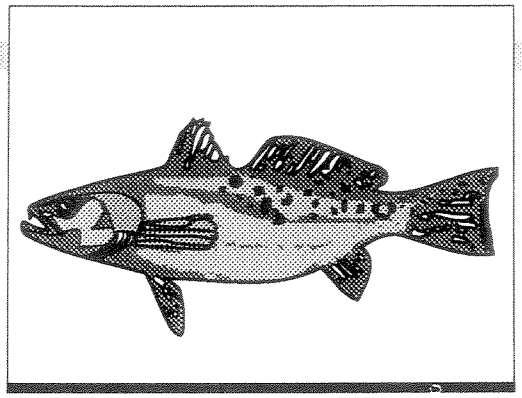
Galveston Bay Finfish

Diversity beneath the waves



Galveston Bay supports a diverse population of finfish totaling more than 162 species. Some are considered resident, spending their entire life in the Bay, while others may be Gulf-wide migrants that utilize the Bay only temporarily for a portion of their life cycle. Some species, such as the popular and economically important **red drum** (*Sciaenops ocellatus*), wash through the passes with the incoming tide in the form of ***sac fry*** (newly hatched young). The juvenile fish thrive and grow in the shallow marshes along the shoreline, where they find food and shelter. After several years of growth and maturation, they migrate back out into the Gulf of Mexico as adults.

Most species of fish in Galveston Bay have little or no direct economic impact with respect to commercial or recreational use; however, all are essential to maintaining the diversity, productivity, and ecological health of the Bay.

The six dominant species, in respect to ***biomass*** (total weight) are **Atlantic croaker** (*Micropogonias undulatus*), **bay anchovy** (*Anchoa mitchilli*), **star drum** (*Stellifer lanceolatus*), **spot** (*Leiostomus xanthurus*), **sand seatrout** (*Cynoscion arenarius*) and **hardhead catfish** (*Arius felis*). All of these except bay anchovy and hardhead catfish belong to the **drum** (*Sciaenidae*) family. Several additional members of this family, **spotted seatrout** (*Cynoscion nebulosus*), **red drum**, **black drum** (*Pogonias cromis*), and **whiting** (*Menticirrhus americanus*), are utilized commercially, recreationally or both.

Commercial Fisheries

Prior to the mid-1970's, Galveston Bay supported a sizable commercial finfishery and a gradual rate of increase in landings. A variety of highly efficient harvesting techniques were used, including gill nets, trammel nets, seines, trawls and trotlines.

Fluctuations in finfish landings occurring since 1975 are primarily due to regulatory actions taken in the face of heavy commercial and recreational fishing pressure on spotted seatrout and red drum. The commercial harvest and sale of spotted seatrout and red drum was banned Sept. 1, 1981, causing a sharp overall decline in landings. Prior to the ban, red drum and spotted seatrout accounted for about half of the commercial finfish landings.

Species composition of commercial landings has shifted since the ban on the commercial sale of spotted seatrout and red drum. **Southern flounders** (*Paralichthys lethostigma*) make up 26% of the landings, followed by black drum (17%), **striped mullet** (*Mugil cephalus*) (16%), and **sheepshead** (*Archosargus probatocephalus*)(12%).

The average total commercial finfish landings from 1978-1988 in Galveston Bay was half a million pounds, or 15% of the total finfish landed in Texas.

In 1988, the commercial fishing industry landed an estimated 495,000 pounds of finfish, with an estimated ***ex-vessel*** (money paid to the boat) value of $226,300. This represents 28% of the Texas finfish production by weight for that year.

Landings dropped significantly in 1989 and 1990 to 221,100 and 188,200 pounds, respectively. (Ex-vessel values were approximately $70,000 in both 1989 and 1990.) This decrease in landings coincides with the banning of all commercial finfish nets in Texas bays. Presently only trotline use and incidental catches in shrimp trawls are legal. The highly specialized **Gulf menhaden** (*Brevoortia patronus*) fishery is allowed to use purse seines in Gulf

waters adjacent to Galveston Bay, after the fish migrate out of the Bay.

