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THE SEA URCHIN FISHERY

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The common sea urchin of the North Atlantic coast of North America and Europe is Strongylocentrotus drobachiensis. This "sea egg" is also abundant on the Pacific Coast of North America. In the United States this species is most common on the Atlantic Coast north of Cape Cod and on the Pacific Coast in Puget Sound. The sea urchin is eaten wherever found, but to a lesser extent in this country, Canada and Alaska than in European countries. The only fishery is in the New England States. Although the British Columbian and Alaskan Indians consume both this species and the larger sea urchin Strongylocentrotus franciscanus, there is no organized fishery and the catch is home-consumed.

The sea urchin is an echinoderm, being related to the sea cucumbers, starfishes, sand dollars, brittlestars and sea lilies. It has a greenish color and is somewhat hemispherical in shape, with a fairly rigid external skeleton provided with movable spines. The usual position of the animal is with the flat side to the ground. It lives only in the sea and seems to prefer a rocky habitat. Rarely is it found on mud bottom. On the North Atlantic coast it is most common in depths of one to twenty fathoms.

The sexes are separate and the eggs and sperm are emitted into the water where fertilization occurs. The eggs develop into complicated larval stages (echinopluteus) which drift about for several weeks before settling to the bottom as small typical sea urchins. On the Maine coast this species spawns in late March and April.

The sea urchin eats both plant and animal food. It consumes mainly the large brown sea weeds, but will also occasionally eat small mussels and carrion. The enemies of the sea urchins are many, including sea birds and various species of fish.

While it may exceed three inches, the average size is much less. A sample taken February 1946 from a shipment of Maine sea urchins showed that the average size (diameter) was 1.8 inches with a size range of 0.9 to 2.5 inches. The average weight was 3.1 ounces. The weight of the orange-yellow reproductive organs, which are the edible parts of the animals and which are usually eaten raw, was 17.4 percent of the total weight. The purple body fluid, which is edible, was 13 percent of the total weight.

Although the statistical records for the United States fisheries do not show any landings of sea urchins before 1929, undoubtedly these animals have been eaten for many years by American fishermen of European origin. This same condition prevails today; however, records of the sea urchin catch are based on the amounts shipped to market only and consequently can be regarded as minimum figures. The present fishery dates from 1933 when 5,800 pounds were shipped from Maine.

The fishery is of minor importance. Statistical records of the U.S. Fish and Wildlife Service and the U.S. Bureau of Fisheries for the years 1937-1940 and 1942 and those of the Maine Department of Sea and Shore Fisheries for the years 1941 and 1943-1945 show an average annual production of almost 79,000 pounds and an average value of about \$1,500. The price paid to the fisherman increased from about one-half cent a pound in 1937-1939 to over 7½ cents in 1945 when the catch was worth almost \$5000.

The fishing season for this species is from October to early April. The bulk of the catch is made between December and March. It is during these winter months that the yield from other fisheries is at a minimum and a few fishermen begin harvesting sea urchins to supplement their incomes. In this season the cost of transportation to market is decreased for no ice is needed and only simple containers are necessary for shipping. Also the reproductive organs of these animals are well developed during the winter months and are considered to be in prime condition. Thus, owing to an increased demand and a lower producing cost, the fishery is most active during this time.

In the last ten years the Atlantic coast catch of sea urchins has been produced almost exclusively in Lincoln County, Maine. The Sheepscot Bay area is the most important region, with small catches sometimes being reported from other nearby bays. While many other sections of the coast have an abundance of sea urchins, the limited demand and generally low price have discouraged any expansion of the fishery.

Dip nets or rakes, both with handles of ten feet or more are used to scrape the rocky ledges and dislodge the sea urchins. Fishing is generally carried on during the low tide. The operation of the gear is wholly manual. Scallop dredges have been used in the past, but boats which are large enough to operate scallop dredges efficiently are engaged in more profitable fisheries.

Out of water these animals will remain alive for as long as a week, if kept cool and moist. Between shipments to market the fishermen keep them immersed in sea water, either in crates or floating cars.

Second-hand bushel baskets or orange crates are used for shipping containers. Rigid containers are necessary to protect the sea urchins, whose shells are fragile and easily smashed. The animals must be protected from freezing, but this is a relatively simple matter, for shipments are made in closed trucks or express cars. The principal market is New York City, with a small quantity going to Boston, Massachusetts.

The future of this fishery is uncertain. Under the present conditions increased production will easily glut the market and reduce the price to a level at which the fishermen could not operate with profit. Perhaps new markets will be developed to absorb an increased catch; however, there is some doubt that this seafood would be attractive to more than a limited number of people.