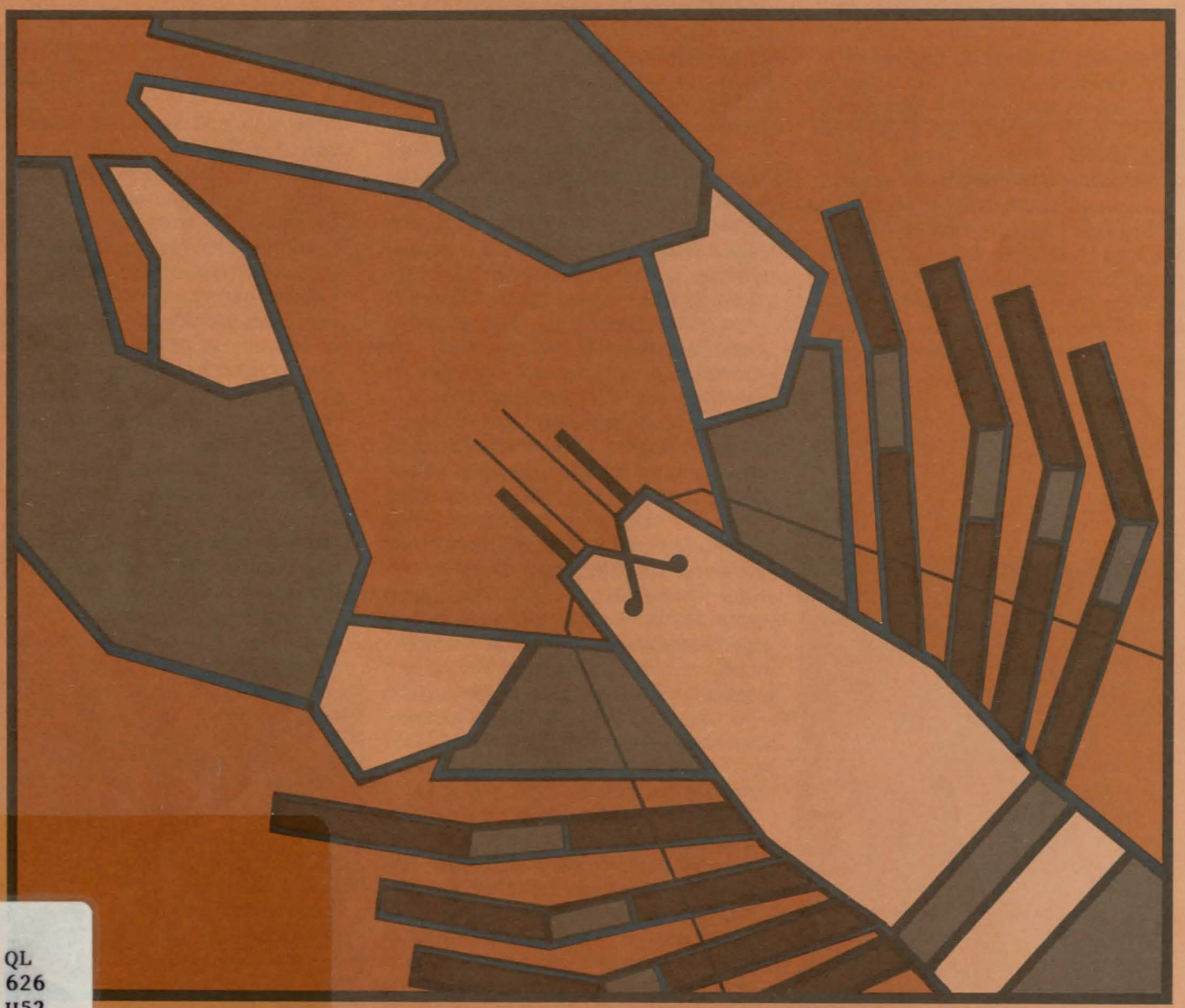
Fisheries and Oceans
Pêches et Océans

Underwater World

Atlantic Shellfish



Canada

Atlantic Shellfish

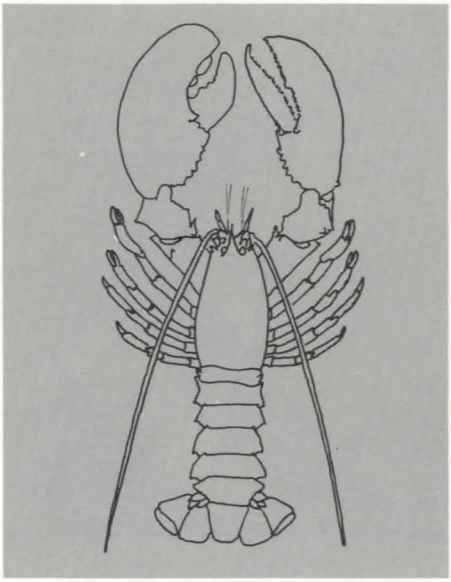
Atlantic Shellfish

Shellfish are aquatic animals which lack a backbone and whose soft bodies are usually enclosed in a protective outer shell. Some of them such as lobsters and crabs are covered with a hard but jointed and flexible shell and are classed as *crustaceans*. Others like oysters and clams are called *molluscs* (a word from the Latin meaning soft-bodied). A few molluscs such as octopus and squid do not have the outer shell but instead have a remnant of it inside their bodies.

Shellfish are among the most popular of all seafood species and though harvests are limited in quantity, they contribute significantly to incomes of fishermen, processors and distributors. Canada's Atlantic shellfish generate about half of fishermen's total income from the fisheries although they make up less than one-fifth of total landings.

Major Canadian Atlantic shellfish in usual order of economic importance are: lobsters, scallops, snow crab, shrimp, squid, clams and oysters.

Lobster
(Homarus americanus)



American Lobster

American Lobsters, widely acclaimed for their delicious meat, are truly kings of Canadian shellfish. Their shell-armoured body is divided into two main sections, the combined head and thorax, and the six-jointed abdomen commonly called the "tail". There are two pairs of antennae, a complicated set of mouth parts, and two black eyes mounted on short movable stalks set on either side of a stout, spiny horn.

