

FISHERIES DIVERSIFICATION PROGRAM

Emerging Fisheries Development

Project Summary: FDP 84

Northern Stone Crab (*Lithodes maja*) Exploratory Fishing



Canada



GOVERNMENT OF
NEWFOUNDLAND
AND LABRADOR

Introduction

Northern Stone Crab (*Lithodes maja*) has been caught in the groundfish and snow crab fisheries for several years. The species can grow to similar size as snow crab and has been processed with good yields into very acceptable crab meat products. These characteristics make it an attractive source of raw material for the crab processing industry. In response to a renewed interest by a major crab processor (Daley Brothers) and a major crab marketing company (Orion Seafoods Group Canada) the Department of Fisheries and Aquaculture, with funding from the Fisheries Diversification Program, undertook an exploratory survey for northern stone crab along the south and west coasts of the province in May and June of 2000.

Biological Profile

Northern stone crab (*Lithodes maja*) one of only two known members of the King Crab family found in the North West Atlantic inhabits the seabed around the coast of Newfoundland and Labrador. As with other members of the family its pear shaped shell and legs are covered with short spines. It also possesses characteristics unique to deep sea crab, such as a bright red colour, long legs and a highly developed bronchial chamber. Males reach sexual maturity at a carapace width of around 98 mm and females in the 65 mm range. Northern stone crab are not considered a very fertile species when compared to the red king crab (*Paralithodes camtschatica*), the blue king crab (*Paralithodes platypas*), and snow crab (*Chionoecetes opilio*) for which there are commercial fisheries. A major factor that may contribute to this is that the females lay small numbers of large eggs which is the opposite of that which occurs with the red and the blue king crab, and snow crab species.

Ref: DFO Stock Status Report (4-04) (1998)
Decapod Crustacea of the Atlantic Coast of Canada
Hubert J. Squires

Fishing Vessel and Gear

The project vessel chartered to conduct the survey was the F.V. Fundy Leader 11 owned by Max Forsey of Fortune. The vessel is 64' 11" LOA, carries a 22" beam and is powered by a 525 hp. Cummins diesel with 5.9 to 1 reduction. Two 75 pot strings of standard conical snow crab pots covered with



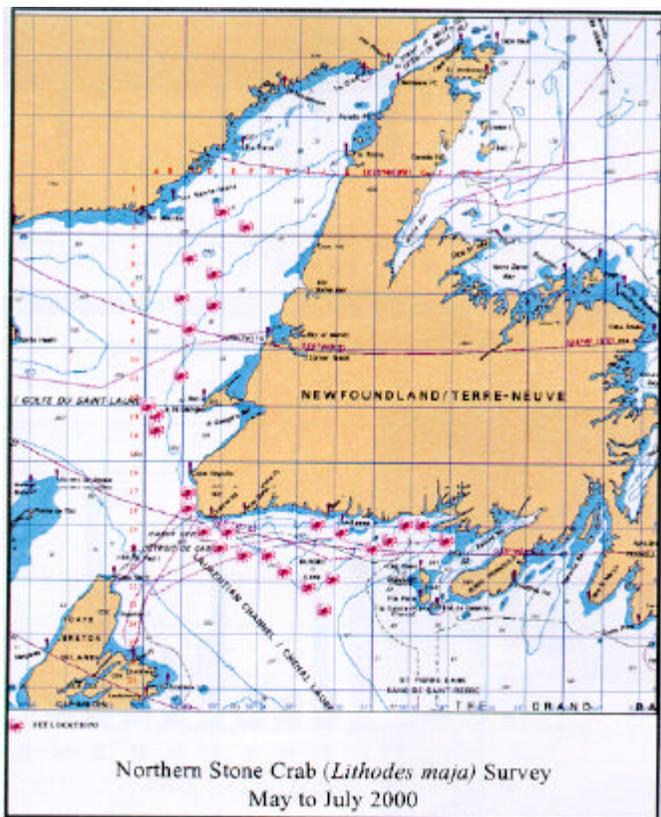
5 ½" mesh webbing were used for test fishing at the various survey positions. The pots were spaced 20 fathoms apart and baited with squid placed in plastic jars and/or mesh bags as well as on open skivers.



