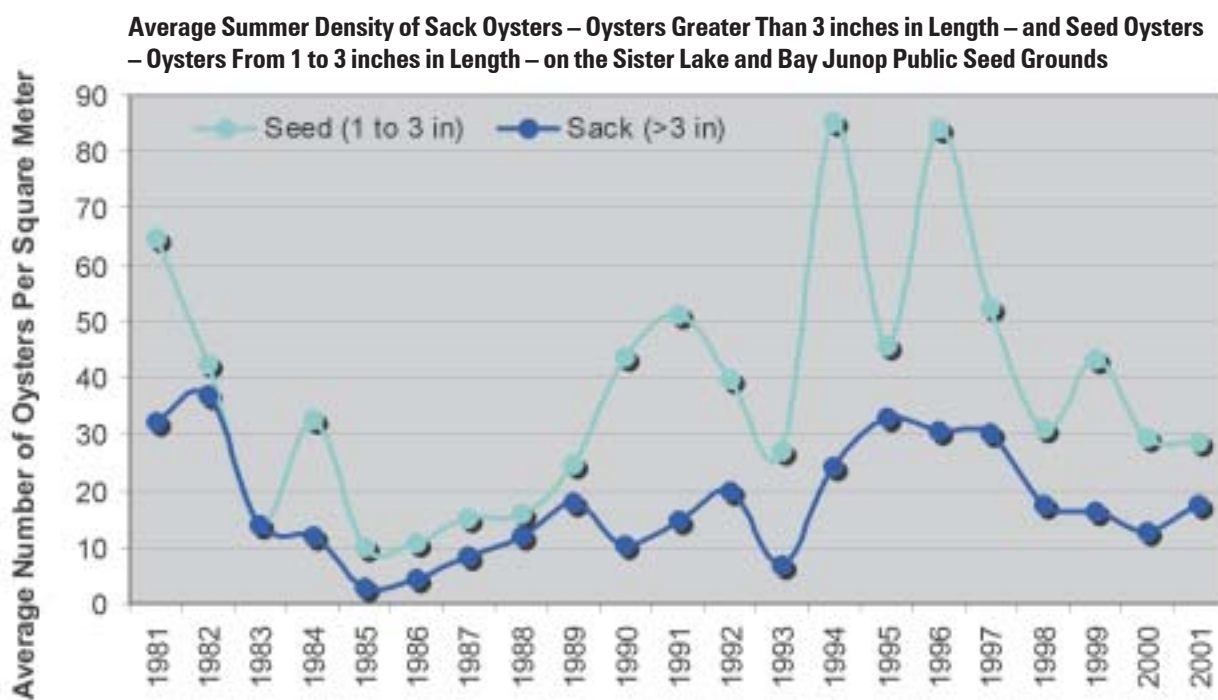


## Indicator #6: Oyster density on BTES public seed grounds



Source: LDWF Marine Fisheries Division. Sampling conducted in June or July. Sister Lake and Bay Junop data combined.

## What factors influence the BTES oyster population?

Average density on the Bay Junop and Sister Lake public seed grounds is variable, due primarily to changes in environmental conditions and secondarily because of management actions and market conditions. Environmental conditions such as salinity, water temperature, and dissolved oxygen concentrations influence oyster reproduction, spat set, and mortality. At high salinities disease, parasites, and predation may limit oyster populations, while at very low salinities oyster survival may be reduced. Overall oyster abundance is higher in estuaries with significant freshwater input. Economic factors (e.g., dockside price) influence fishing effort and thus population levels. Other events such as hurricanes (which lead to increased sedimentation on oyster reefs) and disease can cause population declines, while habitat enhancement efforts, such as the massive cultch deposition efforts in 1994 and 1995, can lead to population increases.



Courtesy of Gulf of Mexico Program.

Harvesting oysters is both big business and a part of history in the BTES. In any given year, around three-quarters of Louisiana oysters are landed in the BTES. In addition to being economically important, oysters enhance recreational fishing habitat and filter large volumes of water, potentially improving local water quality.

The Louisiana Department of Wildlife and Fisheries is charged with managing Louisiana's oyster resource. Part of the agency's management program includes cultch planting, which enhances oyster habitat in public seed grounds, like Bay Junop and Sister Lake. Oysters in public seed grounds are then available for direct harvest or transplanting to private oyster leases. Based upon the average annual density of oysters in Bay Junop and Sister Lake, the local oyster population appears to be stable. This measure, however, may not be representative of oyster population stability and health across the entire BTES.

