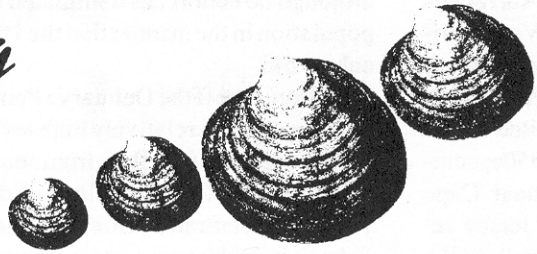
Ocean Quahog



by J. Weinberg

The ocean quahog, *Arctica islandica*, is a bivalve mollusk found in temperate and boreal waters on both sides of the North Atlantic. Distribution in the western Atlantic ranges from Newfoundland to Cape Hatteras in depths from 8 to 256 m. Quahogs are rarely found where bottom water temperatures exceed 16°, and occur progressively further offshore between Cape Cod and Cape Hatteras. In the Gulf of Maine region, ocean quahogs are distributed in relatively nearshore waters, with fishable concentrations 3 to 7 mi from shore.

In the Middle Atlantic region, ocean quahog populations are composed primarily of relatively large (>70 mm shell length), old individuals, and there is little evidence of recent recruitment to these populations. In contrast, Gulf of Maine populations (primarily off eastern Maine), composed of smaller (about 50 mm shell length) individuals, seem to have had greater recruitment in recent years. Growth rates of ocean quahog are lower in the Gulf of Maine than in Middle Atlantic areas. Results of mark-recapture, shell banding, and length frequency studies indicate that the ocean quahog has a longevity of more than 100 years, and that after age 20 growth is exceedingly slow. Spawning apparently occurs over a protracted interval from summer through autumn. Free-floating larvae develop slowly (more than 30 days until settling), and thus may drift far from their parents.

The principal gear used in the fishery is the hydraulic clam dredge, and until the early 1990s, most ocean quahogs were caught off New Jersey and the Delmarva peninsula. The fish-

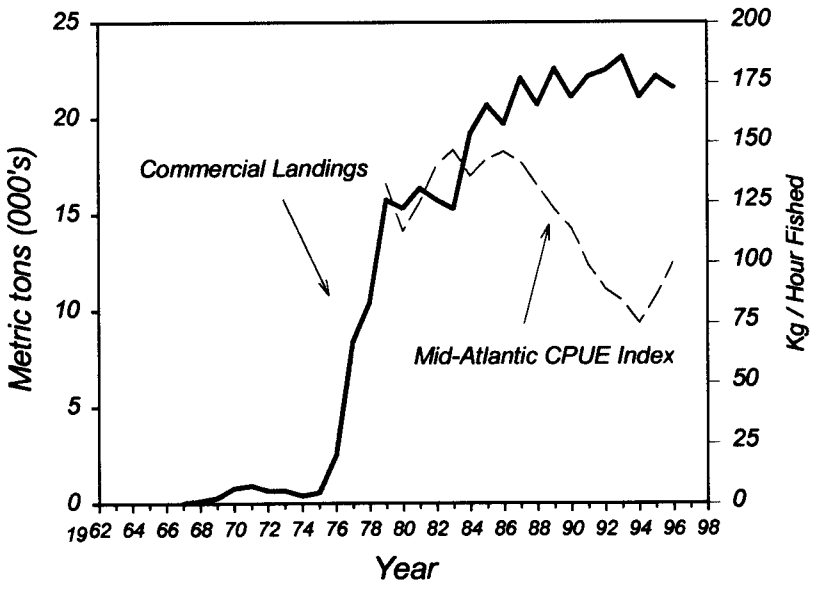
Quahogs in wire basket

NOAA Fisheries
NEFSC photo by Brenda Figuerido

"Commercial catch rates in this region [Mid-Atlantic] have declined since 1987. . . although values have risen in 1995 and 1996"

New England-Middle Atlantic

Ocean Quahogs



ery has been moving north for several years and significant catches are now taken off Long Island and southern New England. Recreational and foreign fishing in the Exclusive Economic Zone (EEZ) are insignificant. The Mid-Atlantic EEZ fishery is managed under the Surf Clam-Ocean Quahog Fishery Management Plan (FMP) of the Mid-Atlantic Fishery Management Council. Provisions of Amendment 8 of the Surf Clam-Ocean Quahog FMP, approved in 1990, instituted for the first time an individual transferable quota (ITQ) system for both surfclams and ocean quahogs, allocating percentages of the annual quota, based on vessel performance history and vessel size. For ocean quahog, management measures in effect include an annual quota (typically 20,000 to 25,000 mt of shucked meats), vessel allocations, and reporting requirements for both processors and fishing vessels.