The body rests on four pairs of spindly, jointed walking legs, the first two pairs of which have small claws. Two large front legs provide the lobster with formidable tools for capturing food. They are well-armed with strong claws generously equipped with teeth and sharp spines. Usually, one claw is considerably heavier and is known as the "crusher" in contrast to the other, more slender "pincer". There is a series of small paddles or swimmerets on the underside of the abdomen, which ends in a wide, flattened tail fan.

The shell is often speckled with dark spots and varies in colour with the area of habitat, ranging from greenish blue to reddish brown. Lobsters are great scavengers and live chiefly on fish (dead or alive) and immobile or slow-moving invertebrates such as mussels, sea urchins, crabs and worms which inhabit the sea bottom. Lobsters in the commercial catch generally range in length from 18 to 30 cm and in weight from .23 to .91 kg. Giant lobsters can exceed 20 kg.

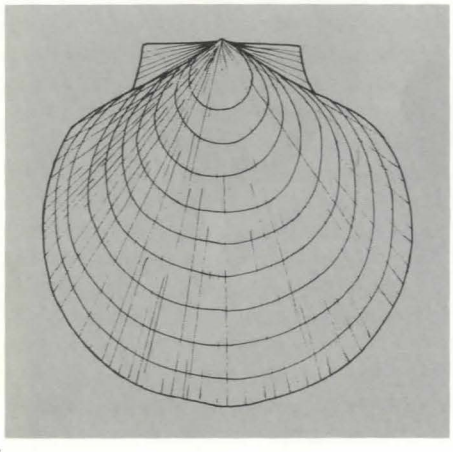
Lobsters are found all along the North American east coast from Labrador to the state of North Carolina. They are most abundant in the central part of this range, and the inshore waters of Canada's Atlantic provinces provide the greatest supply of lobsters to be found anywhere in North America. A sizable offshore population also exists off the south-western coast of Nova Scotia and on Georges Bank.

Licensed Canadian fishermen harvest inshore lobsters during the open season in their area, usually in the warm months of the year, although the open season in certain regions of New Brunswick and Nova Scotia is from November to June or July. They use small boats to fish with baited, wooden-frame traps or pots which are weighted and lowered to the sea bottom. The traps are hauled by ropes attached to brightly-painted buoys which mark their location.

