

Atlantic Surf Clam (*Spisula solidissima*) and Hard Clam (*Mercenaria mercenaria*)

Along with Blue Mussels (profiled separately), the Atlantic Surf Clam and the Hard Clam or Northern Quahog make up the bulk of the current filter-feeding mollusk population in the New York/New Jersey Harbor Estuary and the New York Bight. Both have economic, ecologic and historic significance to the region.

The Atlantic Surf Clam is the largest type of clam living along the Atlantic coast. Their strong, triangular shaped, two-part or bivalve shell can reach up to 6 inches across. They are found from Maine to North Carolina. Preferring fine to medium grained sandy sediment and salinities above 14 parts per thousand (ppt) for adults and 16ppts for larvae, this soft-bodied invertebrate is most common where the Harbor Estuary opens into the Atlantic Ocean. They are also found along the coast of New Jersey and Long Island.

SURF CLAM
Spisula solidissima



Since they are plankton eating filter feeders, they offer the Harbor Estuary some water filtering benefits. They are also a food source for the Estuary's fish, horseshoe crabs, sea stars, crustaceans and other mollusks, most notably the moon snail who drills a small, countersunk hole in the surf clam's shell (generally near the hinge or umbo) to consume it. Young spat can be eaten by several bottom feeding fish. Larger surf clams are eaten by gulls that drop them from the air onto hard surfaces such as docks, boat decks and parking lots to break the surf clam's hard shell apart. Adult surf clams rarely move voluntarily from their sandy burrows under normal conditions but storms and strong currents can displace them. They rebury themselves rapidly, unless they are washed up onto a beach. Although this presents a problem for beach maintenance, it makes for an easy feast for the Estuary's gulls, raccoons and foxes. Processed surf clam shells are also being used as underwater beds for oysters intentionally placed for their ability to improve water quality.

Harvesting Atlantic Surf Clams for human consumption is presently banned in the Harbor Estuary although some are harvested for use as bait. Surf clams are adversely affected by bacteria and chemical contamination and with both of these factors present in the waters of the Harbor Estuary so surf clams taken there are not safe for people to eat. Just outside the boundaries of the New York/New Jersey Harbor Estuary and the New York Bight though, in areas including Long Island Sound, the surf clam supports a major commercial fishery. The surf clam is too tough to be eaten raw so it is sold chopped and canned and eaten in sauces and chowders. Only the adductor muscle of this clam is edible. Despite this, surf clams account for about 70% of all clams commercially harvested in the United States.

The species spawn in our area from mid-July through early August and again from mid-October to early November. Spawning occurs when males and females release gametes into the water where fertilization occurs. Spawning depends on temperature though, and

during cooler periods only one spawning might occur. Surf clams can be sexually mature in as soon as 3 months old, but spawning will only occur if the clam has grown to a minimum of 40mm across. Following the egg stage, the planktonic larva develops a shell just prior to settling. Juvenile clams develop after 21 days and begin their sedentary life at less than 1mm across. After five or six years, surf clams reach commercial harvest size (12.5cm across). Surf clams can live about 25 years. Generally surf clams in deeper, open waters live longer than inshore ones.

The Hard Clam or Northern Quahog has a long-standing history within the New York/New Jersey Harbor Estuary. Like the Atlantic Surf Clam, it has a two-part shell, but each half or valve is thicker and stronger. The shell is grayish white outside with a purple patch inside that originally had a sacred significance to Native Americans. Later, after the arrival of the colonists, the purple part of the shell was used for money (wampum). The Hard Clam was a staple food for the Native Americans and became popular with the colonists as well.



HARD SHELLLED CLAM
Mercenaria mercenaria

The Hard Clam is common throughout the East Coast and is particularly abundant between Cape Cod and New Jersey including the New York/New Jersey Harbor Estuary. Although the Hard Clam can be found in softer sediments, they are generally found in the Estuary's bays with firm bottom areas consisting of sand and shell fragments.

They are tolerant of poor water quality and can survive a wide range of conditions. They have been found in water with salinities as low as 4ppt but are generally found in salinities ranging from 15 to 32ppt with optimal growth occurring at 24 to 28ppts. Hard Clams, like the Atlantic Surf Clam, are filter feeders, able to remove harmful bacteria from water including those present in domestic sewage. These bacteria concentrate in the Hard Clam so although they can survive in water that is polluted, they are not safe for human consumption.

As a result of many possible factors including habitat loss, industrialization, varied water quality, dredging, excessive siltation and past overharvesting, harvests of Hard Clams or Northern Quahogs have diminished steadily throughout the Harbor Estuary and the New York Bight over the last thirty years. However, this tasty bivalve does support a major shellfishery in Raritan Bay. Improved conditions there following a 1979 clean-up led to a dramatic increase in Hard Clam production although most of the harvest must be depurated before being sold to consumers. Depuration is the term applied to the purification of shellfish, under controlled conditions. The process generally involves holding the shellfish in tanks of flowing seawater for periods of forty-eight to seventy-two hours.

Hard clams have a sweet, light flavor and are highly prized whether eaten raw ("on the half-shell") or cooked in sauces and chowders. When sold, the hard clam has different names according to its size. Small Hard Clams or littlenecks, top necks or cherrystones

command the highest price since they are sweeter and tenderer than the larger Hard or “Chowder” clam.

The life history of this species is similar to the Atlantic Surf Clam with a planktonic egg and larvae stage and a sedentary, benthic juvenile and adult phase. Females can release 16 to 24 million eggs per spawn and eggs are fertilized in the water column. Free-swimming larvae develop for up to 24 days, during which time they develop a foot used to crawl and check out a surface before settling into its sedentary life. The settled juvenile clam anchors itself with thin threads secreted from the foot and slowly turns into an adult Hard Clam with siphons, digestive viscera and gills. Juvenile clams are heavily predated upon by crabs, horseshoe crabs, and snails, and larger clams are eaten by cownose rays, several other fish, including the tautog, pufferfish, and black drum, and the siphons nipped off by Winter Flounder and scup. At low tide or following a storm, gulls and oyster catchers may prey upon them. The species is long-lived with individual Hard Clams aged at more than 30 years.



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