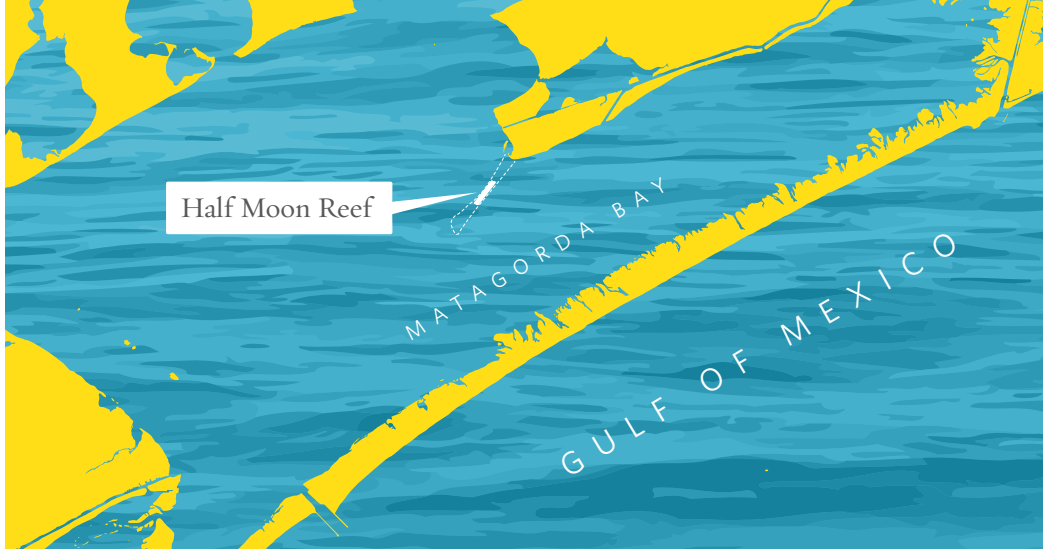


Half Moon Reef

Measuring the Recreational Fishing Benefits
of a Restored Oyster Habitat



Half Moon Reef

Half Moon Reef, a 54-acre restored oyster habitat in Texas' Matagorda Bay, is a cornerstone of The Nature Conservancy's restoration efforts along the Gulf of Mexico. The multi-year project has generated remarkable social and economic benefits across the bay. Wanting to quantify anecdotal information about the success of the reef, The Nature Conservancy, working together with Texas Sea Grant, surveyed anglers and fishing guides from August 2015 to January 2016 to determine the social and economic benefits of increased recreational fishing in Matagorda Bay due to the restoration of Half Moon Reef.

The restored habitat has generated large oysters and an increase of biodiversity—more shellfish, small invertebrates and fish like flounder and redfish in and around Half Moon Reef—to create an increasingly popular hotspot for hundreds of sport anglers across the region.

THE REEF'S HISTORY

In 1905 Half Moon Reef measured as much as 500 acres, but by the late 20th century, dredging, harvesting and changes in the amount of water entering Matagorda Bay had rendered Half Moon Reef functionally extinct. This meant the loss of benefits that oyster reefs create for coastal ecosystems, including improved water quality, stabilized shorelines and a diversity of plant, animal and sea life. In 2013, the Conservancy partnered with the Army Corps of Engineers, U.S. Fish and Wildlife Service, Texas General Land Office, Texas A&M University, and private foundations on a multi-year project to restore Half Moon Reef. Today, it stands as one of the largest oyster restoration projects in the country.

More Than Oysters

The successful restoration of Half Moon Reef has attracted more than just fish, shrimp and crabs. Anglers started fishing around the reef in 2014, as construction was nearing its end. As word spread among area fishing guides about this new hotspot, Half Moon Reef quickly earned a reputation as a location that “holds the fish.” Here’s what our survey of anglers and fishing guides found:



45% of the in-person survey respondents reported that they **were familiar with the Half Moon Reef restoration work**

94% of anglers reported that the restored habitat at Half Moon Reef offers **a more satisfying experience** than other fishing locations



Increased recreational fishing at Half Moon Reef **added \$691,000** to Texas' **gross domestic product each year** and generated an additional \$1.273 million in annual economic activity

Half Moon Reef has created a dozen new jobs and \$465,000 in annual labor income



12 JOBS

Whether guiding a chartered trip or fishing for personal satisfaction, anglers agreed that Half Moon Reef was an above-average to excellent fishing spot in Matagorda Bay to which they will return time and time again.