Ocean quahogs were first harvested commercially during World War II off Rhode Island. Total landings, however, never exceeded 2,000 mt of shucked meats until 1976 when offshore exploitation began off New Jersey and Maryland. Steady declines in offshore Mid-Atlantic surfclam stocks combined with the massive kill of surfclams off New Jersey in 1976 stimulated fishing for the deeper-dwelling ocean quahog. Total ocean quahog landings increased dramatically between 1976 and 1979, from 2,500 to 15,800 mt of meats per year.

Table 32.1 Recreational catches and commercial landings (thousand metric tons, meats)

Category	Year										
	1977-86[1] Average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
U.S. recreational	-	-	-	-	-	-	-	-	-	-	-
Commercial											
United States											
EEZ	14.8	21.5	20.3	22.3	21.0	22.1	22.5	21.9	21.0	21.2	20.0
State	0.8	0.6	0.4	0.2	0.1	0.1	<0.1	1.3	0.1	1.1	1.6
Canada	-	-	-	-	-	-	-	-	-	-	-
Total nominal catch	15.7	22.1	20.7	22.6	21.1	22.2	22.5	23.2	21.1	22.2	21.6

[1]EEZ Fishery Initiated in 1976

Summary Status

Long-term potential catch	=	18,140 - 27,200 mt
SSB for long-term potential catch	=	Unknown
Importance of recreational fishery	=	Insignificant
Management	=	Surf Clam and Ocean Quahog FMP
Status of exploitation	=	Fully exploited
Age at 50% Maturity	=	8 years, males 11 years, females
Size at 50% maturity	=	55 mm (2.1 in.) shell length
Assessment level	=	DeLury depletion model
Overfishing definition	=	$F_{25\%}$
Fishing mortality rate corresponding to overfishing definition	=	$F_{25\%} = 0.04$

M = 0.01-0.03 $F_{0.1}$ = 0.023 F_{max} = 0.068 F_{1996} = <0.1

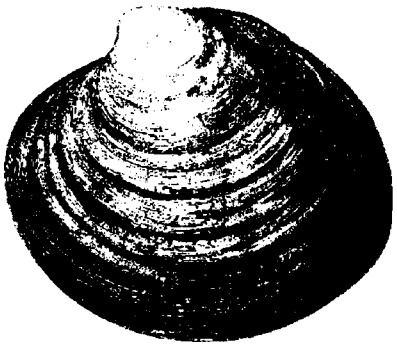
"Although annual landings are approximately only 2 percent of the total estimated stock, greater landings are probably not warranted due to extremely slow growth rates and low annual recruitment. "

Landings in 1995 (22,200 mt) and in 1996 (21,600 mt) were typical of annual landings since 1987. Most of the landings are currently derived from EEZ waters off Long Island, New Jersey, and southern New England. Quahogs are also taken in the EEZ off Maine, and inshore (state waters) off Rhode Island and Massachusetts. The Gulf of Maine fishery has been designated as an experimental one to provide information on abundance, distribution, and biological characteristics of the resource. It has not been subject to ITQ regulations for several years. Landings from the Gulf of Maine fishery are primarily for small (about 50 mm shell length) quahogs, which are sold as a fresh, in-shell product. Landings of larger quahogs in Middle Atlantic waters are used in processed clam products (for example, chowders, minced clams, and juices.)

Resource surveys for ocean quahog have been conducted by the NEFSC in the Georges Bank-Cape Hatteras region since 1965. Swept-area calculations indicate a stock biomass (meat weight) of about 1.0 million mt. Sources of uncertainty in these calculations include the fraction of clams assumed to be collected by the survey dredge and the fraction of the regions sampled consisting of actual ocean quahog habitat, rather than rocks or sands. Of this total biomass, approximately 6 percent is found off Delmarva, 13 percent off New Jersey, 22 percent off Long Island, 31 percent off Southern New England, and 28 percent on Georges Bank.

Trends in fishery performance from 1979 to 1996 have been documented using catch and effort data from mandatory logbook submissions. Mid-Atlantic (New Jersey and Delmarva) landings have declined, especially after 1991. Commercial catch rates in this region have declined since 1987 (after an initial fishery development period), although values have risen in 1995 and 1996. In the absence of substantial new recruitment (as indicated from NEFSC surveys), this trend toward lower performance is likely to continue in the New Jersey and Delmarva areas. The fishery has expanded spatially as catch rates declined in heavily fished areas off Delmarva and southern New Jersey. In 1991 and 1992, the fishery expanded to the Long Island area, a region heretofore unexploited. Continued expansion of the Mid-Atlantic fishery to the north and east is anticipated. Although a substantial ocean quahog resource exists on Georges Bank, it has been subject to fishery closure since 1990 due to the presence of paralytic shellfish poisoning toxins. Fishery-wide CPUE has held steady due to relocation of the fishery over time.

Although annual landings are approximately only 2 percent of the total estimated stock, greater landings are probably not warranted due to extremely slow growth rates and low annual recruitment. Once an area is depleted, recovery time would be expected to be extremely long.



For further information

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