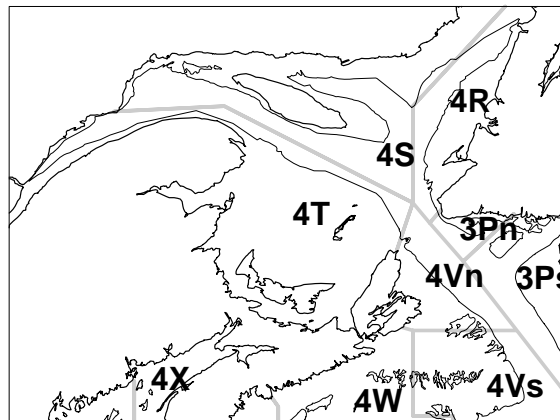


Gulf Toad Crabs
(from Squires, H.J. 1990)



Background

Both species of toad crabs (*Hyas sp.*) found in the Gulf of St. Lawrence are similar with *H. araneus* adults being slightly larger than *H. coarctatus*. Toad crabs are observed from the sub-tidal to a depth of 60 meters. The best toad crab fishing occurs between the lobster and snow crab grounds. Transitional areas are found at the 35 and 50 meter depth contour where toad crabs share the same habitat as lobster and snow crab respectively. They are common on all types of substrate with *H. araneus* preferring soft bottom while *H. coarctatus* is more common on hard bottom.

The toad crab fishery was initiated on a limited basis in 1994 for northern New Brunswick and northern Prince Edward Island. Initially, fishers in northern New Brunswick landed a small quantity of toad crab as a by-catch of lobster while the possibility of a directed fishery for P.E.I. became apparent during a survey of rock crab distribution.

The fishery is in its infancy with relatively few permits exploiting a small percentage of available fishing grounds. Fishers are experimenting with a variety of trap types from modified lobster to snow crab. There were no defined seasons for 1995 with the only regulations being a trap limit set at 100 and a prohibition against the landing of females. As with all exploratory fisheries, participants are required to complete a daily log.

In 1995, there were 5 permits issued in northern New Brunswick of which 4 were active from June 20 to late November. Twenty permits were issued in Prince Edward Island for which 10 fishers completed log books. There was one active permit in Nova Scotia from the port of Pleasant Bay.

The Fishery

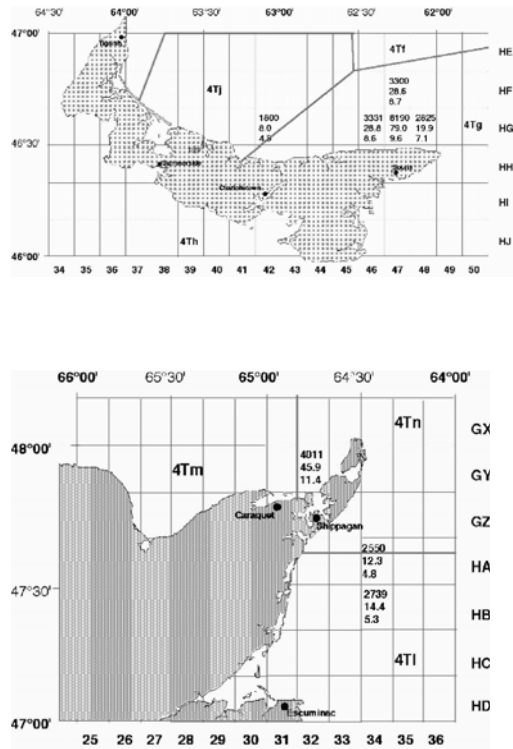
Management: Management of the fishery in 1995 was limited as this was the first year toad crabs were landed on a wide scale basis. A limited number of permits were issued for 1995 and it is expected that an increased number of permits will be issued for 1996. Fishery managers have requested that a minimum carapace size based on toad crab biology be established for the 1996 season to ensure conservation of the stocks.

Landings: Purchase slips showed landings of 388.5 t for 1995. Logbooks reflected similar values with the exception of Nova Scotia which was slightly higher. Prince Edward Island accounted for 78.6% of landings with New Brunswick and Nova Scotia landing 18.7 and 2.7% respectively.

1995 Landings (t) for toad crabs from purchase slips

Province	July	Aug.	Sept.	Oct.	Nov.	Total
N.S.			10.0	0.7		10.7
N.B.	0.2	18.3	16.2	33.9	3.9	72.5
P.E.I.	15.8	143.5	109.9	36.1		305.3
Total	16.0	161.8	136.1	70.7	3.9	388.5

The number of trap hauls (effort), landings in metric tonnes and the average CPUE for the season was recorded where fishing activity occurred (Fig. 1).



