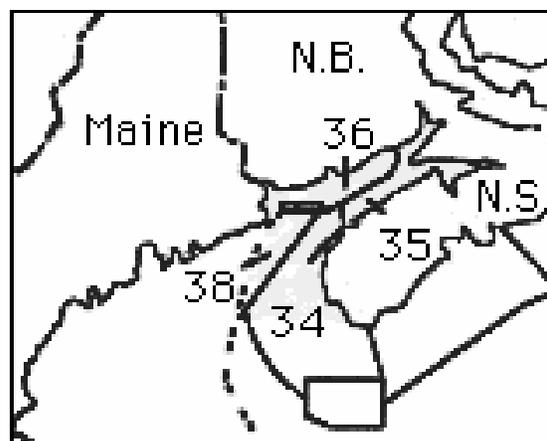




Inshore Gulf of Maine Jonah Crab
(*Cancer borealis*)



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.

The crab fishery started in 1995 in southwestern New Brunswick and in 1996 in Southwest Nova Scotia. The fishery is permitted under combined exploratory Rock and Jonah crab permits. It is mainly concentrated in five areas; the southern part of Grand Manan (LFA 38); mainland New Brunswick between Maces Bay and Mascarene shore in Passamaquoddy Bay (LFA 36); the Annapolis Basin (LFA 35); St. Mary's Bay (LFA 34) and the midshore area situated between 22 and 93 km off LFA 34.

In 1995, two exploratory crab permits were issued on Grand Manan and four for mainland New Brunswick. Each fisher had a 100 trap limit, and only conical crab traps were allowed to be used. There was no minimum size limit, and all lobster were to be released. Although permitted all year, most of the fishing took place from June until the end of October in 1995. Although specimens were found in all areas, commercial concentrations were only found in deeper waters (> 75 meters) off southern Grand Manan.

The Fishery

In 1996, all six exploratory crab permits from southwestern New Brunswick were reissued to the same permit holders as in the previous year. A new trap limit was set at 200, and a minimum size limit for Jonah crab was set at 121 mm CW. Also introduced was a minimum 20 fishing trip requirement in order for participants to retain their exploratory fishing permits. Fishers were also required to fully participate in an approved Dockside Monitoring Program.

In 1996, on the Nova Scotia side of the Bay of Fundy, a draw for 20 new permits was realized; 10 permits were made available for LFA 35, 8 for Digby and Yarmouth counties (part of LFA 34), and 2 midshore permits (off LFA 34). Several distinct regulations were introduced to accommodate this new fishery: the minimum size limit for Jonah crab was set at 130 mm CW; the trap limit was restricted to 100; modified lobster traps were permitted to be used as well as conical crab traps; and all traps were to be out of the water at least 1 week before and after the lobster fishing season. In the midshore area, fishers were only allowed to fish between 22 and 93 km from shore. Midshore permit holders were allowed a trap limit of 125.

Introduction of these new regulations caused delays in issuing the 1996 crab permits, therefore delaying crab fishing on the New Brunswick side to the third week of July.

It should also be noted that only one Grand Manan fisher (LFA 38) was active, and directed his effort on Jonah crab only. Thirteen fishers from Nova Scotia picked up their permits, and 10 of these have been actively fishing. In New Brunswick, although trap limits were increased from 100 to 200 in 1996, no fisher invested in additional traps.

This report is based exclusively on Jonah crab landings from Grand Manan (LFA 38) and from the midshore area off southwestern Nova Scotia (LFA 34). Although Jonah crab were present in other areas, no commercial concentrations were found.

Landings are not systematically reported. Jonah crab has been taken as a by-catch in the Gulf of Maine lobster fishery, since the mid 1960s. Jonah crab landings from this by-catch off Grand Manan may be larger than landings from the directed fishery.

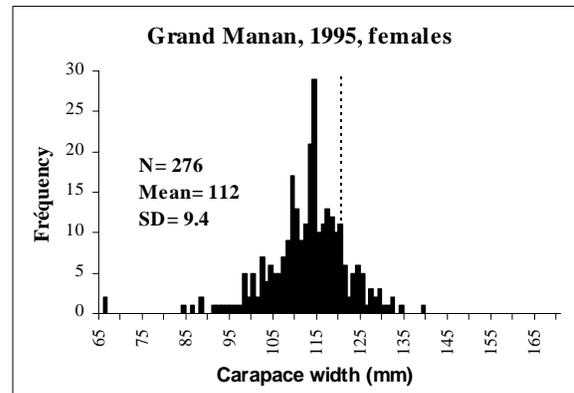
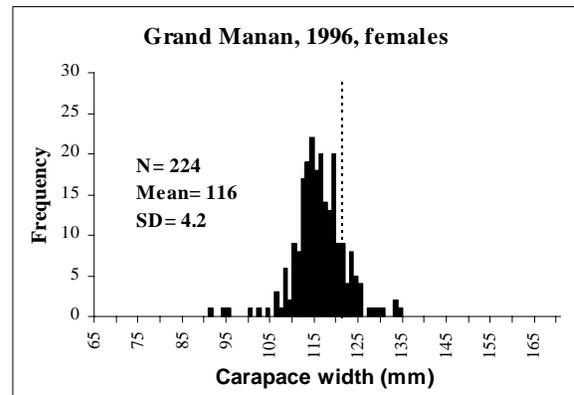
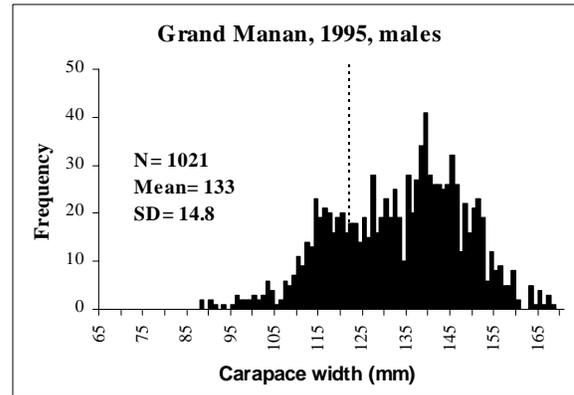
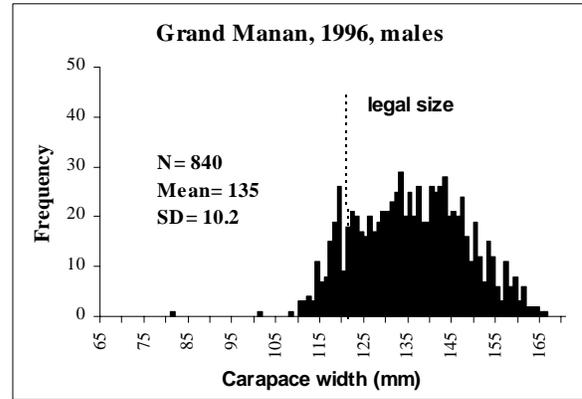
All Jonah crab landings were calculated from fishers logbooks. During 1995, landings came only from southern Grand Manan (LFA 38) and in 1996 they came from southern Grand Manan and the midshore area (LFA 34).

