

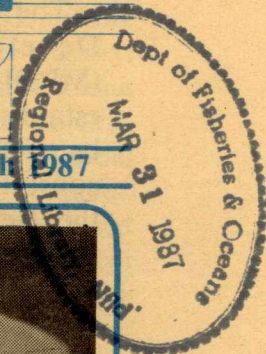
Regional Library  
Northwest Atlantic Fisheries Centre  
Fisheries and Oceans  
P.O. Box 5667  
St. John's, Nfld.  
A1C 5X1



Fisheries and Oceans / Pêches et Océans

**"The Gulf Region's Newsletter"**  
(Français au verso)

Canada Post / Pêches Canada  
Third class / Troisième classe  
8226



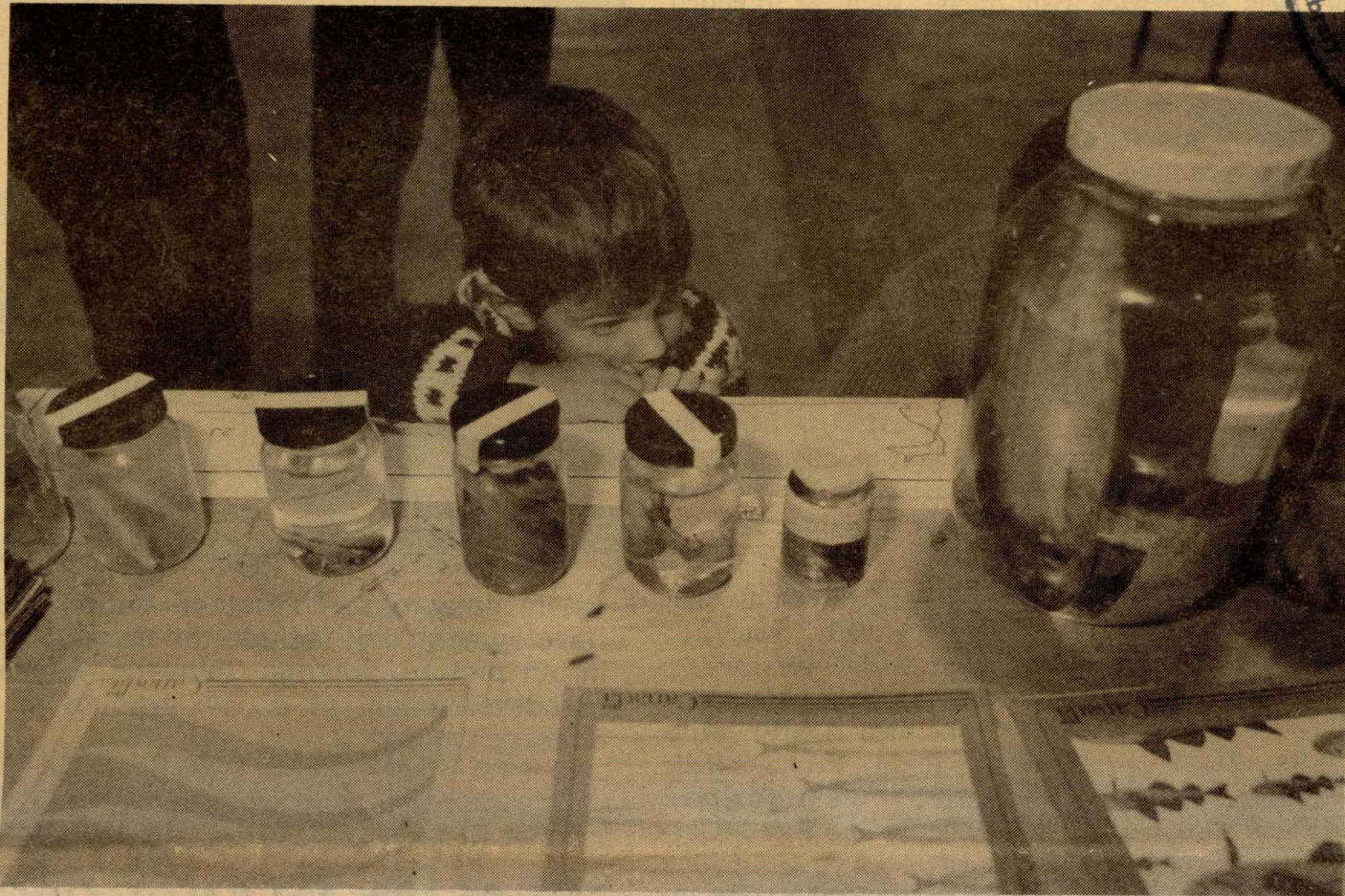
Volume 3 Number 4

February - March 1987

**ADVISORY MEETINGS ON HERRING FISHERY PAGE 8**

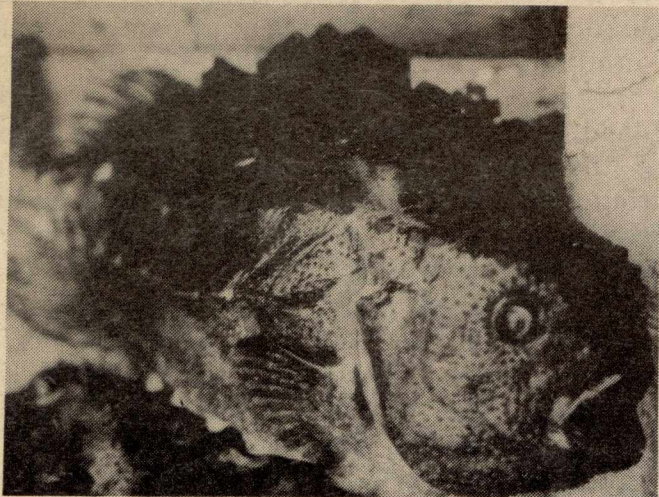
**HISTORY OF THE LOBSTER FISHERY PAGE 4**

