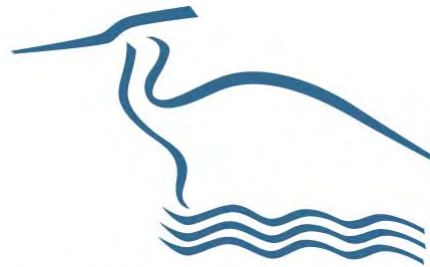


*Restaurants to Reefs:
Galveston Bay Foundation's
Oyster Shell Recycling Program*

GLO Contract No. 16-064-000-9108

**FINAL REPORT
MARCH 2017**

Prepared by:



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I. Project Summary

In an effort to reverse the significant loss of oyster habitat in Galveston Bay, the Galveston Bay Foundation (GBF) works with local restaurants to recycle oyster shells after patrons consume the oyster meat. Rather than being disposed of in landfills, the oyster shells are returned to the Bay to provide hard substrate and thus enhance the native oyster populations. While oyster larvae find many surfaces suitable for attachment/growth, oyster shells are the preferred substrate for spat recruitment as confirmed by Coen and Luckenbach (2000).

During Grant Cycle 20, from March 1, 2016 through February 28, 2017, 182.68 tons of oyster shells were recycled through GBF's Oyster Shell Recycling Program. These shells are being stored at GBF's "Curing Sites" where they will be turned intermittently with a tractor to allow for proper sun curing before being returned to the Bay. The shells will be returned to Galveston Bay through (separately funded) oyster reef enhancement and restoration projects such as GBF's Volunteer Oyster Gardening Program and "oyster bar" breakwater construction.

II. Background Information

Oyster reefs are a vital component of a healthy estuary. They filter contaminants from the water, protect shorelines, stabilize sediment, and provide habitat and food sources for other aquatic species. Unfortunately, oyster reefs are the most threatened marine habitat worldwide. Studies show that over 85% of oyster habitat has been lost on a global scale (Beck et al, 2011). In Galveston Bay, over 50% of the oyster reefs have been destroyed, primarily as a result of Hurricane Ike (Hons and Robinson, 2010). Prior to 2008, Galveston Bay provided nearly 80% of the oyster harvest in Texas (Haby et al, 2009). However, the severe sediment deposition resulting from Hurricane Ike smothered oyster reefs across the bay system and eliminated a large portion of the hard substrate required for oyster development.

To help replenish hard substrate in the bay and support local oyster restoration efforts, GBF partnered with local restaurant owner Tom Tollet of Tommy's Restaurant and Oyster Bar in 2011 and began recycling oyster shells. Before GBF's Oyster Shell Recycling Program began, oyster shells were discarded along with other restaurant waste and sent to a landfill. To avoid the disposal this vital resource, GBF now partners with multiple local restaurants to collect oyster shells and return them to the bay. The reclaimed shells will serve as new oyster habitat, thus enhancing the local oyster populations.

With the assistance of CMP funding, GBF has expanded the program from the pilot stage with one restaurant and one curing site to a total of ten restaurant partners over five years and three curing sites. Under Grant Cycle 20, GBF recruited a new restaurant partner, Tookie's Seafood, secured a third curing site, performed quality control measures, and developed new outreach materials to improve the education of restaurant patrons on the importance of oysters in Galveston Bay.

III. Project Implementation

A) Task 1: Shell Collection & Maintenance

A.1 Shell Collection

GBF staff collected oyster shells from participating restaurants on a weekly basis to relieve the restaurants of their shell waste. Throughout the week, restaurant staff deposited used oyster shells in recycling receptacles. GBF staff transported these containers of shells via truck and trailer to one of three “curing sites” where shells were stored temporarily. As the shells accumulated at the curing sites, GBF staff and volunteers strategically piled the shells every 3 to 4 months using a front-end loader. The shells were then left to sun cure or “bleach” for a minimum of 6 months. As identified by Bushek et al. (2004), sun curing oyster shells for a minimum of 1 month ensures that all bacteria and parasites are eliminated. Following the curing process, the shells were ready to be used in (separately funded) oyster reef restoration and enhancement projects throughout Galveston Bay.

GBF continued to follow the collection schedule established under Cycle 19: Monday-Wednesday-Friday. Restaurants producing greater than 1 ton of oyster shells annually were provided with two or more pick-ups per week. Restaurant partners with less output, or those located off the main route, received collection services once a week.

A third curing site was secured in May 2016 through a new partner, Inland Marine. Inland Marine’s construction yard, located in Dickinson, TX, provides additional space for storing shells and is in closer proximity to restaurant partners in comparison to the TX City Curing Site, thus reducing travel expenses. In addition, Inland Marine staff maintain the shell piles with their own equipment by piling and turning the shells throughout the curing process.

To track the amount of oyster shells recycled, GBF staff maintained spreadsheets that documented the tonnage of oyster shells collected monthly and annually for each participating restaurant. To improve the accuracy of shell tonnage documentation, GBF staff conducted quality control measures to confirm the average weight of recycled oyster shells per 32-gallon recycling bin as well as the weight of shells per 5-gallon recycling bucket. Five to eight bins full of recycled oyster shells were weighed on three different occasions using two different commercial scales. Based on the average weight of these bins, it was concluded that the average weight of recycled oyster shells per 32-gallon bin is approximately 192 pounds. The same effort was performed with the 5-gallon buckets, resulting in an average weight of 23 pounds of recycled oyster shells per bucket. It is estimated that the average weight of shells per bin and bucket are subject to a variance of $\pm 5\%$ due to potential human error in measuring the volume of shells, the uneven settling of shells, and other materials/waste often mixed in with the shells. GBF staff updated all spreadsheets from previous years, as well as the current spreadsheets, with the new weights. The average weight of 192 pounds of shells per 32-gallon bin and 23 pounds of shells per 5-gallon bucket will be used in all future reporting.

Please refer to Appendix A for the shell collection numbers and associated graphs.

A.2 Curing Site Maintenance

GBF staff worked with an Eagle Scout to improve and expand the cement oyster shell storage unit at the TX City Curing Site. The expansion of the cement storage unit was completed in July 2016 and all of the recently recycled oyster shells onsite were moved to the cement for sun curing.

GBF coordinated the repair of the access road to the Red Bluff Curing Site in August 2016 through a partnership with the Port of Houston Authority. Prior to that time, the site was inaccessible, particularly after a rain event. Now, the curing site is available for use and is the primary storage location for oyster shells recycled in GBF’s program.

A.3 Restaurant Recruitment

With the assistance of CMP Cycle 20 funds, GBF secured a new restaurant partner, Tookie’s Seafood, in June 2016. GBF was approached by Tookie’s Seafood prior to the opening of the new restaurant in Seabrook, Texas. The owners and managers of the restaurant were determined to start recycling oyster shells from day one. As a result, the restaurant’s oyster shell recycling effort has been one of the largest in the program, recycling, on average, over five tons of shells per month. Currently, GBF is partnering with the six local restaurants listed below.

Restaurant	Date Partner began Shell Recycling
Tommy's Restaurant & Oyster Bar	March 2011
Topwater Grill	May 2013
Crazy Alan's Swamp Shack	November 2013
The Aquarium (Kemah)	August 2013
Captain Benny's Seafood (Gulf Fwy)	October 2015
Tookie’s Seafood	June 2016

GBF’s “Restaurant Database,” as shown in Appendix B, was updated to include additional restaurants serving oysters in the Houston-Galveston region. Through analysis of restaurant location and menu items, GBF staff identified thirteen restaurants as potential future partners to pursue over the next two to three years.

At this time, expansion into downtown Houston is not feasible due to the high cost of mileage and staff time required to collect shells from downtown restaurants. Thus, GBF explored alternative recycling options such as delivering oyster shells to a GBF storage facility or curing site. While there were multiple discussions with interested restaurants, the logistics associated with restaurant staff delivering shells to GBF has not been fully vetted. However, GBF did secure a partnership with TX A&M University at Galveston (TAMUG) to establish an expansion of the Oyster Shell Recycling Program on Galveston Island. TAMUG will provide the staff and truck necessary to collect shells from local restaurants. TAMUG will also allow GBF to store the recycled shells on the TAMUG Wetland Center property for sun curing purposes. Although the expansion program is still under development, it is proposed that shell recycling on Galveston Island will start no later than January 2018.

A.4 Public Disposal Site

In an effort to facilitate oyster shell recycling by local citizens and restaurants located outside GBF's current shell recycling range, GBF staff investigated the possibility of establishing a public oyster shell disposal site. Based on other states' public shell disposal initiatives, such as South Carolina's Department of Natural Resources, GBF has identified two possible options: 1) construct a public shell disposal site on one or more of GBF's properties; 2) collaborate with local municipalities and/or private companies to establish shell disposal sites at existing waste disposal facilities (i.e. landfills) and/or recycling centers.

The first option includes two alternatives based on the accessibility of GBF's properties. The first would entail the construction of a large storage cabinet outside GBF's current office building. The cabinet would contain empty 5-gallon recycling buckets that could be exchanged with restaurants' buckets full of shells. Only authorized restaurant employees and GBF staff would have access to this storage cabinet. An alternate method would involve constructing a wooden enclosure on GBF's future headquarters property in Kemah or at the TX City Curing Site. This wooden structure would contain empty 32-gallon recycling bins secured to the ground. The public would have full access to these bins and would be able to deposit oyster shells directly into the bins for recycling. GBF staff would inspect these bins weekly and transport the recycled shells to a curing site at least once a month.