Landings (t) and trap hauls in the directed fishery in 1995 and 1996.

	1995		1996	
	landings (t)	traps hauled	landings (t)	traps hauled
Mid-shore	-	-	15.4	3309
LFA 38	20.7	3948	25.3	3875

Biological samples indicate that the size-frequency distributions of Jonah crab from Grand Manan are similar between 1995 and 1996 for both males and females. In both years, samples were taken from conical crab traps, but the escape vents were smaller (to catch rock crab) on the 1995 traps compared to 1996. All crabs from individual trap hauls were sexed, the presence or absence of eggs noted, and the carapace width measured.

No egg bearing females were observed during sea-sampling in 1995 and 1996. Aggregated frequency distributions from these samples show that the average carapace width of males was 133 mm in 1995 and 135 mm in 1996, and 112mm and 116 mm for females respectively.

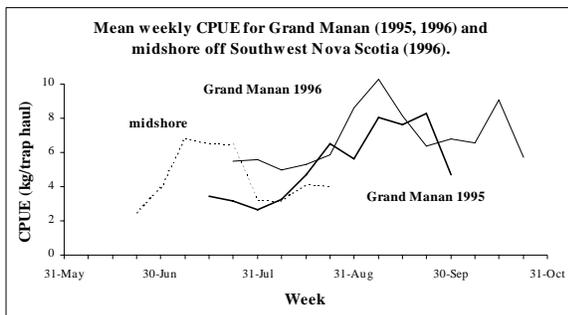


Resource Status

Catch rates were obtained from logbook data. During 1995, off southern Grand Manan (LFA 38) a total of 3948 traps were hauled and a total of 1.9 t of rock crab and 20.7 t of Jonah crab were landed. In 1996, effort was directed for Jonah crab only. Logbook analysis shows that 3875 traps were hauled and a total of 25.3 t of Jonah crab were landed. The overall catch rate was 6.5 Kg/TH. No rock crab were landed.

During July and August 1995, weekly catch rate for Jonah crab off Grand Manan is underestimated as a proportion of the traps were also set on rock crab bottom, rather than Jonah crab bottom. In the daily logbook records only the total number of traps set was recorded. However, this bias does not occur during the last week of August, and during the month of September when the fishing was carried out exclusively on Jonah crab bottom.

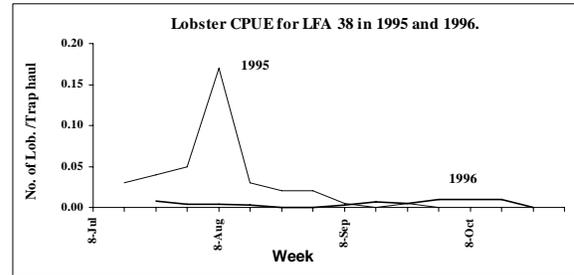
During 1996, in the midshore area, fishers hauled 3309 traps and landed 15.4 t of Jonah crab. Both midshore fishers fished different areas, and their mean CPUE varied between 2.8 kg/trap haul and 6.7 kg/trap haul, respectively.



No data are available on the **recruitment** into the fishery.

Exploitation rates are unknown, and assessment of the impact of this directed fishery on Jonah crab stock is complicated by the by-catch of crab in the lobster fishery.

Ecosystem considerations: Distribution of lobster and Jonah crab overlap, particularly in coastal areas. However up to now Jonah crab fishing has occurred at depths of over 75 meters. At these depths lobsters did not seem to be a problem. Overall the number of lobster per trap haul (lob./TH) was low in 1995 (0.04 lob./TH) for southern Grand Manan and in 1996 for southern Grand Manan (0.004 lob./TH) and the midshore area (0.01 lob./TH).



Outlook

The prospects for a sustainable harvest of Jonah crab in the Gulf of Maine will not be known until all areas are explored. Since only half of license holders were active, limited information is available on this fishery. The inactive licenses should be deployed systematically throughout the known distribution of this species to gather more complete information on stock abundance

Data gathered in this report indicates that the current level of effort is not having an impact on the resources. However, emphasis should be directed in gathering data on the by-catch of crab in the lobster fishery, as well as more information on the life cycle of the Jonah crab specific to the Gulf of Maine.

The bycatch of lobsters does not seem to be a problem for the Jonah crab fishery.

For More Information

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