Effort
Landing (t)
CPUE

Represent the numbers in each 10' x 10' square on the chart

Fig. 1. Distribution of fishing effort, catch and CPUE for the 1995 toad crab fishery.

Biological data:

Size Frequency: The mean size of toad crab sampled at sea seems to be area specific (Fig. 2). The average carapace size of crab in New Brunswick was slightly larger than Prince Edward Island and may be attributed to a number of factors. Samplers in New Brunswick reported *H. araneus* almost exclusively in the catch while *H. coarctatus* made up 99.5% of the landings in Prince Edward Island. As *H. araneus* are slightly larger than *H. coarctatus* this may account for the difference. Trap selectivity could also be an important factor in the observed size frequency distribution.

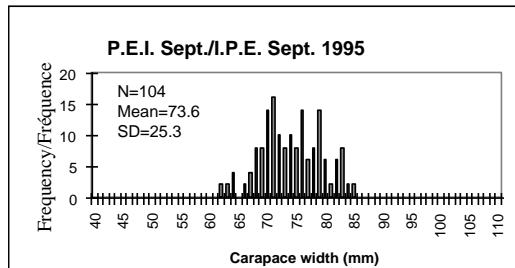
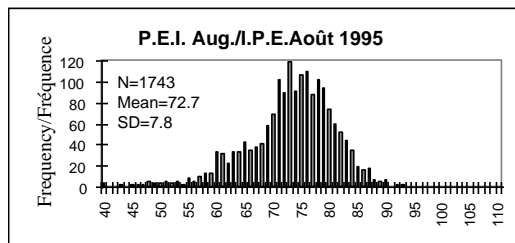
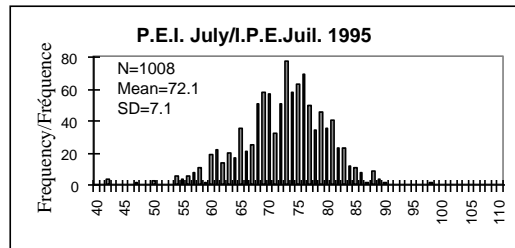
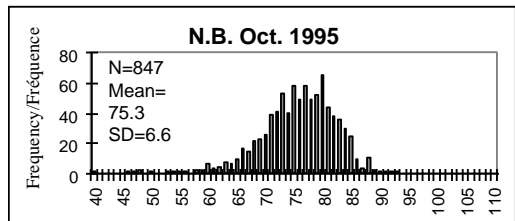
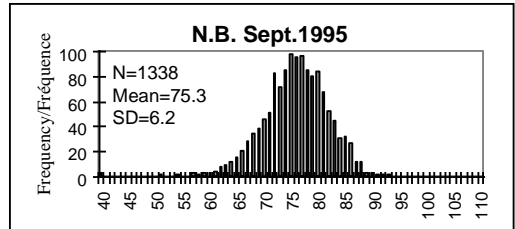
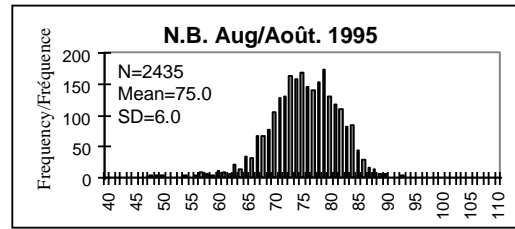


Fig. 2. Monthly size frequency distributions for male toad crab sampled at sea during the 1995 fishery.

Resource Status

Catch rates: The mean monthly catch per unit of effort (CPUE) ranged from a low of 2.68 kg/trap haul to a high of 16.72 kg/trap haul. It was reported by fishers in northern P.E.I. that rapid depletion of toad crab in a given area required that fishing gear be moved on a regular basis. Some variability in CPUE may reflect a learning curve as fishers seek out grounds and fishing methods for the first time.

There is also variability in catch rate when comparing different fishing locations of close proximity. For example, fishing square HG-47 showed an average CPUE of 9.6 kg/trap with surrounding squares having lower catch rates (Fig. 1). The high catch rate in this area corresponds to high densities observed during the groundfish trawl survey.

1995 Effort by Fishing Square

Square	# of trap hauled	Landings (kg)	Average CPUE
GY-32	4011	45905	11.4
HA-34	2550	12323	4.8
HC-34	2739	14437	5.3
Total N.B.	9300	72666	7.8
HF-47	3300	28612	8.7
HG-42	1800	8073	4.5
HG-46	3331	28777	8.6
HG-47	8190	79008	9.6
HG-48	2825	19959	7.1
Total P.E.I	19446	164429	8.4
HG-54	189	683	3.6
HF-55	395	3835	9.7
HG-63	1949	9713	5.0
Total N.S.	2533	14231	5.6

Population abundance: The wide spread distribution of toad crabs is confirmed from data collected during the groundfish trawl survey (Fig. 3). The number of individual toad crabs in the southern Gulf was estimated at 91.4 million ± 34% from data collected during the 1995 snow crab trawl survey (Fig. 4). This survey found large concentrations of toad crab near Orphelin Bank and between PEI and Cape Breton.