Survey Area

The survey plan was developed to include areas where stone crab fisheries had been attempted in the past and expanded to adjacent areas. Set locations were determined using an alpha numeric grid delineated by 10 mile squares. The grid area included both mud and rock bottom types and varying depths.

The survey traversed approximately 400 miles along the 100 to 200 fathom bottom contour beginning at the mouth of Fortune Bay and proceeding in a westerly direction along the south west coast to Port aux Basques and then northerly into the Gulf of St. Lawrence to Point Riche.



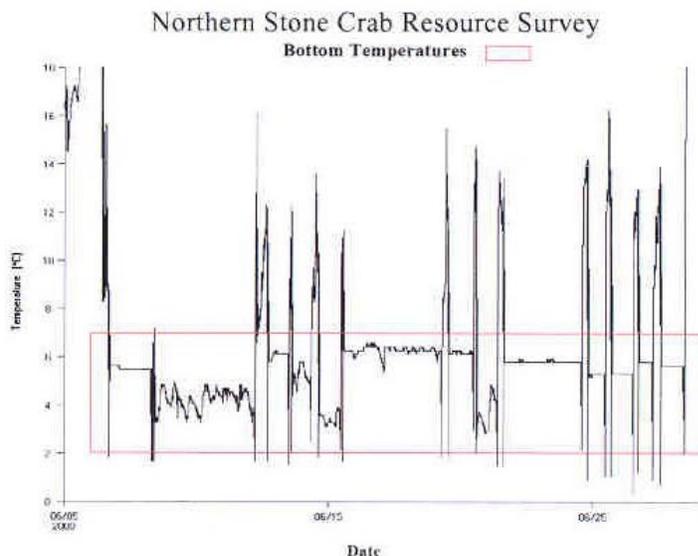
Results

A total of 2,513 pots were set and hauled yielding a catch of 1,074.5 lbs. of stone crab of which 809 lbs. was greater than 90 mm carapace width. The best catch recorded for one set of 150 pots was 144 lbs. of which 117 lbs. had a carapace width greater than 90 mm. In excess of 80% of the catch was comprised of hard shell male crab with an average carapace width of 96.7 mm and an average carapace width of 76.8 mm for the females. The largest male crab that was sampled had a carapace width of 122 mm and the largest female had 94 mm. The smallest male that was caught was 66 mm and the smallest female 64 mm carapace width. The most common defects were the absence of the right front claw and the last leg on the left side. In some specimens new growth of the large right front claw was observed and in one instance the large claw was on the left side.

To eliminate predation from sealice and hagfish the bait (squid) was placed in plastic bait jars.

By-catch species included toad crab, snow crab, skate, white hake and red fish.

During the survey the bottom temperatures were recorded using a temperature recorder. The data from the areas surveyed had bottom temperatures ranging from approximately 2°C to 7°C. According to Squires this species of crab is often found with *Pandalus borealis*, which prefer temperatures between 2°C and 6°C. This would indicate that the bottom temperature in the areas surveyed was within the range preferred by this species of crab.

