

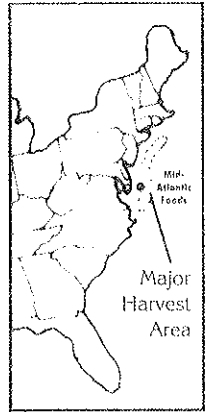


# EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT CLAMS



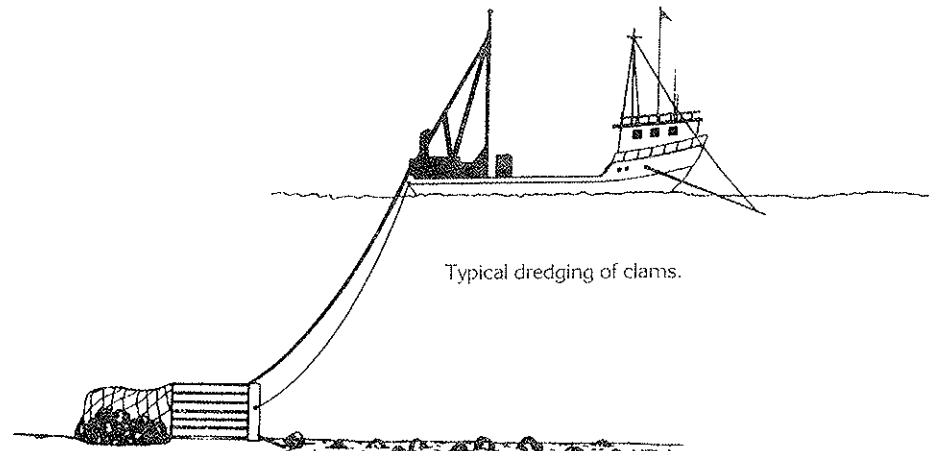
## HARVESTING AREA

The resource map indicates the major harvesting beds of top quality clams. Most clam processors are located in this geographic area, and the finished products are shipped all over the world. The major harvesting area is bordered on the south by Norfolk, Virginia, and on the north by Cape Cod Bay. In the industry, this area is known as the "Mid-Atlantic Bight". The major ports of call for the industry are Ocean City, Maryland; Cape May and Atlantic City, New Jersey; Long Island, New York; and New Bedford, Massachusetts.



## CLAM SPECIES

There are a number of different species of clams that are sold commercially. The clams which are eaten at raw bars and sold in the fresh state are mainly inshore clams harvested in relatively shallow waters and tidal estuaries. The commercially processed clam industry, as we know it, makes use of two species of clams, both found in deep water in the Atlantic Ocean. The first clam species is the "Surf" or "Sea Clam" (*Spissula solidissima*). The second variety is the "Ocean Clam" or the "Quahog" (*Arctica islandica*). While the Quahogs or Ocean Clams may look similar to the New England Chowder Clams (*Mercenaria mercenaria*). They are a totally different species. Currently, there are approximately 2,565,000 bushels of Sea Clams harvested annually, and approximately 4,500,000 bushels of Ocean Clams.



## HARVESTING

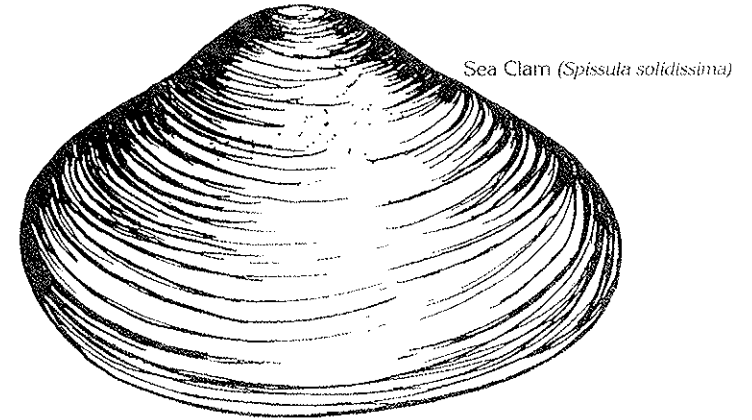
While the processed clam industry has been in existence since the late 1800's, it went through an evolution in the late 1950's with the invention of the hydraulic dredge. Modern clam vessels are double-rigged with hydraulic dredges (one dredge on either side of the boat) which has increased the harvesting capacity one hundred fold. A modern vessel on a good trip will off-load 2,000-4,000 bushels of fresh clams (5-10 tractor trailer loads from a one day trip). The hydraulic dredge is actually a drag, which is towed behind the vessel by 3" polypropylene towline. The dredge is connected by a large hose which is 8" in diameter. Large centrifugal pumps deliver 6-8,000 gallons per minute at 125 psi of seawater to the dredge. This water is directed through specially constructed nozzles on the front of the dredge and blasts the top 6" of the sea bottom away so that the cutting bar of the dredge can scoop up the clams before they bury themselves. The forward motion of the vessel and resultant water deflection pattern causes the clams to slide up a series of spacing bars into a chainlink bag. The spacing bars allow small clams and foreign objects to fall through and return to the bottom, thereby allowing only mature clams to be harvested. In order to get the quantity and pressure of water needed, the fishing vessels have huge pumps driven by diesel engines. When the chain bag becomes full, the dredge is winched to the surface. The clams are conveyed through shell separators (to remove empty shells) and are stored in cages. These cages hold 32 bushels (60 cubic feet each) and are the standard of measurement in the industry. They are not devices to keep the clams from "escaping".

