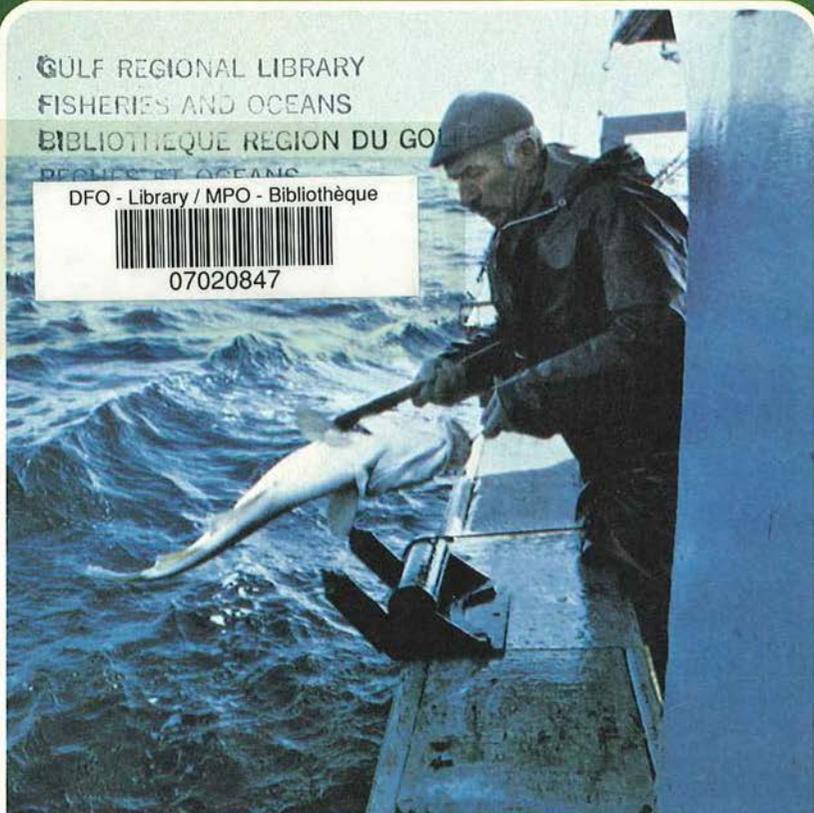


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Fishing Gear and Equipment No.1

The Newfoundland Longline Fishery



 **Canada** 

This brochure is one of a series being produced on fishing gear and equipment used in the Newfoundland fishery.

Although this brochure was primarily produced for the benefit of fishermen in Newfoundland and Labrador, the information contained in it may also be applicable to fishermen in other areas of Atlantic Canada.

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DECEMBER 1983



Fishing Gear and Equipment No. 1

The Newfoundland Longline Fishery

Longline gear has been used for centuries in Newfoundland and Labrador with little or no change. A modern fishery, however, demands ever greater operating efficiency.

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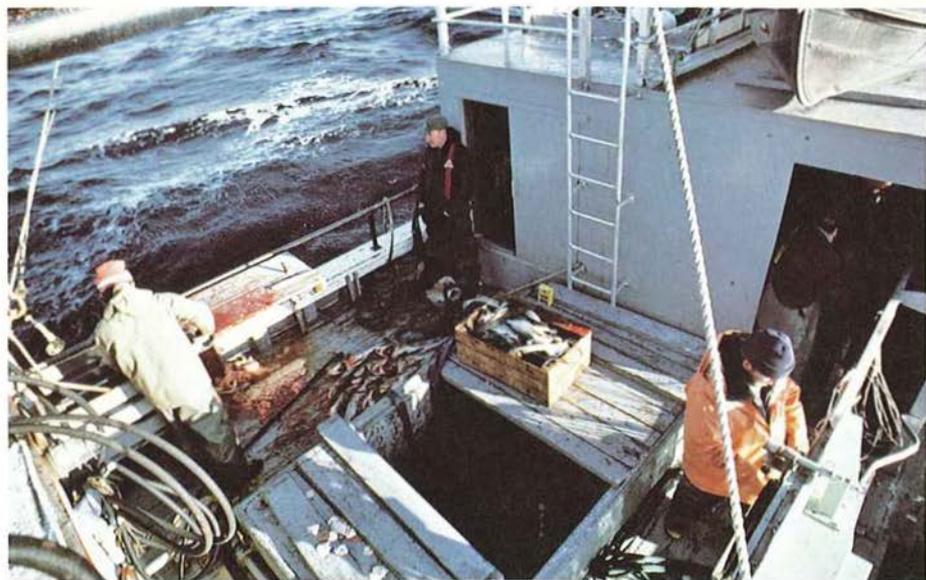
- Quality by hook and line.**
- Modern developments.**
- The "Mustad" auto-line system.**
- Random balters.**
- Gang balter.**