**HOW MANY FISH PAGE 5**



**IS IT ALIVE?**

An interested visitor looks over a gaspareau and other exhibits at the DF0 information booth during the Humber Valley (Nfld.) Fall Fair. Hundreds of people took advantage of the opportunity to learn more about the fishery and to pick-up seafood cookbooks or brochures on various aspects of the fisheries. The question most asked by the younger visitors with regard to preserved exhibits is: "Is it alive?" Other popular questions are: "Can they hurt you?" and "How big do they grow?" or "How much can it eat?". (Photo Keith Piercey)



**NO RAVING BEAUTY**

Even though lumpfish are no raving beauties, certain Western Newfoundland fishermen have fallen in love with them. While the cod fishery was called a failure, many inshore fishermen turned to the lumpfish fishery where the roe was selling for 45 cents to \$1.00 a pound. See our article on page 3. (Photo Keith Piercey)



**MIDDLE DISTANCE GROUND FISH FLEET WORKSHOP**

The middle distance Atlantic groundfish fleet (65' - 100') faces a certain number of difficulties which were discussed during a workshop held in Moncton last November 25-27. In our picture, some of the participants concentrate on the discussions during the workshop. See our article on page 2. (Photo Maurice Landry)

# THE MARINE PRODUCTS DEVELOPMENT UNIT

by **Maurice Landry** shrimp fine meat prepared with various types of equipment etc.

The Marine Products Development Unit (MPDU), a new service established in 1986, will be offering technical and consultancy services to the New Brunswick fish processing industry. The MPDU, a non-profit organization, is located on the Université de Moncton campus. It is associated with the Food Research Centre, which in turn is affiliated with the Canadian Institute for Research on Regional Development.

The objective of the Marine Products Development Unit is to offer technical assistance to New Brunswick marine product processing plants for the diversification of existing products and the improvement of processing methods to make them more cost-efficient and effective. "We try to make New Brunswick processing plants more efficient by improving and diversifying the products they process to enable them to increase their market share and profit margin" stated Auréa Cormier, director of the Food Research Centre, who will be heading the Marine Products Development Unit and acting as senior consultant for the Unit.

New Brunswick processing companies are invited to propose marine product development and research projects in which the MPDU could participate. The unit has already begun to work with some plants in the province. For example, it has begun a study on the storage life of marine products by observing microbe counts. This involves observing the development of microbial flora on fresh fillets treated with anti-microbial agents; studying clam liquid to assess its microbiological safety; studying coliform levels in lobster and

In addition, research has been done on the development of new products, such as breaded fillets made from frozen and sliced fish blocks, lobster and shrimp paste with an ideal texture and colour, as well as new crab-based products.

The MPDU has undertaken other projects, including a study of consumer reaction to lobster meat in glass jars, a study of the effect of freezing on clam quality, a study on the shelf life of new marine products, etc.

Among the plants that have already benefited from MPDU services are the United Maritime Fishermen (UMF), Mills Sea Foods, Produits Belle Baie, Westmorland Fisheries and R & G Cormier. All New Brunswick processing plants are invited to submit projects the MPDU could take part in. The share of costs paid by the company itself is based on the value of its sales the previous year, so as to encourage the participation of smaller companies that often have less resources available for research and development.

This service is funded under the Subsidiary Agreement on Fisheries Development - a program jointly administered by the Federal Department of Fisheries and Oceans and the New Brunswick Department of Fisheries - in cooperation with the Université de Moncton and the Canadian Institute for Research on Regional Development.

For additional information on the Marine Products Development Unit, please contact Auréa Cormier, Director of the Food Research Centre, Centre universitaire de Moncton, Moncton, N.B. E1A 3E9. Tel.: (506) 858-4284.



The many research projects undertaken by the Marine Products Development Unit include the development of new fish products. In our picture, Solange Chiasson, Research Assistant, works on the development of a new product in one of the labs. (Photo Maurice Landry)

## WORKSHOP ON THE FUTURE OF THE 65-100' ATLANTIC GROUND FISH FLEET

by **Maurice Landry**

Participants at the workshop on the future of the 65-100' Atlantic groundfish fleet have shown interest in exploring the alternative of enterprise allocations, if such a measure would help this fleet become more profitable. Enterprise allocations are quotas allocated to each individual vessel or company, which are divisible and/or transferable between companies and vessels. This workshop was held in Moncton last November 25-27 with representatives of the Department of Fisheries and Oceans (DFO), the five Atlantic provinces, as well as fishermen and their organizations.

The 65-100' fleet, the middle distance fleet, is characterized by its diverse fishing activities. Different segments of the fleet are active in the shrimp, crab, swordfish or halibut fisheries as well as in the traditional groundfish fisheries such

as redfish, cod, haddock and pollock.

The groundfish middle distance fleet is composed of 62 vessels of which 21 have their home port in New Brunswick, 17 in Nova Scotia, 15 in Quebec, 5 in Newfoundland and 4 in Prince Edward Island. The average age of the middle distance groundfish fleet is 19 years and consequently, many vessel owners will likely have to replace or refurbish these vessels in order to remain active in the fishery. The replacement of vessels in this fleet comes at a very difficult time since many of the stocks fished traditionally have declined. Except for redfish and turbot, the fishing effort on these stocks is unlikely to increase. On this point, everyone was unanimous: the current allocations are insufficient to allow the replacement of existing fishing units.

Participants to the

workshop generally agreed that existing management tools were adequate to conserve the resource. However, they also expressed the point of view that existing quotas provide insufficient financial returns. Some of the reasons given: by the Gulf fleet the twelve-mile limit from which the middle distance fleet is excluded favours vessels under 65 feet and the presence of vessels over 100 feet in the Gulf is detrimental to the middle distance fleet.

One of the suggested options to improve the current management regime would be to allocate cod specifically for the middle distance fleet in 4T (Southern Gulf). However, no specific amounts were advanced for such an allocation.

