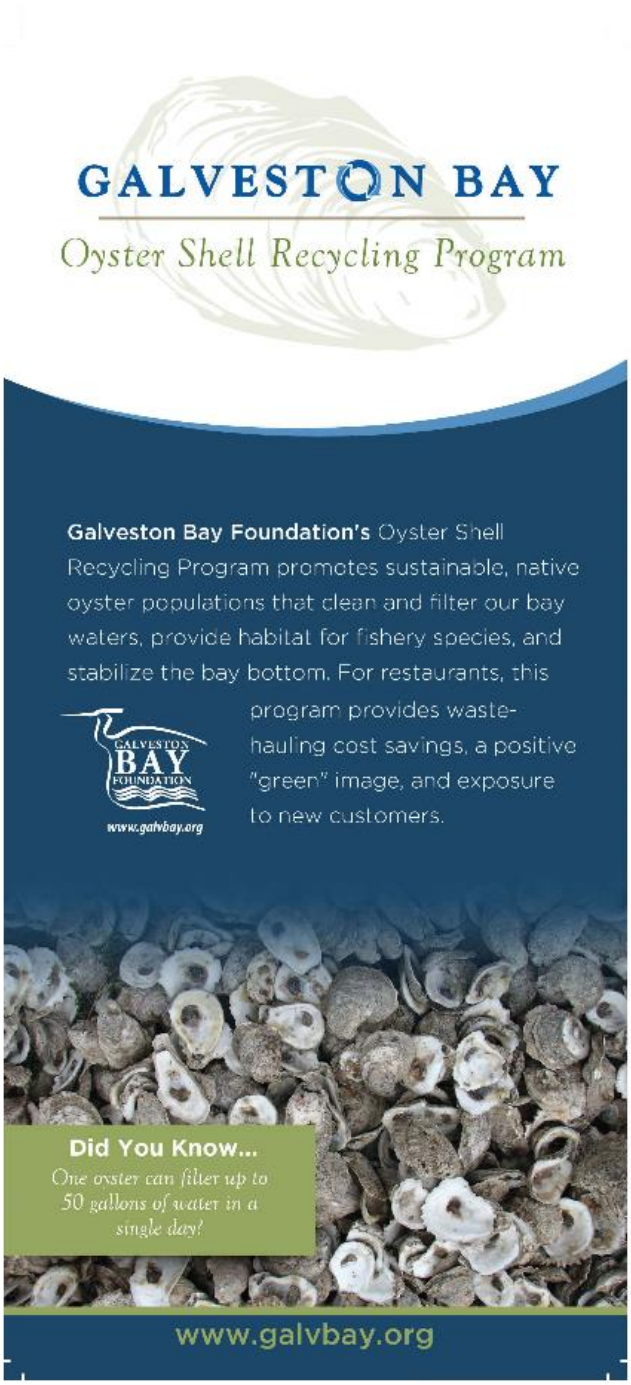
Aramco Services Company

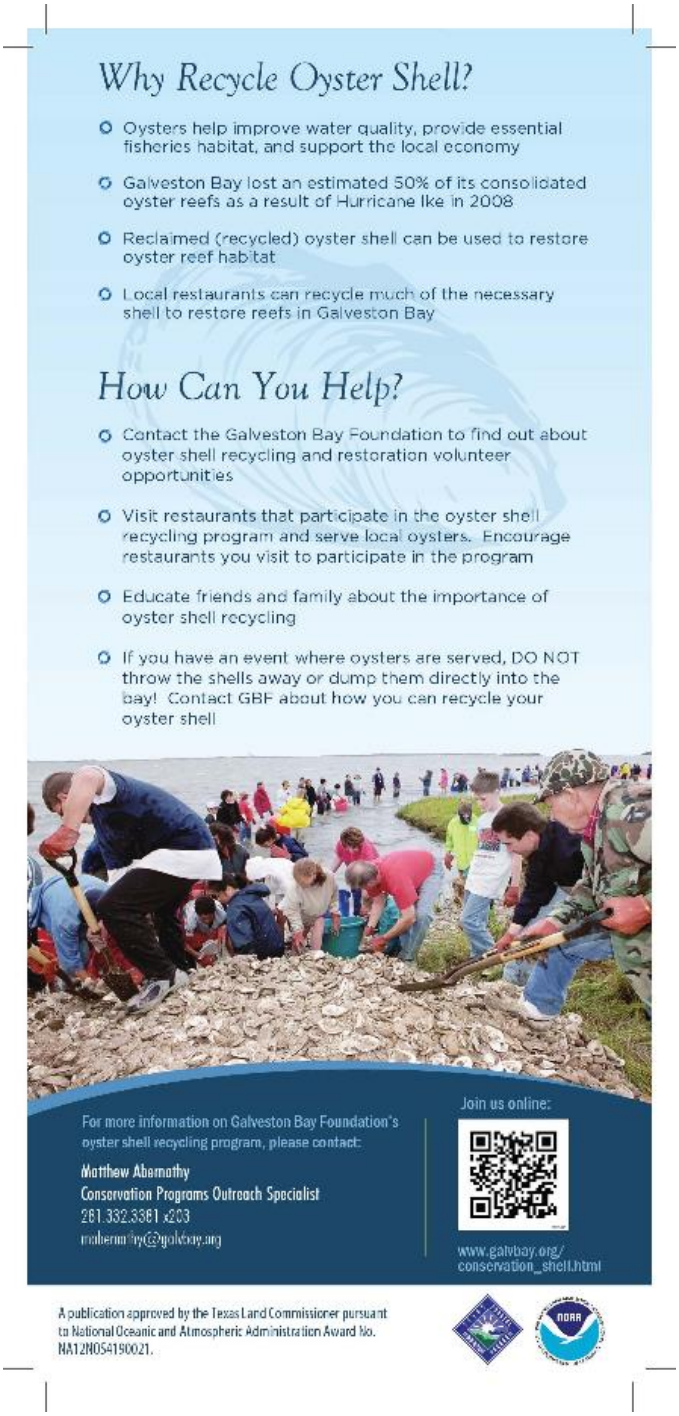
RESTORE AMERICA'S ESTUARIES

ERM

Galveston Bay Foundation | 17330 Highway 3 | Webster, Texas 77598-4133 | P: (281) 332-3381

Oyster Shell Recycling Rack Card





Newspaper Article – Tommy's

DINE + DRINK

RESTAURANT NEWS

Tommy's shuckers are true oyster lovers

By Syd Kearney

I've found the hardest-working men in Houston. The four full-time oyster shuckers at Tommy's Restaurant & Oyster Bar. During the week of Jan. 13-19, the men shucked 10,000 oysters for diners at the popular seafood restaurant.