There is also a small fleet of offshore lobster vessels. They use oversize traps because of the larger lobsters and are not permitted to fish closer than 80 km from shore.

More than half of the annual lobster catch is shipped live to markets in other parts of Canada, the United States and Europe. The remainder is sold as fresh-cooked, frozen or canned lobster meat.

Sea Scallop
(Placopecten magellanicus)



Sea Scallops

Sea scallops, also called giant or smooth scallops, are the most important commercial species of molluscan shellfish in Canada.

These shellfish are bivalves, that is, they have two round valves or shells, held together by a small straight hinge. The lower valve is flat, smooth and white or cream in colour, while the upper one is arched slightly and usually reddish brown. The shell size in commercial catches ranges from 15 to 20 cm in diameter.

Between the shells are the soft body parts which account for about 40 per cent of a scallop's total weight. The large white muscle in the centre which opens and closes the shells is called the "meat" and is the only part of the sea scallop eaten in Canada.

Unlike most other shelled molluscs, scallops can swim. If disturbed by fishing operations, for example, scallops will contract their powerful muscle and 'clap' the shells together. This movement forces water out from the corners of the hinge, propelling them forward.

If left relatively undisturbed, however, scallops generally remain sedentary and lie with the flattened shell on firm gravel, shells or rocks on the ocean floor. Where food and temperature conditions are most favourable for survival, sea scallops occur in dense local populations called "beds".

Scallops feed on minute plants and animals which they strain from the water by an elaborate filter mechanism involving the gills.

Sea scallops are found in the northwest Atlantic from the northern part of the Gulf of St. Lawrence to the coastal waters of North Carolina in the United States. In the northern part of this range, they occur in shallow water (less than 18 m) while in the southern portion, they are found in water deeper than 55 m.

Important Canadian sea scallop fisheries are conducted by inshore fishermen in the Gulf of St. Lawrence and the Bay of Fundy off Digby, Nova Scotia. The offshore fishery occurs on Georges Bank off the southwestern tip of Nova Scotia. Depending on the area, scallop fishing can be conducted on a year-round basis.

Fishermen harvesting inshore sea scallops use vessels of about 18 m which tow drags equipped with large wire-mesh bags over the ocean bottom. Larger, more powerful vessels (about 30 m in length) are used to harvest the offshore scallops.

Scallops are shelled or "shucked" as soon as they are caught. Most Canadian-landed scallops are sold in the United States where they are marketed fresh or frozen, or as breaded and partially fried products.

Atlantic Snow Crab
(Chionoecetes opilio)

Atlantic Snow Crab

Atlantic snow crabs are crustaceans and belong to the family of spider crabs, so-called because their legs are long and slender in proportion to their rounded bodies. Canadian fishermen originally marketed this species under the trade name of queen crab.

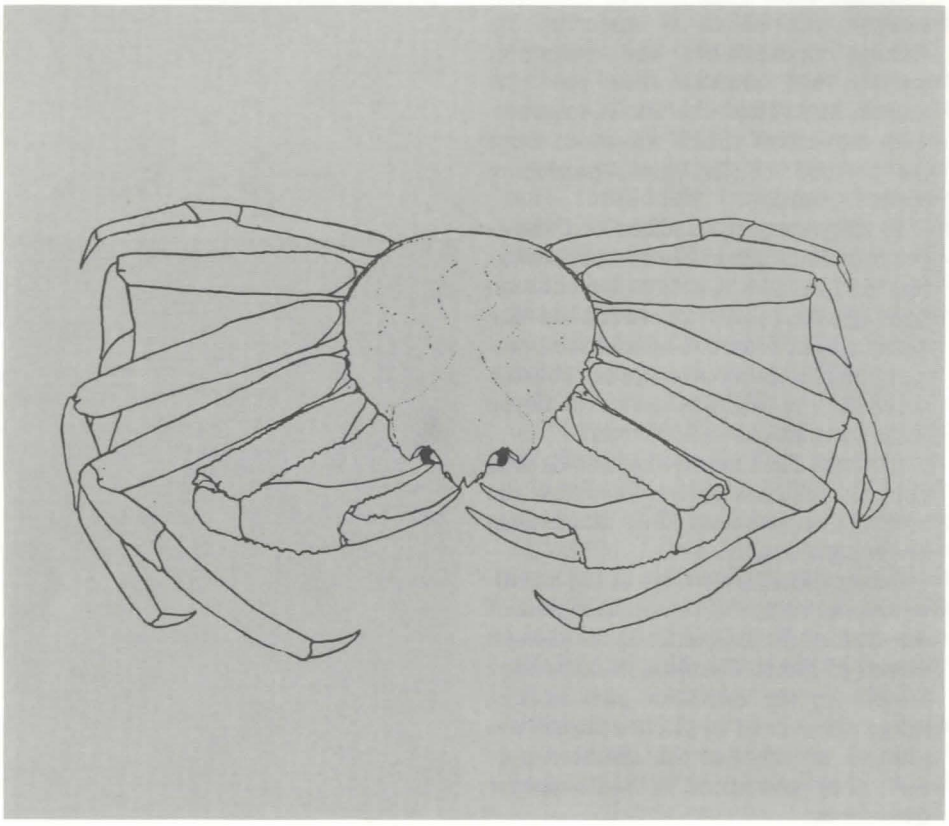
The Canadian fishery for these shellfish began in 1967 after exploratory fishing efforts found abundant stocks in the Gulf of St. Lawrence. Since that time, the fishery has developed rapidly and snow crabs rank with lobster and salmon among Atlantic Canada's top taste treats in fishery products.