The group concluded that this discussion should await a future Gulf Groundfish Ad-

(continued on page 8)

# LUMPFISH - NO RAVING BEAUTY, BUT A MONEY MAKER!

by Keith Piercey

While the Lumpfish (*Cyclopterus Lumpus*) will win no awards for its looks, it is proving to be the most attractive thing a lot of Western Newfoundland fishermen have seen this season. With the cod fishery termed a failure in many parts of Newfoundland, a good many fishermen turned to this species this past summer to supplement an otherwise dismal income.

According to "Underwater World", the Lumpfish is primarily a bottom dwelling fish, inhabiting rocky and stoney bottom areas. In general, lumpfish like and seek deepshore and offshore waters of low temperatures; certainly a good reason to find them around the shores of Newfoundland.

Lumpfish like rocky bottoms for spawning. With the abundance of such underwater terrain on Newfoundland's West Coast, the arrival of the "Lumps", as they are known locally, has created increased interest among fishermen.

"Lumps" are fished with lumpfish webbs. These gillnets have a 28 cm mesh size and are about 50 fathoms in length. Initial cost is about \$20.00 per net. The nets are set up on the bottom where the lumpfish likes to meander, attaching itself to the rocks among the seaweeds by means of a suction-like cup located between the pelvic fins. Because the lumpfish return to the same spawning area each year, fishermen can take advantage of this feature to set their nets in the same general location.

The lumpfish is not fished for its flesh, but rather for its eggs. Most of the catch ends up as food for gulls, but a small portion is used in the production of fishmeal. In Europe, the major market for lump roe or caviar, a small bot-

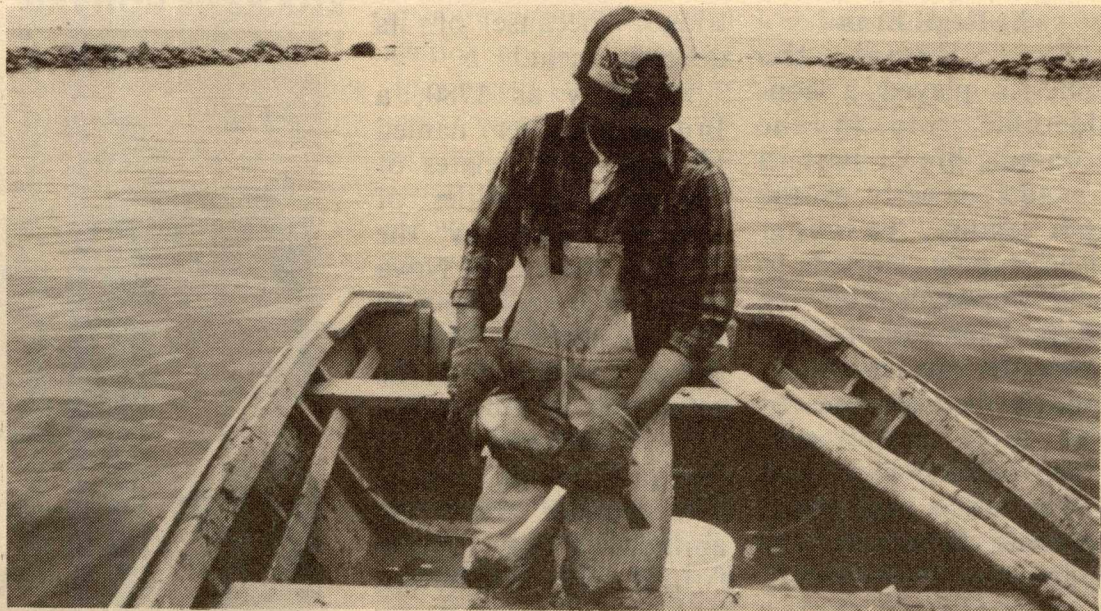
tle of one or two ounces fetches several dollars. On the local market, the price remained fairly steady until this year when it jumped from a five year average of thirty-four cents a pound to anywhere from forty-five cents to one dollar per pound. Most buyers this year paid seventy-five cents on the average.

With such a poor inshore cod fishery, any fisherman lucky enough to take a good lumpfish catch could make a fair dollar. In fact, one fisherman who stopped by the Corner Brook office stated that he had taken 10,000 pounds in three weeks. At seventy-five cents on the average, that meant a substantial boost in his personal income. He also said that instead of confining his effort close to shore, he had set up webbs at various distances from shore and has enjoyed good success. At the time he was fishing, he said most of the others had stopped because the roe was becoming "watery". Perhaps the lumps he had taken further from shore had not yet reached the state of maturity of those close in. Purely speculation, but food for thought.

## PROCESSING THE ROE

As far as the journey-to-market trip is concerned, the procedure is basically as follows, according to a survey done by Dave McLennon, Fish Quality Specialist at DFO, Port aux Basques.

The roe is removed from the fish by making a half-circle-like cut a couple of inches behind the pelvic fin from one side to the other. The roe and roe sac is simply dropped into any suitable container available, such as a five-gallon plastic pail. An effort is made to get the roe to the nearest buyer as soon as possible. After about twenty-four to forty-eight hours the roe begins to deteriorate



An inshore fisherman at Three Mile Rock, on Newfoundland's Northern Peninsula, is about to remove the roe from a freshly caught lumpfish. (Photo Keith Piercey)

and must be disposed of.

The processor drains and weighs the roe. The viscera is removed by a rotating screen in which the roe drops through holes into containers where it is washed in a 5% brine solution to remove any slub or blood. It is then drained on stainless steel screens to remove the water.

The roe is then prepared for storage by mixing 231 lbs. of roe with 30 lbs. of fine salt and 6 ozs. of sodium benzoate, used as a colour preservative. It is then packed in plastic barrels with an 80% brine solution. The barrels are rolled once per day for at least seven days and cured for fourteen to twenty-one days after packing, at a temperature of 35°F to 40°F and then at a temperature of 32-35°F until shipment.

As with any seafood prepared for export, it must be inspected for compliance with Government Fish Inspection Regulations before an export permit is issued. Most of the roe prepared in Western Newfoundland is shipped to Europe via Halifax on container ships where it goes through its final stage of preparation as Lumpfish Roe Caviar in West Germany.