The commercial live bait industry can legally use cast nets, minnow traps, and 20-foot minnow seines to harvest mullet, mud minnows or **killifishes** (*Fundulus* spp.), and croakers. The demand for these baitfish is quite high during the fall redfish and flounder "runs."

Recreational Fishing

Almost half the licensed anglers in Texas annually visit coastal waters to seek out their favorite sportfish. The spotted seatrout (a.k.a. speckled trout) is the number one target species, followed by red drum and flounder. Black drum, croaker, sheepshead, sand sea trout, **gafftopsail catfish** (*Bagre marinus*), and whiting are also commonly caught by recreational fishermen in Galveston Bay.

Since 1975, a saltwater stamp has been required in addition to a fishing license for anglers age 17 to 65 fishing in coastal waters. Texas saltwater stamp holders and exempted anglers numbered over one million in 1990 before a gradual decline.

Since May, 1974, recreational fishing landings data have been gathered through routine interviews. Generally, fishing pressure has remained high while landings have cycled between decreases and increases. Severe winter cold snaps in Texas, such as in December 1983 and December 1989, had a devastating effect on spotted seatrout and red drum populations. The resulting mortality caused a sharp decline in landings for the next two- to three-year period.

In spite of the devastation caused by freezes, the Galveston Bay system produced 40% of the private-boat bay and pass fishing landings for the ten-year (1981-1991) coast-wide average. Economic impact determinations of recreational fishing in Texas include multipliers generated from total expenditures per trip. A value of two billion dollars annually has been estimated for the state, with 30% coming from the Galveston Bay complex.

Threats to Finfish Populations

In addition to mass mortality from periodic freezes, more localized and smaller "fish kills" result from oxygen depletion or—less common—toxic spills. Occasionally a toxic "red tide" algal bloom will occur off the Gulf coast of Galveston Island and may enter the Bay with the rising tide. Red tides occur when conditions are just right for accelerated reproduction of a particularly toxic species of naturally occurring ***phytoplankton*** (microscopic plant-like organisms). Although red tide is capable of causing mass mortality of fish, it rarely occurs in Texas and is even rarer in Galveston Bay.

Fish taken or killed incidental to another related or unrelated activity is called ***bycatch***. Examples of activities that produce bycatch are shrimp trawling, recreational fishing, and withdrawing water for power plant cooling.

Bycatch reduction has recently become an important issue for resource managers and users. Progress has been made in developing bycatch reduction devices for shrimp trawls which, according to the National Marine Fisheries Service, average 65% of the total catch by weight in bycatch. Their studies show the dominant fish species of shrimping bycatch are Gulf menhaden, sand seatrout, **cutlassfish** (*Trichiurus lepturus*), bay anchovy, hardhead catfish, spot and Atlantic croaker. The favorite recreational species, spotted seatrout and red drum, were captured very infrequently by shrimp trawls.

Recreational fishing bycatch reduction efforts are centered on increasing angler awareness of techniques for catching and releasing undersize or oversize fish with minimal stress and trauma.

Perhaps the greatest threat to healthy finfish populations in Galveston Bay is loss of water quality and habitat. Shallow water, vegetated with seagrasses and emergent marsh grass is essential for juvenile fish growth and survival, and is the habitat most impacted by filling and ***bulkheading*** (walling off shoreline bank to prevent erosion).

Coastal wetlands are an essential nursery habitat for estuarine fish, like the juvenile red drum described earlier. From the 1950s to 1989, the Galveston Bay estuary lost 21% of its wetlands, primarily because of subsidence and/or sea level rise. Changes in policy governing ground water withdrawl have greatly slowed the rate of subsidence, but the natural restoration process is slow.

Sustainable populations can be ensured for the future through careful resource management.

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The Galveston Bay Foundation is a nonprofit organization whose mission is to preserve and enhance the Bay for its multiple uses through education, conservation, research and advocacy. The mission of the U.S. Fish and Wildlife Service is to conserve, protect and enhance the nation's fish and wildlife and their habitats for the continuing benefit of the American people.

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