## PROCESSING

Timing is critical when processing clams. Upon the return of the vessels from sea, refrigerated tractor trailers are ready and waiting at the dock. The clams are off-loaded in their cages and are rushed to the shucking plant where the meat is removed from the shell and the viscera (belly material) is separated from the clam meat. The clam meat is then chilled and moved directly to the processing facility where it can be canned, frozen, or processed into further value-added products.

## FINISHED PRODUCTS

The single biggest use for clams is in clam chowder and various seafood soups. They are extremely popular for use in clam sauces, clam cakes, clam fritters, clams casino, stuffed clams, seafood stuffings, and seafood salads. The clam juice is valuable as a flavor base and is excellent when served as a broth or in sauces and bar drinks such as a "Bloody Caesar".



Sea Clam (*Spissula solidissima*)

## ATLANTIC SURF (SEA) CLAMS

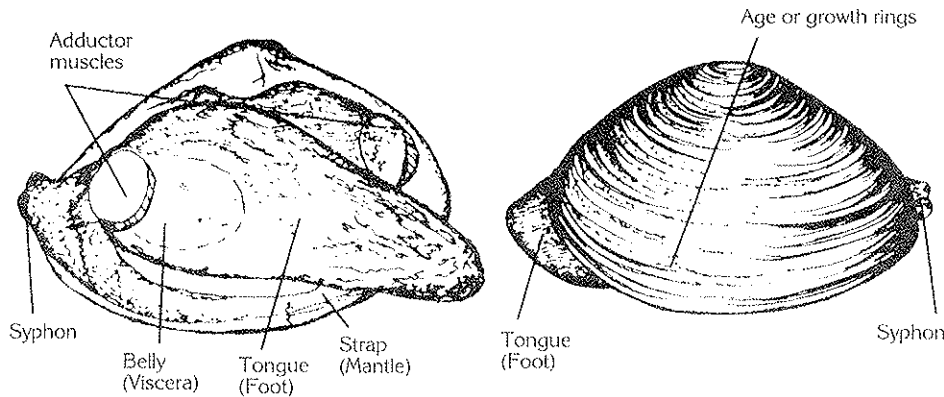
This species for years was the staple of the clam industry, and until the 1970's, was the only offshore clam packed or processed commercially. This fast-growing clam matures in five to seven years, and obtains a length of five to seven inches. Sea Clams are harvested in relatively shallow water, usually from about 60 feet to as much as 120 feet in depth. Unlike oysters which are attached to a stationary object (a rock, broken shell, or piling) and spend their lives in one location, clams can move. After spawning in the water, the larva can be carried by the currents. As the larva moves through the water, it extracts calcium from the sea water and forms its shell. As the shell grows, the weight causes it to sink to the bottom where they develop. Bottom type, food availability and predators combine to determine the success or failure of the larval set.

Sea Clam meat is light tan in color with some shading toward orange in the syphon. Sea Clams are generally considered the premium species. The meat from Sea Clams lends itself well to recipes in which a sweet, tender clam is desired, such as white chowders, clams in white sauce, linguine with clam sauce, etc. Aesthetically, the Sea Clam is pleasing to the eye with its light color and various size pieces. As a finished product, 12/51 oz. cans of chopped Sea Clam meat can bring between \$3.00 to \$7.00 or more per case over the less expensive Ocean Clam meat. This premium is brought about by very tight harvesting restrictions placed on the clam industry by the federal government and the resulting higher price of the shellstock.

