

Offshore Jonah Crab

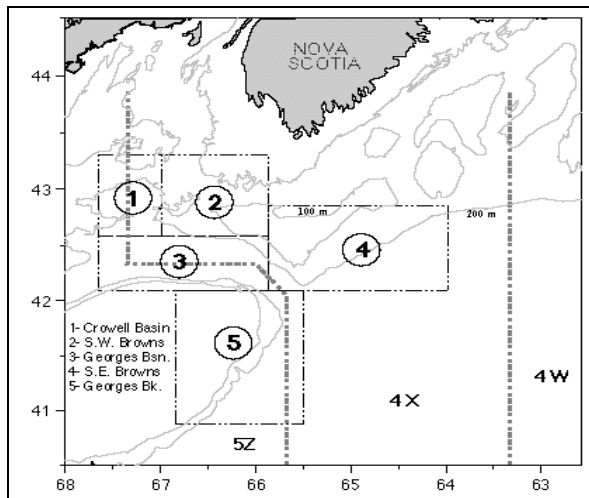
Background

The Jonah crab, *Cancer borealis*, is found from Nova Scotia to South Carolina and in the Bermudas at depths ranging from intertidal to 800m. In the waters off Nova Scotia the crabs are found primarily at depths of 50-300 m and temperatures of 8-14°C. The Jonah crab's substrate of preference ranges from rocky off the coast of Maine to sand and clay off Chesapeake Bay.

As with lobsters, the female broods her eggs on the swimmerets under the abdomen. The larvae develop through several plankton stages in the water column before settling to the bottom. Most male Jonah crabs are mature at 90-100 mm carapace width (CW) and most females mature at 85 mm (CW). Maximum carapace width for males is approximately 180 mm with a weight of 0.9 kg. Females usually do not exceed 150 mm (CW) and 0.5 kg in weight. Mean carapace width of males increases with increasing depth.

There is limited biological information available on Jonah crab off Nova Scotia. Ovigerous females have been found in July and August. There have been some indications of migration.

Since the mid 1960's Jonah crab stocks have been exploited at minimal levels as a trap by-catch to the lobster fishery. In the early 1980's an experimental Jonah crab fishery on the Scotian Shelf concentrating in LaHave and Emerald basins lasted only two years. All males and females above the minimum carapace width of 130 mm could be retained. Average catch-rates were 6.6 kg/th in 1983 and 13.3 kg/th in 1984 before economics resulted in its closure. The most recent research surveys were conducted in 1981 prior to the Jonah crab fishery of 1983 and 1984. Through the years the Offshore Lobster Industry has landed Jonah crab as a by-catch to the offshore lobster fishery. Most by-catch Jonah crab was landed after much of the lobster quota had been caught.

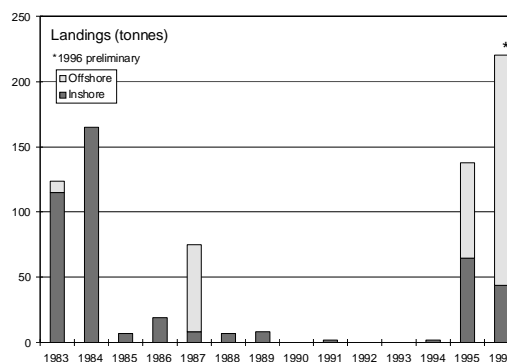


The Fishery

Landings (tonnes)

Year	1983-90 Avg.	1991	1992	1993	1994	1995	1996 *
Offshore	10	-	-	-	-	73	176
Inshore	41	2	-	-	2	65	44
Total	51	2	-	-	2	138	220

