Whelk (Bacinum undatum) is a species of shellfish long recognized as an extra source of income in some rural areas of Newfoundland and Labrador. The Great Northern Peninsula usually sees the greatest effort and annual catch rates there can top 200,000 lbs.

At present, Newfoundland and Labrador supplies only a very small percentage of the world demand for whelk. Processors cannot secure from whelk harvesters enough product to supply constant market demands due to low prices.

However, as this fishery develops and markets become stable, it is anticipated the demand for the product will increase and, with it, prices.

Based on feedback from the whelk industry, this project was funded by the Fisheries Diversification Program to construct and test a new type of conical pot for the whelk fishery among the most active whelk fishing communities in the Province. Newly designed conical pots were built and distributed to whelk fishers in communities between Cook’s Harbour and Englee on the Great Northern Peninsula who fished the new whelk pots through the 2000 season.

Whelk is the common name applied to marine gastropods, also known as sea snails. The common northern whelk has a thick, spiral shell, usually about 7.5 to 15 cm (3” to 6”) in length, with a wide opening and ridged whorls. Whelk is found in low water to a depth of some 180 fathoms. It is carnivorous and it grasps its food with its foot. Its mouth is toothed and capable of boring holes in the shells of mollusks on which it preys.

Whelk has been harvested for many years using a variety of trap designs and bait. Traditionally, small, twine, conical pots known as ‘Korean pots’, and homemade pots made
from converting plastic tubs and buckets, were used to harvest the delicacy.

In 1996, the Department of Fisheries and Aquaculture (DFA) introduced the English plastic pot, or portzic pot, at a cost of $60 per unit. Even though this type of gear resulted in improved catch rates, the cost was triple that of the traditional pots such as modified tubs or buckets, and conical, twine pots which were available for $20 per unit.

Therefore, it was the aim of this DFA-initiated project to design a type of gear that would match the cost of the less-expensive, traditional pots, while striving for the improved catch rates of the portzic pot.

Furthermore, it was felt that by designing a stackable pot, a greater quantity of gear could be transported to whelk fishing areas, thereby increasing overall landings. It was anticipated that these developments would encourage greater involvement in the whelk fishery.

In 1999, there were 1,246 core and 18 non-core enterprises licensed to fish whelk in Newfoundland and Labrador, although less than 20% were actually active in the fishery. A license entitles an enterprise to fish up to 500 pots in a specific whelk fishing area at any time throughout the year.

Methodology

A contract for the construction of the conical whelk pots was awarded to Linhav Ltd. of Harbour Grace. A schematic drawing and specifications were provided to the company which included a 15mm metal ring at the top with a diameter of 15” and a 15mm metal ring at the bottom with a diameter of 21”. The sides were to be constructed of a standard conical crab pot entrance cone. A ring was attached at the top and bottom of the cone. A netting entrance was attached to the top and the bottom was also netting with a pull string to allow bottom opening for stacking purposes and removal of catches.

Upon the completion of the construction phase, the pots were transported to E.J Green & Co. Ltd. in Conche, the industry partner in this project. The pots were disbursed to harvesters selected on the basis of criteria established by representatives of the Department of Fisheries and Aquaculture and E. J. Green & Co. Ltd.

Harvesters were chosen based on several factors, including their effort in the fishery over the past several years, interest expressed for the year 2000, the area to be fished, the number of fishers in an area, and vessel size.

Catch data sheets were provided with the whelk pots. These sheets were completed by the harvester for every day fished and submitted on a regular basis. The catch data sheets recorded the following information: date, area fished, number of pots, total landings, average per pot, size (inches), depth (fathoms), bait, soak time and comments.

The pattern employed to set the gear - separately or in strings - was at the discretion of the harvesters depending on their traditional fishing patterns.

Initial trials illustrated a design problem in the conical pots which caused them to turn
upside down as they were passing down through the water column.

This problem was rectified by securing small floater buoys to the top of the pots and, in some cases, using larger attachment lines.

**Results**

Seventeen of the twenty-seven fishers initially chosen to participate in the project utilized the pots and reported landings for the year ranging from 3,500 to 33,000 lbs. All fishing activity occurred between June 26 and October 27, 2000.

The main baits used were herring and mackerel. Some turbot and sculpin were also used. The data submitted suggested that the amount of bait used per pot would greatly affect catches. Volumes of four to five lbs. would produce much larger catches than that being obtained using the traditional one to two lbs. of bait per pot.

Pots were set in water depths ranging from two to 17 fms. with most activity occurring in three to seven fms. The soak times were one or two days with extended periods occurring when weather conditions prevented safe harvesting.

The average catch was between one to six and a half lbs. per pot with most catches being three to five lbs. Harvester suggested the quantities of whelk harvested varied greatly from pot to pot and, generally, was dependent on the bottom substrate upon which the whelk pots were set.

It was not uncommon for some pots to yield over 30 lbs. while other pots hauled on the same day were empty.

Many harvesters noted that pots set as a single unit, as opposed to being set in strings, produced better catch rates. The major bycatch was rock, toad and snow crab, and sea urchin.

**Analysis**

The introduction of newly designed whelk pots and the resulting increased fishing activity was the major reason for a 36.8% increase in landings of whelk on the Great Northern Peninsula in 2000.

The stability of the conical pot allowed fishers to extend the areas fished to deeper and more turbulent waters while their stackability enabled vessels to carry more. The relatively light weight of the pots, as compared to buckets, enabled the hauling and setting of the gear to be accomplished more quickly.

The final project report included the following comments:

- The new pots appeared to fish better than traditional types in areas with strong ocean currents;
- The conical pots may have been even more efficient in these ocean conditions if the pots did not have floats attached;
The floats caused the pots to become more buoyant and thus less stable when sitting on the ocean floor;

- Buckets fished better in rocky bottom areas;
- The pots were built too lightly;
- More ties should have been used to secure the cone to the rings;
- The pots did not fish as well after the metal rings began to rust;
- The conical pots were more efficient at holding whelk over extended soak times; and,
- When weather did not allow the regular hauling of the gear, whelk would crawl out of traditional gear once all the bait was completely consumed.

Conclusions

The increased landings of whelk on the Northern Peninsula in 2000 resulted in the following significant economic benefits for the area and the entire Province:

- There was a direct increase in revenue to whelk harvesters of 36.8% over 1999.
- The whelk processing facility in Conche, E.J. Green & Co. Ltd., was operating for a total of 21 weeks, employing 13 workers.
- New money was spent on fishing necessities such as bait, fuel, gear (rope and buoys) and maintenance of gear and vessels.
- The collection and transportation of the whelk from various locations created increased employment for those involved in trucking.

- The construction of 5,000 whelk pots for this project at Linhav Ltd., Harbour Grace, created factory employment.

If further resources of whelk can be harvested, it might be beneficial to the incomes of harvesters in the small-boat fishery (<35') who have been adversely affected by the downturn in other areas of the fishery.

Therefore, further research is required to identify new inshore areas throughout the Province which have whelk resources. Also, the considerable potential of the nearshore and offshore biomass should be pursued.

Consequently, these new whelk pots will continue to be utilized to conduct DFA exploratory surveys, as well as to support the developing whelk fishery on the Northern Peninsula.