



RESTORING THE BALANCE

The Pensacola East Bay Oyster Habitat Restoration Project

BY HEIDI TRAVIS

In the last 200 years, the world has lost 85 percent of its oyster reefs. Oyster reefs play a critical role in the overall health of our marine ecosystems. They provide homes for many marine species, improve water quality through filtration and help counteract the negative effects of rising sea levels. As a result, oyster reef restoration projects are gaining momentum.

The Nature Conservancy in Florida (TNC) and its partners are bringing this fight to our shores. The Pensacola East Bay Oyster Habitat Restoration Project is set to bring 33 new oyster reefs to a 6.5 mile stretch of the Santa Rosa County shoreline. The reef installation, located approximately 200-500 feet off the eastern

shores of East and Blackwater Bays, is funded by a \$15 million grant from the National Fish and Wildlife Foundation Gulf Environmental Benefit Fund through a criminal settlement from the Deepwater Horizon oil spill. This project aligns with the newly instated Oyster Fisheries and Habitat Management Plan by the Pensacola and Perdido Bays Estuary Program.

It's an ambitious project which promises to re-establish oyster populations and marine diversity to our shores. We spoke to Anne Birch, Florida Marine Program Manager for The Nature Conservancy in Florida to find out more about the project.

How long will construction take?

Construction is anticipated to take approximately one year.

What makes this location ideal for this project?

Historically, numerous oyster reefs have existed throughout the bay system. The project location still has the right conditions suitable for oyster reefs to survive and thrive. These include average salinity (not too salty or too fresh for any length of time), bottom sediment that is sandy (not mucky where reefs could sink) and sufficient oxygen levels in the water.

Why is limestone a particularly good material for oyster reefs?

What is missing from the bay system are

stable substrates that oyster larvae need in order to settle, grow and form a reef. Oyster shells are composed of calcium carbonate and oysters prefer to settle on other oysters. Limestone rock is also made of calcium carbonate and provides a more stable structure for larvae to settle on. It won't get moved or displaced by waves or get covered by sediment like a layer of shell might.

There was a two-year monitoring period before the project could proceed. What sort of data was being recorded and gathered during that time and how did it direct your plan of action?

We monitored pre-restoration to get a baseline of what is in the project site before the reefs were constructed. The monitoring for both pre- and post-reef construction

follows the guidelines established by restoration scientists and practitioners from the Atlantic, Pacific and Gulf Coasts of the United States. Standard data collection includes live oyster density, oyster size and frequency of distribution, salinity and dissolved oxygen. We also monitored for the number and diversity of other invertebrates, crustaceans, fish, birds, and if seagrass is present. This helped us understand how the reefs might impact the presence (or absence) of these living organisms. The pre-restoration monitoring data showed that no oyster reefs, very little seagrass and a limited number and diversity of other animals were using the project area.

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Oysters are critical to the health and welfare of our marine ecosystems. Which species in particular benefit from the reefs and what importance does this kind of interdependence have on the overall health and sustainability of our local natural environment?

Oysters and the reef habitat they form provide numerous benefits that we value, as a fishery and for the ecosystem services they provide us, free of charge. This includes the value of oysters as a habitat for other species, commercial fish value, nitrogen removal, enhanced seagrass and shoreline protection with an estimated annual value of these ecosystem services of more than \$8,000 per acre.

Oyster reefs are a “fish making” habitat, meaning they provide excellent structure with their nooks and crannies that is needed by recreationally and commercially important fish and shellfish species as shelter during juvenile phases and as nursery and feeding habitat for species such as blue crab, stone crab, sheephead, flounder, redfish and sea trout. Wading birds and shorebirds also feed on oysters and the crab, shrimp and fish within the reefs. One adult oyster can filter up to 50 gallons of water a day.

Considering that 85 percent of the world’s oyster reefs have been lost, how can we safeguard this reef and prevent the new installation from befalling the same fate?

We’ve designed the reefs with the best possible science and engineering to achieve our success. There is always a chance that restoration will not succeed, it’s the nature of nature and a risk we are willing to take to restore this important habitat and our estuaries. We can’t control the environmental conditions. But we can control the human related factors that are partial causes of decline.

The project is in the Pensacola Bay system where the community has made significant progress on improving the water quality conditions of the bay.