A study carried out by the Provincial Fisheries Department in 1982

recommended that secondary processing be evaluated so that instead of the roe leaving the Island unfinished, it be shipped as a final product. The transition from a seventy-five cents per pound item to one worth several dollars for a two-ounce jar is one that should be seriously investigated.

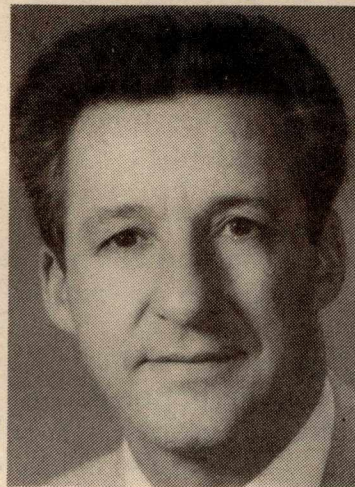
It is interesting to note that the recent Royal Commission studying Newfoundland's on-the-shelf commodity.

unemployment and employment problem, recommended the establishment of small industry based operations and one of those cited was final product roe processing.

The fishery appears to have a future. How it progresses will depend on how much effort the stock can withstand and how far processors are prepared to investigate an

## NEW DIRECTOR GENERAL

by Maurice Landry



On November 19, 1986, Dr. Peter Meyboom, DFO's Deputy Minister, nominated Mr. Eugene Niles as Director General of the Gulf Region. Mr. Niles replaces Mr. Jean-Eudes Hache who has been appointed Director General of the Scotia Fundy Region. Currently residing in Cap-Pele, N.B., Mr. Niles previously held the position of

Regional Executive Officer, Atlantic Region, with Correctional Service Canada.

Mr. Niles sees his new job as a challenge he could not resist when the opportunity came. "Even though my roots are in the Maritimes, I was not hired because I am a fishing expert or a fisherman," he admits. "I was hired because I have some managerial skills that I have developed over the years, and I have learned that to be an effective manager, I have to depend on delegation to those specialists within the system," said Mr. Niles. "My job is to provide the minister and the government with the best possible advice based on the input from my staff, the industry and the fishermen," he added.

# THE LOBSTER FISHERY

## FROM THE 16TH CENTURY TO THE 1870s

by Régis Brun

Even though the fisheries played a considerable role in the economic life of Eastern Canada as early as the 16th century, the lobster fishery only started to gain importance in the 1850s. Even with this late start, the lobster fishery quickly became one of the most important. "The Lobster fishery in 1898 was the most valuable fishery in the Maritime Provinces," wrote the historian DeWolf. "It had become the most valuable fishery in Prince Edward Island and New Brunswick during the 1890s and, about 1900, the value of the lobster fishery, to Nova Scotia, surpassed that of the cod."

### FROM THE 16TH TO THE 18TH CENTURY

One of the oldest mentions of the capture and eating of lobster dates back to the voyage of the British captain Anthony Parkhurst to Newfoundland in 1578. His ship, the *Chancewell*, belonged to a consortium of London merchants competing with Basque, Breton and French merchants for the control of the rich fishing banks in the Gulf of Saint Lawrence. He wrote in his logbook that his men, using eel spears, caught "in less than half a day lobsters sufficient to feed 300 men for a day's meat." The first reference to catching and eating lobster in the Maritimes dates back to 1606-1607. Marc Lescarbot, one of Samuel de Champlain's companions, wrote that lobsters were so abundant near the rocks at Port Royal that they could be caught without the help of boats or nets. Having arrived on the shores of Acadia in 1636, Nicolas Denys, who operated permanent fishing posts in Cape Breton and New Brunswick, spoke with high esteem of lobster which he called "sea par-

tridge" because of its delicious meat.

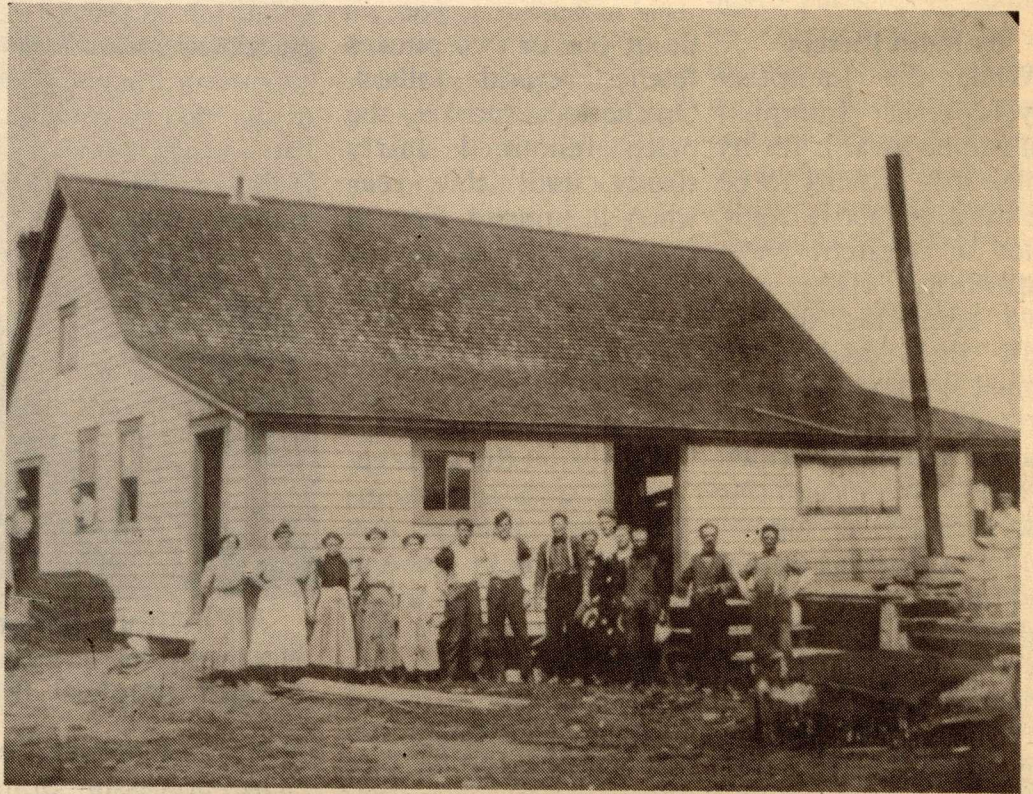
As early as 1780, a British traveller named Hollingsworth relates of the great quantities of lobster caught by the Micmac Indians of Nova Scotia who sold them to English settlers. This is the first reference to the actual sale of lobster.