Quality by Hook and Line

The emphasis in today's cod fishery is on quality. It is generally recognized that cod taken by hook and line are a basis for production of premium fish. From the late 1400's until the mid 1800's hook and line was the predominant fishery in Newfoundland. The cod trap was invented in 1865 and from then until the late 1950's, these two methods were the mainstay of the Newfoundland fishery. The basic hook and line fishery changed little over the years. Eventually, sail and oars were replaced by motors. In the early 1950's the development of the "longliner", capable of fishing further offshore and equipped with mechanical hauling devices, resulted in the greatest change in the longline fishery. Variations of these boats are the mainstay of today's fishing fleet.

By the 1960's, a decline in cod stocks and the introduction of synthetic gillnets capable of taking other groundfish species as well as cod, resulted in a move away from the hook and line fishery. Gillnets produced more fish for less effort, and the trend away from hook and line spread over much of the province, with the exception of the southwest coast. Despite problems with product quality, increasing costs, and concern over conservation of fish stocks (ghost fishing), gillnets remained the most commonly used fishing gear in Newfoundland and Labrador throughout the sixties and into the eighties.



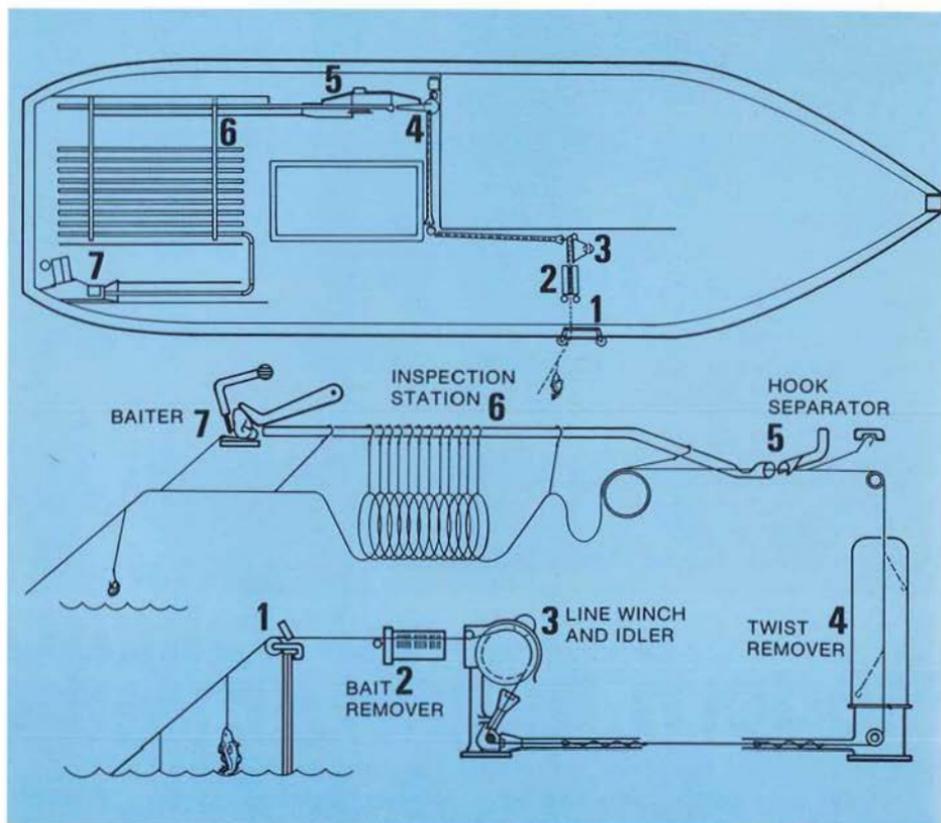
Modern Developments

In the early 1970's, the Fisheries Development Branch of the Department of Fisheries and Oceans, recognizing major problems in the gillnet fishery, began to look for alternative fishing methods. It was felt that if a mechanical means of baiting hooks could be developed, fishermen would be interested in returning to the hook and line fishery. It was hoped that this would reduce harvesting costs and increase the quality and value of fish landed.