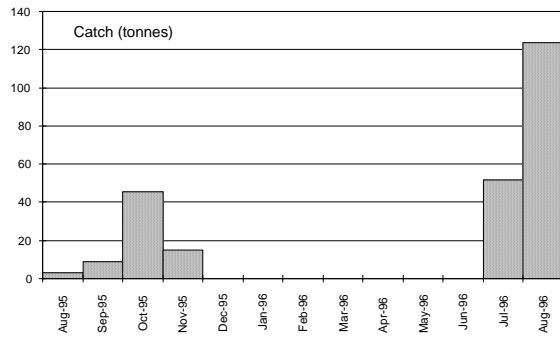
*1996 landings preliminary



In the latter part of 1995 the fishery resumed in response to a proposal by the Offshore Lobster Industry. The fishing year started October 16, the same as offshore lobster quota year. The Industry was limited to fishing the historical offshore lobster assessment areas. The gear used was offshore lobster traps. The minimum carapace width was 130 mm, hard shell, with no retention of females. An industry funded agreement with DFO provides biological data on stock size composition using sea samples and fishery data through completed logbooks with catch and effort information to DFO Science.

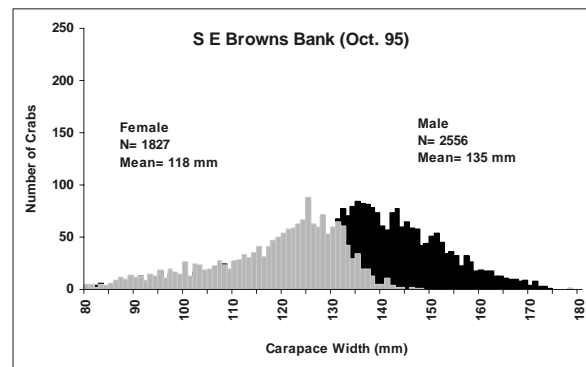
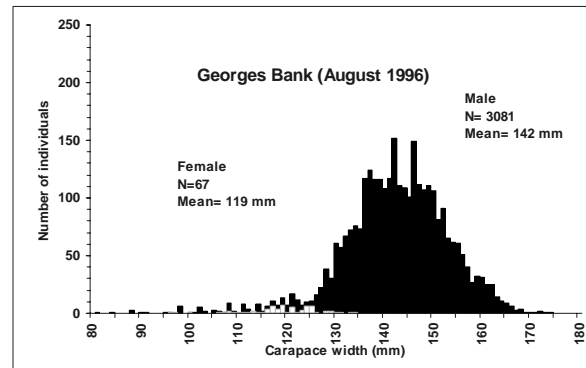
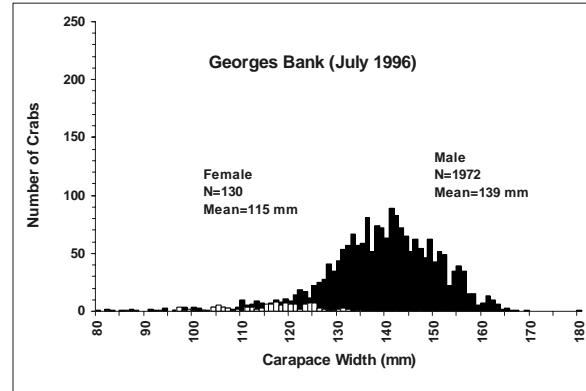
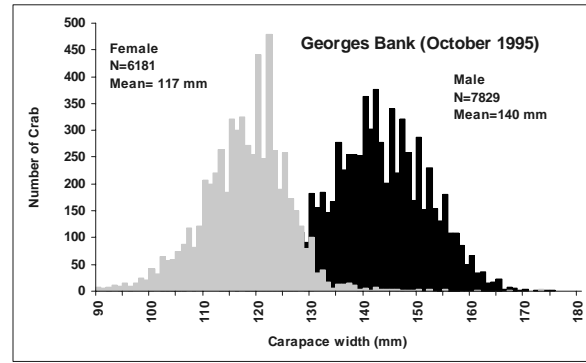
In 1995, 73 t of Jonah crab were landed by the offshore fleet. Monthly catches improved as crab concentrations were located and markets were secured. Catches declined in November as the fleet redirected for lobster.