Snow crabs have a flattened, almost circular body and five pairs of long, spider-like legs, one pair of which is equipped with strong claws. The upper surface of the shell is orangey tan and the underneath is creamy white. When fully mature, male crabs are twice as large as females and average about 13 cm across the body shell. Average weight of these crabs in the commercial catch is .7 kg. In Canadian waters, they are commonly found on the muddy or sandy sea floor at 75-450 m.

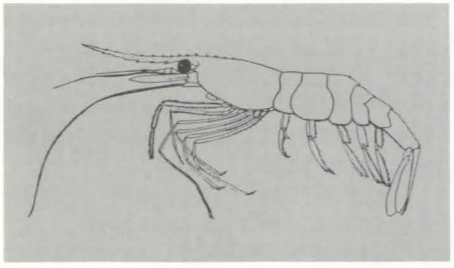
Snow crabs occur in the northwest Atlantic from Greenland down the Canadian Atlantic coast and into the Gulf of Maine. In Canadian waters, they are most abundant off Labrador, Newfoundland and in the Gulf of St. Lawrence. In the Gulf, snow crabs are landed from May through September and in some areas off Newfoundland and Labrador, year-round fishing is possible when ice conditions permit.

Fishermen harvest snow crabs in the Gulf of St. Lawrence from 16-18 m boats which have been converted from gillnetting, seining or dragging for groundfish. Each boat works about 35-80 square steel-frame traps. These traps are baited, set singly and hauled daily by ropes which lead to surface buoys. The crabs are stored alive on ice in the boat's hold. In the deeper waters of Newfoundland's bays (over 185 m), small conical traps are used from smaller boats. These are set together in lines of about 10 traps each.

A gourmet food item, snow crab meat is marketed in Canada, the United States and Europe as cooked frozen meat and canned meat.



Pink Shrimp
(Pandelus borealis)



Shrimp

Shrimp are crustaceans closely related to lobsters and crayfish. The Atlantic shrimp fisheries mainly harvest pink shrimp, also known as northern pink shrimp and great northern prawn. Continuing high world market demand is reflected in the growing importance of Canada's eastern shrimp fishery.

Small, spindly, long-bodied animals, of pinky-red colouring, pink shrimp average 7.4 to 10 cm in length. It takes approximately 120 to 130 of them to make 1 kg.

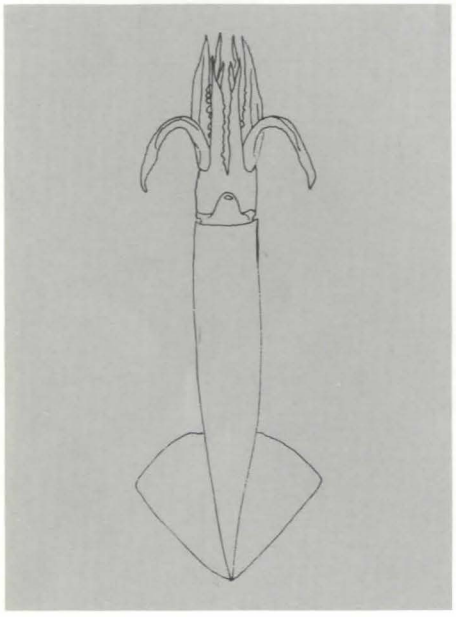
They are commonly found on muddy or sandy bottoms and feed upon other small bottom crustaceans and plankton.