And while that's quite a feat, the restaurant's owner, Tommy Tollett, also deserves a shout-out for his efforts to recycle all those oyster shells.

Two years ago, Tollett began working with the Galveston Bay Foundation to recycle oyster shells.

Tollett's team separates the shells from the rest of the restaurant's waste. The shells are collected several times each week by staff from the Galveston Bay Foundation.

The empty shells are then dried in the sun for six months (or more) to kill bacteria and other organic matter. After the shells are "cured," they are returned to the bay for a variety of projects, including to provide near-shore homes for oyster larvae, to provide habitat for other marine life and to enhance existing oyster reefs.

In the past two years, Tommy's has contributed more than 80 tons of shells to the recycling program.

Love the bay? Stop by Tommy's and have a dozen or so oysters. Currently, the restaurant is offering a dozen on the half shell for $5 on Tuesdays and Fridays.
2555 Bay Area Blvd., 281-480-2221

Courtesy photo

Tommy's Restaurant & Oyster Bar owner/executive chef Tommy Tollett, center, and his team shuckers Angel Guox, from left, and Edwin Capriel, and chef Manuel Viveros are committed to helping recycle oyster shells in an effort to help the Galveston Bay Foundation.

good plan? Here are two ideas for a memorable Feb. 14.

»Cullen's American Grille will have "Ministers on Demand" 6-10 p.m. Feb. 14. Couples that book their Valentine's dinner at Cullen's

for seatings before 6:30 p.m. and $75 after 6:30 p.m. Reservations for both dinner and the wedding/vow renewal ceremony are required.
11500 Space Center Blvd., 281-991-2000

Chocolate Lava Cake. Space is limited so make a reservation or risk being a hound dog.
12420 Memorial, 713-463-8463

»If a minister or Elvis is not in your plans, you'll find dozens of deals, menus and ideas

on Feb. 14? Swing by Sonic and snare your girl (or guy) a Chocolate Cherry Sweetheart Shake. The shakes, which start at $3.19, come gift-ready with a To: and From: on the cup. The romantic gesture (and the shake) are available through February.
Find the nearest location at sonicdrivein.com.

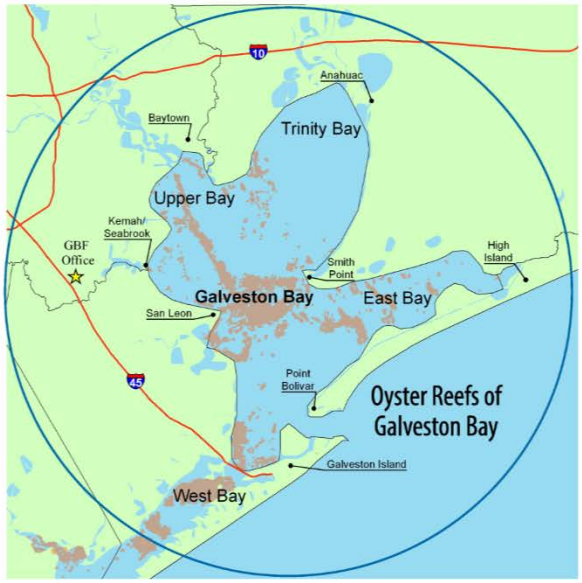
Kobe flights at Killen's

Explore the exclusive world of Kobe beef at Killen's Steak House in Pearland. The restaurant is serving a "Kobe Flight" that features four 3-ounce cuts of Kobe and Kobe-style beef. One cut is from Japan, the only country officially allowed to use the name Kobe. Other cuts featured include beef from Australia, a cut from Wyoming's Snake River Ranch and Texas steak from Strube Ranch near Pittsburg. The flights cost $150 and are subject to the availability of the beef. (That means call before you head out.)
2804 S. Main in Pearland, 281-485-0844