Construction of Half Moon Reef

Rocks are strategically spaced in parallel rows across the bay floor

1 Sub-tidal (fully submerged underwater)

2

4

The diverse reef structure creates differently-sized niches, which attract oysters, fish, shellfish, and small invertebrates and ensure a healthy, thriving ecosystem.

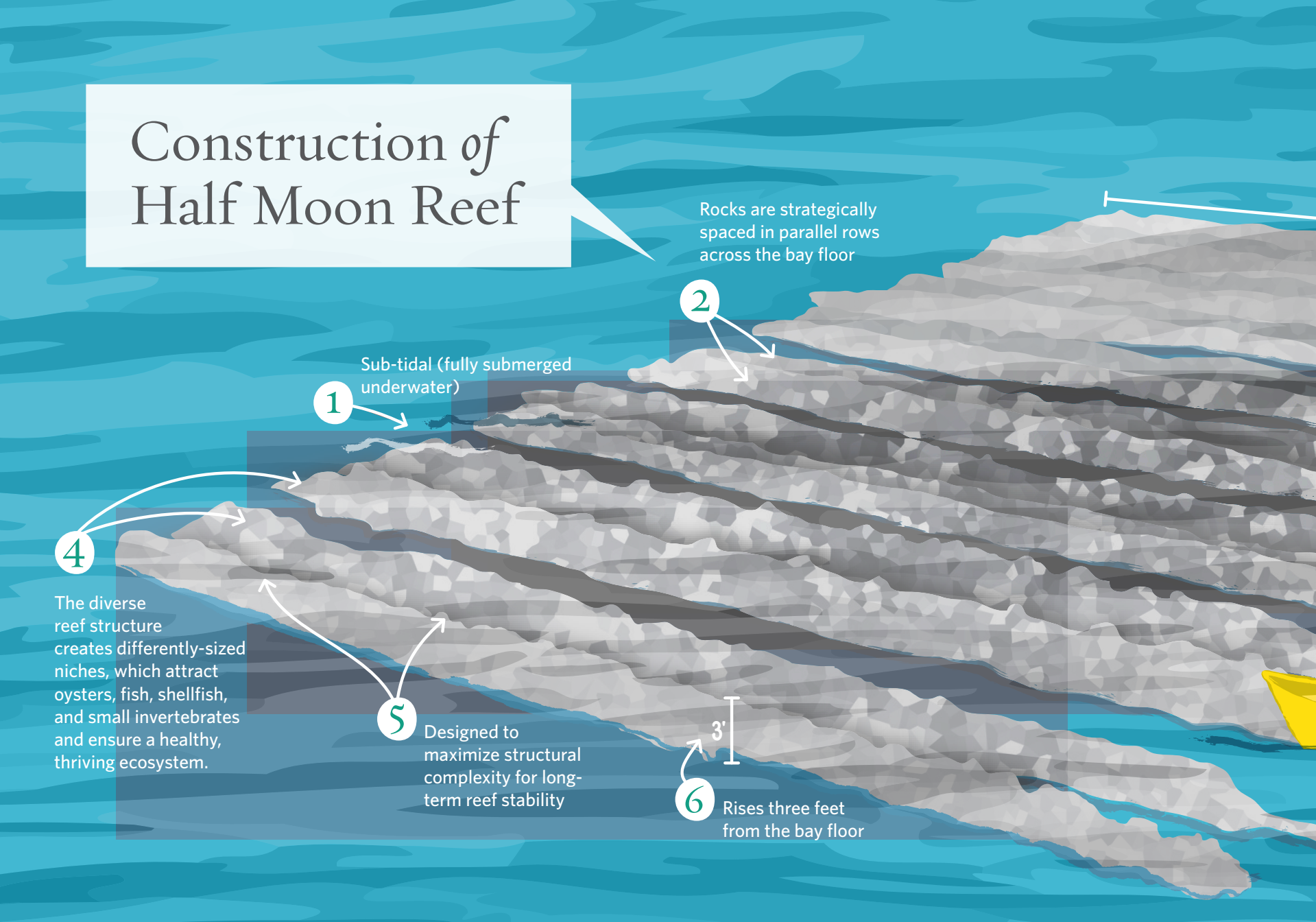
5

Designed to maximize structural complexity for long-term reef stability

6

Rises three feet from the bay floor

3'