Pink shrimp in North American waters range from the Columbia River on the Pacific coast, along the Arctic coast and south to Massachusetts Bay on the Atlantic coast. Canadian harvests on the Atlantic coast take place mainly in the Gulf of St. Lawrence, on the Scotian Shelf, and along the coast of Labrador.

The most common method of shrimp fishing involves the use of otter trawls.

Shrimp are usually cooked fairly soon after capture, and are principally marketed as headless, cooked and peeled meat in frozen form.

Squid



Squid

While a number of species of squid exist in the northwest Atlantic, only two species — short-finned squid (Illex illecebrosus) and long-finned squid (Loligo pealei) — are commercially important. Short-finned squid, common to Newfoundland waters, make up the bulk of the total annual catch.

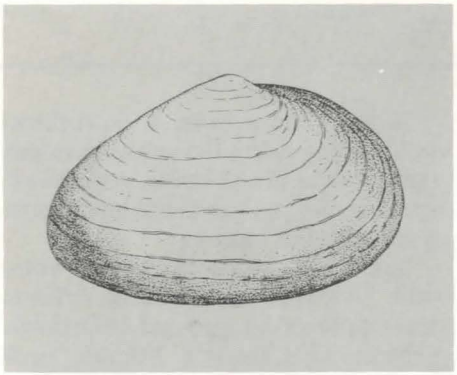
Squid are molluscs which carry their armour on the inside instead of on the outside like clams and oysters. An internal shell supports the soft, muscular body. Short-finned squid have a mature body length of about 30 cm. Two short fins are located at the tail end of the body and the head has well-developed eyes and a parrot-like beak. Ten arms equipped with suction cups extend from around the head. The two longest arms are known as tentacles. Motley brown in colour, squid can change colours readily in response to their background to escape predators. A good example of 'jet propulsion', this small species can move backward and forward with great ease and speed.

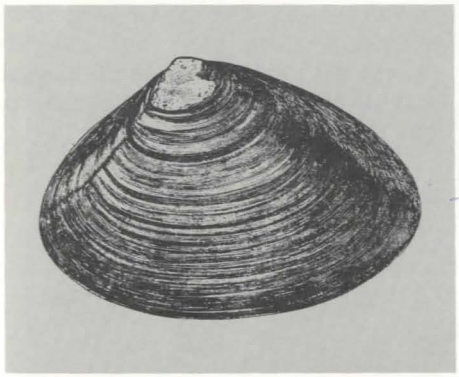
In the western Atlantic short-finned squid range along the coast from northern Labrador to Florida. A migratory species, they appear in the north in the warm weather months.

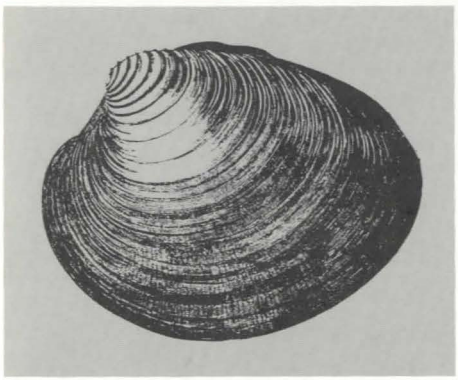
Squid are caught in inshore waters with jigs and traps and in offshore areas with off-bottom and otter trawls.

Most of Canada's Atlantic squid catch is exported, principally as a frozen product. The drying of squid by individual fishermen has recently proven a valuable processing method and has resulted in the development of new markets in the Far East.

Clams







Clams

The name 'clam' covers a wide variety of bivalve molluscs found along Canada's Atlantic coast. Main species in the commercial catch in order of abundance and economic importance are: the soft-shell clam, the bar or surf clam and quahaugs.