The second option would require GBF to establish partnerships with one or more waste disposal facilities such as local landfills and/or recycling centers. While this option would ultimately require less time and resources, GBF would incur expenses to establish these partnerships. More specifically, additional staff costs would be involved in the coordination of responsibilities and logistics with the waste disposal facilities. Travel expenses would also be required to collect the recycled shells from the waste disposal facilities and transport them to GBF's curing sites unless the facilities were able store the shells onsite.

At this time, GBF has only received interest from four restaurants in Houston who would be willing to deliver recycled oyster shells to one of GBF's facilities. There have also been inquiries from individual citizens regarding shell recycling options. In addition to the limited interest, there are insufficient funds to proceed with the construction of a public shell disposal site on GBF property or to establish partnerships with public waste disposal facilities. Further research under CMP Cycle 21 and 22 will be required to determine the approximate cost of the proposed options and to thoroughly gauge the public's interest.

B) Task 2: Public Outreach & Education

To improve the outreach and education component of the Oyster Shell Recycling Program, GBF prepared five new outreach materials under Cycle 20 and updated three existing items. All of these items incorporate the new GBF logo as well as the new Oyster Shell Recycling Program logo to maintain consistency within the program and the Foundation.

Based on the outcomes of outreach materials utilized in previous years, it appeared that a new approach was required to engage the public in the Oyster Shell Recycling Program. Brochures were often discarded and not read due to complex messaging and excessive text. On the other hand, coasters were well received by many restaurants and their patrons. To help clarify the message of the program and involve restaurants in the decision-making process, GBF designed a set of optional outreach materials as shown in Appendix C and listed below. During the next funding cycle, restaurants will be provided with the opportunity to review, choose, and implement one or more of these outreach items to help promote their involvement in the program as well as the program itself. GBF will prepare an “outreach package” and work with restaurants one-on-one to determine the best avenue for delivering the message to restaurant patrons.

- 1) Infographic – Originally designed under Cycle 19, the “Oyster Shell Recycling Infographic” was updated under Cycle 20 to more clearly represent the entire process of oyster shell recycling. Two versions of the infographic, full text and basic, were created to allow for multiple uses such as on the webpage and in other outreach materials discussed below.
- 2) Coaster – To maintain a consistent image of the Oyster Shell Recycling Program throughout all program materials, the coaster was redesigned using the new logo and basic infographic.
- 3) Rack Card – The Rack Card was updated to simplify the message of recycling oyster shells so that they may be returned to Galveston Bay as new habitat for baby oysters. The redesigned Rack Card will be offered to restaurants and used at outreach events to provide citizens with a brief yet informative description of the program and provide different avenues to become involved in the program.
- 4) Insert for Check Presenter – The “Insert” was developed to specifically target restaurant patrons. Restaurants will be given the option to include this insert in their check presenters to help inform patrons of the restaurant’s involvement in the Oyster Shell Recycling Program and encourage those same patrons to return and enjoy an oyster dish.
- 5) Menu Recognition – The “Menu Recognition” item is a simple text box that restaurants can include on their menus to indicate their participation in the Oyster Shell Recycling Program.

- 6) Menu Callouts – The “Menu Callouts” is a secondary menu option for restaurants to highlight all of the oyster items on their menu. The menu item designation, an image of an oyster shell, will be correlated with a text box on the menu describing the restaurant’s participation in the program. It will also indicate that all of the shells from the oysters consumed are responsibly recycled, thus encouraging patrons to purchase oyster dishes and participate in the program themselves.
- 7) Table Tent – The “Table Tent” is an outreach option for restaurants to include on their tables to publicize their participation in the program and promote the patrons’ involvement.
- 8) Window Cling – The “Window Cling” will allow restaurants to display their partnership with GBF on their front door as patrons enter the restaurant, thus encouraging them to select an oyster dish for a meal.

GBF staff attended multiple events at which the Oyster Shell Recycling Program was promoted through educational booths (refer to photographs in Appendix E). Local citizens were often presented with a display of two fish tanks, one containing live oysters and one containing only bay water, demonstrating the filtration ability of oysters. Participants had the opportunity to help prepare oyster gardens and “send a message to an oyster” with a coloring activity, geared particularly towards the youth. A variety of handouts and examples of the shell recycling receptacles were also exhibited during these events. GBF’s education staff assisted in creating a visual of the entire shell recycling process using a mock oyster tray, toy recycling bin, and toy tractor to help the public grasp the concept of shell recycling. Through interactions with GBF staff and volunteers, attendees at outreach events were educated on the importance of oysters in Galveston Bay and the significance of returning shells to the bay through the Oyster Shell Recycling Program. In addition, GBF staff attended three conferences during 2016 and delivered presentations on the Oyster Shell Recycling Program at two of these conferences: International Conference on Shellfish Restoration and the Restore America’s Estuaries Summit.

IV. Results

The addition of Tookie's Seafood significantly increased the tonnage of shells recycled annually as evidenced by the twenty percent increase in shells recycled from 2015 to 2016. As shown on the graphs in Appendix A, the tonnage of shells recycled by GBF has steadily increased with each cycle of grant funding. A total of 182.68 tons of oyster shells were recycled during CMP Cycle 20 from March 1, 2016 to February 28, 2017 and over 590 tons of oyster shells have been recycled since 2011. The oyster shells collected during Cycle 20 are currently undergoing the proper sun curing process and will be used in GBF's (separately funded) Volunteer Oyster Gardening Program and "oyster bar" breakwater projects.

V. Lessons Learned

Over the last five years, ten restaurants have participated in the Oyster Shell Recycling Program. Due to changes in restaurant management, menu revisions, and/or lack of participation, four of these restaurants are no longer partners of the program. During both Cycle 19 and Cycle 20, GBF attempted to accommodate restaurant partners with a lower output of shells by providing 5-gallon buckets with lids. Although multiple meetings were held to address the concerns of each restaurant, two of the restaurants were not recycling shells on a regular basis. GBF staff put shell collection on hold at these restaurants in August 2016 as communications continued. After no improvements were made, GBF discontinued the partnership with these two restaurants as both establishments had only recycled 0.05 tons (100 pounds) of shells for the entire year of 2016.

In response to these challenges, GBF staff began developing a tool, the "Restaurant Selection Criteria," to help select new restaurant partners in the coming years. GBF plans to use the Selection Criteria to assess whether the output of shells from an individual restaurant will be beneficial to the program and justify the mileage, supplies, and personnel costs required to accommodate that restaurant. This tool will help GBF determine the minimum output of shells necessary for a restaurant to become and remain a partner of the Oyster Shell Recycling Program. As a result, GBF can be more strategic in the expansion of the program and provide restaurants with standardized guidelines of what is expected as a partner of the Oyster Shell Recycling Program. It is anticipated that the Selection Criteria will be finalized under Cycle 21.

To improve the daily operations of the program as well as GBF's relationships with the restaurant partners, an existing part-time Shell Recycling Assistant was promoted to a full-time position during Cycle 20. With vast experience in the restaurant industry, this individual has proven to be an incredible asset to the program. By overseeing the on-the-ground operations, the training and management of the part-time Shell Recycling Assistant, and managing GBF's restaurant partnerships, this employee has helped improve the efficiency and productivity of GBF's Oyster Shell Recycling Program.

VI. References

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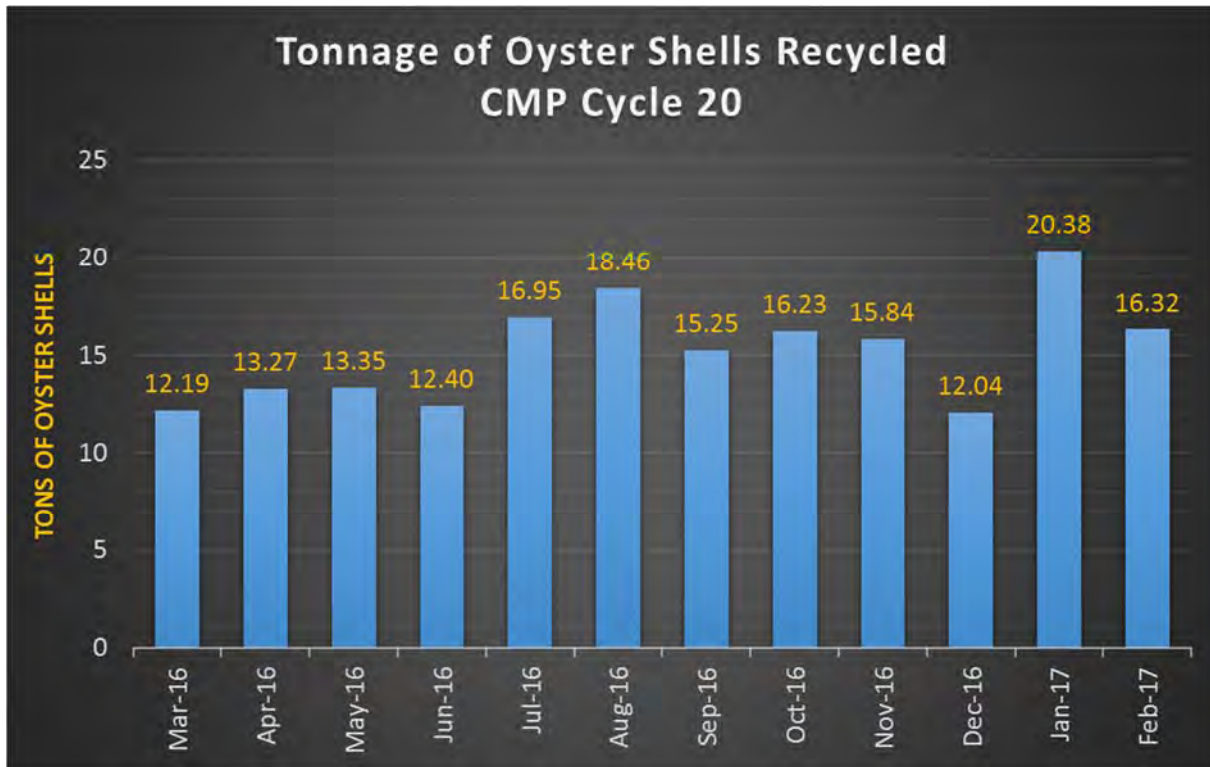
VII. APPENDIX