Two eyewitnesses of the last century spoke with wonder about the abundance of lobster found on Maritime beaches following heavy storms. While in Caraque for a visit of his diocese in 1811, Msgr. Plessis, Bishop of Quebec, wrote in his journal that lobsters were so abundant following a storm the beach was covered with them over a distance of several kilometers. Following the great storm of August 1873, a Shippagan (N.B.) lobster processor reported that rows of lobster from one to five feet deep had been thrown on shore by the waves and estimated there was an average of one thousand lobsters per two yards of beach.

### ORIGINS OF THE COMMERCIAL FISHERY

Up to the 1840s, there was practically no commercial lobster fishery in the Maritimes. Our ancestors fished lobster to feed their families since it had no commercial value. In his major essay on the New Brunswick fisheries, fisheries inspector Perley indicated around 1847 that lobsters are so abundant they are used by the thousands to fertilize the soil.

The first lobster canneries in New England appeared as early as 1815 and 1818 in the state of New York. These are the first in North America. The first lobster cannery in the Maritimes was established in Liverpool (Nova Scotia) in 1841. Around 1845, lobster canneries were establish-



The employees of a lobster cannery located at Cap-Lumière near Richibouctou-Village in New Brunswick, take time-out to pose for the photographer. An exterior boiler can be seen at the bottom-left corner. This turn of the century cannery is probably typical of the period.

ed in New Brunswick at Petit-Rocher, Portage Island, and Kouchibouguac. Prince Edward Island will have to wait until 1868-1870 before its first lobster cannery is in operation.

In Southern New Brunswick, the first lobster cannery was established in the Shediac area in 1861. For this same year, the whole production for Westmoreland County represented 7,000 pounds valued at \$700. Thirty years later, in 1891, the production for Westmoreland County represented by itself close to a million pounds of lobster for a total value of \$137,286.96.

By 1873, around forty lobster canneries were established in Nova Scotia, twenty four in New Brunswick, but only two in Prince Edward Island. The record year for landings in the Maritimes was 1885 when 94 million pounds of lobster were shipped to Canadian, European, and American markets. At this time, 450 lobster canneries were operating in the Maritimes.

### DECREASING PRODUCTION

As early as the 1870s, the inspector of Fisheries for the provinces of New Brunswick and Nova Scotia was concerned about declining lobster stocks. He recommended that catching soft-shelled lobsters, egg-bearing females and lobsters weighing less than 1½ pounds (less than 9 inches in length) be prohibited. Unfortunately, in general regulations were not respected.

In the 1870s, fishermen were catching lobsters weighing up to 16 pounds in the Northumberland Strait. In the 1880s, five-, six- or seven-pound lobsters were still very common. By 1910, seven-pound lobsters were seldom seen.

In 1875, three lobsters were needed to fill a one-pound can; ten years later, seven were needed. Around 1886-87, not only were the total lobster catch decreasing noticeably, but lobsters were also getting smaller. From 1880 to 1886, the fishery was removing accumulated stocks considerably faster than the grounds could replace it.

Up to 1875, hoop traps were used to fish lobster. They were made with a

funnel-shaped net stretched across a hoop as those found on barrels or wagon wheels. Fish or even fat bacon was fastened in the bottom of the net. Often, a fisherman might attach 20 or more hoop nets to a cable suspended at the surface, thereby forming a trawl. Some fishermen were still using trawls of hoop traps early in the 20th century.

By 1867, fishermen in Nova Scotia knew of lobster traps but did not use them extensively as they were considered expensive. When stocks became reduced, hoop nets were replaced by modified lobster traps whose use became generalized after 1880.

These first years of the lobster fishery have been described as the "marine gold rush" and an economic "boom" became possible through the abundance of this shellfish. The establishment of lobster canneries had a considerable impact on the local economy. Thus, by 1900, 720 lobster canneries were operating in the Maritime Provinces, a record number.

# HOW MANY FISH?

by Michael Chadwick

A continuing problem in our fisheries, particularly in the herring fishery, is disagreement between biologists and fishermen about the abundance of fish stocks. Fishermen complain that biologists never visit the fishing grounds but make their judgements solely on the basis of some artificial statistical game. On the other hand, biologists who depend greatly on the knowledge of the fishermen, complain that fishermen's estimates of stock abundance are based mostly on gut feelings which can change from one year to the next and may have more to do with markets than fish abundance. This debate is complicated because it is difficult to prove which side is right. Let's face it, the ocean is huge and we can't count every herring.

I think we all agree that it would be useful to know how big a fish stock really is: processors need to prepare their markets; fishermen need to prepare their gear; managers need to divide a stock among different types of fishermen, regions, and even countries; biologists need to calculate the number of fish required for spawning; and we all want each stock to produce at capacity.

## HOW MANY PEOPLE IN MONCTON?

There is no doubt that it is difficult to estimate fish abundance. Instead, it might be useful to see how to estimate the population or abundance of people in a small city. How for example would one estimate the number of people living in Moncton? Ideally, we would count everybody all at one time so people aren't missed or counted twice, but this is expensive and probably costs \$10 for every person counted. Let's assume therefore that this problem is to be solved by one person who

has little money and time at his disposal.

Probably the simplest method would be to ask several people, "how many people do you think live in Moncton". The answers might be surprising. A young person or a person who was brought up in Moncton might believe that Moncton has a large population. By contrast, an older person or someone who has moved into the area from a large city might believe that Moncton is quite small. After hearing a wide range of numbers and realizing that you cannot depend on any one's opinion, you may decide to go out and make your own estimate.