(1) Soft-Shell Clams *(Mya arenaria)*

Soft-shell clams have thin, brittle, elongated shells which are chalky-white in colour. They cannot close them tightly as their long "neck" or siphon extends beyond their edges. The average harvested size of soft-shell clams is about 5 cm although they can grow to a length of between eight and 15 cm.

This species occurs from Labrador to South Carolina. Often found in sandy or muddy sediment around mid-tide level, they are common in the estuaries and inlets of all of the Atlantic provinces. While these clams may be harvested with a hydraulic dredge, for the most part fishermen collect them with a clam hack or fork.

Most of the soft-shell harvest is marketed fresh in the shell although some quantities are sold as fresh and frozen shucked meat and in canned products.

(2) Bar or Surf Clams
(*Spisula solidissima*)

The largest clams found in the northwest Atlantic region, this species can reach a length of 18 cm, although the average size harvested is about 10 cm. They have a thick chalky shell covered with a thin, olive-brown skin.

Bar clams occur from Labrador to the Gulf of Mexico. They are most abundant in the Canadian part of the range in the southern and western Gulf of St. Lawrence where they are commonly found on clean sandy bottoms at low tide levels.

Harvesting is undertaken mainly through the use of clam hacks or forks and by "tonging" from dories at low tide.

Bar clams are principally shucked and minced for use in commercial clam chowders.

(3) Bay Quahaug
(*Mercenaria mercenaria*)

Bay quahaugs (or quahogs) like bar clams are hard-shelled. These bivalves have a thick, hard greyish-white shell and when fully grown can reach 13 cm in length. Small size quahaugs (5 to 7 cm) are known in the fishing trade as cherrystones and littlenecks.

This species is found from the southern Gulf of St. Lawrence south to the Gulf of Mexico. In the Canadian part of their range, they occur from New Brunswick's Maramichi Bay to Cape Breton Island where they frequent muddy or sandy bottoms.

Quahaugs are traditionally fished at low tide by hand or clam fork.

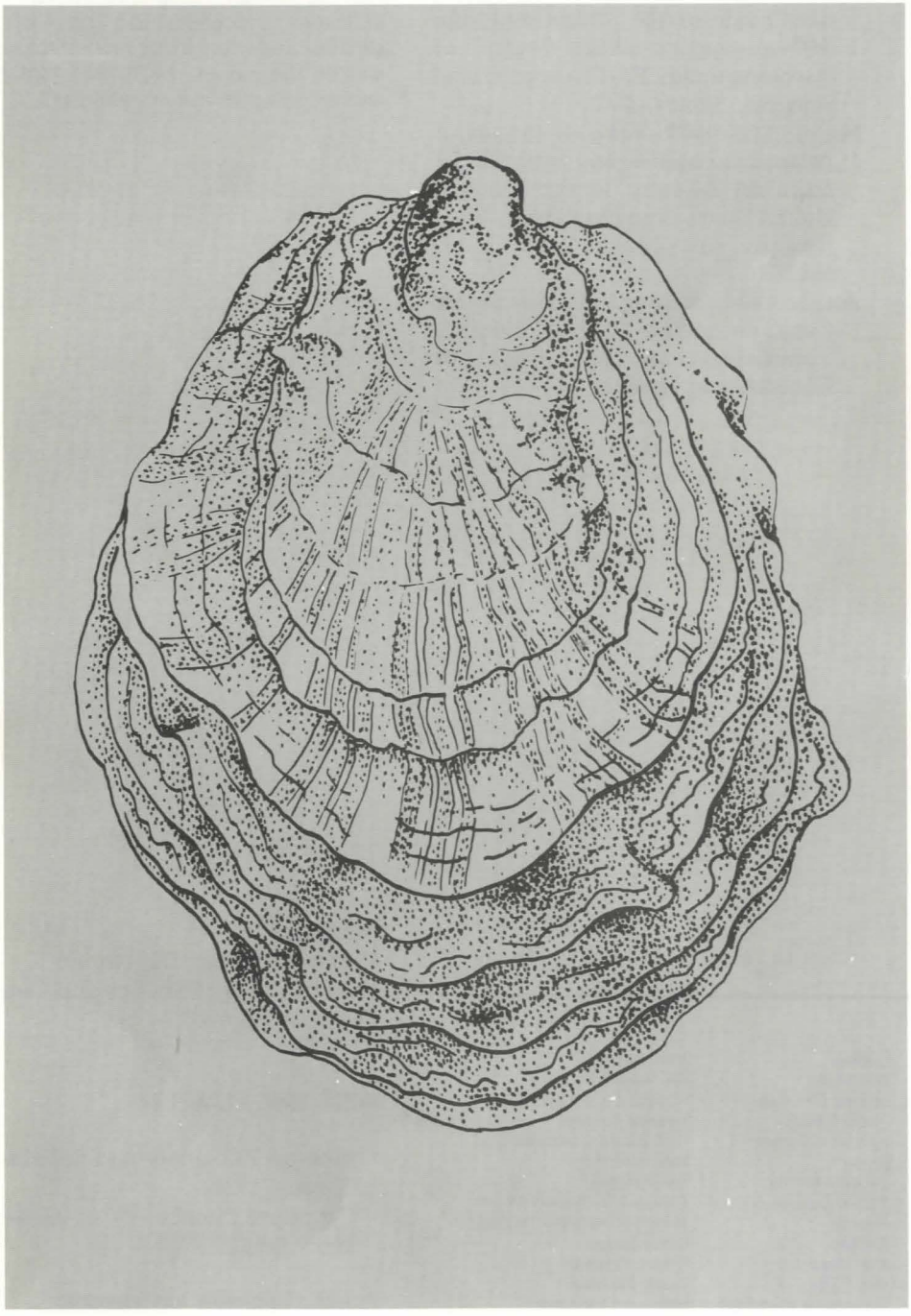
In areas where beds are covered by several feet of water, either tongs or long-handled rakes are used from small boats.