APPENDIX A SHELL COLLECTION NUMBERS

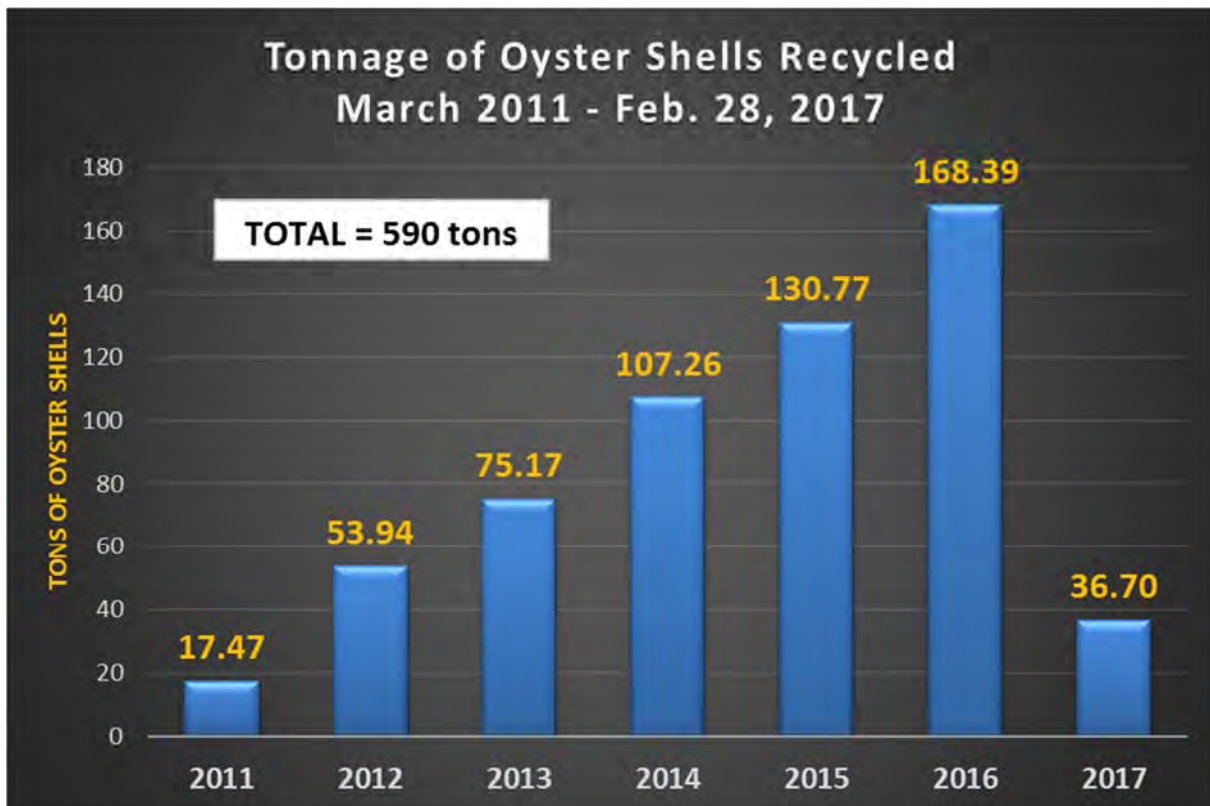
A.1 Tonnage of Oyster Shells Recycled During Cycle 20

Month	Oyster Shells Collected (tons)	Oyster Shells Collected (lbs)
Mar-16	12.19	24,382
Apr-16	13.27	26,544
May-16	13.35	26,694
Jun-16	12.40	24,808
Jul-16	16.95	33,903
Aug-16	18.46	36,912
Sep-16	15.25	30,509
Oct-16	16.23	32,460
Nov-16	15.84	31,680
Dec-16	12.04	24,071
Jan-17	20.38	40,758
Feb-17	16.32	32,640
TOTAL	182.68	365,360

**Oyster shell tonnage is based on an average weight of 192 lbs of shell/32-gallon bin and 23 lbs of shell/5-gallon bucket and is subject to a variance of $\pm 5\%$.*



A.2 Total Tonnage of Oyster Shells Recycled to Date



APPENDIX B RESTAURANT DATABASE

LEGEND
Current Partner
Priority - contact in 2017
Low Priority

Restaurant	Location	Restaurant Phone #	Restaurant Address	Contacted?	Point of Contact Established?	Notes
Aquarium Restaurant, The	Kemah	(281) 334-9010	#11 Kemah Boardwalk	Current Partner	Yes	Partner since 2013
Baybrook's Fresh Seafood	Seabrook	(281) 474-2846	416 11th Ave	No	No	Added to list in 2015
Black Pearl Oyster Bar	Galveston	(409) 762-7299	327 23rd St	Yes	No	Added to list in 2014
BLVD Seafood	Galveston	(409) 762-2583	2804 R 1/2	Yes	Yes	Added to list in 2016
Bonefish Grill	Clear Lake	(281) 332-0430	19325 Gulf Freeway	No	No	Added to list in 2016
Cajun Greek	Galveston	(409) 744-7041	2226 61st St	Yes	Yes	Under new management; revisit interest
Captain Benny's Seafood	Houston	(713) 643-0589	8253 Gulf Fwy	Current Partner	Yes	Partner since 2016
Captain Tom's Seafood & Oyster	Houston	(713) 451-3700	13955 East Fwy	No	No	2 Other locations (Houston & Katy)
Chasin' Tail Sports Bar	Clear Lake	(281) 480-3000	2402 Bay Area Ste. M	No	No	Added to list in 2016
Chilos Seafood & Oyster Bar	Houston	(713) 947-8700	1150 Edgebrook Dr	No	No	Added to list in 2015
Clary's Seafood Restaurant	Galveston	(409) 740-0771	8509 Teichman Rd	No	No	Seasonal Only; added to list in 2014

Restaurant	Location	Restaurant Phone #	Restaurant Address	Contacted?	Point of Contact Established?	Notes
Crawfish Pot & Oyster Bar	Houston	(713) 360-6547	9820 Gulf Fwy #7	No	No	Added to list in 2015
Crazy Alans Swamp Shack	Kemah	(281) 334-5000	310 Texas Ave	Current Partner	Yes	Partner since 2013
Crescent City Connection Sports & Oyster Bar	Houston	(281) 954-6810	16605 El Camino Real	No	No	Added to list in 2015
Fish Tales	Galveston	(409) 762-8545	2502 Seawall	No	No	Added to list in 2016
Fisherman's Wharf	Galveston	(409) 765-5708	2200 Harborside Dr	No	No	Seasonal Only
Floyd's Cajun Seafood And Steakhouse	Webster	(281) 332-7474	20760 Gulf Fwy	No	No	Added to list in 2014
Flying Dutchman	Kemah	(281) 334-7575	9 11th Ave Kemah Waterfront	Past Partner	Yes	Partnership discontinued in 2016 due to lack of shell output
Gaido's Seafood Restaurant	Galveston	(409) 761-5500	3828 Seawall Blvd	Yes	Yes	Interested in starting in 2017; only sell oysters during season
Gilhooley's Restaurant	Dickinson	(281) 339-3813	222 9th St	Yes	Maybe	Contacted but not interested as of 2014; Possible future interest
Hugos	Houston	(713) 524-7744	1600 Westheimer Rd	Yes	Yes	Not on current route
LA Crawfish	Clear Lake	(832) 905-5154	939 W. Bay Area	No	No	Added to list in 2016
Landry's	Kemah	(281) 334-2513	1 Kemah Boardwalk	Past Partner	Yes	Partnership discontinued in 2016 due to lack of shell output
Landry's Seafood House	Galveston	(409) 744-1010	5310 Seawall Blvd	No	No	Added to list in 2016
Lone Star Grill	Bacliff	(832) 864-3788	3435 Hwy 146	No	No	Added to list in 2016

Restaurant	Location	Restaurant Phone #	Restaurant Address	Contacted?	Point of Contact Established?	Notes
Mambo Seafood	Houston	(713) 946-0000	10402 Gulf Freeway	No	No	Bill King has contact at Mambo's; added to list 2016
Marcos Seafood & Oyster Bar	Houston	(713) 946-1168	917 Edgebrook Dr	No	No	Added to list in 2015
Monument Inn	La Porte	(281) 479-1521	4406 Independence Pkwy S	No	No	Added to list in 2017
Noah's Ark Bar & Grill	Bacliff	(281) 339-2895	4438 Boulevard St	No	No	Added to list in 2015
Number 13	Galveston	(409) 572-2650	7809 Broadway St	<i>Past Partner</i>	Yes	Contacted in 2015, not willing to participate; Possible future interest
Ostioneria Michoacan Seafood and Oyster Bar	Houston	(713) 921-1800	5819 Gulf Fwy	No	No	Added to list in 2015
Outriggers	Seabrook	(281) 474-3474	101 Bath Ave	Yes	No	Contacted but not interested as of 2014; Possible future interest
Pappadeaux Seafood Kitchen	Houston	(713) 847-7622	7800 Airport Boulevard	No	No	Added to list in 2016
Pappas Seafood House	Webster	(281) 332-7546	19991 Gulf Freeway	No	Yes	Added to list in 2016
Perry's Steakhouse & Grille	Houston	(281) 286-8800	487 Bay Area Blvd	Yes	Yes	Contacted but not interested as of 2014; Possible future interest
Peska Seafood Culture	Houston	(713) 961-9229	1700 Post Oak Blvd	Yes	Yes	Not on current route
Prohibition Supperclub & Bar	Houston	(281) 940-4636	1008 Prairie St	No	No	Added to list in 2017
Rajun Cajun	Houston	(713) 571-2422	930 Main St	No	Yes	3 Other locations (2 in Houston, 1 in Sugarland)