The natural tendency would be to go to the shopping malls or a busy street corner and count people passing by. But would these counts be meaningful? A merchant will tell you that the number of people in a mall is related to the price of items for sale, the weather or the time of year. For example, compare the number of people in a mall just before Christmas to the number just after the holiday; or compare the number of people on a rainy day versus a sunny day. Besides, how many people are actually from Moncton, and not from Newcastle, Shediac, Tracadie or Picton? Finally, what about ages of people? You would probably find that during the week there would be no children, but during the weekend they would be in great abundance. The lesson in this example is that crowded sites are not necessarily the best areas to measure abundance.

A second lesson in this example is to understand the word bias. Bias occurs when the sampling method does not represent the true population. Samples taken from only the shopping mall would not represent the true population of Moncton,

and our estimate would be too high. Bias often occurs when estimating the size of fish or people as well. It seems that the human eye is naturally attracted to the largest individuals. Unless our sampling is done carefully, we will tend to overestimate the average size of a population.

To remove bias in our estimate of the number of people in Moncton, we could proceed as follows. First, count the number of roads in Moncton using a road map. Next, randomly select several roads for closer study. One simple way of obtaining a random sample would be to number each road, put each number on a small square of paper and select several numbers after thoroughly mixing the paper squares in a hat. Random selection is very important, otherwise the roads may contain only houses or stores and may not be representative of the average road in Moncton.

In the third step, count every house or building on the selected roads. Again, the houses would be numbered and as with the roads each number would be placed on a small square of paper. In the fourth step, randomly select several houses from each road for a detailed sample. In this sample every person inside the house must be accurately counted. The sample should be taken in the evening when most people are home. Some houses may not contain any people, but this value must be included as a sample. In the last step, multiply the average number of people per house by the average number of houses per road and finally by the number of roads in Moncton. The result would be a crude estimate of the number of people in Moncton.

There are several ways of improving the accuracy of this estimate.

For example, the roads in Moncton could be divided into four categories: single family residences, apartments, shops, and factories. Each category could then be sampled separately. This type of sampling is called stratified sampling. Another improvement would be to obtain the age of each person counted. With this information, it is possible to see if a population is growing or dying.

## FISH AND PEOPLE

It should be apparent that there are many similarities between estimating abundance of fish and people. Just like people who aggregate in shopping areas, fish can aggregate on spawning or feeding grounds, but many factors must be considered if the abundance is to be measured accurately. We must account for weather conditions, time of day, time of year, ages and sizes of fish which may not be included in these aggregations, and stocks from different areas which may be mixed together. Much of this knowledge is learned from the fishermen and must be taken into account if the estimate of abundance is to be correct.

The most important feature of a correct method is its repeatability. This means, that someone else who uses the

same method would arrive at essentially the same result. For example, if several people used our technique to calculate the population size of Moncton, their results would not be greatly different.

Repeatability is very important when making annual estimates of abundance, let's say we are interested in following the growth in Moncton's population over the past 100 years. It is important that the population estimate in 1885 is made using the same method as in 1985, otherwise the two years will not be comparable. Repeatable methods are also necessary for assessments of fish stocks, to ensure that estimates of stock abundance are comparable from one year to the next.

In conclusion, two points must be considered in a good estimate of fish abundance. First, we need a good knowledge of the fishery and the fish, and here we depend greatly on the fishermen. Second, we must use unbiased methods to estimate abundance. In other words, a method which can be repeated by someone else to find the same result. Occasionally, this method may require us to sample in areas where there aren't any fish, but that is part of following the method correctly.

## Spaghetti With Seafood

1 can (147 g) clams	2 mL salt
1 pkg (340 g) cooked shrimp, thawed	2 mL thyme
50 mL butter	50 mL chopped green onion
1 garlic clove, minced	250 g spaghetti, cooked and drained
375 mL sliced fresh mushrooms	50 mL soft butter
2 large tomatoes, peeled, seeded and chopped	50 mL chopped parsley
100 mL clam liquor	Grated Parmesan cheese

Drain clams and rinse. Strain liquor, reserving 100 mL. Chop shrimp coarsely. Melt butter and sauté garlic and mushrooms. Add tomatoes, clam liquor, salt and thyme. Simmer until some of the liquid has evaporated. Add shrimp and cook 3 min. Add clams and green onion and cook 2 min longer. Toss spaghetti with butter and parsley. Combine with seafood sauce. Serve with Parmesan cheese.

Makes 4 servings. (375 mL each).

# IN-PLANT QUALITY CONTROL

by Keith Piercey,  
Corner Brook

Under guidelines presented in 1980, Quality Control Programs are designed to provide a company or plant with the necessary directions to produce products of consistent quality which meet existing regulatory guidelines.

The same concept applies today. The best and most consistent product gets attention on the market-place. It makes sense, therefore, to make every effort to see that the final product package can compete among the best. A top quality product speaks for itself, and, with good marketing practices, establishes itself as a product in demand.

With this in mind, Eric King Fisheries of Burnt Islands, in co-operation with the Federal and Provincial governments, embarked on an in-plant Quality Control Program in January 1986.

The Eric King Fisheries operation in Burnt Islands, on Newfoundland's Southwest Coast, is one of three which the company operates; the others are located at Codroy, about 40 miles away, and at Barletts Harbour on Newfoundland's Northern Peninsula.

The program at Burnt Islands was initiated by the Provincial Fisheries Department under the direction of Susan Cave. The Department of Fisheries and Oceans' (DFO) involvement came about when Dave McLennon, Fish Quality Specialist at the Port aux Basques office, was seconded to work with Susan Cave on the project.

At the outset, all recommendations and correspondence on plant quality improvements were evaluated. Afterwards, a number of measures were suggested to correct plant problems.

