

drag-nets cannot be used over very rough-bottomed fishing grounds. Trap-nets are used in some locations such as the east coast of Newfoundland, where heavy inshore runs of certain species (chiefly cod) occur.

#### ATLANTIC SPECIES

The Atlantic cod (*Gadus callarius*) is found on both sides of the north Atlantic Ocean, but so dense have been the stocks of the western Atlantic that several European countries have fished them ever since the Cabots discovered Newfoundland in 1497. Cod has long been the basis of the salted fish industry and later of fresh and frozen fillet production in New England, Quebec, Newfoundland and Nova Scotia, and on a smaller scale in New Brunswick and Prince Edward Island. Cod is found in North American waters from Greenland in the Arctic almost to Cape Hatteras in southern United States and it constitutes nearly two-thirds of the known groundfish resources in those waters. In recent years, almost one-half of the total volume of Canadian Atlantic fish and shellfish landings has been cod; of the total landed value, cod contributed just under 30 p.c. Its importance to the Newfoundland fishing industry is particularly great—about two-thirds of the total value of Newfoundland fishermen's landings. The annual catch by all nations is estimated to take only about 16 p.c. of present cod stocks in North American waters. There is every likelihood of expansion in the annual harvest to meet the needs of growing populations.

Haddock, taken mostly with drag-nets from the Grand Bank to Cape Cod, is at present next to cod in commercial importance. The use of mechanical filleting equipment in recent years has enabled processors to utilize younger and smaller haddock—much of it processed into frozen blocks for later conversion into breaded fish sticks. The catch has been increased in consequence to an estimated 42 p.c. of current stocks. This is expected to cause a substantial reduction in the stocks and, eventually, in the annual catch.

Redfish rank third in importance among the Atlantic groundfish species. They are taken exclusively with drag-nets in deep cold water from New Jersey to Labrador, chiefly in the Gulf of Maine off the coast of Nova Scotia, and west and south of Newfoundland. The development of the redfish fishery is comparatively recent, coincident with the growth of the market for frozen ocean perch filets, particularly in the American mid-west. The species is slow growing and, although some of the more remote northern grounds remain unexploited and although new stocks may be found, the total stocks are expected to diminish. Some increase in annual yield, however, is probable as the older fish are removed and the food supply is improved for those remaining.

Landings of Atlantic halibut in recent years have ranked close to those of redfish in value although stocks and annual catch are less than one-tenth of those of the Pacific Coast. The catch is taken in deep water throughout the Atlantic area, mainly by long-liners but to some extent incidentally by druggers. Although present utilization is only about 10 p.c. of the stocks, little change in the intensity of fishing is expected.

The small flatfishes—plaice, witch, winter flounder and yellowtail flounder—are marketed usually as sole filets. American plaice are found from Long Island, New York, to the Arctic; the others are more localized. All are caught with otter-trawl and Danish seine but plaice may also be taken with line gear. The total catch of small flatfishes could be increased even if some reduction in the total stock resulted.

Pollock, hake and cusk are sometimes statistically included with cod and haddock as related species. All are found in the more southerly parts of the Canadian Atlantic Coast area. Pollock are taken with line gear and marketed chiefly in the dried salted form; cusk and the hake are seldom concentrated and so are usually caught incidentally with other groundfish species. Cusk is a food-fish of excellent quality but hake soften quickly, even when iced, which makes their processing difficult and, in consequence, large quantities are discarded at sea. Silver hake or whiting is a southern species and may move out of Canadian waters if the ocean temperature grows colder, but white hake and squirrel hake