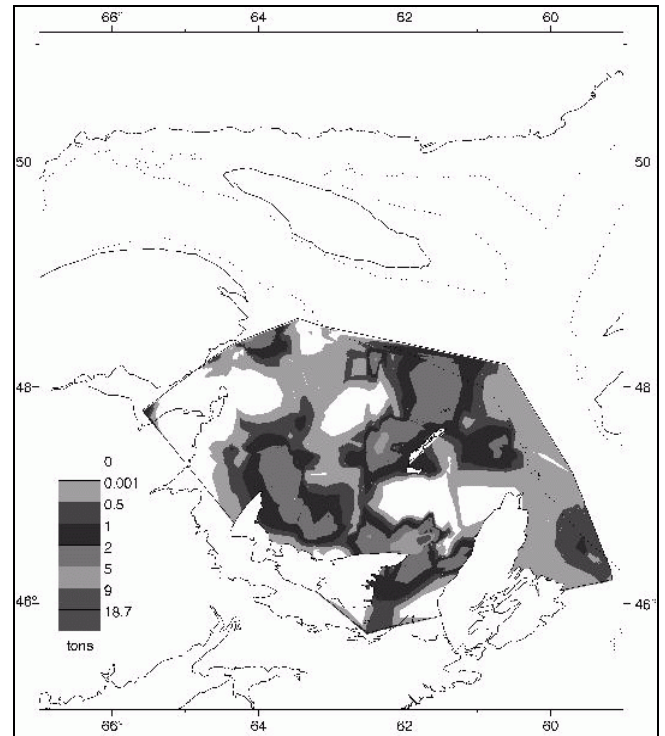


Fig. 3. Distribution of toad crab in the southern Gulf of St. Lawrence estimated by trawling during the September 1995 ground fish survey.

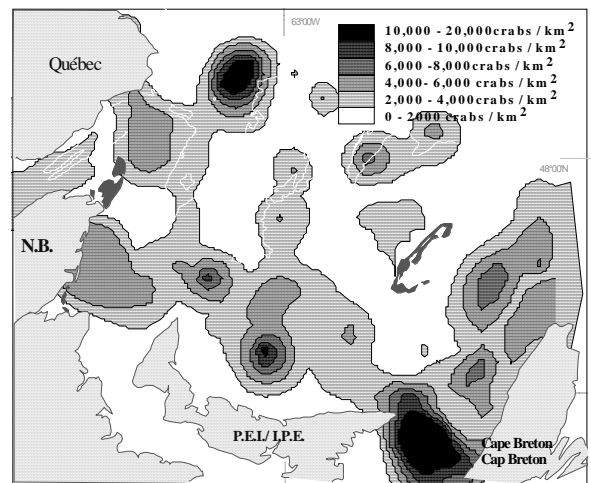


Fig. 4. Distribution of toad crab in the southern Gulf of St. Lawrence estimated during the 1995 snow crab biomass trawl survey.

Recruitment: There are little data available on recruitment into the fishery. The size frequency collected from trapping demonstrates selectivity of the traps towards larger, possibly mature, animals.

Exploitation rate: The exploitation rate is considered low as only a small proportion of the fishing grounds are being exploited.

Uncertainty: Caution should be exercised in greatly increasing the fishing capacity. Fishers have indicated that depletion in a given area may occur quickly and this coupled with the unknown level of recruitment should be considered in the geographical distribution of effort. As with any new fishery, it is expected that catch rates will drop after the older population has been cropped.

Ecosystem: Since there is sharing of habitat between toad crab and several other commercially fished species of crustaceans, it is not unreasonable to assume that there may be competition for food or a predator prey relationship.

Outlook

Management Considerations: There is potential for a good fishery. The surveys indicated that the resource is widely distributed. However, it should be noted that the fishery will need to be mobile. Full compliance is essential particularly in a developing fishery where logbooks are the primary source of information for understanding the status and potential of the resource. Also, the by-catch of lobster and snow crab should be monitored closely to avoid negative impact on those fishery.

Steps should be taken to establish a minimum carapace size to protect immature crabs from being harvested. To minimize waste of the resource, the molting cycle should be studied to determine the best time for optimum meat yield.

Any new fishing permits should be distributed to avoid clustering in a small area.

For More Information

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Reference

Squires, H.J. 1990. Decapod Crustacea of the Atlantic Coast of Canada. Can. Bull. Fish. Aquat. Sci. 221: 532p.