Restaurant	Location	Restaurant Phone #	Restaurant Address	Contacted?	Point of Contact Established?	Notes
Reef Seafood House, The	Texas City	(409) 945-6151	1301 31st 1/2 St N	No	No	Added to list in 2015
Rose's Seafood Inc.	Seabrook	(281) 474-3536	415 11th Ave	No	No	Added to list in 2014
Rouxpour	Clear Lake	(281) 480-4052	700 Baybrook Mall, Ste H100	Yes	No	No reply to July 2016 email - need to call; added to list in 2016
Sam's Boat	Seabrook	(281) 326-7267	3101 Nasa Rd 1	No	Yes	Added to list in 2016
Spot, The	Galveston	(409) 621-5237	3204 Seawall	No	Yes	Added to list in 2016
State of Grace	Houston	(832) 942-5080	3258 Westheimer Road	No	No	Added to list in 2016
Tommy's Restaurant & Oyster Bar	Houston	(281) 480-2221	2555 Bay Area Blvd	Current Partner	Yes	Partner since 2011
Tookie's Seafood	Seabrook	(281) 942-9445	1106 Bayport Blvd	Current Partner	Yes	Partner since 2016
Topwater Grill	San Leon	(281) 339-1232	815 Ave O	Current Partner	Yes	Partner since 2013
Valdo's Seafood House	El Lago	(281) 326-3866	4106 Nasa Rd 1	No	No	Near current route; added to list in 2014
Willie G's	Galveston	(409) 762-3030	2100 Harbor Side	No	No	1 Other location in Houston; added to list in 2014

**APPENDIX C
OUTREACH MATERIALS**

C.1 New Program & Foundation Logos

1.1) Main Foundation Logo



1.2) Oyster Shell Recycling Program Logo

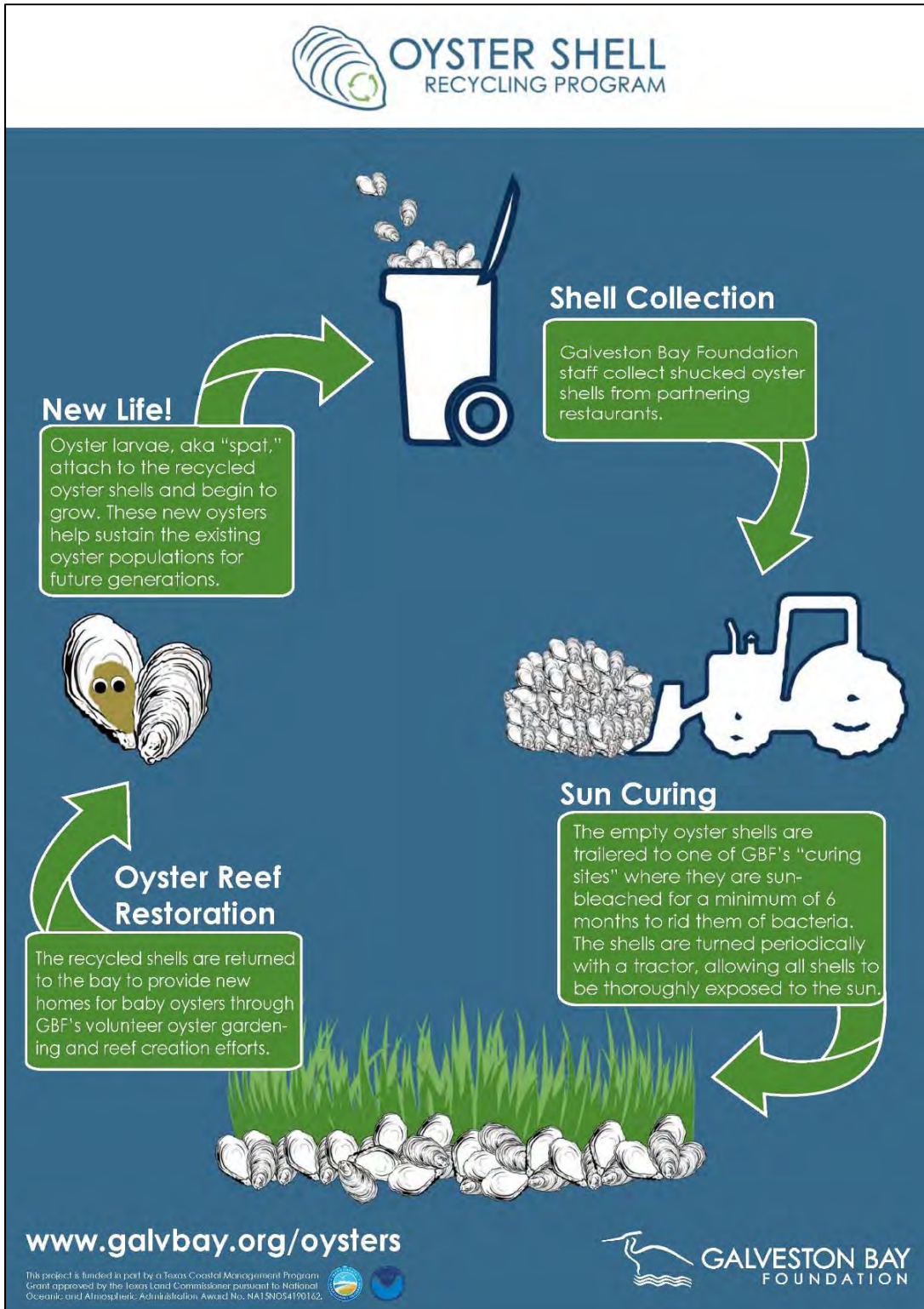


1.3) Combined Program & Foundation Logo

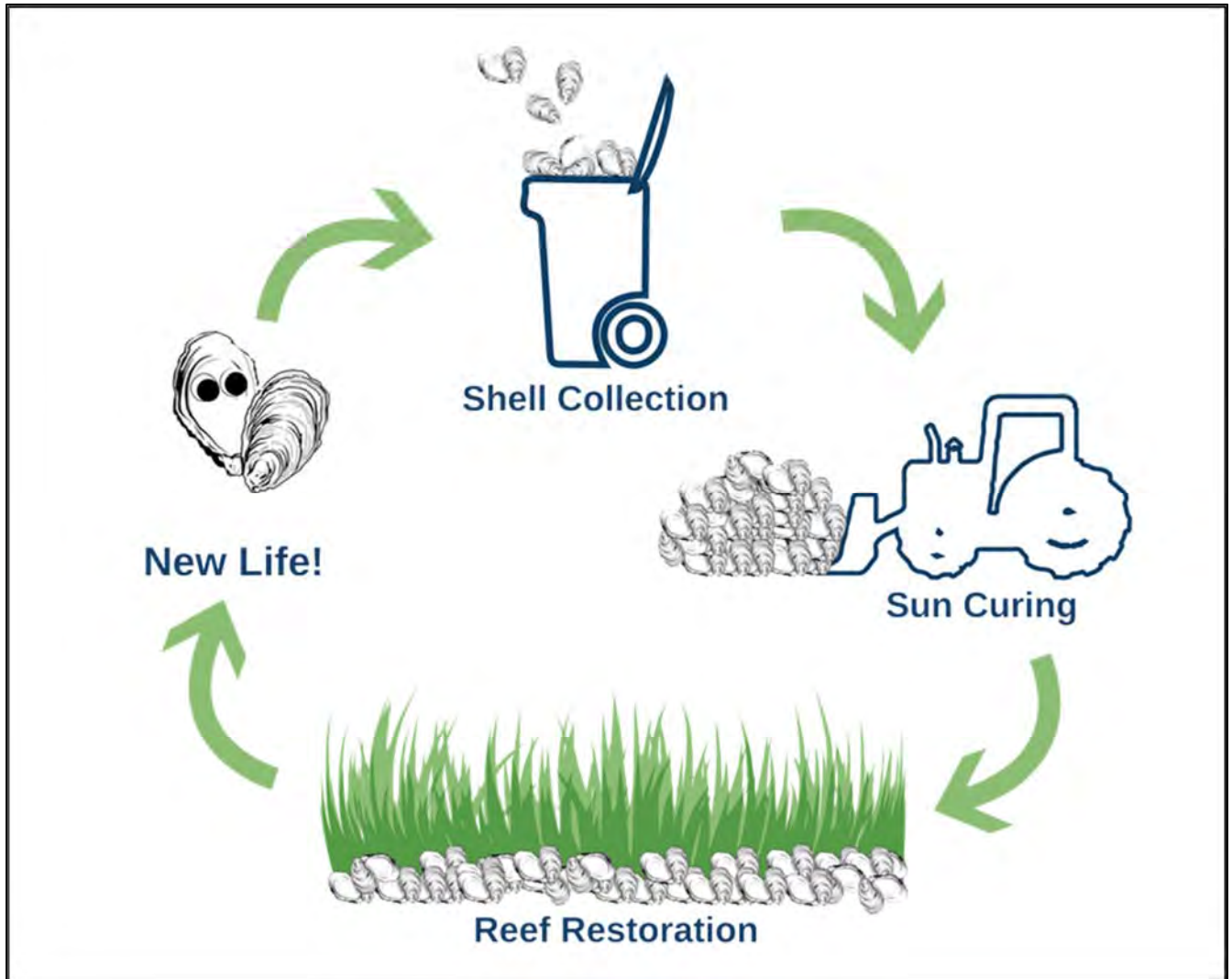


C.2 Infographic

2.1) Full Text Infographic



2.2) Basic Infographic
(for use on other outreach items)

