

HABITAT

**2015 GALVESTON BAY
REPORT CARD**



Photo by Anja Borski/Galveston Bay Foundation

HABITAT

- SALTWATER WETLANDS:** C
- FRESHWATER WETLANDS:** D
- UNDERWATER GRASSES:** D
- OYSTER REEFS:** I (Incomplete)

OVERALL HABITAT GRADE

SUMMARY

- Galveston Bay and its watershed contain several habitat types.
- The variety of Bay habitats contributes to the biodiversity of the Houston-Galveston region.
- 3 of the 4 key coastal habitats assessed for the report card are currently under stress.

Galveston Bay and its watershed contain a wide variety of important habitat types, ranging from open water areas and sand flats, to seagrass meadows, oyster reefs, bird islands, fringing saltwater wetlands, freshwater wetlands, and coastal prairie.

Regional habitats support numerous plant, fish, and wildlife species, so these habitats contribute tremendously to the biodiversity found in the Houston-Galveston region. The protection and restoration of diverse and abundant natural habitats is a requirement for the preservation of the biodiversity and ecological functions of Galveston Bay.

The various habitats found within Galveston Bay's watershed also provide goods (like seafood) and services (such as storing nutrients and cleaning water) that enhance and support the quality of life for people living and working in our region. Protecting and restoring habitat is vital to the future health of the Bay and the area's residents.

Making the Grade

Many of the habitats in Galveston Bay and its watershed are under stress. Freshwater wetlands, oyster reefs and underwater grasses have seen significant declines, while some habitats, such as fringing saltwater wetlands, are beginning to benefit from the successes of regulatory protection and restoration efforts.

WHAT YOU CAN DO

VOLUNTEER: Restore habitat around Galveston Bay by joining an organization or taking part in events such as [Marsh Mania](#), where people plant cordgrass.

STAY INFORMED: Be aware of proposed construction and dredging projects that could impact natural habitats in and around Galveston Bay. Also, participate by submitting comments during public review periods. A list of public review documents is available at the [U.S. Army Corps of Engineers Galveston District website](#).

- Each year, the Galveston Bay Foundation's Wetland Permit Review Committee examines approximately 100 public notices from the U.S. Army Corps of Engineers for wetland permit applications. The committee makes recommendations for changes or denials when the projects do not appear to meet applicable regulations or mitigation requirements — or do not represent the least environmentally damaging alternative. For additional information about the GBF's Wetland Permit Review Committee and opportunities to get involved, visit the Galveston Bay Foundation's website.

CONSERVE LAND: Private landowners can consider donating land or establishing conservation easements as two ways to conserve natural resources. These protect the land from development for perpetuity while retaining ownership. Donors of land or easements can often take advantage of federal tax incentives for the value of their donation. [Learn more](#).

Learn more about [aquatic habitat conservation here](#).

- Wetlands are found at the transition between land and aquatic environments.
- Wetlands are a natural filter for runoff. They also slow tides and storm surges, and reduce shoreline erosion.
- Saltwater wetland acreage is currently maintaining, but freshwater wetland acreage is declining.

Found at the transition between land and aquatic environments, wetlands can be salty, brackish, or fresh, and can be either constantly or intermittently flooded. Wetlands naturally filter polluted runoff coming from land, storing and processing nutrients as they flow toward the Bay. Wetlands also serve as a buffer for tides and storm surges, reduce shoreline erosion, and offer recreational opportunities. Biologically, wetlands are an important source of nutrients for the aquatic food web, and they serve as an important habitat for many species of fish, birds, and other wildlife, especially those in juvenile stages of life.

Overall Saltwater Wetlands: C (Adequate for Now/ Maintaining)

Overall Freshwater Wetlands: D (Requires Action/ Deteriorating)

Between 1953 and 1989, the Galveston Bay watershed lost more than 30,000 acres of freshwater and saltwater wetlands. In just 15 years (1996 to 2010), the Galveston Bay system lost an additional 365 acres of saltwater wetlands and 13,538 acres of freshwater wetlands (a total of 13 percent of all wetlands) to development. In order for wetlands to effectively prevent flooding, filter water, and provide habitat for the entire Galveston Bay system, they need to be present all around Galveston Bay. The disappearance of wetlands from a large portion of Galveston Bay means that our area is more vulnerable to flooding and water quality issues.