In 1974, two 120-foot former Scandinavian purse seiners and one 58' Newfoundland longliner were rigged with early versions of the

Mustad autoline system. Fishing results were encouraging but the systems needed further refinements to make them acceptable for use in the Newfoundland fishery.

In 1978, the 124-foot Norwegian vessel "SYNSRAND", equipped with an improved system, was chartered for September and October. The boat completed four ten-day fishing trips, and on one trip over 200,000 lbs. of cod were landed. Eleven Newfoundland fishermen worked aboard the "SYNSRAND" as observers, all of them were impressed by the Mustad System.



The "Mustad" Autoline System

Over the past 15 years, O. Mustad and Son Ltd. has developed and perfected this system. The system uses a normal line hauler. The returning lines and hooks pass through a machine, which removes any bait still present. Then the lines cross the deck in a guide tube, which protects the crew from loose hooks. Next the lines enter a twist remover, which unravels the snoods from the ground line. A separator separates the

hooks from the ground line and guides and positions each hook onto a magazine. Damaged gear is inspected and repaired by crew members. The lines are then ready for shooting. With the vessel moving ahead at speeds of up to ten knots, the high-flyer and buoy line, which are attached to the ground line, are launched. The resistance of the buoy and rope in the water pulls the hooks through the baiting machine. The baiting machine



THE M/V "GARY MICHAEL", AN AUTOLINER-PURSE SEINER

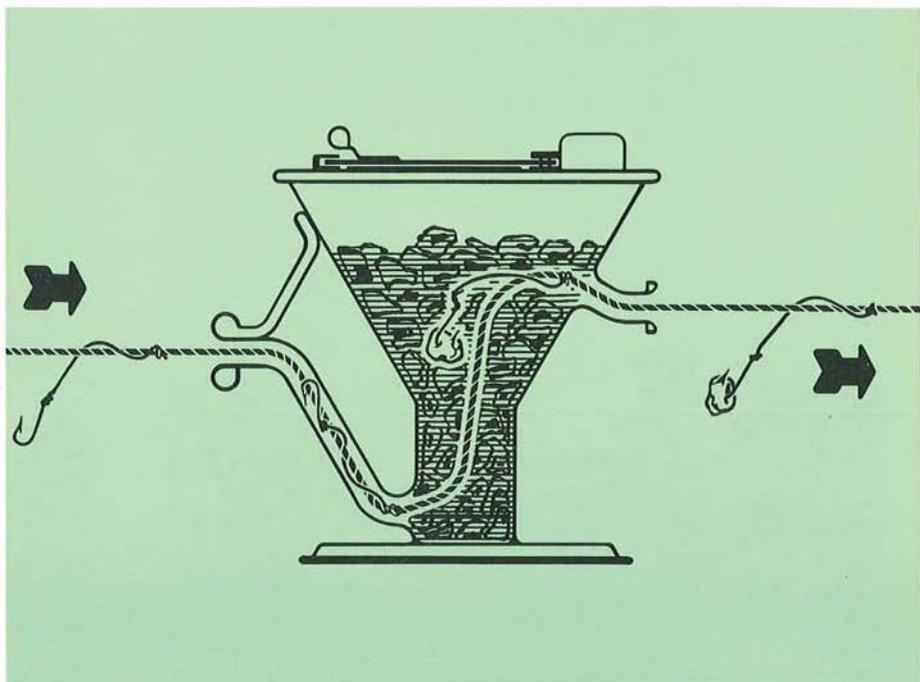
operator feeds uncut bait (usually mackerel or squid) into the baiter. Each hook activates the baiting machine, which cuts the bait to uniform size and holds each piece in position until the hook is double baited.