A map of the East and Blackwater Bay oyster reef construction site.

With the establishment of the Pensacola and Perdido Bays Estuary Program there is now even more effort focused on improving and maintaining the health of the bay system, with restoring and maintaining oyster habitat as an integral piece of the effort. We are inspired by the community’s commitment to taking actions that help ensure the estuary they call home is healthy today and for future generations.

How long after the reef is installed can we begin to see the effects of the reef project?

Based on our experience with oyster restoration, we may start to see oyster settlement on the reefs within the first year after construction and start to have noticeable growth within 18-24 months. Variables such as weather conditions can affect how much and how fast the reefs will start to have live oysters on them.

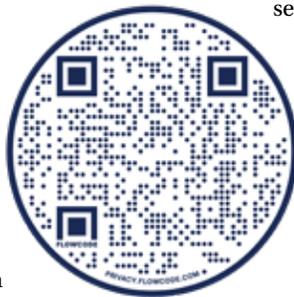
What can the general public do to protect our oyster reefs?

There are so many actions a person can take. Here are a few that will not only help oysters but the overall health of their estuary and the wellbeing of their community:

- Be like an oyster. They are impressive critters – small animals that quietly go about their business and

with many of them together their ‘work’ adds up to great things. So, like an oyster, what you do doesn’t have to be big or complicated. Simple actions can add up to big results. Involve your family and friends to make an even bigger impact.

- Keep pollutants and plastics out of the bay, storm drains and waterways entering the bay.
- Help prevent excess nutrients from entering your estuary. You can do this by following your local county fertilizer ordinance, if there is one (e.g., Escambia County). If there isn’t an ordinance where you live, then take individual action to reduce the use of lawn fertilizer during the rainy season (summer months) to prevent excess nutrients from entering the bay system. Your action can have an effect on the water quality whether you live right on the water or miles away.
- Voice your opinion to your local elected officials letting them know you care about the estuary and support restoration of oysters and other habitats and species and improving water quality. This can be as simple as a phone call, letter, or email to let them know your thoughts.



Scan this QR code to keep up to date on the project by following its progress through drone footage and photos of the reef construction over the next year.

FROM THE PENSACOLA AND PERDIDO BAYS ESTUARY PROGRAM

The Pensacola and Perdido Bays Estuary Program is thrilled to see the diligent work of our partners come to fruition to restore historic oyster reef habitat. The Pensacola East Bay Oyster Habitat Restoration project is an ambitious investment in our bays and our communities.

Since the 1960s, the Pensacola Bay System has lost at least 72 percent of its oyster reef area. The good news? We know that the Pensacola Bay System (Escambia, Pensacola, East and Blackwater Bays) meets many criteria for restoration. The recently completed Oyster Fisheries and Habitat Management Plan outlines the road to recovery, not only for our reefs, but for our once thriving oyster fishery industry as well. We have a unique opportunity to take action to protect and restore our reefs before it is too late.

Before we can restore what has been lost, we must understand where our remaining oyster reefs are and what condition they are in. The Estuary Program and The Nature Conservancy completed oyster mapping in Escambia, Pensacola, East and Blackwater Bays this summer. These efforts were funded through Florida State Appropriations and Santa Rosa County RESTORE Pot-1 funds. The results, which are being analyzed now, will paint a comprehensive picture of the range and health of the reefs across the Pensacola Bay System.

When combined with TNC's Oyster Habitat Suitability Model, which identifies the most promising areas for oyster reef restoration based on several biogeophysical factors, we have the knowledge we need to effectively restore reefs across the bay system. These tools allow us to make informed decisions when planning restoration efforts. We can identify restoration sites that have a high probability of success to maximize the impact and sustainability of our reef

systems. This data is a critical first step in leveraging grant funds to bring more on the ground oyster restoration projects, like the Pensacola East Bay Oyster Habitat Restoration project, to our area.

These efforts are just the beginning for the Pensacola Bay System's oysters. The Estuary Program is now working to implement priorities identified in the plan in coordination with our Oyster Sub-Committee, which is comprised of stakeholders that were involved in the development of the plan. With the Oyster Fisheries and Habitat Management Plan to guide us and a strong network of partners, we look forward to a brighter future for our reefs and communities.



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