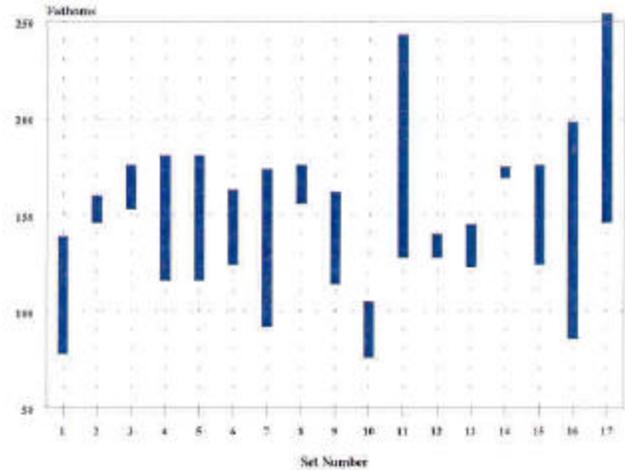


Conclusion

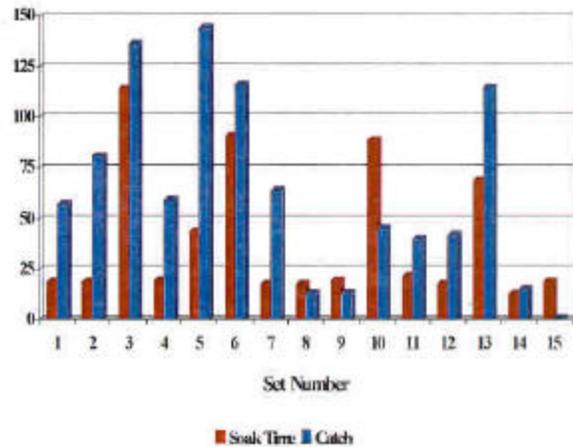
None of the sets resulted in a catch rate that approached the commercial potential of snow crab which is approximately 20 lbs per pot. Catches of up to 6 crab were retained in certain pots but this was without any degree of consistency.

Northern stone crab have been observed feeding aggressively (similar to snow crab) on squid, herring, mackerel, etc., during tank tests conducted at the Fisheries and Marine Institute. This confirms that the crab are attracted to the bait and these fishing trials indicated that they remain in the pots. It is therefore reasonable to assume that they would be retained by the pots in commercial quantities providing they inhabit the area in sufficient numbers. The survey showed that northern stone crab is widely distributed across a variety of bottom types and depths but that it is not abundant enough to be classified as a viable commercial fishery opportunity. This conclusion coincides with findings from several other surveys that have been initiated in the past in an attempt to develop a commercial fishery for this species.

Depth Range by Set



Soak Time (Hours) and Catch Rates (Pounds)



(End of 150 pbs)

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Set #	No. of Pots	Position		Stone Crab Catch Lbv.	Less Than 90 mm
		Latitude	Longitude		
1	74	47° 21'N	55° 55'W	40	5
2	74	47° 23'N	55° 57'W	17	1
3	71	47° 32'N	56° 21'W	40	19
4	74	47° 33'N	56° 24'W	41	14
5	75	47° 30'N	56° 24'W	81	19
6	75	47° 25'N	56° 33'W	51	4
7	75	47° 19'N	56° 42'W	45	15
8	75	47° 19'N	56° 57'W	1	
9	75	47° 09'N	57° 14'W	43	12
10	75	47° 29'N	57° 39'W	101	15
11	75	47° 30'N	57° 43'W	73	9
12	74	46° 59'N	57° 26'W	43	13
13	74	46° 39'N	57° 31'W	61	20
14	74	46° 47'N	57° 48'W	3	3
15	74	47° 02'N	58° 06'W	5	
16	74	47° 08'N	58° 18'W	8	2
17	74	47° 17'N	58° 27'W	3	2
18	74	47° 25'N	58° 49'W	10	
19	74	47° 27'N	59° 02'W	5	3
20	74	47° 26'N	59° 22'W	108	45
21	74	47° 30'N	59° 30'W	47	12
22	74	47° 38'N	59° 26'W	3.5	.5
23	74	47° 40'N	59° 30'W	23	3
24	74	47° 45'N	59° 26'W	19	1
25	74	48° 22'N	59° 53'W	49	9
26	74	48° 12'N	59° 54'W	66	6
27	74	48° 38'N	59° 55'W	12.5	.5
28	74	48° 53'N	59° 34'W	2	
29	73	49° 18'N	59° 32'W	3	
30	73	49° 17'N	59° 02'W	1	
31	73	49° 46'N	59° 26'W		
32	73	49° 50'N	59° 02'W	1	
33	73	50° 08'N	58° 40'W	5	
34	73	50° 17'N	58° 27'W	1	