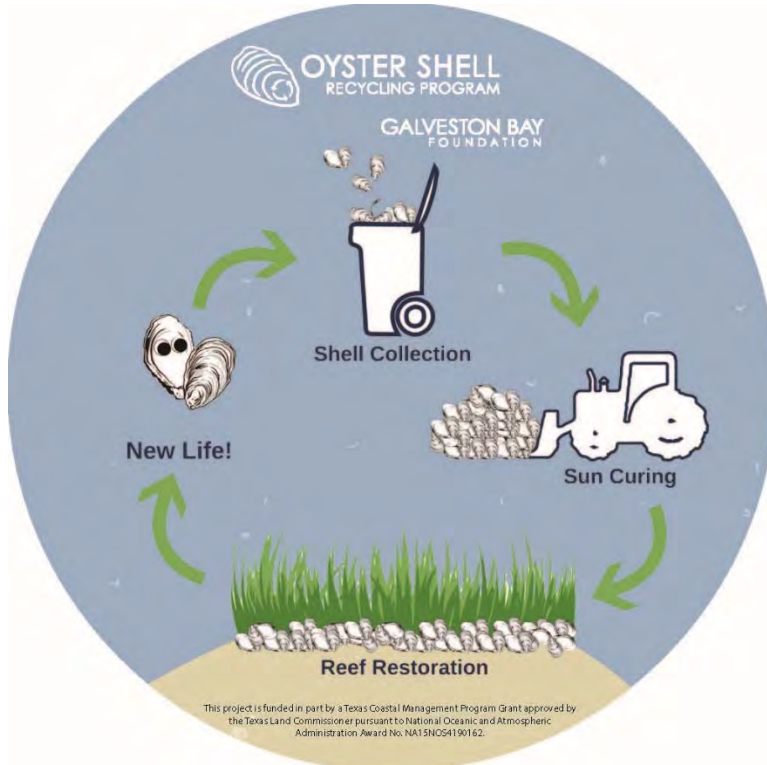


C.3 Coaster

Front




Back



C.4 Rack Card


Front of Rack Card



OYSTER SHELL
RECYCLING PROGRAM

GALVESTON BAY
FOUNDATION

Galveston Bay Foundation partners with local restaurants to collect shucked oyster shells after patrons enjoy a tasty meal. The empty oyster shells are sun bleached for a minimum of 6 months to rid them of bacteria. The shells are then returned to Galveston Bay to provide new homes for baby oysters.




Shell Collection

Sun Curing

Reef Restoration

New Life!

Find out which restaurants recycle their shells at www.galvbay.org/oysters and eat your way to a healthier Bay!



Back of Rack Card

WHY ARE OYSTERS SO IMPORTANT?

- ♥ Oysters clean the water
- ♥ Oyster reefs create homes for fish, shrimp, crabs, and many other species
- ♥ Oyster reefs help protect the shoreline
- ♥ Oysters are food for people, birds, & crabs

WHY RECYCLE OYSTER SHELLS?

Oyster larvae need a hard surface on which to attach so that they may begin to grow. While baby oysters can attach to just about anything, they prefer other oyster shells!



Galveston Bay lost more than 50 percent of its oyster reefs as a result of Hurricane Ike. To help restore the Bay's oyster population, keep our water clean, and provide habitat for aquatic life, Galveston Bay Foundation returns all recycled oyster shells to the Bay through Volunteer Oyster Gardening efforts and Oyster Restoration Workdays.



Interested in becoming an Oyster Program
Volunteer? Sponsor? Partner?
Contact Haille Carter at hcarter@galvbay.org

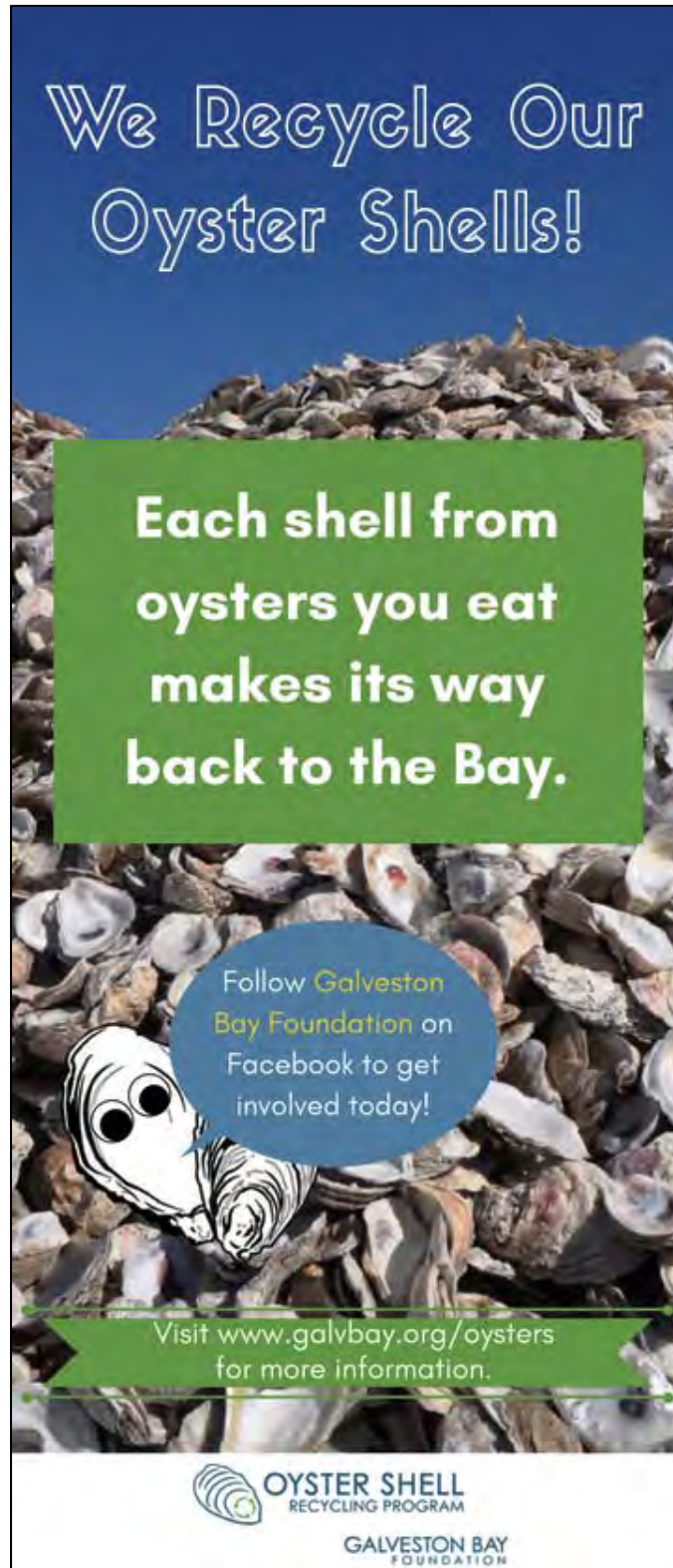


A PUBLICATION FUNDED BY A TEXAS COASTAL MANAGEMENT
PROGRAM GRANT APPROVED BY THE TEXAS LAND COMMISSIONER
PURSUANT TO NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION AWARD NO. NA16NOS4190174.



C.5 Insert for Check Presenter

Front of Insert








Back of Insert



C.6 Menu Recognition



C.7 Menu Callouts

<p>Oysters on the Half Shell</p> <p> ½ Dozen \$X.XX 1 Dozen \$X.XX</p>	<p>Baked Oysters</p> <p> ½ Dozen \$X.XX 1 Dozen \$X.XX</p>
<p>Fried Oysters</p> <p> ½ Dozen \$X.XX 1 Dozen \$X.XX</p>	<p>Oysters Rockefeller</p> <p> ½ Dozen \$X.XX 1 Dozen \$X.XX</p>
<p> All shells from the oysters consumed in this restaurant are recycled through Galveston Bay Foundation's Oyster Shell Recycling Program. For more information visit www.galvbay.org/oysters.</p>	

C.8 Table Tent

This area represents the bottom of the table tent card. This area will not be visible and should be clear of any critical information such as text, images, graphic elements, logos, etc

www.galvbay.org/oysters

Eat your way to a healthier Galveston Bay!

We recycle our oyster shells.

OYSTER SHELL RECYCLING PROGRAM

GALVESTON BAY FOUNDATION

Shell Collection

Sun Curing

Reef Restoration

New Life!

No oyster shells used in past 2 yrs. mussel control along shore in region. Shell approved by the Texas Shell Composites Association, Rock of Oyster, and Alsea Shell. www.galvbay.org/OSR for more info.