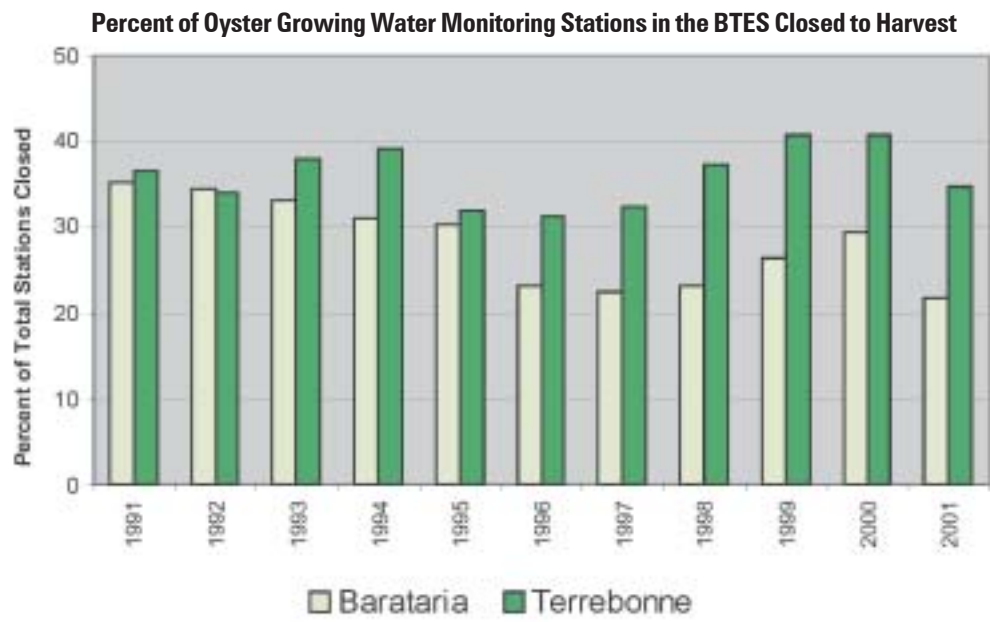


Planting oyster cultch, courtesy of BTNEP.

## What is cultch?

The Louisiana Department of Wildlife and Fisheries periodically deposits cultch on public seed grounds to serve as substrate for new spat set – the initial attachment of oyster larvae. Cultch is any hard material, most often shell or limestone, placed on water bottoms to enhance oyster habitat or create oyster reefs.

## Indicator #22: Bacteriological water quality of oyster harvesting waters



Source: LDHH Molluscan Shellfish Program. September to October classification. The total number of stations monitored in the Barataria Basin decreased from 142 to 129 beginning in 1999. The total number of stations monitored in the Terrebonne Basin increased from 197 to 201 beginning in 1995.