In 1979, the M/V's "HARMON 1" and "HARMON 11" were rigged with the Mustad system. Although the first year of operation was poor, catches improved in 1980 and they had a good year in 1981.

In 1980, the Fisheries Development Branch purchased a 15,000-hook Mustad system and installed it in a 3 meter by 4 meter aluminum container. The containerized system can be placed on, or taken off a boat in 24 hours, giving fishermen the versatility, important in our fishery. The system was placed aboard the 58-foot

Newfoundland longliner "GARY MICHAEL". After 3 years using the system, Skipper Andrew Hann is very pleased with both the Mustad autoline system and the fact that with the containerized approach, he can switch from longlining to purse seining quickly and his crew can work in safer, more comfortable conditions.

Despite the proven operating efficiency and effectiveness of the Mustad System, it is not widely used in the Newfoundland fishery. The major reason appears to be that the system is expensive and difficult to justify given the seasonal nature of the inshore fishery.



Random Baiters

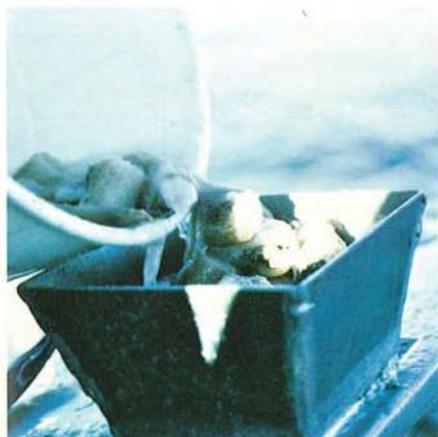
A simpler approach to the hand baiting problem was developed by three Newfoundland fishermen from Fogo Island. The Gill brothers felt that if they could bait effectively, they could continue to longline in the traditional way. They experimented and developed a simple random baiter which was less expensive than either the selective Mustad baiter or existing random baiters developed outside of Newfoundland.

The Gill baiter was the prototype for a number of random baiters developed in Newfoundland. The C & W Baiter System, the Burry Easy Slide System, and the Bruce Baiter System are examples of variations of the

random baiting concept as developed by the Gill brothers. Operation of the random baiter is very simple. The ground line and hooks are passed through a hopper that is filled with bait. As the hooks move through the hopper they snag pieces of bait and proceed through an exit tube into the water. The bait is placed into the hopper from the top and gravity applies enough pressure to ensure that the hooks snag the bait. The ground line and snoods are prepared for baiting in racks or trays. The hooks and line are pulled through the baiter by the drag created by the high-flyer and anchor buoy, and the steaming of the boat.



SHOOTING THE LINES



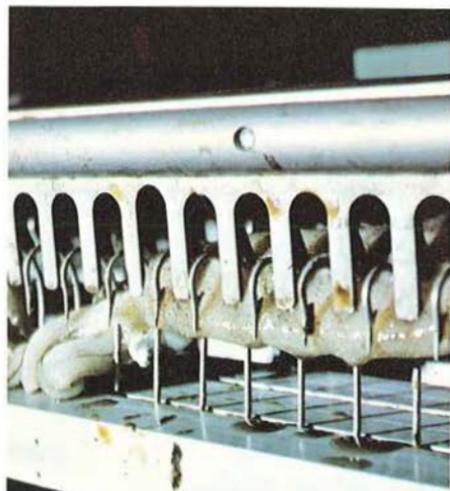
SQUID PROVED TO BE
A MOST EFFECTIVE BAIT

Gangbaiter

In the last few years random baiters have been used with limited success throughout Newfoundland, but many fishermen feel that the failure of the system to duplicate the double-baited technique of hand baiting is a serious drawback. To overcome this obstacle, the Fisheries Development Branch has been working with a design group to produce a mechanical gang baiter which would not only bait efficiently and quickly, but also reproduce the double-baited technique of hand baiting, be affordable to hook and line fishermen and withstand the rigors of longline operations throughout the region. Designing a machine to bait a hook as well as the human hand can do it proved difficult but not impossible.