The Restored Reef

32 rows* of oyster-encrusted rocks that total 650 feet in length

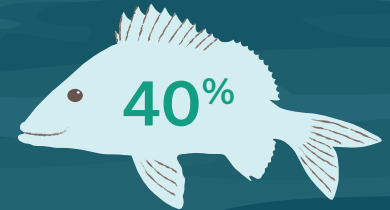
650'

3



Oyster size increased by **551%** from January 2014 to May 2016

Biodiversity is **40% higher** at Half Moon Reef than on the adjacent bay bottom



Biomass, which helps measure the level of sea life in and around Half Moon Reef, is **1,014% greater** on the reef than on the adjacent bay bottom

1,014%

Oysters have attached to roughly **70%** of the reef's total surface



*Artist's rendering does not depict all 32 reef rows

Who Fishes Half Moon Reef?

THE GUIDE

"This has turned out to be a great project... I would like to see more projects like this for the entire Gulf Coast."

—SURVEY RESPONDENT

Average age: 51

77% of guides take charter clients to Half Moon Reef

Approximately **26%** of charter trips involve fishing at Half Moon Reef

Booked **268 more guide trips** due to the habitat restoration at Half Moon reef (10.5% increase in trips)

THE ANGLER

"I'm glad to see such an important resource planned and placed in the bay system. It is a good investment for the ecosystem and the people who use it."

—SURVEY RESPONDENT

Average age: 55

Fishes to enjoy nature, relax and have fun, connect with family and friends; catches fish to eat and trophy fish

Values protecting and restoring Gulf habitat

Takes more fishing trips than the average fisherman in the bay (**67% to 20.5%**)



The Future of the Texas Coast & the Gulf of Mexico

With an increase in jobs, statewide GDP and approximately \$1.3 million generated annually for the Texas economy, the benefits of increased fishing at Half Moon Reef in Matagorda Bay are clear. This restored oyster colony also offers hope for a ravaged ecosystem. Increased diversity of marine life in and around Half Moon Reef promotes better fishing for Texas anglers and an improved ecosystem throughout the bay. Healthy oysters and an intact reef also mean cleaner water; just one acre of healthy oyster reef can filter approximately 24 million gallons of water daily.

The success of Half Moon Reef has created a blueprint for coastal restoration across the region. Using the Half Moon Reef habitat restoration as a guide, The Nature Conservancy is ambitiously spearheading three new large scale oyster habitat restoration projects in the Gulf: the construction of a 40-acre oyster reef in Texas' Galveston Bay, a 12-acre reef in Florida's Pensacola Bay, and a 45-acre reef in Copano Bay, north of Corpus Christi, Texas.

Projects like these, along with an array of habitat and shoreline restoration projects the Conservancy has implemented across the Gulf, are vital to the long-term viability of our country's hardest working body of water. Major Gulf industries such as tourism, oil and natural gas production, shipping, and commercial and recreational fishing contribute billions to the United States economy each year. The region produces more than a third of the seafood Americans eat, is home to seven of the 10 busiest shipping ports in the country, and provides critical habitat for 15,000 species of plant, animal and marine life. It also stands as a cultural touchstone for millions of people.

Armed with a proven plan for coastal resiliency and an influx of conservation funding resulting from the Deepwater Horizon oil spill of 2010, we have an unparalleled opportunity to invest in the future of the Gulf of Mexico. The work we do now to rebuild oyster reefs, increase biodiversity, enhance recreational fishing opportunities, and protect our shorelines will allow our beloved Gulf Coast to rebound stronger and healthier.

ABOUT THE STUDY

The Nature Conservancy partnered with Texas Sea Grant to calculate survey results for both private boat (non-guided fishing trips) and charter (guided) fishing trips. The survey investigated four issues:

1. Angler awareness of the Half Moon Reef restoration.
2. Angler use of and satisfaction with the Half Moon Reef restoration.
3. Demographics and motivations of Half Moon Reef anglers.
4. The economic and social impacts of the Half Moon Reef restoration.

Four hundred anglers took part in the in-person interviews; 357 of them (89%) fished from private vessels. Seventy-three fishing guides participated in the online survey.



Dr. Christine Shepard | Gulf of Mexico Program
cshepard@tnc.org

Mark Dumesnil | The Nature Conservancy in Texas
mark_dumesnil@tnc.org



Dr. Stuart Carlton | Texas Sea Grant
stuartcarlton@tamu.edu

Texas Sea Grant Publication TAMU-SG-16-303