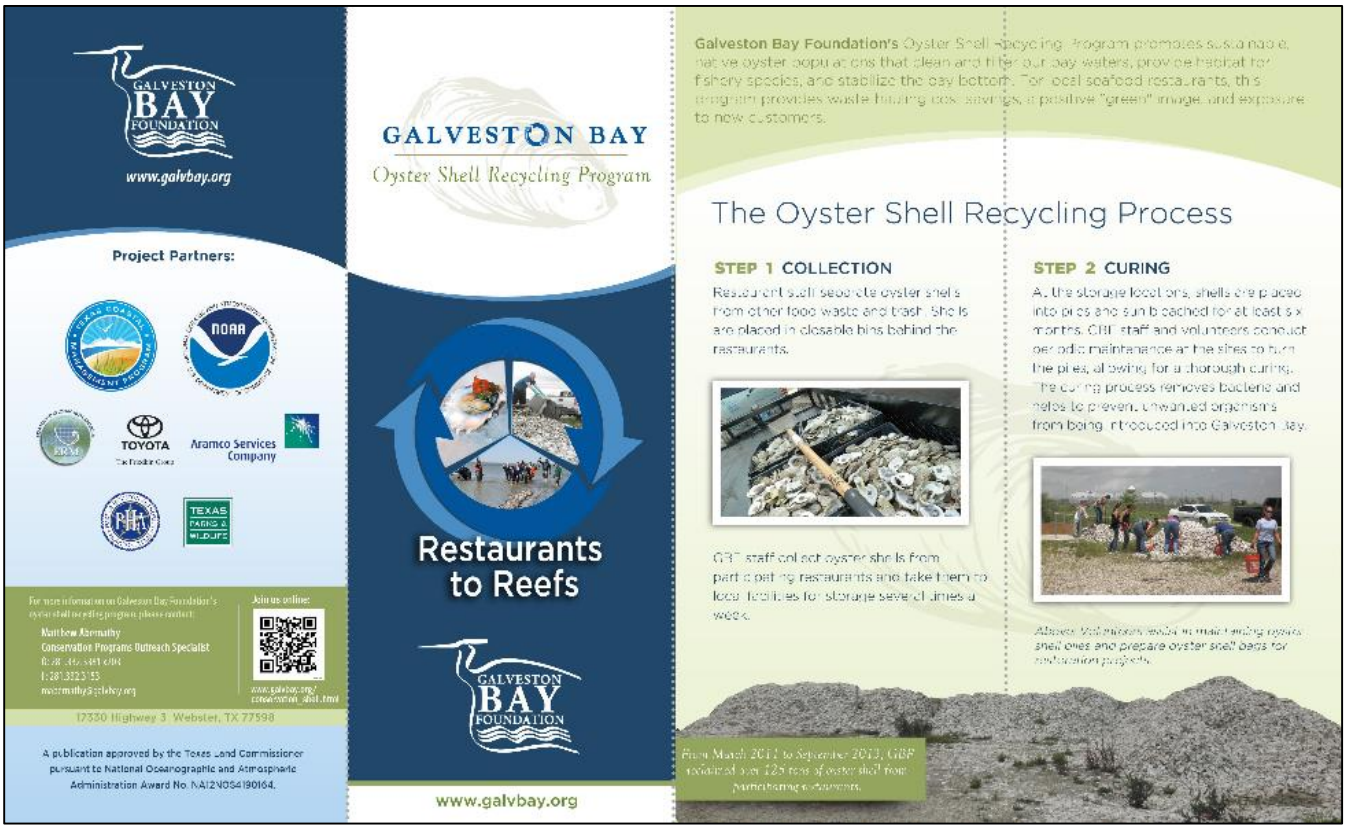
Big Taste of Houston

Tickets are on sale now for Big Taste of Houston, which will be April 21 at the Corinthian, 202 Fannin. The event will feature small bites by some of the city's best restaurants, including Sorrel Urban Bistro, Del Frisco's, Sullivan's, Uchi, Kata Robata, Carrabba's and Haven. Tickets

Oyster Shell Recycling Coaster for Restaurants



Oyster Shell Recycling and Restoration Brochure



GALVESTON BAY FOUNDATION

www.galvbay.org

Project Partners:

TOYOTA

Aramco Services Company

TEXAS PARKS & WILDLIFE

For more information on Galveston Bay Foundation's oyster shell recycling program, please contact:

Matthew Abernathy
Conservation Programs Outreach Specialist
O: 281.332.3193
mabernathy@galvbay.org

Join us online:

www.galvbay.org/conservation_shell.html

17330 Highway 3 Webster, TX 77598

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GALVESTON BAY

Oyster Shell Recycling Program

Restaurants to Reefs

GALVESTON BAY FOUNDATION

www.galvbay.org

Galveston Bay Foundation's Oyster Shell Recycling Program promotes sustainable, native oyster populations that clean and filter our bay waters, provide habitat for fishery species, and stabilize the bay bottom. For local seafood restaurants, this program provides waste hauling cost savings, a positive "green" image, and exposure to new customers.

The Oyster Shell Recycling Process

STEP 1 COLLECTION

Restaurant staff separate oyster shells from other food waste and trash. Shells are placed in closable bins behind the restaurants.

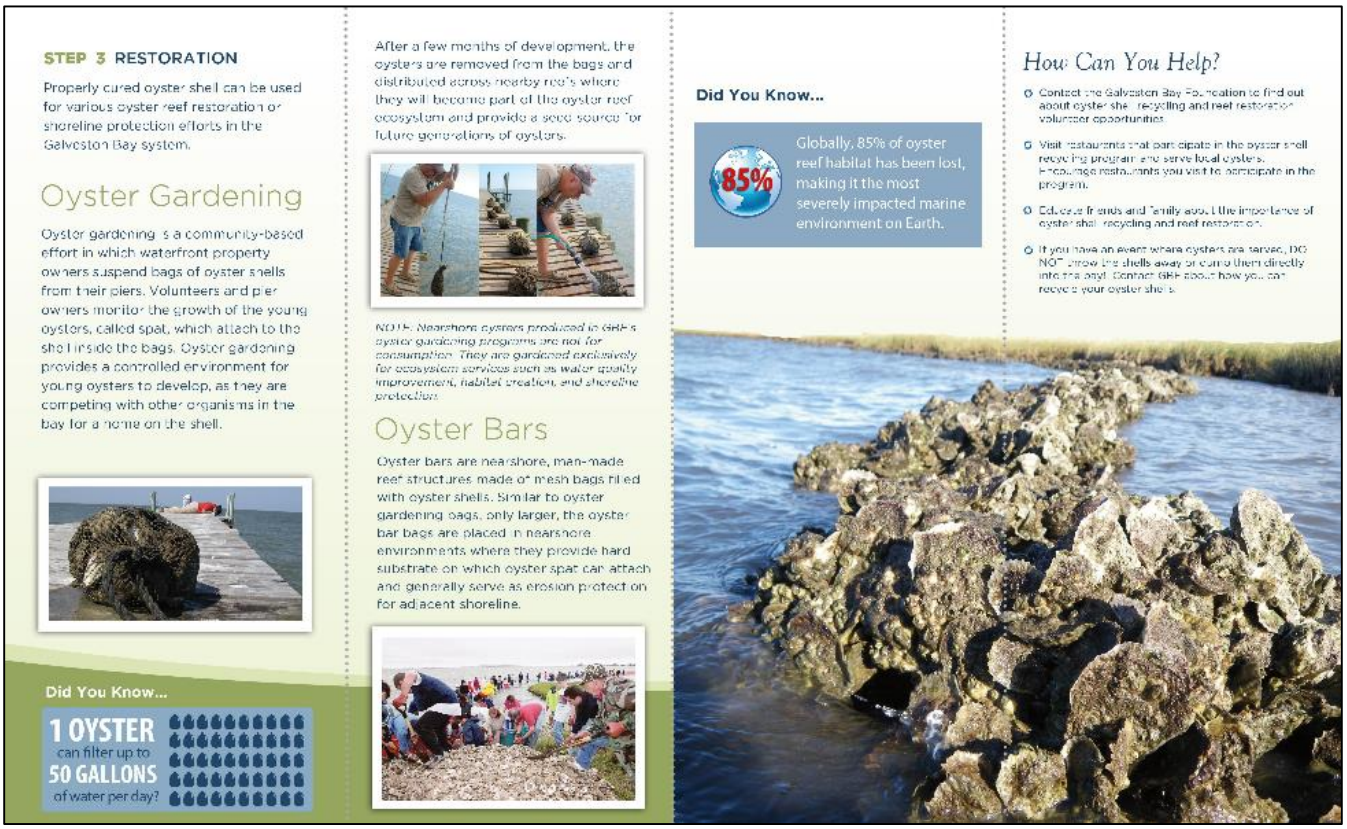
GBF staff collect oyster shells from participating restaurants and take them to local facilities for storage several times a week.