The team looked at unloading systems, cutting line operations, skinners, trimming, candling



**A quality control program at Eric King Fisheries plant at Burnt Islands has helped produce quality products at reduced cost. Plant owner Eric King (left); Ed Kelly, Regional Fish and Fish Products Specialist at DFO's Regional Office in Moncton; and Dave MacLennon, Fish Quality Specialist at DFO's Port aux Basques sub-district office, examine a baader skinning machine during a visit of the plant. (Photo Keith Piercey)**

and packaging.

Cost estimates and a time frame for implementing recommendations were developed. A total of nine separate problems were recognized and about twenty alternatives were suggested to remedy them. Some meant cost saving production for the plant, a welcomed move for any owner/operator.

For example, in the plant's unloading systems, the Harvy Pan Weighing System produced variable weight per insulated container, making yield checking difficult or impossible. High labor cost was evident and the set-up made washing unfeasible, especially in winter when water pressure is low. The implementation of a conveyor system with exact weight scales to give 300 lb. drops was suggested as an alternative for washing and an estimate was made to determine feasibility.

Some of the quality and sanitation problems have been solved by installing better, easier-to-clean candling equipment; installing hand dips and an apron disinfection area; limiting access doors to the plant;

instituting more adequate clean-up procedures; and employing a commercial pest controller to do monthly inspections.

Many aspects of quality control have been implemented and a draft Quality Control Manual for Eric King Fisheries completed. This outlines quality control authority and the management reporting procedure. Other areas include raw material and product

specifications for more than 95% of production. Inspection schedules, acceptance sampling plan, and reaction procedures are also stated (reaction procedures are basically the "plan of attack for correcting a problem" when defect rates exceed tolerance). Copies of Federal and Provincial regulations are included.

To ensure all facets of the manual were understood, on-the-job

training was conducted for quality control personnel. Quality control management and quality control employee information sessions were held to explain sanitation requirements.

While many of the recommendations have been implemented, some work remains to be done. The initial project dealt primarily with cod processing. The plant at Burnt Islands handles other species which are also destined to receive attention. Specifications are to be written for catfish, hake, ocean perch and lumpfish roe. Cutters are to get training from an expert to increase yields and decrease defect incidence.

The owners are considering expanding the quality control system to the two other plants.

The conclusion of the quality control personnel is that with the right tools, inspectors can make a significant contribution to the development of quality control systems at medium-sized plants. More training is being considered for DFO inspectors to help in this regard.



## AQUATIC TOXICITY WORKSHOP

The Fish Habitat Division of the Department of Fisheries and Oceans' Science Branch participated in the organization of the thirteenth Aquatic Toxicity Workshop held in Moncton last November 11-14 and sponsored by the Université de Moncton. Some of the subjects discussed included acid rain, the effects of pesticides on aquatic habitats, aquatic toxicity to fish etc. Many scientists across Canada and even the U.S. participated and/or made presentations on the current status of their research projects. In our picture, a discussion panel on the use of pesticides in forestry and agriculture and their effects on aquatic habitat, with representatives of Agriculture Canada, Environment Canada, the DFO, the forest industry and pesticides manufacturers. (Photo Maurice Landry)

# FOOD FREEZING AND COLD STORAGE SEMINAR

by Maurice Landry

A seminar on food freezing and cold storage was held in Moncton last October 29-30. The course, planned by the Department of Fisheries and Oceans (DFO), was coordinated by the Canadian Manufacturers Association with the cooperation of the Department of Energy, Mines and Resources.

Even though the course was designed for the food industry as a whole, it was of particular interest to frozen fish and seafood processors.

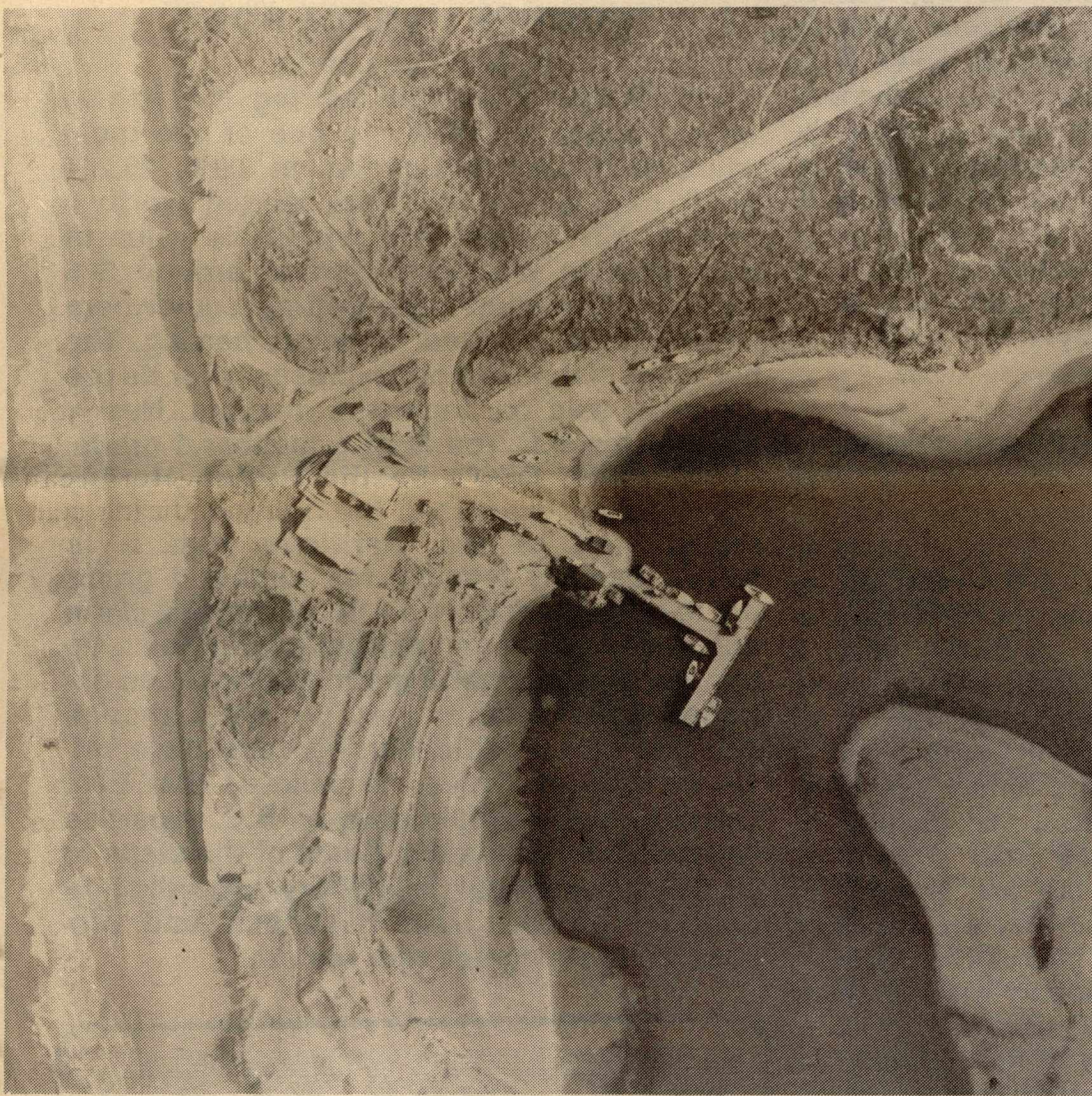
Studies of cold storage units in the Gulf Region's processing plants carried out in 1983, 1984 and 1985 by Jean-Guy Bernard, an engineer with DFO's Inspection Services Branch, showed