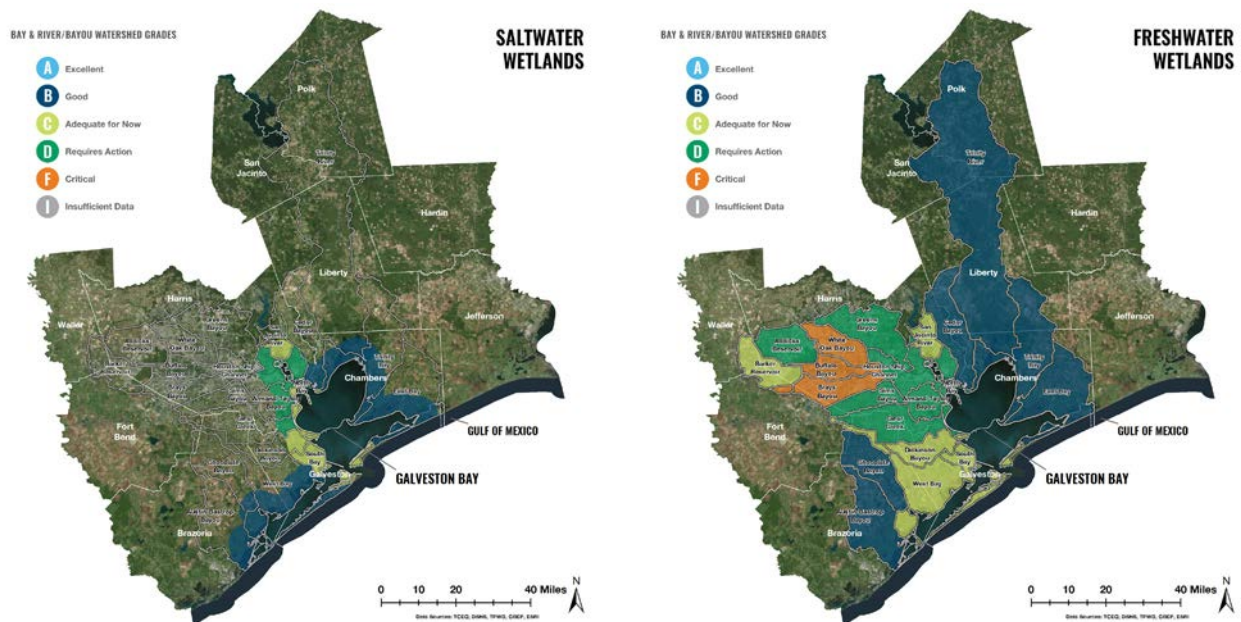
Photo by Anja Borski/Galveston Bay Foundation

Some wetlands are difficult for the average person to identify; they may not look “wet” all of the time. But that doesn’t mean that they aren’t valuable. There are two major categories of wetlands around Galveston Bay. One type, called saltwater or fringing wetlands, occurs where saltwater from the ocean mixes with freshwater from land. The second type, called freshwater or palustrine wetlands, are found further inland, often embedded in coastal prairie or forested habitats.

Runoff from impervious surfaces like concrete parking lots and roads can alter the plant community and impact the basic services provided to animals that rely on wetland habitats. Wetlands can be permanently damaged by disturbances such as canal building, the placement of temporary structures, and driving vehicles through soft soils.

Under the Clean Water Act, construction in, and alteration of, saltwater wetlands requires a permit, and is regulated by the U.S. Army Corps of Engineers. But many freshwater wetlands remain unprotected from development, and continue to be lost at a greater rate than which they are being restored or preserved.