Small quahaugs are sold raw in the shell. The larger ones tend to be tough if eaten whole and so are minced and canned for use in chowders.

Atlantic Oyster
(*Crassostrea virginica*)

Atlantic Oyster

Variously referred to as American oysters, eastern oysters and Atlantic oysters, these non-mobile bivalve molluscs occur from the Gulf of St. Lawrence to the Gulf of Mexico and the West Indies. Canadian oyster grounds occur in the estuaries and inlets along the southern Gulf of St. Lawrence and Northumberland Strait to Cape Breton Island.



Oyster shells are unequal in size, the upper being flattened and the lower cup-shaped. On the outside, the shells are rough, and brownish or greyish white in colour. On the inside, they are smooth and dull white. The shape and quality of oysters is determined by the conditions under which they grow. On soft bottoms and crowded reefs, they assume a vertical position and grow long and narrow. On hard, clean uncrowded bottoms, they grow round, strong and deeply cupped. Oysters in the commercial catch range in length from eight to 25 cm.

Atlantic oysters are taken from natural beds and leased areas operated as oyster farms. Naturally-occurring oysters are harvested with tongs or rakes while cultured oysters are raised on trays. Shell strings, or other material on which oysters will attach themselves, are also used for culture purposes.

The oyster catch is primarily marketed fresh in the shell.

Further reading:

Bousfield, E.L. 1960. Canadian Atlantic Seashells. National Museums of Canada.

Caddy, J.F. and R.A. Chandler. 1976. Historical statistics of landings of inshore species in the Maritime provinces, 1947-73. Fish. Res. Bd. of Canada Tech. Rept. No. 639.

Brinkhurst, R. et al. 1976. A preliminary guide to the littoral and sublittoral marine invertebrates of Passamaquoddy Bay. Inst. of Ocean Sciences, Sidney, B.C.

Hare, G.M. 1977. Atlas of the major Atlantic coast fish and invertebrate resources adjacent to the Canada-United States boundary areas. Fish. Res. Bd. of Canada Tech. Rept. No. 681.

Anon. 1980. Resource Prospects for Canada's Atlantic Fisheries, 1980-85. Communications Br., Dept. of Fisheries and Oceans.

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Underwater World factsheets are brief illustrated accounts of fisheries resources and marine phenomena prepared for public information and education. They describe the life history, geographic distribution, utilization and population status of fish, shellfish and other living marine resources, and/or the nature, origin and impact of marine processes and phenomena.

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