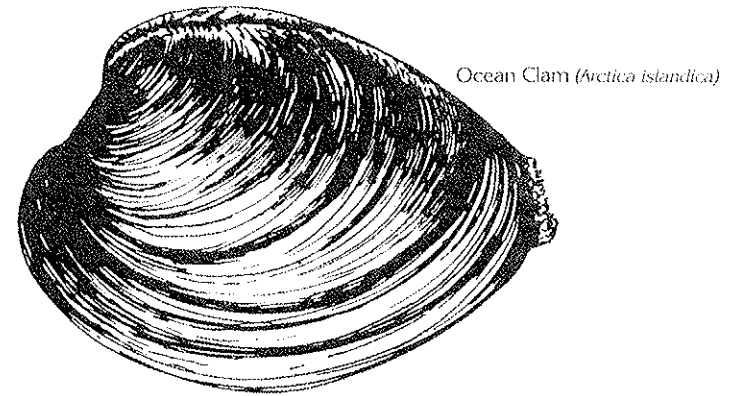
These fishing restrictions came about in the late 1970's and are, by far, the most stringent of any for fin or shellfish currently under regulation by the National Marine Fisheries. These regulations have been very successful and, in fact, saved the industry from sure shortage in the late 1970's. Working in conjunction with the industry, the National Marine Fisheries has developed quotas and a harvesting plan which defines and allocates the maximum sustainable yield. The maximum sustainable yield is defined as "the number of clams that can be taken out over the course of the year



without reducing the overall stock levels for future harvest". Because of significant advancements in harvesting technology, the regulations have been changed over the years. When first installed in the late 1970's, Sea Clam vessels could fish approximately 48 hours per week. Currently, the industry can take approximately the same quota with the boats fishing less than 10% of this time. In the Fall of 1990, the government changed the regulations. Currently, fisherman are given a quota based on their fishing history during the 1980's. Fishermen can catch their quotas themselves or sell their quotas to someone else. These restrictions have had an effect on the value of the raw "shell stock." In the early 1970's, freshly landed shell stock sold for about \$3.00 per bushel, and over the last 15 years has sold as high as \$12.00 per bushel, with the greatest majority selling in the \$10.00 to \$12.00 range.



The Sea Clam has several distinguishable parts of meat. Basically, one-third of the clam's shucked weight is made up of the tongue or foot which is used to make fried clam strips. This product, made famous by Howard Johnson's "Tender Sweet Clams", is now what most people think of when they order fried clams. Another third of the body weight of the clam is made up of the syphon (an orange colored tube), the strap or mantle (the meat that runs around the edge of the shell) and the adductor muscles (similar to scallop meat) which opens and closes the shell. The remaining one-third of the body weight is basically visceral (belly) material which is discarded. The syphon, mantle and adductors are processed into canned meat, used in chowders, and frozen in various sizes from milk cartons to 30 pound blocks for industrial use.



Ocean Clam (*Arctica islandica*)

## OCEAN CLAMS - QUAHOG (*ARCTICA ISLANDIA*)

Ocean Clams are harvested in the same Mid-Atlantic fishing regions, but in much deeper waters. The primary beds are located thirty to fifty miles offshore and in depths from 120 to about 240 feet. The clams are known to exist at depths up to 800 feet, but with current technology (the hydraulic dredge) cannot be harvested at these depths.

This is a much slower growing specie than the Sea Clam and takes 25 to 30 years to mature. These clams have been calculated to live as long as 229 years! Most commercially packed Ocean Clams range in age from forty to one hundred years old.

Meat from Ocean Clams is darker tan in color, has firmer texture and has a more pungent taste than Sea Clam meat. Many people prefer the stronger, richer taste of Ocean Clam meat. It is generally used in recipes where a stronger flavor is preferred. Until the early 1970's the Ocean Clam was generally thought to be unsuitable for human consumption due to its extremely tough texture in the raw state. Modern processing techniques have significantly enhanced product quality, and a significant market has developed, because of its abundance, lesser meat content, and the large annual quota of 4.5 million bushels. Ocean Clams are smaller than Sea Clams, generally about three to four and a half inches in size. The anatomy of the Ocean Clam is similar to that of the Sea Clam; however, the tongue or foot of the clam is much smaller and is more rounded than the pointed Sea Clam tongue. Because of its firm texture, the Ocean Clam tongue is not suitable for frying and is generally ground up with the syphon, adductor muscles, and straps (mantles) to make chopped or minced clams. About two-thirds of the body weight of the clam is edible, with the unusable viscera (belly) material representing about one-third. The viscera (belly) of the Ocean Clam is greener and much more dense than that of the Sea Clam and is discarded.