See the Data



Saltwater wetland loss by subwatershed graphic legend:

Subwatersheds of Galveston Bay are shaded according to wetland loss grade. Saltwater wetlands are located on the fringe of tidal waters and land. The wetland maps only show wetland loss between 1996 and 2010. Wetlands lost before 1996 are not shown.

Freshwater wetland loss by subwatershed graphic legend:

Subwatersheds of Galveston Bay are shaded according to wetland loss grade. Freshwater wetlands include prairie potholes, freshwater swamps, wetlands along nontidal rivers and streams, and seasonal wetlands. The maps only show wetland loss between 1996 and 2010, while wetlands lost before 1996 are not shown.

Wetland coverage was calculated using the National Oceanic and Atmospheric Administration (NOAA) Coastal Change Analysis Program (C-CAP) data set. Change from wetland to developed land uses (residential and commercial development) between 1996 and 2010 was used to calculate percent of wetland loss. As there is no comparable baseline to use for historic wetland loss, percent of wetland loss and percent of developed land in the subwatershed were averaged to come up with a composite wetland loss grade for each subwatershed.

Grading scale

We created our composite wetland loss grading scale after consulting with coastal and wetland scientists, and considered the impact of wetland loss on the Galveston Bay system as a whole.

Grade	% Loss
A	0%
B	1-9%
C	10-25%
D	26-50%
F	51-100%
I	Incomplete

WHAT YOU CAN DO

Choose Conservation

- Learn more about the benefits of wetlands, including how they fight flooding in Houston, on [HARC's blog](#).
- [Join a wetland restoration effort](#).
- Stay informed about development projects that threaten wetlands.

Flooding and water quality affects all citizens of the Galveston Bay region; therefore, wetland loss does too. Wetland loss is a serious issue around the United States. In 1988, President George H. W. Bush adopted a national goal of “no net loss” of wetlands. That goal continues, but every year more wetlands are lost, mostly to development.

HARC is engaged in a study of the [long-term status of wetland permit and mitigation activities in the Lower Galveston Bay watershed](#). The goal of the study is to determine how to better bridge the gap between development, land use permitting decisions made by local governments, the federal wetland permitting process, and regional habitat conservation goals.

UNDERWATER GRASSES

- Underwater grasses grow in shallow, clear water.
- Underwater grasses are an important habitat for juvenile species of fish and shellfish.
- The acreage of seagrass habitat has significantly declined.

Underwater grasses, or seagrasses, grow in shallow areas of the Bay with clear water. This lets light penetrate the surface, allowing the grass to perform photosynthesis. Like wetlands, seagrass beds are an important habitat for juvenile species of fish and shellfish.



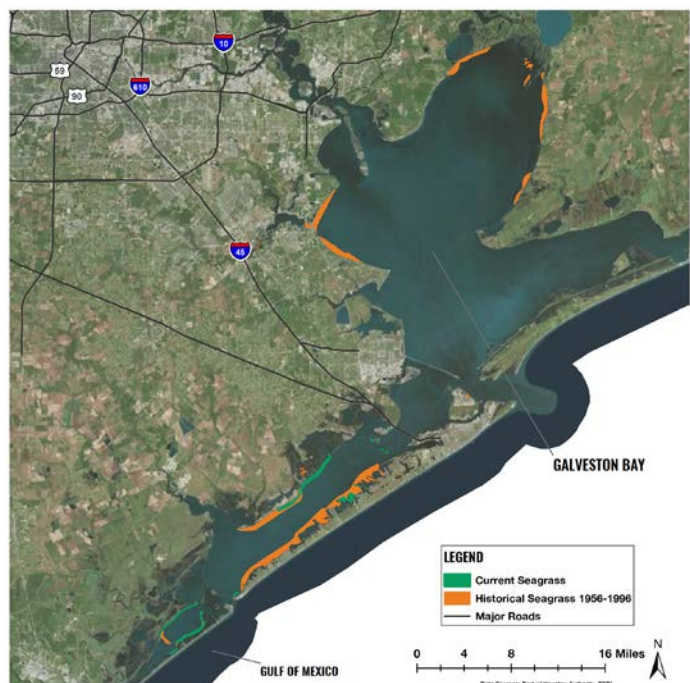
Photo by Anja Borski/Galveston Bay Foundation