STEP 2 CURING

At the storage locations, shells are placed into piles and sun bleached for at least six months. GBF staff and volunteers conduct periodic maintenance at the sites to turn the piles, allowing for a thorough curing. The curing process removes bacteria and helps to prevent unwanted organisms from being introduced into Galveston Bay.

Above: Volunteers assist in maintaining oyster shell piles and prepare oyster shell bags for restoration projects.

From March 2011 to September 2013, GBF recycled over 125 tons of oyster shell from participating restaurants.



STEP 3 RESTORATION

Properly cured oyster shell can be used for various oyster reef restoration or shoreline protection efforts in the Galveston Bay system.

Oyster Gardening

Oyster gardening is a community-based effort in which waterfront property owners suspend bags of oyster shells from their piers. Volunteers and pier owners monitor the growth of the young oysters, called spat, which attach to the shell inside the bags. Oyster gardening provides a controlled environment for young oysters to develop, as they are competing with other organisms in the bay for a home on the shell.

Did You Know...

1 OYSTER can filter up to **50 GALLONS** of water per day?

After a few months of development, the oysters are removed from the bags and distributed across nearby reefs where they will become part of the oyster reef ecosystem and provide a seed source for future generations of oysters.

NOTE: Nearshore oysters produced in GBF's oyster gardening programs are not for consumption. They are gardened exclusively for ecosystem services such as water quality improvement, habitat creation, and shoreline protection.

Oyster Bars

Oyster bars are nearshore, man-made reef structures made of mesh bags filled with oyster shells. Similar to oyster gardening bags, only larger, the oyster bar bags are placed in nearshore environments where they provide hard substrate on which oyster spat can attach and generally serve as erosion protection for adjacent shoreline.

Did You Know...

85% Globally, 85% of oyster reef habitat has been lost, making it the most severely impacted marine environment on Earth.

How Can You Help?

- Contact the Galveston Bay Foundation to find out about oyster shell recycling and reef restoration volunteer opportunities.
- Visit restaurants that participate in the oyster shell recycling program and serve local oysters. Encourage restaurants you visit to participate in the program.
- Educate friends and family about the importance of oyster shell recycling and reef restoration.
- If you have an event where oysters are served, DO NOT throw the shells away or dump them directly into the bay! Contact GBF about how you can recycle your oyster shells.

Port of Houston Magazine Article

PHA, Galveston Bay Foundation help oysters find their world

The Port of Houston Authority is doing its part to help restore the Galveston Bay oyster population that was decimated by Hurricane Ike five years ago. The Port Authority has granted Galveston Bay Foundation (GBF) a lease of a one-acre parcel of land on its Memorial Tract across from Armand Bayou Nature Center.

The land is being used to expand the foundation's oyster shell recycling program. Hurricane Ike deposited a layer of sediments and debris across the bottom of the bay, smothering live oysters. The Texas Parks and Wildlife Department reported that nearly 60 percent of the oyster reef habitat in Galveston Bay and 80 percent of East Bay's oyster population was destroyed. The oyster reefs have still not recovered.

GBF had previously participated in an oyster restoration program around the year 2000, according to Matthew Abernathy, GBF Conservation Programs Outreach Specialist. Abernathy oversees the present oyster recycling program.

"We had done oyster gardening (placement of recycled oyster shell colonized with young oysters) with Galveston Island communities about 10 or 15 years ago, so in response to Hurricane Ike, we decided it would be prudent to get involved again," Abernathy says.

The recycling program has been under way since 2011, and GBF President Bob Stokes says more than 100 tons of shells have been collected for the project over the past two years.

The current project came about after Clear Lake restaurateur Tommy Tollett provided the foundation with an ample supply and source of shells. Tollett owns Tommy's Restaurant and Oyster Bar on Bay Area Blvd.

"We approached him and talked about the idea," says Stokes. "He was very interested in it from the beginning. He makes his living from serving fresh seafood, and he wants to ensure there is a good supply of oysters in Galveston Bay."

While those interests may be business-related, the project is targeted toward conservation. None of the oysters restored through the project are meant to be harvested.

"All of the oyster restoration we do is for marine ecosystem benefits," Abernathy says. "One oyster can filter up to 50 gallons of water a day. We do it (restoration) to prevent shoreline erosion, among other things."

To ensure the oysters are protected from harvesting, they are placed on private bayside properties and around private piers, where boat traffic is restricted by state law to beyond 200 feet of the shoreline.

Collecting the used shells is a challenge. Preparing them for reintroduction into the ecosystem can be a painstaking and sometimes adventurous process.

For one, GBF has to work through health department issues such as frequency of pickup, ensuring the shells are handled properly and transported in the proper containers.