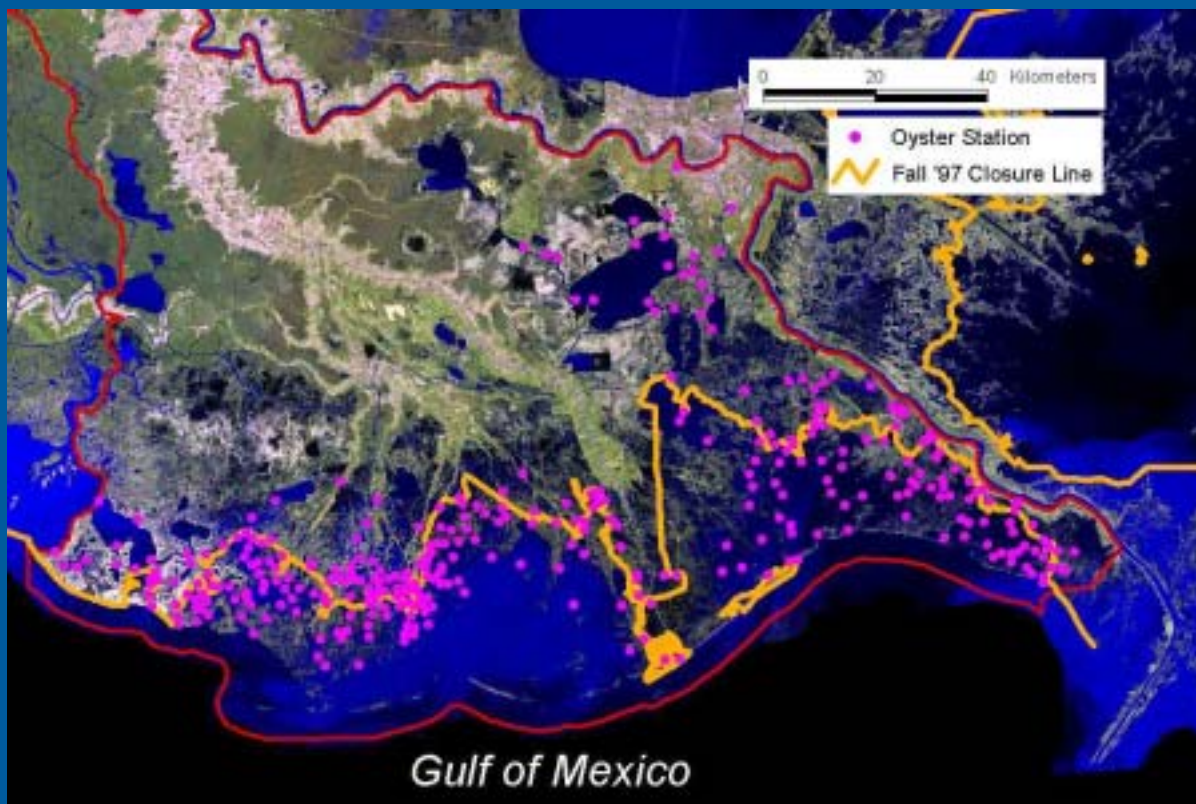


Harvesting oysters, courtesy of Earl Melancon, Jr.

Oysters are a multi-million dollar industry in Louisiana, and 80 percent of Louisiana's oysters are harvested from the waters of the BTES. To live and grow, oysters filter small organisms, including bacteria and viruses from the water. Pathogens from untreated human sewage discharges, filtered from the water by oysters, can cause illness in healthy individuals who eat these oysters raw. In addition, oysters can be contaminated by naturally occurring marine bacteria such as *Vibrio*. The consumption of *Vibrio*-contaminated oysters can cause illness and even death, especially for people who are predisposed to liver, blood, kidney, stomach, or immune system problems.

The Louisiana Department of Health and Hospitals Molluscan Shellfish Program regularly monitors the concentration of a sewage pathogen indicator – fecal coliform bacteria – in oyster growing waters throughout the BTES (sampling stations are pink dots in the map to the left). Based on the results of this monitoring and on the time of year, the state classifies oyster growing waters as “open” or “closed” to harvest. In the example map to the left, waters above the orange closure line are closed to harvest, and those below are open to harvest. The conservative nature of this program has been quite effective in preventing illness from the consumption of sewage contaminated oysters, and the bad press that accompanies an associated illness outbreak. A strong emphasis on proper handling, labeling, and refrigeration by Louisiana's oyster industry has also greatly reduced the risk of contaminated oysters entering the commercial market.

Oyster Growing Water Monitoring Stations in the BTES and an Example Closure Line



Source: Map adapted from NOAA and USEPA GMP. 1997. *Gulf of Mexico Oyster Data*, Arcview Projects CD-ROM.

**Pathogens** are organisms such as bacteria and viruses that cause disease.

**Fecal coliform bacteria** come from human sewage, from pasture land runoff, and from marsh animals such as nutria and waterfowl.

**Human sewage pollution** can come from improper sewage treatment, failing septic systems, faulty aerobic treatment plants, and direct discharges of untreated sewage from camps and boats.

Although the dynamic nature of the fecal coliform bacteria indicator makes it difficult to draw definitive conclusions about trends in oyster growing water quality, it appears that the number of closed stations in both the Barataria and Terrebonne basins has remained relatively constant over the last decade. While there has not been an occurrence within the BTES, blooms of the toxic “red-tide” algae, *Karenia brevis*, have also caused emergency mass closures of oyster growing waters in Louisiana. Other toxic algal species occur in the BTES, but have never reached proportions that cause contamination of shellfish.



Dredging for oysters, courtesy of BTNEP.