Overall Underwater Grasses: D (Requires Action/Deteriorating)

Underwater grasses have largely disappeared from Galveston Bay, with the exception of Christmas Bay. In 1996, the Galveston Bay Plan set a goal of 1,400 acres of seagrass restoration within 10 years. That goal has not been reached. Since 1996, 948 acres of seagrass have been restored in the Galveston Bay system, but another 482 acres have been lost, resulting in a net gain of only 466 acres of seagrass in Galveston Bay since 1996. That is just 33 percent of the goal set by the Galveston Bay Plan. Recently, a successful seagrass restoration project took place in West Bay, near the Galveston Island State Park. We hope that more restoration efforts like this one might help this valuable habitat recover.

See the Data

[The Texas Parks and Wildlife Seagrass Viewer](#) shows the current extent of seagrasses in coastal Texas bays, including Galveston Bay. In order to grade Galveston Bay's seagrass acreage, we used the TPWD's seagrass map. We also added acreage near Carancahua Cut using new aerial photographs provided by the Galveston District of the U.S. Army Corps of Engineers. We then compared the total current seagrass coverage to the Galveston Bay Plan's goal of 1,400 acres of restored seagrass.



Grading scale

We based our underwater grasses grading scale on the percent of restoration achievement.

Grade	% Restoration
A	81-100%
B	61-80%
C	41-60%
D	21-40%
F	0-20%
I	Incomplete

WHAT YOU CAN DO

Keep the Water Clear

- Prevent nutrient pollution by using rain barrels, picking up after your pets, and following fertilizer directions carefully.
- Be a responsible boater and never allow propellers or paddles to come into contact with seagrass beds.
- Speak up for responsible dredging practices.

Underwater grasses are an excellent indicator of ecosystem health, since so many factors contribute to their success or failure. For more information about the aspects of Bay health that impact underwater grasses, be sure to read about water quality issues like poor water clarity caused by too much nitrogen and phosphorus; salinity changes due to variability in freshwater inflows; and habitat loss due to sea level rise.

Progress has been made in recent years to move away from old practices of open-bay disposal. These practices deposited dredge material on valuable underwater habitats like seagrass meadows and oyster reefs. Today, a network of partners around the region works to identify dredge disposal locations that support beneficial uses in Galveston Bay. Dredge material is tested and used to restore habitats such as bird islands, as well as associated habitats, such as sand flats and wetlands.

[Learn more about seagrass in Texas and access educational materials about seagrass-friendly boating.](#)

- Oysters filter silt and contaminants from Galveston Bay, improving water quality and clarity.
- Galveston Bay was once filled with oyster reefs, but only a fraction remains due to the overharvesting of oyster shells, damaging storms, drought, fishing pressure, and disease.
- The most recent oyster reef maps available are outdated (1994), and the current status of oysters cannot be evaluated, so the grade for oyster reefs is an I for Incomplete.

As generations of oysters grow on top of each other, they form reefs that provide habitat for many other animals. Oysters are capable of filtering as much as 50 gallons of water each in a single day, removing silt and contaminants from the water, and improving local water quality and clarity. Galveston Bay was once filled with oyster reefs, but we only have a fraction of them left because of the overharvesting oyster shells for construction material (a practice that is now prohibited), damaging storms, fishing pressure, and disease.



Photo by Chris Kuhlman

Galveston Bay oysters are also an important commercial fishery. Oysters are monitored closely for signs of stress because of changes in salinity (the salt content of the water). These changes occur due to fluctuations in the amount or timing of freshwater flowing from the Trinity and San Jacinto rivers, especially during times of drought. Prolonged periods of saltier water can cause predators and parasites to overwhelm oysters' natural defenses. The good news is that because of their biological and economic importance, a lot of work is being done to restore oyster reefs in Galveston Bay.

