Pacific Razor Clam

History of Fishery

The Pacific razor clam (*Siliqua patula*) is one of the tastiest food clams in California and is diligently pursued by sportsmen on the beaches where it is abundant. The best California beaches for razor clams are in Del Norte and Humboldt counties. Before 1949, a small commercial fishery existed, but only a few pounds of clams were ever sold. Commercial fishing for razor clams is presently prohibited.

There were no seasonal restrictions on razor clamming until 1953. Due to a decline in the numbers of larger clams at that time, Clam Beach in Humboldt County was divided into a north (Mad River to Strawberry Creek) and south beach (Strawberry Creek to Little River) to limit fishing effort seasonally. The south beach was open to clamming only in odd-numbered years, while the north beach was open during even-numbered years. A similar restriction went into effect for the razor clam bed at Crescent City in Del Norte County in 1955.

A 1960 study on Clam Beach concluded that the alternate-year closures were responsible for a decline in older and larger clams on the south beach due to of the concentration of clammers there. As a result, all of Clam Beach was opened to clamming from 1971 to 1973. During that three-year period, catch and effort were monitored, and public reaction noted. It was found that instead of being evenly distributed, 86 percent of the clamming effort took place on the north beach. The high pressure on the north beach resulted from a combination of easier access to the north beach, and the much greater clamming success there. There was also a strong sentiment among clam diggers to return to alternate year closures because of the declining average size of clams. In 1974, the alternate year fishing pattern was reinstated with the north beach open during odd-numbered years and the south beach open during even-numbered years. In the years immediately following the reinstatement, the catch-per-digger and the average clam size increased significantly.

A daily bag limit of 30 razor clams was changed to 20 in 1963. In addition, all clams dug were required to be kept regardless of size or broken condition.

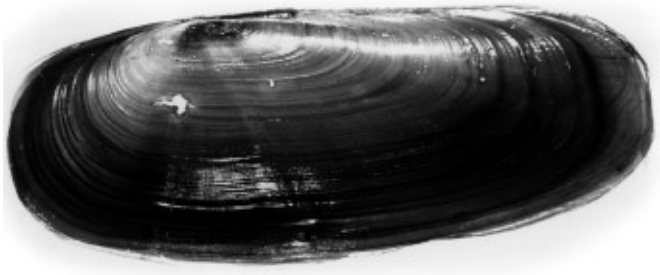
Status of Biological Knowledge

The Pacific razor clam ranges from western Alaska to Pismo Beach, California, and is generally found on flat or gently sloping sandy beaches with a moderate to heavy surf. Razor clam shells are long and thin, with fragile, shiny valves – not what one would expect in a surf-loving animal. An excellent burrower, it depends on digging speed for protection from wave shock. Individuals laid on top of the sand have buried themselves completely in less than seven seconds. A digger must work quickly to capture a clam before it burrows to depths that are difficult to reach. At the surface of the sand, the clam assumes an almost vertical position with only siphons exposed. Water is drawn into the inhalant siphon by a current set up by the action of cilia lining the mantle cavity. As water is passed across the gills, planktonic food organisms are guided by cilia and a pair of palps to the mouth. Respiratory exchange takes place as the water passes over the gills, and waste products are passed out in the water through the smaller exhalant siphon.

The life-cycle of the razor clam is typical of most clams. Sexes are separate, fertilization is external, and free-swimming larvae develop three or four days after fertilization. Approximately eight weeks later, the larvae settle into the sand and the juvenile phase of life begins. Sexual maturity in razor clams may be related to size as well as age. While maturity is commonly achieved at a length of about four inches, the age at maturity varies with geographic location; usually at the age of two years in California. Razor clams usually spawn in May and June in California, mid-May to July in Washington, and as late as August in Alaska. The optimum temperature for razor clam spawning is around 55° F.

Razor clams attain their maximum rate of growth during their first year of life. The growth rate remains high through the second or third year, after which it slows markedly. The largest razor clam on record in California was a seven-inch specimen taken from Clam Beach in 1979.

The mortality rate of razor clams on Clam Beach increases rapidly after the third year of life, with few clams living to be seven years old. In the northern part of the range, the maximum age is greater. Razor clams in Alaska live 18 or 19 years, but the typical life-span is shorter.



Pacific Razor Clam, *Siliqua patula*
Credit: DFG

Status of the Population

There are only three areas along the coast of California that have had significant populations of Pacific razor clams. The Pismo Beach-Morro Bay area supported a very small sport fishery, which has diminished over the years. Currently, this population is quite small and seems to consist mostly of individuals ranging from one to two inches in size. The Clam Beach and Crescent City fisheries are similar to each other in several respects. Both beds are divided into north and south beaches with alternate-year closures in effect. In both areas, the northern beach was more heavily fished and more productive than the southern beach for many years. However, the southern beach in Crescent City saw an increase in effort and in catch-per-digger during the early 1980s. A decline in razor clam abundance was seen in the coastal states of Washington, Oregon, and California following the 1982-1983 El Niño. A previously unknown disease, nuclear inclusion X (NIX), caused the closure of the razor clam fishery in Washington in 1984 and 1985. Mortality appeares to depend on the intensity and prevalence of infection. The prevalence and intensity of NIX decreased both north and south of central Washington beaches. In Oregon, prevalence was high, but intensities were low enough that little mortality was seen. Little information exists for NIX in California, but large declines in razor clam abundance were noted in the late 1980s and into the mid-1990s for beaches in northern California. A major source of mortality, especially for young razor clams, is the scouring effect of winter storms. The El Niño events of the past two decades have had large storms associated with them and this may have had some impact on northern California razor clam populations. The razor clam population in the Crescent City area is recovering, but the Clam Beach population is still much diminished from former levels.

No current population estimates are available for any of California's razor clam beds. Beginning in 1974, a sampling program was initiated to provide estimates of total catch and effort for Clam Beach. Estimates of annual catch, number of diggers, and annual catch-per-digger were made for the years 1974 through 1989 for North and South Clam Beach and for the years 1980 through 1989 for Moonstone Beach (Little River to bluffs). Estimates of annual clam catch for North Clam Beach ranged from 1,100 to 116,400; for South Clam Beach the range was from zero to 45,500; and for Moonstone Beach the range was from zero to 74,800. The annual estimated number of diggers ranged from 880 to 12,670 on North Clam Beach, from 220 to 6,900 on South Clam Beach, and from 50 to 5,510 on Moonstone Beach. Annual catch-per-digger for North Clam Beach, South Clam Beach and Moonstone Beach ranged from 1.3 to 9.5, 0.0 to 6.6 and 0.0 to 13.9 clams, respectively. Catch, effort and catch-per-digger exhibited no particular trends but fluctuated over time.

Management Considerations

See the Management Considerations Appendix A for further information.

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