



THE SEA SCALLOP

(Placopecten magellanicus)

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There are about 400 species of scallops, but the sea scallop (Placopecten magellanicus) is the largest American scallop and is the bivalve which is fished commercially off the coast of Maine, eastern Canada and on the Georges Bank. Two other scallops are fished commercially in the United States--the bay scallop found in shallow waters from Cape Cod south to the waters off New Jersey and the calico scallop, a southern scallop, fished commercially off the Carolinas and Florida. However, the sea scallop is the largest scallop fishery and was the third most valuable fishery in Maine in 1975. Sea scallops are found all along the Maine coast in the main estuaries and bays on beds of gravel, sand or pebbles; however, commercial fishing is generally

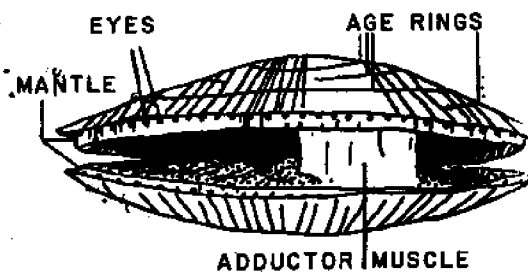
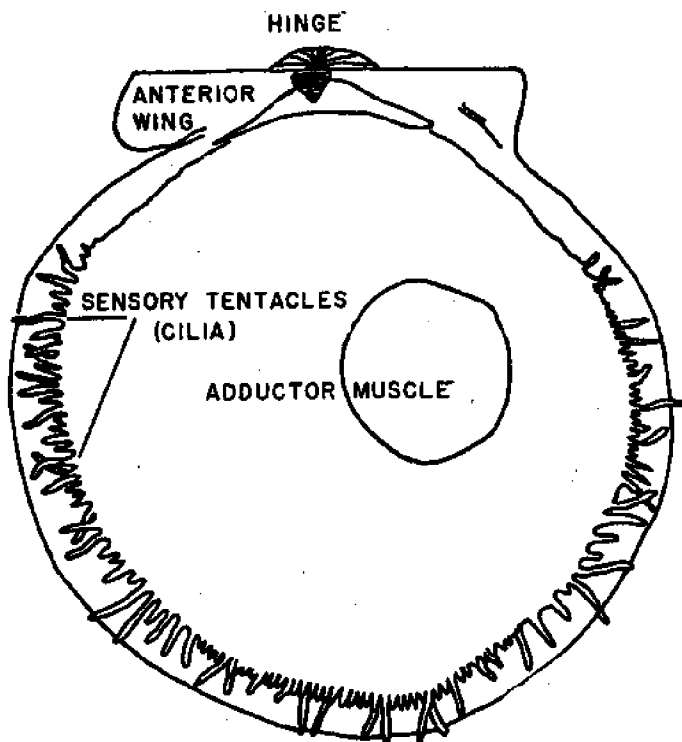
limited to the Penobscot Bay area. Some of Maine's fishermen also fish for scallops offshore on the Georges Bank.

The shells (valves) of the sea scallop are fan-shaped with a straight hinge and wings at each side of the hinge. Many of the scallop species have radial ribs (the scallop shell most usually pictured in art and architecture is similar to that of the bay scallop); however, the sea scallop shells are relatively smooth. The bottom shell is usually flatter and light colored while the top shell is convex and tannish. Concentric rings mark periods of growth, and if the scallop undergoes a serious disturbance, its shell will be marked with a shock ring. Scallops growing on Georges Bank where there is extensive dredging may have very distinct shock rings.

Clams and oysters are known to be sedentary, but not the sea scallop. The scallop perfected jet propulsion long before

man. With the use of its adductor muscle (which is the part of the scallop you eat), it opens and closes its valves, forcing water out through two openings near the hinge. This movement is most generally used as an escape mechanism. However, it can also move in the opposite direction. This is made possible because the scallop has a curtainlike mantle edge which the scallop holds firmly in place as it opens and shuts its valves. The mantle prevents the water from shooting through the hinge, and thus the scallop moves forward. It looks as if it were biting the water as it moves. By controlling the muscles of its mantle flap, the scallop can move in any direction. Despite its great mobility, tagging experiments do not show any migrational habits.

Another unusual feature of the scallop is its eyes. Along the edge of the mantle the scallop has as many as fifty blue eyes, each containing a cornea, lens and retina. They probably cannot form an image but are very sensitive to light. If a fish should cause a shadow and scare the scallop, its valves will snap shut and the scallop will swim rapidly away. While resting on the bottom, the scallop's valves are not closed tightly but are held open by the triangular elastic cushion on its hinge.



Commercial fishing for sea scallops began in Maine in the 1880's. The scalloper towed a dredge consisting of a coarse mesh bag made of wire rings. Maine fishermen generally use a 4-foot drag, although 3-foot tandem drags have been popular. The scalloper tows the dredge for about 15 minutes and then pull it up. These dredges are estimated to have only 5% to 15% efficiency. The open season for catching sea scallops in Maine waters is from November 1st to April 14th. The waters are cold then, making the scallops sluggish and less able to swim away from the dredges. Divers can also gather scallops commercially during the season, usually in rocky areas which the dredge cannot reach.

Scallops feed on microscopic plants and animals in the water. They use their cilia and mucus to collect the food from the water as it passes through the mantle cavity. ...Spawning takes place from late August to early October and perhaps throughout the summer in inshore waters. The eggs and sperm are emitted into the water and fertilization takes place. The temperature of the water at the time of spawning (5°C and 10°C seems to be the ideal temperature range conducive to spawning) seems to have a great deal to do with the abundance of the scallop landings six years later in coastal waters. However, water temperature does not seem to affect scallops on the Georges Bank....The length of the scallop's larval period has not been determined. As it changes to adult form, the young scallop will often attach itself to a solid substrate (shells, etc.) by byssal threads; however, this attachment can be released when desired and the scallop swims away.....In a given size scallop there may be great variability in the size of the muscle.....Scallops as large as 225 mm (9 inches) in height and 210 mm (8 1/2 inches) have been recorded in Maine waters, but generally those dredged are 125 mm and 175 mm (5 inches to 7 inches) in width. Sometimes the adductor muscles will be 2 inches across.....Only 10% of the scalloper's catch may be scallops of less than 76 mm (3 inches) in diameter.....The scallop is a cold water creature and does not thrive in water temperatures above 20°C.

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