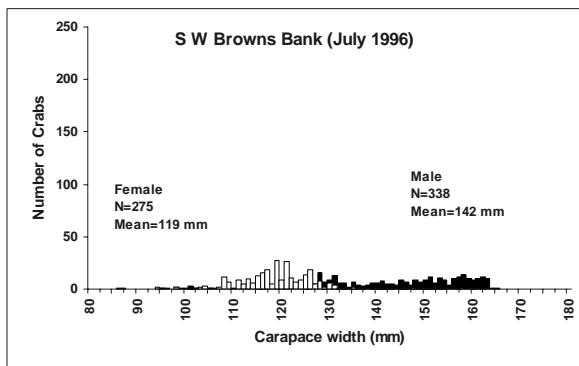
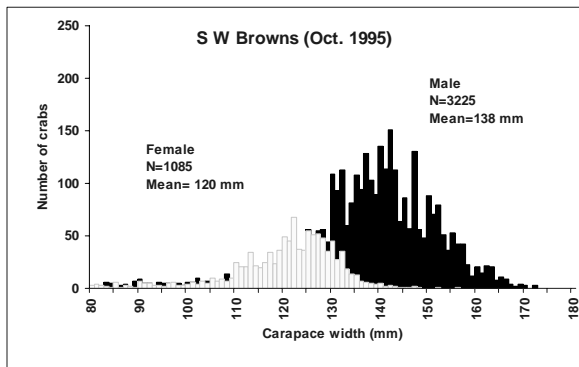
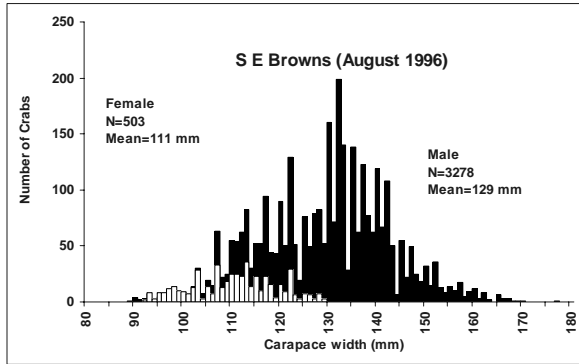
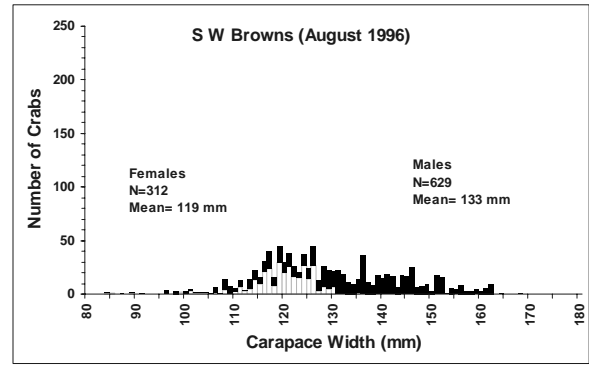
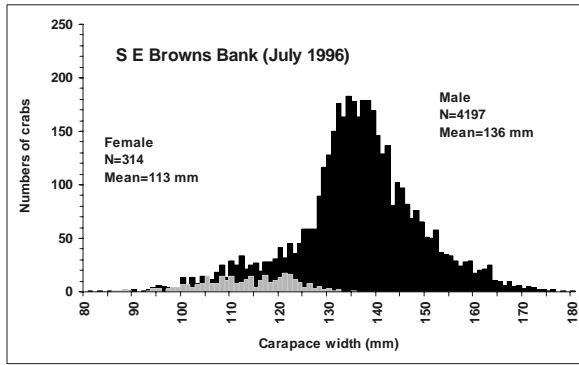
The 1996 quota for the offshore Jonah crab fishery was not to exceed the 720 t quota for offshore lobster. Fishing for Jonah crab resumed in July 1996 after the new processing plant was operational and much of the lobster quota had been caught. The plant utilizes the whole crab for meat and by-product. August catches were almost double those of July. To date the offshore fleet has landed 176 t or 24% of the quota.



