Introduction

For the past several years, attempts have been made to develop a whelk fishery around the province, with significant progress made in inshore areas on the Northern Peninsula. As a result, a whelk fishery and processing plant have been established in that part of the province. However, whelk does not appear to be as plentiful on the east and south coasts, and therefore, inshore areas, with the exception of a few small pockets, present fewer opportunities.

While close-to-shore, shallow water areas in southern parts of the province have been less than productive, a 10-day survey funded
through the Fisheries Diversification Program (FDP), was carried out in August 2001 by the Department of Fisheries and Aquaculture (DFA) on the northwest corner of St. Pierre Bank. This survey indicated that sufficient whelk was present in some areas to support a commercial fishery. It was for this reason that further work was done in 2002, with the main focus on landing a quality product. In this project, the emphasis was on onboard handling during a "trip" type fishery versus a "same day" fishery as is being conducted on the Northern Peninsula. Another objective of the project was to further examine the abundance and distribution of whelk in specific areas of St. Pierre Bank and to evaluate the economics of a "trip" type fishery.

**Methodology**

The fishing vessel, "Lone Venture", a 55' vessel owned by Brian Grandy, was selected through the public tender process to complete the project.

Following an approved fishing plan, the harvesting aspect of the project was completed between October 7 and October 10, 2002 on the northwest corner of St. Pierre Bank in the general area of 46° 30' N and 56° 56' W with fishing activity conducted in water depth ranges between 20 and 30 fathoms. Approximately 400 whelk pots were used during the project, with each haul recorded on appropriate log sheets. Bait consisted of skate bodies and cods heads.

Five hundred pounds of whelk samples were collected on each day fished (total of approximately 2,000 lbs from four fishing days) and recorded on data sheets supplied. Icing ratio guidelines and onboard handling were followed according to established protocol.

The daily 500 lb sample catch was divided into three lots. Samples were handled and iced as follows:

**Lot A**  Regular 'shrimp bag' bagged and iced (55 to 65 pounds of whelk per bag), or the regular onboard handling procedures now practised.

**Lot B**  'Shrimp bag' bagged, stacked in the hold, no ice applied on the day of harvest, but sprayed with clean seawater periodically to keep moist, and iced on the third day (i.e. whelk lot sample two days old before ice applied).

**Lot C**  Tote-boxed (approx. 80 pounds of whelk per box), covered with a 'shrimp bag(s)' and iced adequately to maintain 0° C to 4°C.

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**Bagged whelk before storage in hold**

**Boxed/bagged whelk handling comparison**
At-sea sampling for broken shell, information on air temperature range, surface water temperatures, fishhold temperature range at sea, and fishhold temperature upon arrival at dockside were also recorded. Sampling for liveliness, color, shell condition and size was carried out by a DFA Inspection Officer over a seven-day period, including the day the vessel landed.

**Results**

A total of 771 pot hauls were made and landings for the four-day trip totaled 11,713 lbs. The average catch rate during the project was around 15 lbs per pot, significantly better than 6.6 lbs/pot from a DFA project in 2001. The results were certainly positive and indicated excellent potential for an expanded commercial whelk fishery. However, soak times, location and pot types (i.e. more conical than Portzic) were different and were contributing factors for the difference in catch rates.

The main focus of the project was quality; specifically, how the whelk held up under various holding conditions. Temperature range fluctuations are shown in Table 1 and while some of these factors are impossible to control, there is a need to be cognizant of how it may impact on the quality of the landed product in the final analysis.

Checks done for broken/intact shell during the shelf life sampling in the onshore holding facility indicated 5% of the whelk sampled had some degree of broken shell after offloading. Length frequencies and color range were also noted. The highest percentage of whelk was in the 90 mm range while olive green was the predominant color.

The first mortalities were noted on October 11, 2002 from Lot B, or whelk not iced until three days after harvest. For Lots A and C, small numbers of dead whelk were found on the fourth day from harvest, with the number of mortalities increasing significantly for whelk more than four days old in all three Lots (Table 2). From a daily harvest analysis, it also appears that holding conditions onboard the vessel were conducive to extended shelf life. Whelk harvested on October 7 and 8, 2002, the first two days, iced immediately and held on the vessel for 2.5 and 3.5 days, did not start to die until the sixth and fifth day respectively. Whelk were found dead both retracted into and extended from the shell and gave off a distinctive decomposing odor with the meat having an off-yellowish/orange color. The odor was also present on live whelk that were in close proximity to the dead ones.

**Conclusions**

In the project fishing areas, whelk catch rates were considered to be excellent with evidence of significant abundance and distribution. On the northwest corner of St. Pierre Bank, there is good potential for a commercially viable whelk fishery at current prices of 35 to 39 cents per pound.
Chilling the product immediately after harvest is an important consideration in extending the shelf life of whelk. The shelf life for the properly iced whelk sample was approximately four days. However, all product four or more days old should be thoroughly checked before processing, even though some whelk were very resilient and alive with proper icing after five or six days. The numbers of mortalities rose sharply on the fifth and sixth day. Boxing did not appear to extend the shelf life of whelk, but inadequate icing appeared to accelerate the demise of whelk (Lot B whelk that were iced on the third day from time of harvest). With proper onboard handling, the at-sea shelf life of whelk should permit further development of a "trip" fishery of a two-to-three-day duration.

<table>
<thead>
<tr>
<th>Lot #</th>
<th>Lot A</th>
<th>Lot B</th>
<th>Lot C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days Old</td>
<td>Number of whelk in sample</td>
<td># Dead</td>
<td>% Dead</td>
</tr>
<tr>
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<td>30</td>
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</tr>
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<td>30</td>
<td>40</td>
</tr>
</tbody>
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Table 2 - Whelk Sampling Data Cumulative Summary

Department of Fisheries and Aquaculture
Government of Newfoundland and Labrador
P.O. Box 8700, St. John's, NF, A1B 4J6
Call: 709 729-3732 / Fax: 709 729-6082
Web: http://www.gov.nf.ca/fishaq/FDP
(Or a DFA Regional Office near you)

The $10 million Fisheries Diversification Program is part of the $81.5 million Canada-Newfoundland Agreement Respecting the Economic Development Component of the Canadian Fisheries Adjustment and Restructuring Initiative.