Before the Port Authority stepped in and made its tract available, the shells had to be transported all the way to Texas City, where they were stacked on a 130-acre site owned by GBF as part of a multi-phase curing process that takes about six months.

"We take all the shells back to the location and we let Mother Nature cure it," Stokes says. "We keep it there six months, turning the piles bimonthly to ensure the shells stay clean during the bleaching process.

"The shells must be exposed to the sun, wind and rain to ensure there are no organisms attached to them that are harmful to the bay," adds Stokes.

Volunteers are then called upon to place the shells into mesh bags. Property owners willing to participate in the program hang the bags from their piers that jut into the bay.

The oyster shells attract baby oysters (also known as spat) that are floating around in Galveston Bay in search of hard shell on which to attach. Growth of these young oysters takes place rather rapidly. The bags are usually hung from the private piers in May and collected for replanting in late September or early October. They are added to existing reefs, small reefs or areas where there used to be reefs.

The program has taken off to the point where other restaurants such as Topwater Grill in San Leon, The Aquarium Restaurant, the Flying Dutchman, and Landry's at their Kemah Boardwalk locations are contributing shells to the replenishing efforts. ■

Oyster Shell Recycling Sign for Trailer

Task 2; recruitment of additional restaurants was an essential task to both educating the community and increasing shell collection volume. GBF purchased a truck and trailer to facilitate collection from additional restaurants. The vehicle and trailer are dedicated to the shell recycling program, allowing GBF to expand to additional restaurants and easily collect from them. GBF's marketing coordinator designed a wrap for the truck to promote the program. New 32-gallon recycling containers were purchased with attached lids and wheels, to allow for easy collecting, loading and unloading of shell.

Initially, Hooters in Seabrook began collecting shell, but were very inconsistent with their collections and communication, and have since stopped collecting shell. In April 2013, the Topwater Grill in San Leon began collecting shell for the program. Early in 2013, GBF was approached by staff from the Texas Parks & Wildlife Department (TPWD) Dickinson Marine Lab regarding a collaboration on an education, outreach, and restoration project at the Kemah Boardwalk. TPWD and the Landry's corporation were working on plans to construct a small reef adjacent to the boardwalk and also have supplemental educational materials in the form of signs and handouts. There was also interest in conducting shell recycling with boardwalk restaurants, and to have some of the reclaimed shell to be used to in the construction of the reef. In June 2013, GBF met with the Texas Parks and Wildlife Department (TPWD) and managers from the Landry's Corporation at the Kemah Boardwalk to discuss the project logistics and three restaurants were brought on board with the program. Landry's Seafood House, the Flying Dutchman, and the Aquarium at the Kemah Boardwalk all began collecting shell in September 2013. During this time, GBF also began discussing oyster shell recycling with the new managers at Number 13, which is located at Pelican Rest Marina on Galveston Island. Pelican Rest Marina already participates in oyster gardening (bagging/hanging shell to propagate baby oyster spat) and reef enhancement at their property, and they were very interested in shell recycling as well. Once Number 13 opened in October 2013, they began collecting oyster shell from the restaurant and storing it on an adjacent property at Pelican Rest Marina. The shell cures at that site, and will restore and enhance reefs adjacent to the marina. In the fall of 2013, discussions began with Crazy Alan's Swamp Shack in Kemah, and shortly thereafter, they began collecting shell. GBF is currently partnered with seven restaurants. Shell is collected from six of the seven partners and shell from Number 13 is stored at Pelican Rest Marina for restoration on site as previously mentioned.

Task 2 Deliverables

Oyster Shell Recycling Restaurant Partners

Galveston Bay Foundation - Oyster Shell Recycling Partners

Restaurant	Date Collection Began	Primary Contact Person	Restaurant Phone Number	Address
Tommy's Restaurant	Mar. 2011	Tom Tollett	281-480-2221	2555 Bay Area Blvd, Houston, TX 77058
Topwater Grill	Apr. 2011	Chris Key	281-339-1232	815 Avenue O, San Leon, TX 77539
Kemah-Aquarium	Aug. 2013		281-334-9010	Kemah Boardwalk
Kemah-Landry's	Aug. 2013	Brandy	281-334-2513	Kemah Boardwalk
Kemah-Flying Dutchman	Aug. 2013	Sean Smith	281-334-7575	Kemah Boardwalk
Crazy Alan's Swamp Shack	Nov. 2013	Christine Jorgensen	281-334-5000	310 Texas Ave, Kemah, TX 77565
Number 13	Jan. 2014	Jason Hanin	409-572-2643	4809 Broadway, Galveston, TX 77554