This area represents the bottom of the table tent card. This area will not be visible and should be clear of any critical information such as text, images, graphic elements, logos, etc

C.9 Window Cling



C.10 Updated Logo Sticker for Recycling Receptacles



C.11 News Articles & Media

11.1) Galveston Bay Foundation's Spring Gazette Article

http://www.galvbay.org/root/htdocs/galvbay/htdocs/wp-content/uploads/2014/05/Spring_2016_final.pdf



Aramco's worldwide commitment touches Galveston Bay

Aramco looks for initiatives that truly make a difference. The Oyster Shell Recycling & Reef Restoration Program is a way to demonstrate commitment to preservation and protection of the environment.

"It was a natural step for us to be a part of the oyster reef restoration initiative," said Alma Kombargi, Branding & CSR Advisor, Public Affairs, ASC. "The fact that the program directly impacts the health of critical marine habitat in Galveston Bay was important to us."

Prior to 2008, Galveston Bay accounted for 80 percent of all oysters harvested in Texas. However, as a result of Hurricane Ike in 2008, nearly 60 percent of Galveston Bay's oyster reefs were destroyed as sediments from the storm deposited on reefs and smothered oysters.

Since then, Aramco has supported GBF in its efforts to restore these oyster reefs. Last year, 27 Aramco employees teamed up with GBF to build an oyster reef along the shore of GBF's Sweetwater Preserve in Galveston. Volunteers assembled 176 bags of oyster shells—equal to three tons of material—that formed the basis for the reef. The shells were collected from local seafood restaurants to be used for the reef restoration projects. To help in the establishment of marsh landward of the oyster reef, an additional 900 individual marsh grasses were also planted.

"The event was amazing," said Savannah Ober-Mawed, Support Services Assistant, Industrial Relations, ASC. As the shells were bagged, Ober-Mawed's group organized the bags and transported them out to the reef using a kayak.

She said total teamwork was the key to a successful event.

"One bag of oysters by itself doesn't seem like a lot, but when you add them all up, it really creates a tremendous difference for the marine life and ecosystem in the Bay," she said. "That resonated with me because, as people, one person may not be able to do it all, but when we all come together and work as a team, we can make a big impact on each other and on the world around us."

When Aramco began its support for the Oyster Shell Recycling Program, Tommy's Restaurant Oyster Bar was the only



Oyster shells are recycled from local seafood restaurants. Aramco is a project partner for the GBF Oyster Shell Recycling Program which has collected more than 442 tons of oyster shells since the program began in order to revitalize the health of Galveston Bay.

participating restaurant. Today, seven area restaurants contribute to this unique program.

Since 2011, more than 442 tons of oyster shells have been collected and cured so they can be reintroduced into the Bay and become part of the estuarine ecosystem to support future generations of oysters.

Aramco's involvement with GBF dates back more than a decade to 2002, with involvement in a number of activities designed to contribute to the Foundation's objective of restoring Galveston Bay's wetlands. Aramco volunteers have participated in the past in GBF's nationally recognized "Marsh Mania" events to accomplish hands-on wetlands restoration by planting marsh grass. They have also participated in "Get Hip to Habitat" which gives Aramco a chance to contribute to GBF's science-based environmental education program for school children.

According to Arin Morris, Community Affairs Advisor, ASC, there is a very active employee volunteer group at Aramco, and the Aramco Citizenship Program provides opportunities to participate in a wide variety of volunteer activities to support the local community.

"Volunteering is in our DNA at Aramco," said Morris.

She added that GBF is special to many of the employees because it combines

volunteerism with environmental protection, both important to the company. Aramco volunteers are gearing up again for this year's oyster reef building at the Sweetwater Preserve in April and hoping for beautiful weather again this year. GBF looks forward to a continued



Aramco employee volunteers place bags of oyster shells in the water to stimulate formation of a new reef.

partnership with Aramco as we work together for the benefit of Galveston Bay. You can learn more about ASC's involvement within the community and how they team with nonprofits dedicated to a range of environmental initiatives by visiting the "In the Community" section of their website at www.aramcoservices.com.

We are always looking for new sponsors at GBF. If you are interested in sponsoring one of the many programs that help enhance Galveston Bay, contact Sharon Roark at sroark@galvbay.org.

11.2) Houston Eater Article

<http://houston.eater.com/2016/6/27/12037946/tookie-s-seafood-now-serving-grilled-oysters-fruity-margaritas-in>

Tookie's Seafood Now Serving Grilled Oysters & Fruity Margaritas In Seabrook

by [Amy McCarthy](#) Jun 27, 2016, 9:30am CDT

A fresh new spot for seafood in Seabrook

Should you find yourself in Seabrook, the Houston suburb now has an exciting new dining option – one you might recognize. A sibling of Tookie's Burgers, **Tookie's Seafood** is now serving up fresh Gulf catches at 1106 Bayport Blvd.

According to the *Houston Chronicle*, [the new addition to Seabrook's dining scene kicked open the doors last week](#). The restaurant occupies a massive 12,000 square foot space, which includes a large patio and "shuck room," where diners can watch their raw oysters on the half-shell cracked open live and in person.

Also on the menu are six different types of grilled oysters topped with everything from lime juice and pico de gallo to bacon and cheese. Gumbo, po'boys will also be on offer, in addition to the freshly-caught Gulf redfish, snapper, and more fruits of the sea that will be grilled over wood.

Cocktails include a selection of coconut and watermelon infused margaritas and the Jack & Diane, a sweet and boozy concoction mixed with Jack Daniel's honey whiskey and Absolut pear vodka. Beer will be available on draft and by the bottle in addition to a selection of wines by the glass.

As an added bonus, you can rest assured that all those oyster shells you slurp from are going to a good cause. Tookie's Seafood donates their spent shells to the Galveston Bay Foundation to be recycled back into the ocean to help maintain healthy oyster populations. The more you know.

11.3) Galveston Bay Foundation's Winter Gazette Article

https://issuu.com/galvestonbayfoundation/docs/gbf_gazette_-_winter_2016/1?ff=true&e=5833982/41634653



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Galveston Bay Foundation oyster gardening volunteers become adoptive oyster parents

On a Thursday evening in Bayou Vista, Chris Roper gathered together her neighbors for what is typically their wine night and added oysters to the mix — oyster gardening, that is.

This year, Galveston Bay Foundation (GBF) volunteers around the Bay hung mesh bags containing more than 7,500 recycled oyster shells from their docks in hopes of providing new homes for oysters.

The shells, recycled from restaurants through GBF's Oyster Shell Recycling Program, are an ideal home for oyster larvae, which are free floating in the water until

they find a hard surface on which to attach.

Chris, already a water quality monitor for Galveston Bay Foundation, knew how important salinity, or the concentration of salt in water, is for the health of oysters in our Bay. As she monitors the Bay for salinity already, she was curious to see how this year's salinity would impact new life on her oyster shells.

"The idea of creating a garden for oysters just sounded like a wonderful thing," Chris said.

Continued on pg. 4 ►



Oyster gardening volunteers (continued from cover)

The neighbors enjoyed their wine while bagging their oyster shells as the sun went down.

“We’re going to be oyster parents!” One of the neighbors exclaimed. “Provided salinity levels are good enough,” another added.

Typically, oyster gardening volunteers would start the oyster gardening process in June to align with the oyster spawning season, but the heavy rainfall this spring and summer caused a delay in the process and the gardeners did not place their bags until September this year.

Oysters need a balance of freshwater and saltwater in order to spawn, and the influx in freshwater from the heavy rainfall

led to low salinity levels in the Bay. Additionally, oysters are much less tolerant to rapid salinity changes during the summer due to high water temperatures. Although spawning was delayed this year because of these unfavorable conditions, we do have evidence of spat (baby oysters) on the gardeners’ recycled shells.

“Oyster gardening brings attention and sensitivity to the water quality in our canals and the marsh grass that surrounds our community.” - Chris Roper, GBF Volunteer

Chris. “Oyster gardening brings attention and sensitivity to the water quality in our canals and the marsh grass that surrounds our community,” said

Chris. “We’re excited to be adoptive oyster parents,” she said.

For more on Galveston Bay Foundation’s oyster gardening program, visit www.galvbay.org/oysters.



GBF volunteers bag oysters at a neighborhood gathering in Bayou Vista.



DATES TO REMEMBER



Bravos for the Bay

What: Galveston Bay Foundation Volunteer Appreciation event
Where: Texas Corinthian Yacht Club
Time: 5:30 - 8pm
For more information, email Emily Ford at eford@galvbay.org



Abandoned Crab Trap Removal

Where: Anahuac, Texas and Bolivar Peninsula
www.galvbay.org/volunteer



Volunteer Water Quality Monitor Gary Bell claps in recognition of his fellow volunteers during Bravos for the Bay in January 2016.

11.4) Gulf Coast Mariner Magazine Article <http://www.gulfcoastmariner.com/current-issues/>

It's not legal to seed oysters here. In Texas, it has to happen naturally. So, if oyster populations want to build oyster populations, they have to set their bags in optimum conditions. This fish year at Bayou Vista is a selling example for future sites.

Journee Kilwell has just returned from Christmas shopping for her girlfriends when she comes to her dock to help put up her half-year effort. "I was a Foster Parent," she says.

Hattie and Michael open her bags and the others on the Roper's dock, sorting the shells, looking for spats. "I'm amazed at what I see," says Hattie. She's finding spat on every 10 oysters. Some shells are covered with three or more spat.