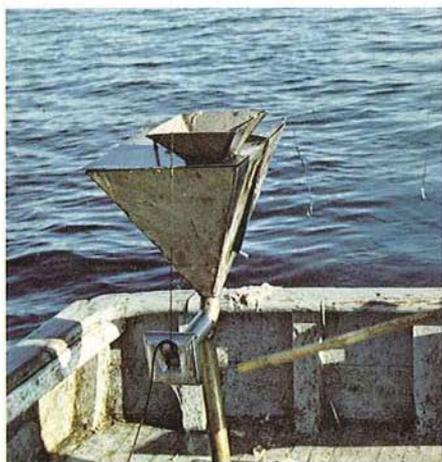
**ROLLING THE BAIT
ONTO THE HOOKS**



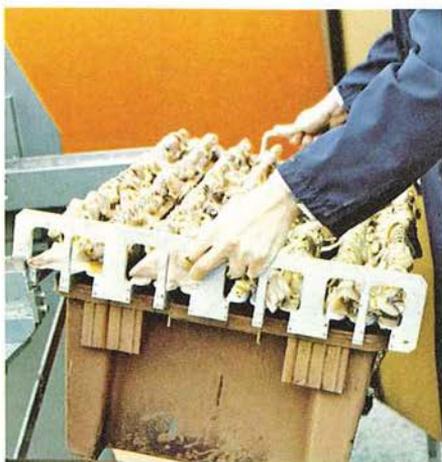
**BAITED HOOKS
READY FOR CUTTING**

The result of design experiments was a longline system consisting of a mechanical baiter, hook racks, modified hooks and storage boxes. The loaded hook racks, attached to the storage box, which houses the main line and snoods, is put in place on the baiting machine. Uncut bait (squid, mackerel, herring) is laid in place on the baiting head under the rows of hooks. Turning the rotating arm of the baiter rotates the bait up and over onto the hook in such a way that the hooks pass through the bait twice, double baiting each hook. A set of cutters is then moved across the bait, slicing it into individual pieces on the hooks. Half the hooks on the rack are now baited. Next the rack is removed, rotated horizontally through 180° and replaced, and the process is repeated, baiting the rest of the hooks.

The present racks hold 300 modified hooks and the machine baits 150 hooks at a time. The baited hooks, racks and storage boxes are taken aboard the longliner and readied for setting. As the line is hauled, the fish are removed and the hooks are checked, cleaned and replaced in the rack, ready to be re-baited. The system can be used as a shore set-up shared by a number of fishermen, or as an onboard operation.



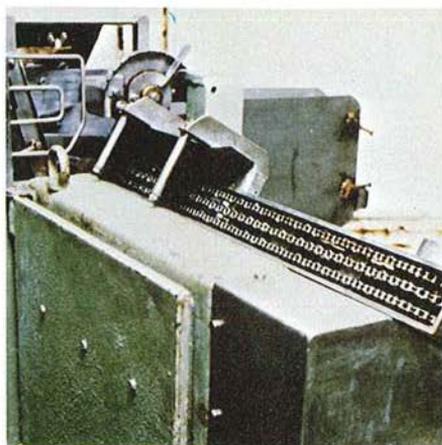
RANDOM BAITER



GANG BAITER

Conclusion

The hook and line fishery produces a top quality, high value product. The Fisheries Development Branch of Department of Fisheries and Oceans feels that it is advisable to increase use of longlines and has put considerable effort into developing the technology required to make this type of fishery viable. This booklet provides an overview of developments to date.



AUTOMATIC BAITER



Fisheries
and Oceans

Pêches
et Océans