Area Restaurants That Serve Oysters – Current and Potential Partners

Area Restaurants Serving Oysters

Interested in Program	Company	Mailing Address	City	State	Zip	Phone
Y	Black Pearl Oyster Bar	23rd & Market St.	Galveston	TX	77550	(409) 762-7299
Y	Captain Benny's Seafood	8253 Gulf Fwy	Houston	TX	77017	(713)643-0589
UNK	Captain Henry's Seafood	1419 Lawrence Road	Kemah	TX	77565	(281) 334-2275
UNK	Captain Tom's Seafood & Oyster	9651 FM 1960 Rd W	Houston	TX	77070	(281) 890-8334
N	Casey's Seaside Café	3828 Seawall Blvd.	Galveston	TX	77550	(409) 762-9625
UNK	Clary's Seafood Restaurant	8509 Teichman Road	Galveston	TX	77554	(409) 740-0771
Partner	Crazy Alans Swamp Shack	310 Texas	Kemah	TX	77565	281-334-5000
UNK	Fisherman's Wharf	Harborside Drive	Galveston	TX	77550	(409) 765-5708
UNK	Floyd's Cajun Seafood And Steakhouse	20760 Gulf Freeway Frontage Road	Webster	TX	77598	(281) 332-7474
Partner	Flying Dutchman	9 Kemah Waterfront St Kemah	Kemah	TX	77565	(281) 334-7575
N	Gaido's Famous Seafood Restaurant	3900 Seawall Blvd.	Galveston	TX	77550	(409) 762-9625
N	Gilhooley's Restaurant	222 9th Street	Dickinson	TX	77539	(281) 339-3813
UNK	Golden Seafood	511 Waterfront Drive	Seabrook	TX	77586	(281) 731-1929
UNK	Houston Seafood Company	6060B Southwest Freeway	Houston	TX	77057	(713) 669-1969
Partner	Landry's	#1 Kemah Boardwalk	Kemah	TX	77565	(281)334-2513
UNK	Louisana Foods	4410 West 12th Street	Houston	TX	77055	(713) 957-3476
UNK	LT Seafood, LTD	415 E. Hamilton Street	Houston	TX	77076	(713) 328-1999
Partner	Number 13	7809 Broadway	Galveston	TX	77554	409-572-2650
N	Outriggers	101 Bath Ave (Waterfront Street)	Seabrook	TX	77586	(281) 474-3474
UNK	Pappas Seafood House	19991 Gulf Freeway Frontage Road	Webster	TX	77598	(281) 332-7546
N	Perry's Steakhouse & Grille	487 Bay Area Boulevard	Houston	TX	77058	(281) 286-8800
UNK	Rajun Cajun	30 Main St	Houston	TX	77002	(713) 571-2422
N	Red Lobster	888 W. Bay Area Blvd.	Webster	TX	77598	(281) 338-2518
UNK	Rose's Seafood Inc.	415 Waterfront Drive	Seabrook	TX	77586	(281) 474-3536
UNK	Seabrook Seafood, Inc.	PO Box 776	Kemah	TX	77565	(281) 334-2546
N	Sudie's Catfish & Seafood House	352 Gulf Fwy N	League City	TX	77573	(281) 338-5100
Partner	The Aquarium Restaurant	#11 Kemah Boardwalk	Kemah	TX	77565	(281)334-9010
UNK	The Reef Seafood House	1301 31st 1/2 Street North	Texas City	TX	77590	(409) 945-6151
Partner	Tommy's Restaurant & Oyster Bar	2555 Bay Area Blvd	Houston	TX	77058	(281) 480-2221
Partner	Topwater Grill	9th St. & Ave. O	San Leon	TX	77539	(281)339-1232
UNK	Valdo's Seafood House	4106 Nasa Parkway	El Lago	TX	77586	(281) 326-3866
UNK	Willie G's	2100 Harbor Side	Galveston	TX	77550	(409) 762-3030

*Current Partners Highlighted in Green

Oyster Shell Recycling Partnership Agreement

Oyster Shell Recycling Program Partnership Agreement

This document details the partnership between the Galveston Bay Foundation and establishments participating in the Oyster Shell Recycling Program. Defining expectations through this agreement is intended to streamline the oyster shell recycling process and ensure a healthy working relationship between GBF and its partners.

The Galveston Bay Foundation will:

- Provide appropriate receptacles for shell collection
- Perform shell collections at regular intervals each week
- Raise community awareness for the program and participating establishments
- Provide relevant educational resources in order to provide the public with a better understanding of the benefits of oyster shell recycling

Participating Establishments will:

- Separate shell from waste and deposit shell in designated collection bins
- Ensure only oyster shells are deposited in collection bins (organic materials are acceptable) – No trash, recycling, or inorganic materials are to be placed in the collection bins
- Ensure bins are stored in an orderly fashion (closed bins, ready for pickup)
- Ensure bins are cleaned on a regular basis (if this is not possible, please coordinate with GBF)
- Notify GBF if a regular increase or decrease in the amount of shell is anticipated, so that the number of bins can be adjusted accordingly
- Notify GBF staff if designated bins have reached capacity (mailto: ehitt@galvbay.org)

Restaurant Name: _____

Representative/Primary Contact at Participating Restaurant:_____

Contact Phone Number(s):_____

E-mail address:_____

GBF Contact: Matthew Abernathy, Conservation Programs Outreach Specialist - mabernathy@galvbay.org

• 17330 Highway 3, Webster, TX 77598 • Phone 281-332-3381• Fax 281-332-3153•

Task 3; shell collection, documentation and curing of oyster shell has been an ongoing effort since project inception. Oyster shell is collected twice a week to ensure that the bins don't get overfilled and to maintain a clean area behind the restaurants. Two different routes are used, with one covering Tommy's and the restaurants in Kemah and the other for Tommy's and the Topwater Grill. Collection at Tommy's is included on both routes to facilitate multiple shell collections during a week due to the high volume of shell from this restaurant. To ensure as accurate a count as possible, GBF staff averages the weight of five full bins of oyster shell. The average weight of each bin is 230 lbs. When each collection is done, GBF staff log the number of bins collected on a spreadsheet and that is translated to tons using a formula in Microsoft Excel.

Two challenges presented during the project were to ensure that there was sufficient space to store the oyster shell and capacity to transport shell from multiple restaurants. The initial site used to store shell is part of a parking lot at a GBF-owned property near Texas City. This worked well for small amounts of shell, but space eventually became limited and the site was also somewhat out of the way from where the majority of the restaurants are located. GBF began discussions with the POHA about the possibility of leasing a piece of property that is much closer to the Clear Lake area and the participating restaurants. Once details were worked out, GBF signed a five-year lease with POHA for a 1.5 acre tract of land on Red Bluff Rd. This property provides more than enough space to store oyster shell to cure before being used for restoration. This property is also provided at a discounted price and provides substantial in-kind match to the program. The location on Red Bluff has become the primary storage location, with the Texas City property only being used if access to Red Bluff is restricted due to heavy rain events. Transportation of the shell is facilitated with a truck and trailer purchased through the grant. A Toyota Tundra and 12-foot landscape trailer were acquired for the purpose of shell collection. Specifically, the trailer was selected because the tailgate also serves as a ramp, making the loading and unloading of full shell bins much easier.