It will take two years for this spat to grow to the legal 3-inch-size oyster for harvesting. But those will never be harvested. Today they're going into restricted waters of Galveston Bay Foundation's 449-acre Sweetwater Preserve. There, the oysters will build a

Six months later, on this last day of November, it's time to collect the bags, check for spat, and move the bags to an oyster bar freshwater so they can mature. We're at the Roper's residence, it's a brightly clear afternoon, and the folks from Galveston Bay Foundation are curious to see what's inside two ice chests at the Roper's front door. Hattie Gomez, Galveston Bay Foundation's Habitat Restoration Coordinator, and Michael Neibich, Program Technician, open the chests and remove the wet towels covering bags that neighbors have dropped off. One bag hung in the canal, shows no spat; the other hung in the wetland, is full of spat. Commenting on that neighbor's results, Chris says, "We've had very little influx. I'm not surprised that our water in the canal was not absolutely full of spat. It was dark brown. You couldn't see anything."

Ullie Chesapeake Bay, where oyster gardening has been going on for years,

"Oyster gardening is easy for families to do with their kids."

Sweetwater Preserve to deposit the bags. Near the water is a tall pile of oyster shells, a curing site for those collected from nearby restaurants. So far, six Bay Area restaurants participate in the shell-recycling program. They've been given 32-gallon collection bins that Galveston Bay Foundation retrieves and brings to the curing site on a weekly basis. Michael led that effort for most of last year. "I'd visit Truitt's the most, about three times a week," he says.

Giddis and Cajun Cook, and continue our partnership with Texas A&M-Galveston with students picking up shells at those recycling sites and taking them to the curing site.

Oyster gardening is easy for families to do with their kids, and it's a good way for kids to connect to their ecosystems. To get involved, contact: [Emily Ford](mailto:Emily.Ford@gbf.org) eford@gbf.org www.gbf.org/get-involved/volunteer

Shell at the curing site will go into the 5-pound bags for the gardening program. They also make up the 35-pound bags that form this and other breakwaters. Since 2011, the program has collected 570 tons of shells.

As they set the bags in the wet, Hattie talks about how the program will expand to Galveston Island in the next year. "We'll partner with

Sweetwater Preserve to deposit the bags. Near the water is a tall pile of oyster shells, a curing site for those collected from nearby restaurants. So far, six Bay Area restaurants participate in the shell-recycling program. They've been given 32-gallon collection bins that Galveston Bay Foundation retrieves and brings to the curing site on a weekly basis. Michael led that effort for most of last year. "I'd visit Truitt's the most, about three times a week," he says.



- WHEN YOU EAT OYSTERS**
at these restaurants, you can be sure they'll be recycled in the Galveston Bay Foundation's Oyster Shell Recycling program:
- Tommy's Restaurant and Oyster Bar
 - Truitt's Seafood
 - Spawwater Grill
 - Captain Benny's Seafood
 - Cray Allen's Swamp Shack (Mamou)
 - Aquarium (Mamou)
 - Guido's
 - Cajun Creek

That's a spat! The oyster gardeners look for spat on oysters.



Bayou Vista residents Journee Kilwell puts up her oyster bags with Galveston Bay Foundation's Hattie Gomez and Michael Neibich.

OYSTER GARDENING

elias. "We were bagging with oyster gardening in one hand and wine in the other," says Chris.

With Galveston Bay's oyster population at an all time low, beset every two years by silt, worms, low salinities or high salinities, Galveston Bay Foundation is enlisting communities to spawn their growth and shore up rebuilding land.

Bayou Vista's tightest bay community is a perfect setting to try out the nursery program. At the intersection of I-45 and I-10, 6 near Galveston, it's built around a series of residential canals fed by Highland Bayou. On the community's southeast boundary lies a wetland fed by West Bay. Residents bring bags from their docks both on the bayou-canal side and the wetland side to see where the oyster larvae, spat, would take hold starting in June.

Residents hang bags from their docks to spawn bi-valves.
By Janice Van Dyke Walden

GOOD THINGS happen over wine, and in this case, it was oyster gardening. At a Wine Social last Spring, Bayou Vista resident Chris Roper suggested to her neighbors that they collectively cultivate oysters, right from their docks. It's a program that Galveston Bay Foundation started in 2010, and has been doing with success in Kerrick and San Leon.

Fourteen residents signed up to help, and in June, they gathered at the Roper's driveway on Blue Haven Drive to create the 5-pound bags. In all, they assembled 25 bags. Again, wine was the

26 Gulf Coast Mariner Magazine January/February 2017

11.5) Edible Houston Article

<http://ediblehouston.ediblecommunities.com/eat/ode-oysters>

An Ode to Oysters

By Susan L. Ebert / Photography By Shannon Tompkins & Susan Ebert | January 03, 2017

'Tis the season to rhapsodize over oysters

I'm standing in the [Armadillo Palace's](#) cavernous barroom, queuing up in front of four 35-gallon galvanized tubs on a thick-hewn wooden sideboard. Glistening atop the chipped ice in the tubs lie dozens of freshly shucked oysters, shimmering in briny pools of their own half shells. Four oyster shuckers stand behind the massive table, deftly replenishing the array.



“Many folks don’t realize that oysters are what drives Texas’s \$1.9 billion recreational saltwater fishery,” says Ted Venker, who’s standing next to me as I slurp down a plump Hannah’s Reef oyster.

Venker does: As conservation director of the [Coastal Conservation Association](#) (CCA), Houston native and ardent angler, he’s a frontline advocate for healthy marine ecosystems. CCA—a four-decade-old nonprofit with 17 coastal chapters along the Atlantic and Pacific seaboards and the Gulf of Mexico—will be the initial beneficiary of this evening’s fundraiser, their sleeves to begin healing the bay. Their biggest ally? The oyster.

Cornerstones of the Coast

Indeed, the lowly oyster does a yeoman’s job. As an adult oyster passes seawater over its gills and through hair-like cilia in its continual search for calcium carbonate to keep building its shell and for the plankton and algae on which it feeds, it coats any non-food impurities with mucus and then expels them as little waste packets that sink into the bay’s sediment. In doing so, each oyster returns approximately 50 gallons per day of cleansed, filtered water to the bay.

“Oysters are the unsung heroes of our oceans for the vital role they play in protecting our shorelines and the health of our marine environment,” says Laura Huffman, Texas state director for [The Nature Conservancy](#). “When we restore just one 15-acre oyster reef, that reef has the potential to filter as much water per day as the entire dubbed “Oysters, Blues & Brews: A Gulf Coast Celebration” and sponsored by Goode Co., the Armadillo Palace’s parent company, to kick off this year’s oyster season.

Worldwide, 85% of oyster reefs have vanished, making them the most severely impacted marine habitat on the planet. Adding insult to injury, Hurricane Ike savaged Galveston Bay’s oyster population in 2008, burying nearly two-thirds of them in an aquatic avalanche of sediment, muck and debris and ravaging the entire estuary; 80% of East Galveston Bay’s oyster reefs were obliterated.

That year, Texas' commercial oyster harvest—which is dominated by Galveston Bay—plummeted by more than half (from 2,555.3 metric tons in 2007 to 1,215.3 in 2008). Galveston Bay's post-Ike restoration costs skyrocketed into several hundred million dollars, and an interlaced consortium of nonprofits, advocacy groups and government agencies including CCA, the Texas Nature Conservancy, the Galveston Bay Foundation, [Texas A&M SeaGrant](#), [Texas Parks and Wildlife Department](#), and the [U.S. Fish & Wildlife Service](#), among others, rolled up Houston metroplex uses on an average summer day. The reefs created by these hardworking shellfish also provide a natural barrier to storm surges and support a bevy of other marine life including crab, shrimp and small finfish, which in turn attract larger fish. That's why 'fishing the reefs' is tremendously popular among anglers.



After being “sun-cured” for a minimum of six months, recycled oyster shells are transported to restoration sites photo courtesy of Galveston Bay Foundation

“In the Gulf, we’re actually in better shape than anywhere else in the world,” Huffman continues. “We still have roughly 50% of our historical reefs intact, which is one of the reasons why the Gulf of Mexico is widely considered as the last, best hope for a full comeback. And we’re wasting no time on that front. Next year, The Nature Conservancy, Texas Parks and Wildlife and the Galveston Bay Foundation are undertaking a 40-acre oyster reef restoration project in the upper portion of Galveston Bay. This part sanctuary, part harvestable reef will bolster the ecological health of bay while providing new opportunities for sustainably harvested oysters.”

Oysters have been successfully farmed for centuries, as once the developing oyster (known as spat) attaches to a substrate, there it remains, colonizing with other oysters to build a reef—purifying water, creating marine habitat, protecting coastlines. Furthermore, oysters are one of the few seafoods of which both farmed and wild-caught stocks earn “Best Choice” ratings from the [Monterey Bay Aquarium Seafood Watch](#), as the benefits to the aquatic environment are equally beneficial.



Photo 1: Recycled oysters are placed in mesh bags and stacked to create new habitat and protect the shore from erosion photo courtesy of Galveston Bay Foundation

Photo 2: Oysters are natural water filters

Those of us who salivate at the thought of fresh, plump, briny oysters will just have to be patient while the oysters work. Unlike that tasty pink crustacean, the shrimp, which reaches harvestable size in a matter of months, an oyster takes three to four years to mature.

Among the five species of oysters that make their way to our tables, the Eastern oyster (*Crassostrea virginica*) might well be called America's oyster: *C. virginica* grows from Canada on down the Eastern seaboard and throughout the Gulf. In one of nature's more fascinating reproductive mechanisms, oysters are protandric hermaphrodites, born as males and completing their first breeding cycle thus, and then gradually becoming females as they mature with some even reverting to male. In spring through early summer, males and females put energy into growing gonad (reproductive tissue, which is not so tasty) for the summer spawn. Post-spawn, they'll convert to producing glycogen, a form of glucose stored for energy, instead—giving them the sweet taste so beloved in the “R” months.

