FISHERIES DIVERSIFICATION PROGRAM

Emerging Fisheries Development

Project Summary: FDP 373 2002

Sea Urchin and Marine Plants
Resource Identification-Bay of Islands

Canada

Government of Newfoundland and Labrador
Background
The Bay of Islands South Shore Development Association serves the South Shore of the Bay of Islands and includes the communities of Mt. Moriah, Halfway Point, Benoit's Cove, John's Beach, Frenchman's Cove, York Harbour and Lark Harbour.

Based on consultation with local fishers the association decided to survey the sea urchin resource in the area to determine if there was enough suitable quality roe to sustain a commercial harvest. Funding was approved from Fisheries Diversification Program (FDP), to carry out a qualitative study of sea urchins and standing crop of marine plants in the Bay of Islands, including the outer islands and the Gulf entrance to the Bay.

This survey included 40 diving days and took place in July, August, September and December, 2002.

Survey Methodology
A contract was awarded to Mr. Paul Sheppard to supply a vessel which would be used as a base to conduct the surveys and provide transportation to and from the survey sites. Two divers and an at-sea tender were hired to conduct the surveys and record all information gathered. A researcher was responsible for structuring the study, analyzing the data collected and compiling information into a final report.

The 40-day study covered areas of the Bay of Islands, the outer islands and the Gulf entrance to the Bay of Islands. Potential sites were identified using chart #4653 with consideration given to anecdotal information from lobster and core fisher persons who have had the opportunity to view urchin locations.

The information for the study was collected through bottom diving by two local certified divers. Six tanks of compressed air were used daily with each diver spending approximately 4 hours per day in the water. All diving was done using a 40 ft boat and/or an 18 ft dory.

The quantitative sampling of sea urchins involved estimating the areal extent of the sea urchin bed with samples being taken and weights recorded. A minimum of 6 counts were done on each bed. All samples were taken from the feed line and within a 1 metre quantum. The areas surveyed were approximately 5 times the size of the feed line.

The qualitative sampling of sea urchin was conducted by taking samples from various locations within a bed and then randomly picking 6 urchins from this lot for further analysis. The analysis involved measuring urchin diameter, the roe yield and the roe color.

The quantitative sampling of marine plants included the taking and bulk weighing of various samples from designated sites. The samples were then sorted by species, weighed and recorded by geographical area.
Results

There were 49 sites surveyed for sea urchin from July to September. The harvestable urchin for these sites are estimated at 104,097 kg. This figure represents the harvestable urchins only. To achieve an approximate urchin biomass multiply the figure by 5. In December, 12 more sites were visited to determine if the roe percentage had increased. In July, the overall average roe yield for all 13 sample sites was 5.58%. Quality of the roe fell in grade B range with one site having A-B grade. The overall average roe yield for the 20 sample sites in August was 9.35%. The quality of roe was a grade B range with 2 sites having an A-B grade and 3 sites having B-C grade. In September, 16 sites revealed an overall roe yield of 7.69% with quality of roe falling into a B grade with 3 sites into B-C grade. From December 2 - 21, 12 sites revealed an average roe yield of 10.27% with a B grade including 2 sites which had a B-C grade.

Sampling during the study showed the average sea urchin test size to be 50 mm which falls within the commercial harvesting size limit. The urchins were found to be larger in the fall than earlier in the survey. During July, August and September there were 75 different entries for kelp identification. Five different kelps were recorded by date, bed location, GPS location and amounts taken for sample. Alaria esculenta was identified in 8 sites, with a total biomass of 29,226 kg. In 6 sites, 240,720 kg of Ascophyllum nodosum was documented. Chordus chripus was found in 11 sites with a biomass of 54,220 kg. Laminaria longicruris was estimated to be 595,841 kg from 17 sites. There were 13 sites having a total of 54,232 kg of Palmaria palmata and Sacchoriza dermatodea had a total estimated weight of 399,799 kg from 20 different sites.

It seems that the presence of Alaria esculenta, Laminaria longicruris, Palmaria palmata, Sacchoriza dermatodea and Chordus crispus are found to be good feed for the urchins. These kelps are located throughout most of the sites surveyed. It is reasonable to assume that with feed available for the sea urchin, and the quantity and quality of the sea urchins, this area would support sea urchin populations.
Conclusion

The Bay of Islands area of Newfoundland and Labrador has a sea urchin ecology similar to that found in other harvesting areas, and has the potential for the development of high value urchin beds. If this area has proper management it can support a sustainable harvest and create economic benefits for the harvesting sector, as well as provide marketable roe for processors.

Laminaria longicruris

Alaria eculenta