Task 3 Deliverables

Oyster Shell Collections Spreadsheet

Oyster Shell Collection Numbers
October 2012 - June 2014

Oyster Shell Recycling
October 1, 2013 - December 31, 2013

Restaurant	Total Oyster Shell Recycled (in Tons)
Tommy's Restaurant	13.05
Total	**13.05**

Oyster Shell Recycling
2013

Restaurant	Total Oyster Shell Recycled (in Tons)
Tommy's Restaurant	61.68
Hooter's - Seabrook	0.4125
Topwater Grill	17.69
The Aquarium-Kemah	0.5359
The Flying Dutchman-Kemah	0.2875
Landry's-Kemah	3.59375
Crazy Alan's	1.0925
Total	**85.29215**

Oyster Shell Recycling
2014

Restaurant	Total Shell Recycled (Tons)
Tommy's Restaurant	40.48
Topwater Grill	12.765
The Aquarium-Kemah	0
The Flying Dutchman-Kemah	0.46
Landry's-Kemah	4.16
Crazy Alan's	8.9125
Number 13	0.575
Total	**67.3525**

* NOTE: The detailed file is too large to include in the printed report, but is included in the digital copy submitted to the GLO

PROJECT RESULTS

The efforts to expand and promote the oyster shell recycling program were very successful.

The education and outreach materials were very well received, especially the four-panel brochure. The fact that the brochure highlights the end use of the oyster shell really helps people to understand why GBF collects the shell; instilling that sense of value and sustainability necessary for this coastal natural resource to thrive.

The expansion of the program was a great success. Though some restaurants contacted were not interested in participating in the program, most of them were. At this time the shell recycling program is at capacity and cannot facilitate partnerships with additional restaurants unless they lie along the existing shell collection route. GBF received several calls from restaurants in the Houston area, but additional funding for personnel and equipment will need to be secured before additional collection routes of that distance can be added.

The total amount of shell collected during the grant period is: 13.05 tons from October 1, 2012 – December 31, 2012, 85.29 tons in 2013, and 67.35 tons from January 1, 2014 – June 30, 2014. That is a total of 165.69 tons of oyster shell that would have otherwise been discarded in trash dumpsters was reclaimed from the seven participating restaurants for use in reef restoration in Galveston Bay. All of the oyster shell in 2012 was collected from Tommy's Restaurant & Oyster Bar. In 2013 and 2014, 61.68 tons (72.3% of total) and 40.48 tons (60.1% of total) of shell was collected from Tommy's. Once reclaimed and properly cured, the shell was used for a variety of projects in Galveston Bay. In 2013 and 2014 local waterfront property owners participating in GBF's Oyster Gardening Program utilized about 3000 lbs. of shell in their gardening efforts. The shell is used to provide a settling point for young oysters which are then placed on restoration reef sites in the bay. GBF also embarked on a larger project using large bags of oyster shell to create reef pads along the heavily eroding shoreline of their Sweetwater Nature Preserve. The bags each weigh about 32 lbs. and are placed perpendicular to the shoreline to create an oyster bar breakwater that also serves as a reef (see photos on page 22 of this report). 300 linear feet of reef (approximately .05 acres) was built using almost 50 tons of reclaimed shell. This was the first project of its kind in Galveston Bay and it has been quite successful. GBF is now looking to use this method along the shoreline of Sweetwater Lake to help protect more of the Sweetwater Nature Preserve and is also working with private landowners to utilize this method to help protect their shorelines and enhance reef habitat.

LESSONS LEARNED

Fortunately, many of the problems and obstacles in implementing the oyster shell recycling program were identified and addressed during the pilot program prior to this grant project. Nevertheless, GBF learned some important lessons during the project period.

For a small operation, the collection totes previously used are appropriate, but for a large scale operation with multiple restaurants and a large volume of shell, a larger bin is beneficial. GBF staff immediately noticed a difference once the larger, rolling bins were added. It was easier to load and transport shell, and it helped make the runs faster as well. Restaurant owners also like them because they can actually be placed at the shucking stations and oyster shell can be placed directly into them, minimizing additional handling by the restaurant.

Regarding scheduling collections, two collections a week is typically adequate; however, sometimes in hotter months, high volume restaurants may need a third collection. This is due to variables such as odor and flies resulting from sitting shells. Along with this, it is important to ensure that the restaurants understand their role in the shell collection process. Though it is conveyed to the manager in person, the requirements of the restaurants are sometimes lost as they are passed down the chain of command. To amend this, GBF developed a written agreement that is signed by the restaurant and a copy is left with the restaurant. It states the role of the restaurant and the role of GBF and also provides contact information should they have any issues with shell collection or need an additional pick-up.

As the program continues, there will likely continue to be small issues that come up, and if the program continues to expand, the same probably hold true, but for the most part, previous experiences have led to a smooth and efficient program.