## SPECIFICATIONS FOR CLAMS

There are several factors that make-up a "good pack" of canned clams. All of these factors should be considered when evaluating canned clams.

### DRAINED WEIGHT

In the clam industry, there is no universal standard of identity. Every packer states "net weight 51 oz." No one, however states the drained weight on the label.

### CANNED CLAMS - DRAINED WEIGHTS

Years ago, the standard was 22 oz. drained weight per can; however, in today's market, different packers quote everything from 20 oz. to 23 oz. In our various competitive cuttings, we have found product as low as 16 oz. with regular drained weights running between 18 oz. and 22 oz. Any product that consistently averages 22 oz. would be considered a premium or heavy weight pack.

Lightweight packs are not necessarily cheaper! Let's look at a 22 oz. pack selling at \$65.00. In this pack, the cost of the actual meat received is about \$.25¢ per oz.

#### 22 oz. DRAINED WEIGHT PRODUCT

12 cans per case  
x22 ounces per can                      \$65 divided by 264 oz. = \$.246¢/ounce  
264 total finished product in ounces

Project this back to an 18 oz. drained weight, you would have to purchase that case at \$53.00 or \$12.00 less per case to receive the same value.

#### 18 oz. DRAINED WEIGHT PRODUCT

12 cans per case  
x18 ounces per can                      \$.246¢/ounce x 216 ounces = \$53.13  
216 total finished product in ounces

The cost of shipping, handling, and selling the 22 oz. case is exactly the same as the 18 oz. case. Typically, the savings, if any, which are passed along to the user would be \$2.00 to \$3.00. Drained weight is therefore very important when considering real value. A case of clams selling on the street for several dollars less is not necessarily a good buy.

### FROZEN CLAMS - DRAINED WEIGHT

Fresh and frozen clams are packed in various size containers and are similar to canned clams regarding actual weights of product per container.

10/5 lb of frozen clams selling at \$2.00/lb = \$100.00  
80% clams and 20% juice x 50 lb pack = 40 lbs. of meat  
\$100 divided by 40 lbs. = \$2.50/lb



### (CON'T) FROZEN CLAMS - DRAINED WEIGHT

Let's look at a 70% pack for comparison:

10/5 lb of frozen clams selling at \$100.00  
70% clams and 30% juice x 50 lb pack = 35 lbs. of meat  
%100 divided by 35 lbs = \$2.86/lb



## CANNED CLAMS VERSUS FROZEN CLAMS

Clams lose a significant portion of their body weight (up to 50%) when cooked. Sea clams lose more weight than ocean clams, but the following story is similar.

### CANNED CLAMS

12/51 oz. canned clams with an average drained weight of 22 oz. per can equals 16.5 pounds of finished product per case. When a case of clams selling for \$65.00 is divided by this 16.5 pounds, the ready-to-eat clam meat's final cost is \$3.93 per pound.

### FROZEN CLAMS

Frozen clams are packed in various percentages from a 60% drain with the best pack being approximately an 80% drain. An average pack of 75/25 drain selling for \$2.00 per pound equals \$2.66 for raw drained clam meat. When this product is cooked, you can expect an additional 50% loss in weight resulting in a cost of about \$5.33 per pound. As you can see, the initial observation that frozen clam meat is more economical than canned is disproved by this exercise, we encourage you to test this for yourself. The canning process for canned clams not only provides you with a more economical and consistent source of clam meat, it also gives you a much more tender product packed in its own rich juice.



## APPEARANCE/TEXTURE

Sea Clam meat should always be soft and moist; not the least bit chewy. A good grade of Sea Clam meat should maintain its identity, with most of the pieces of clam meat measuring between 3/4 and 3/8 inches. The fewer very small pieces (fines), the better the pack.

Ocean Clam meat should be somewhat uniform in size. Ocean meat is more firm, but is not chewy.

### CLAM MEAT COLOR

Surf Clam meat should be light tan in color with some pieces of orange from the syphon portion of the clam. Ocean Clam meat should naturally be a darker tan.

### FLAVOR

There should never be a sour taste to clams. Sea Clam meat broth should always be a mild sweet flavor with very little aftertaste.

Ocean Clam meat and broth should be slightly more pungent with more of a clammy flavor.