Resource Status

Logbooks and dockside monitoring documents were used to provide catch and effort information from which catch rates were estimated. All trips were dockside monitored. Monthly sea samples, collected by fishing area, provided information on size distribution of both males and females.



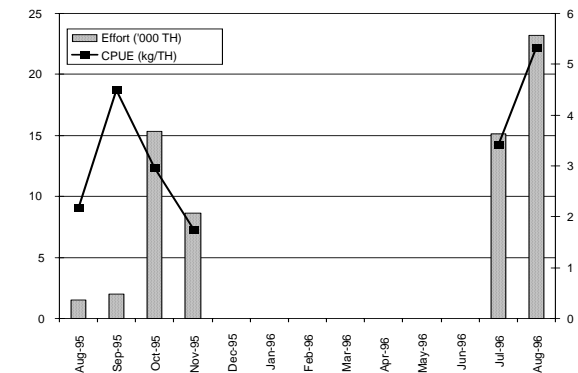


Jonah crabs were caught at depths ranging from 110 to 311 m in 1995 and 118 to 279 m in 1996.

Monthly mean carapace width (CW) for male Jonah crabs varied by fishing areas. In 1995, the mean CW of males varied from 135 to 140 mm (range 41 to 212 mm) and in 1996 it varied from 129 to 142 mm (range 45 to 180 mm). In 1995, the percentages of male crabs larger than the legal carapace width of 130 mm, for Georges Bank, southwest Browns, and southeast Browns were 85%, 81%, and 72% respectively. In 1996, there was little change in the percentage of legal size male crabs for Georges Bank (87%). However the percentages for southwest Browns and southeast Browns decreased to 70%, and 65% respectively.

There was little change in the mean CW of female Jonah crabs between fishing areas and time of year. In 1995, their overall CW varied between 117 and 120 mm (ranged from 40 to 178 mm). In 1996, mean CW of females varied between 111 and 120 mm (range from 76 to 157 mm). No ovigerous females were found in 1995 and only a few were recorded in 1996.

For all fishing areas most males were greater than the legal CW of 130 mm and most of the females were below the legal CW.



Effort is measured in trap hauls (TH). In 1995, effort and catches followed the same trends. The increase in effort for 1996 also corresponds to the increase in catches. Monthly effort in August is the highest encountered thus far.

Catch rate is expressed as kilograms per trap haul (kg/TH). Catch rates for 1995 and 1996 cannot be compared with those 1983 and 1984 as this earlier fishery was permitted retention of females and fished a different geographical area. During the 1995 fishing season, catch rates peaked in September and then declined as the focus shifted to fishing lobster. Catch rates by fishing area ranged from 1.39 to 3.67 kg/TH. In 1995, the catch rate peaked in September while catch and effort peaked in October. In 1996, based on two months of data, there was an increase in catch rate from 1995. The catch rates between fishing areas varied from 1.9 to 7.6 kg/TH.

Outlook

The information available is insufficient to give recommendations and advice on the status of the stock. It would indicate a cautious approach if the long-term goals are to maintain a fishable stock. Sufficient recruitment of crabs to the fishery is essential to maintain a fishable biomass. Variance in catch rates depends on species directed and time of year. Catch rates also vary as the fishing areas are further explored. Changes in catch rates or effort may not be indicative of what the fishery can sustain.

There is no biological basis for changing the present management measures. The catch rates, behavior of the fishery and the size structure of the stock should continue to be monitored through the science logbooks, dockside monitoring and sea sampling.

For More Information

Contact: Maureen Butler
Tel: (902) 426-2616
Fax: (902) 426-1862
E-mail: M_Butler@bionet.bio.dfo.ca

or David Robichaud
Tel: (506) 529-8854
Fax: (506) 529-5862
E-mail: Davidr@sta.dfo.ca

Invertebrate Fisheries Division
1707 Lower Water Street
P.O. Box 550
Halifax, Nova Scotia, B3J 2S7