Photographs

Truck and trailer at POHA Red Bluff curing site

GBF Staff dumping shell at POHA Red Bluff curing site

Shell pile at POHA Red Bluff curing site. July—Dec. 2013

New shell pile at POHA Red Bluff curing site. Jan—Feb. 2014

GBF Staff loading bins at Crazy Alan's Swamp Shack

Oyster shell collection bins behind Crazy Alan's Swamp Shack

Oyster Shell Bins at Tommy's Restaurant & Oyster Bar

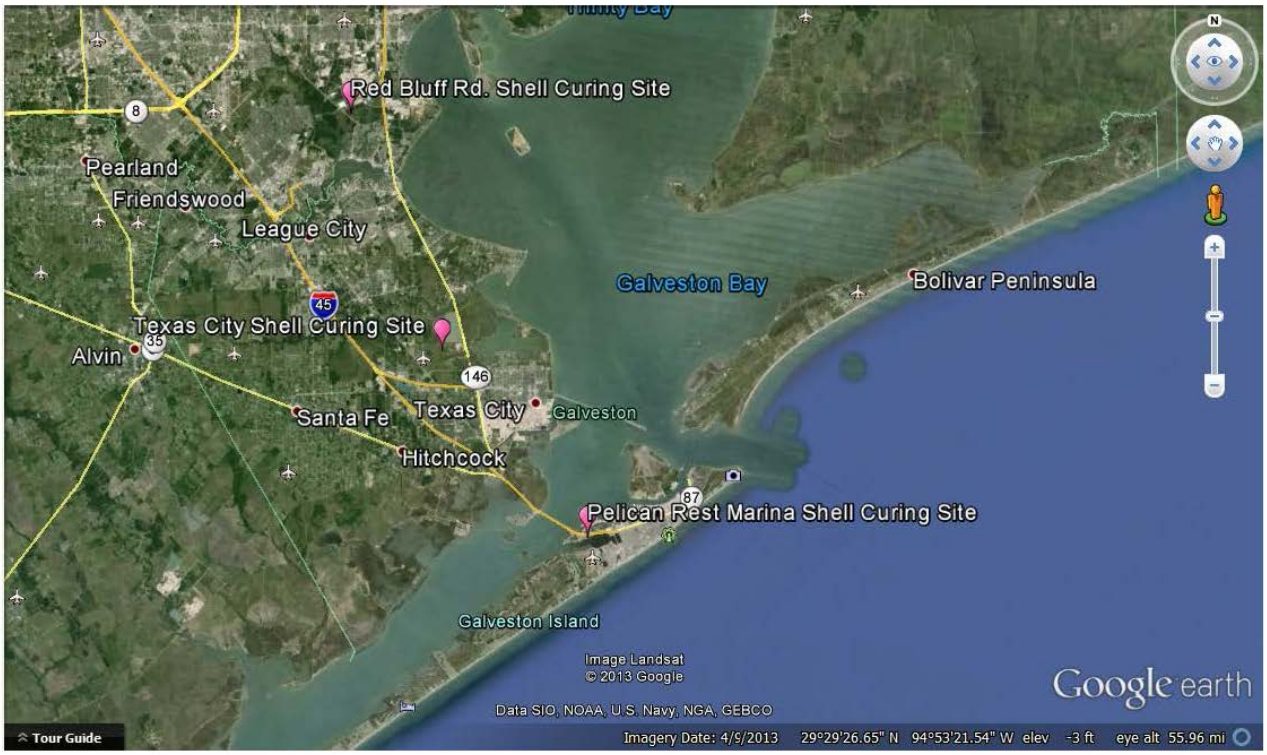
Oyster Shell Piles at GBF Texas City Preserve

Example of oyster bar reef constructed using approximately 50 tons of oyster shell reclaimed through this project

Oyster booth at Bay Day 2014

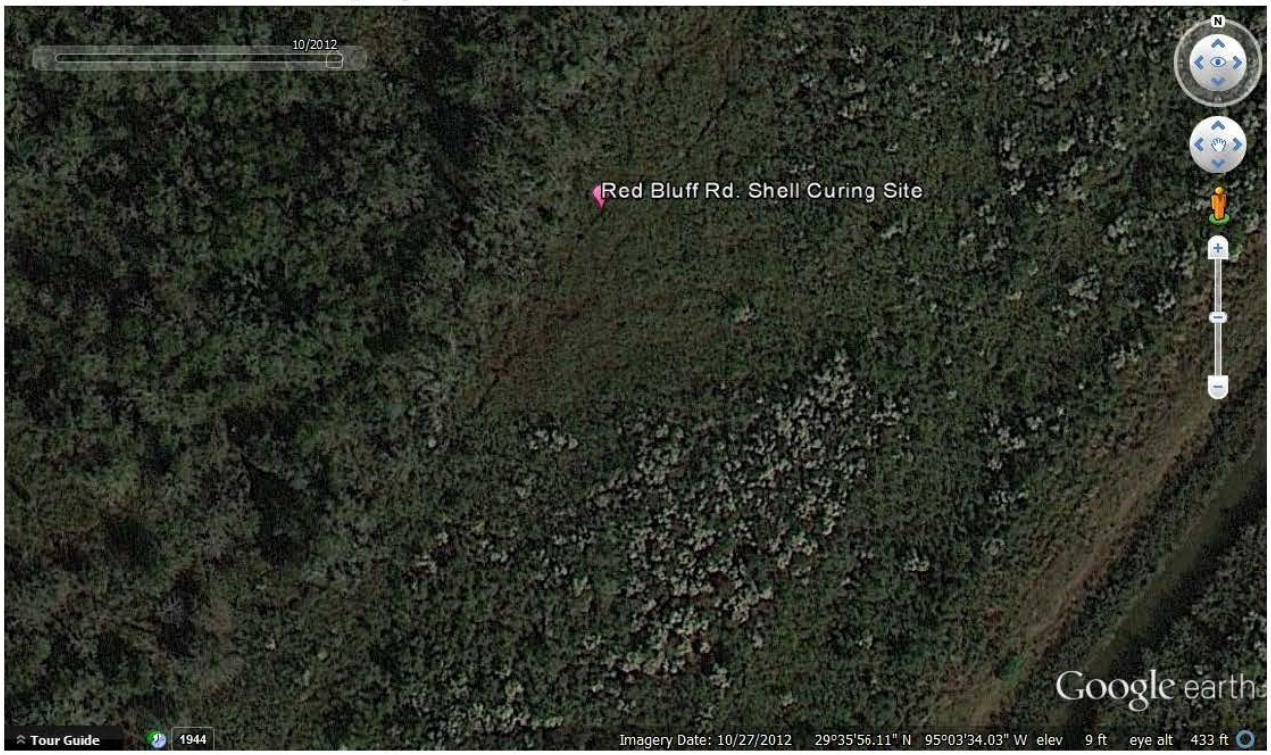
Shell Curing Sites

- Red Bluff Road Site is the primary site, due to proximity to the majority of the restaurants
- Texas City Site is used for Topwater Grill (due to proximity) and if access is restricted to Red Bluff Rd. due to rains (access road is unpaved)
- Pelican Rest Marina Site is used only for shell from Number 13 on site at the marina.



Close-Up of Red Bluff Rd. Site

10/2012 – Area Prior to Shell Recycling



10/2013 – 4 months of shell collection