Overall Oyster Reefs Grade: I (Incomplete)

Historically, oyster reefs in Galveston Bay covered large areas, especially near Red Fish Bar (which once extended across the middle of the Bay, from Eagle Point to Smith Point), in East Bay, and in West Bay. Oyster reef area has decreased over the last decade due to three primary factors: coastal storm surges, drought, and fishing pressure.

Fishing pressure for oysters has increased along with oyster's popularity on restaurant menus. In an effort to keep oysters from being overharvested and disappearing from the Bay completely, the State of Texas stopped issuing new commercial oyster licenses in

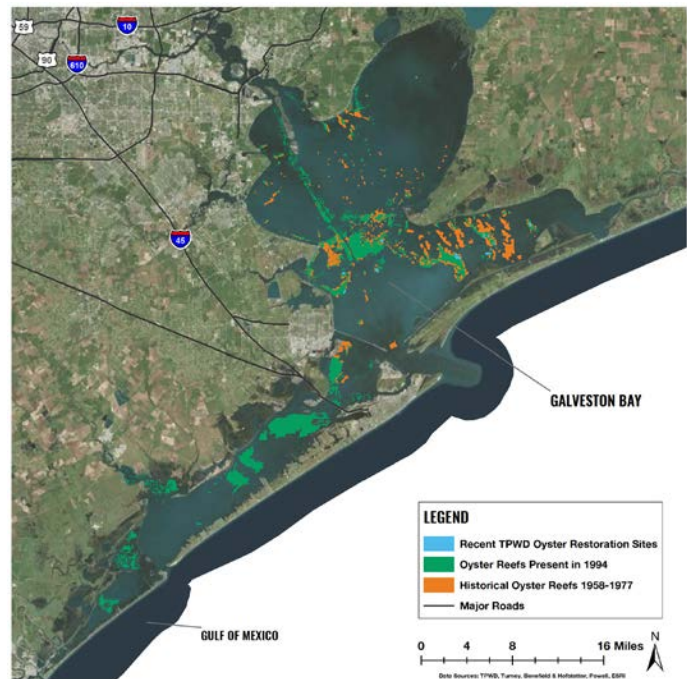
OYSTER REEFS

2007, but that could not protect the oysters from the natural disasters ahead. The Texas Parks and Wildlife Department (TPWD) estimates that approximately 60 percent of oyster reefs in Galveston Bay were buried in sediment transported by the storm surge caused by Hurricane Ike in 2008. The drought of 2011-2012 took a further toll on Galveston Bay's oyster reefs. Freshwater inflows to Galveston Bay were severely limited and salinities became unusually high throughout the Bay.

The most recent oyster reef maps available are from 1994, yet significant loss since that time is irrefutable, especially since Hurricane Ike in 2008. We do have some data on recent oyster restoration projects led by the TPWD, but we cannot report accurately on the current coverage of oyster reefs in Galveston Bay.

See the Data

Map data describing the distribution of oyster reefs in Galveston Bay were created in 1994 and are therefore extremely out of date. However, the TPWD is in the process of finalizing new oyster reef mapping information. TPWD coastal fisheries monitoring data also indicate that oyster abundance has declined in Trinity Bay, East Bay, and Upper and Lower Galveston Bay, confirming preliminary oyster reef distribution data from the agency.



WHAT YOU CAN DO

Fight for the Filters

- Volunteer to rebuild oyster reefs, or help oyster populations through the [oyster gardening program for waterfront property owners](#).
- Speak with your favorite restaurant about shell recycling.
- Learn more about [oyster reef habitat](#) from the National Oceanic and Atmospheric Administration (NOAA).

You can help oysters in Galveston Bay by volunteering to restore oyster reefs, assisting with shell recycling from restaurants, or increasing oyster populations through the [oyster gardening program for waterfront property owners](#).

[Learn more about Galveston Bay's Eastern Oysters here.](#)