Oysters may spawn several times during the summer months, and when one starts to spawn it triggers the surrounding ones, with each male releasing hundreds of millions of sperm, and females up to 114 million eggs. Fertilized eggs start as microscopic larvae, floating in the water column. Over the next few weeks, they enter the veliger phase, developing cilia for feeding and for filtering calcium carbonate from which they create thin shells. Next, they'll develop eye spots and a foot to become “pediveligers,” and begin seeking a suitable habitat—with oyster shell, called “cultch,” being a preferred habitat. Once they cement themselves to the substrate, they're known as “spat,” and their choice becomes their permanent home—come tempest, tide or drought—for up to 20 years.

That is, if they don't get eaten first.

A Look in the Merroir

When it comes to eating, not all *C. virginica* are created equal. Just as with wine varietals that are imbued with terroir (characteristics of the soil and climate in which they're grown), oysters develop merroir, taking on distinct flavors depending upon mineral content, available nutrients, and the salinity and temperature ranges unique to their own specific marine environment.

The longtime custom of branding Eastern oysters with appellations (the name of their home water body) not only continues, but has expanded into the Gulf of Mexico, offending some of the oyster cognoscenti who reverently claim the superiority of Cape Cod Wellfleets, Long Island Bluepoints, Chesapeake Rappahannocks and so on.

Arguably—and argue I will—our Galveston Bay oysters are among the best in the nation, larger and more succulent than their East Coast cousins.



On a sojourn to the Chesapeake Bay a few years back, I quietly set about proving my case ... literally, with wooden cases. My old college pals (neither from Texas) and I had slurped up several dozen raw oysters to their ooohs and aaahs about the amazing Chesapeake oysters, paid our check, and embarked to explore the quaint seaside town. Puzzled when I suggested strolling down the back alley behind the imposing row of harborside restaurants, they burst into gales of laughter as I pointed to empty wooden case after wooden case behind the restaurants. Emblazoned across each case: Jeri's Seafood, Smith Point, Galveston Bay, Texas. Case closed.

“People tend to think of Gulf oysters as being so generic,” says Bobby Matos, executive chef at the River Oaks eatery [State of Grace](#), which sports a posh sunlit oyster bar with well-padded stools rimming an arc of iced-down appellation oysters. “But they’re not; there’re subtle and not-so-subtle differences. We communicate this to our guests through waiter education, so they can pass along this knowledge to our guests, much as we do with our wines. Our Galveston Bay oysters are hand-selected through [Dickinson-based] [Prestige Seafood](#), and we buy other Gulf oysters—Louisiana, Alabama and, soon, Mississippi—through [Louisiana Seafood](#).”

That being said, sometimes only a direct taste test will do, and that's what I'm doing this evening at the [Armadillo Palace](#). Each of the four gargantuan galvanized tubs displays appellation oysters: There's delicate Sister Lake, Louisiana, oysters with nearly imperceptible brininess and Crockett Bay, Alabama, ones that are a tad more assertive and plump. Those two might appeal to the broadest range of tastes; however, my favorites were the brinier, meatier Mississippi oysters from Henderson Point and those from Hannah's Reef in our own Galveston Bay. Choose the merroir you like: They'll range from the near-floral, low mineral and salt of a mermaid's kiss to the bold, briny blast that Robb Walsh, author of [Sex, Death & Oysters](#), affectionately describes as "akin to licking the bottom of a boat."

From Restaurants to Reefs

To address the rebuilding of Galveston Bay's oyster reefs after Hurricane Ike, the [Galveston Bay Foundation](#) began an innovative oyster shell collection program with Houston area restaurants: You see, one recycled oyster shell can provide substrate for 10 spat (baby oysters). By creating new reefs with bagged oyster shells, they not only create new oyster habitat, but build reefs that protect the coastline against storm surges and erosion.



GBF's Habitat Restoration Coordinator Haille Carter explains the process: "We provide shell-recycling bins [either 32-gallon bins or five-gallon buckets] to participating restaurants, and pick them up on a weekly basis. Once the shells are collected, they're sun-dried for a minimum of six months to ensure that all bacteria and any nonnative species have been destroyed. Following the curing process, they're either hauled directly to a restoration site to help the oysters' life cycle begin anew, or packaged in mesh bags and given to bayside 'foster parents' for the summer.

"In the summer, there's a remarkable amount of microscopic fertilized oyster eggs in the near-shore water column," she continues. "The foster parents hang the bags off their docks all summer, and love seeing how much oyster spat has grown by fall." GBF hosts a volunteer day in the fall to put the seeded oyster bags out to become reefs.

Since beginning the oyster shell recycling program in 2011, the Galveston Bay Foundation has reclaimed more than 500 tons of oyster shell with the help of area seafood restaurants. Currently, six restaurants participate in the GBF program: [The Aquarium](#), [Capt. Benny's Seafood](#), [Crazy Alan's Swamp Shack](#), [Tommy's Restaurant & Oyster Bar](#), [Tookie's Seafood](#), and [Topwater Grill](#). Other restaurants, such as Houston's beloved [Goode Company](#), recycle oyster shell directly through their suppliers. The two largest commercial oyster purveyors in Galveston Bay, [Jeri's Seafood](#) and [Prestige Oysters](#), have replenished Galveston Bay by returning an estimated 100,000 tons of oyster shell—and rock during the summer, while oysters are spawning—over the past four years, not only from their own shucking operations, but also from the restaurants they supply.

Texas commercial oyster production is recovering, albeit slowly—our state's commercial harvest topped 1,872.9 metric tons in 2014, a 54% uptick since Ike's decimation. Huge swaths (TX1, TX4, TX5 and TX6, which comprise East Bay in its entirety and the western part of Galveston Bay from

southeast from Baytown at Umbrella Point to Dollar Point just north of Texas City) remain closed to harvest, with the exceptions being granted by TPWD for private commercial oystermen, who grow, cultivate and harvest oysters they have planted themselves.

Still, there's reason for great hope, as oysters continue to “get by with a little help from their friends.” Not only do these modest marine mollusks delight our palates, but are the ultimate givers—cleaning our water, creating habitat and protecting our coastlines.

Eat them or not, that's reason enough to make anyone an oyster lover.

APPENDIX D
OUTREACH MATERIAL DISTRIBUTION

Restaurant	Coaster	Brochure	Rack Card	32-gallon Recycling Bins	5-gallon Recycling Buckets
Tommy's Restaurant & Oyster Bar	150	0	0	23	0
Topwater Grill	0	0	0	12	0
Crazy Alan's Swamp Shack	0	0	0	6	0
The Aquarium	50	50	50	0	3
Captain Benny's Seafood	200	0	100	3	0
Tookie's Seafood	0	0	0	12	0
TOTALS:	400	50	150	56	3

APPENDIX E PROJECT PHOTOGRAPHS

E.1 Oyster Shell Collection



Collection of 32-gallon recycling bins from restaurant partner.



Collection of 5-gallon recycling buckets from restaurant partner.

E.2 Shell Recycling Truck & Trailer



E.3 Sun Curing Process



GBF staff dumping newly recycled oyster shells at curing site.



GBF volunteer piling recycled oyster shells to facilitate sun curing.

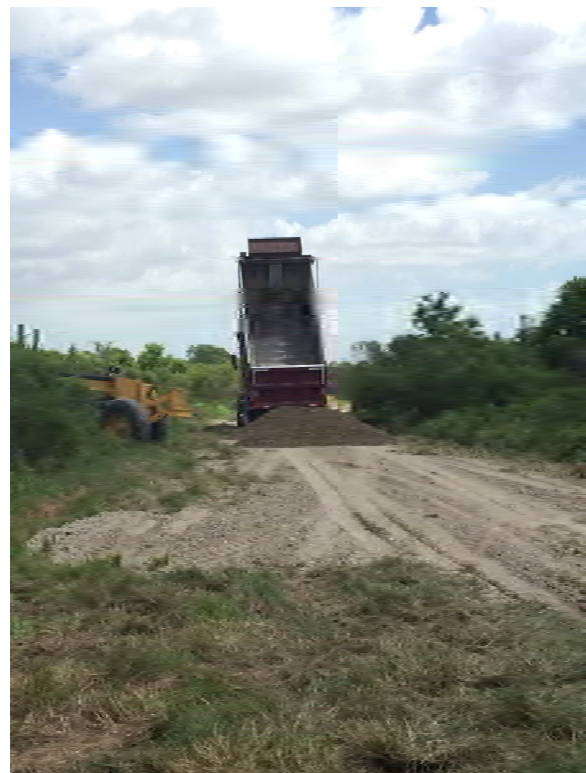
E.4 Port of Houston Authority Lease: “Red Bluff Curing Site”



Red Bluff Curing Site after shell pile maintenance and mowing.



Recently piled oyster shells at Red Bluff.



Road maintenance in progress at Red Bluff.

E.5 GBF's TX City Preserve: "TX City Curing Site"



TX City Curing Site entrance.



Eagle Scout project – cement shell storage unit expansion.



Cured oyster shells and shell bags on cement storage unit.



Additional piles of cured oyster shell at TX City Curing Site.

E.6 Inland Marine Construction Yard: “Inland Marine Curing Site”



E.7. Education and Outreach Events



Outreach table at volunteer oyster gardening event.



Educational lesson/presentation at oyster gardening event.



Oyster shell recycling visual and “send a message to an oyster” activity.



Oyster garden creation with recycled oyster shells.



Outreach booth at Bay Day festival in Kemah.