that a number of problems existed at this level. Of the nine cold storage units inspected in 1983, none met the  $-15^{\circ}\text{F}$  temperature standard required by DFO. In 1985, a study of all cold storage units in the Gulf Region demonstrated that most did not meet DFO criteria regarding design, construction and operation. Only 18% of cold

storage units maintained temperatures of  $-15^{\circ}\text{F}$  ( $-26^{\circ}\text{C}$ ) or lower, while 28% maintained temperatures ranging from  $0^{\circ}\text{F}$  to  $-15^{\circ}\text{F}$  ( $-18^{\circ}\text{C}$  to  $-26^{\circ}\text{C}$ ) and 54% maintained temperatures above  $0^{\circ}\text{F}$  ( $-18^{\circ}\text{C}$ ). Another study carried out the following year showed that similar problems existed with freezing units.

up during the various presentations included the relation between fish quality and freezing and cold storage temperatures, basic refrigeration theories, the choice of equipment according to calculated needs and energy conservation, as well as the construction as such of the cold-storage and blast-freezing rooms.

## IDENTIFY THE HARBOUR



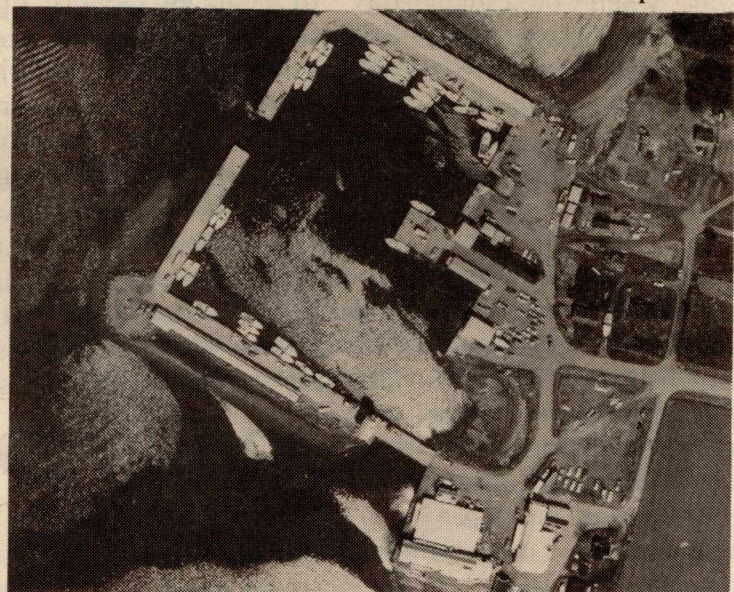
The Small Craft Harbours and Facilities Branch's contest, Identify the Harbour, continues. Name the Gulf Region harbour shown above and you may win one of two 16" X 20" colour photos of the harbour.

A draw will be made from all correct entries received on time. Winners will be named in the next issue of SONAR. Send your entry form before March 31 to: Fisheries and Oceans Canada, Communications Service, P.O. Box 5030, Moncton, N.B., E1C 9B6. The winners of our last contest were Robin R. Martin of Murray River and Betty MacNeil of Beach Point P.E.I. For more information on the port pictured in our last contest, see our article BEACH POINT.

Following these results, DFO's Inspection Services Branch has undertaken to make the industry better aware of these problems - common throughout the whole food industry. Improving freezing and cold storage techniques helps maintain quality and prolong shelf-life. It was also at this time that DFO took the necessary steps to set up a course on freezing and cold storage. This was achieved with the help of Energy, Mines and Resources as well as the Canadian Manufacturers Association.

Even though the course was originally planned for sixty, due to the demand, 90 participants were accepted while others had to be refused. The main points brought

Following the success of this first course, the Department of Energy, Mines and Resources has considered offering similar ones in Halifax, Saint John's, Toronto, Western Canada and on the Pacific Coast. For its part, DFO will present a French course on freezing and cold storage of fish this coming March in Shippagan. This latter course, funded by the Development Branch, will be directed principally towards fish plant owners and managers as well as DFO inspectors. These courses on marine products freezing and cold storage are designed to expand the industry's awareness of the increased importance of maintaining fish quality from the capture at sea to its sale on the marketplace.



**BEACH POINT**

Beach Point is a class A harbour located in southwestern Prince Edward Island, approximately 80 km from Charlottetown. Around 83 fishermen fish out of this harbour with about 58 registered vessels.

Landings for 1985 amounted to about 3400 tonnes with a total value of around \$3.1 million. Shellfish accounted for nearly 85% of the total landed value.

CONTEST # - IDENTIFY THE HARBOUR

Name of harbour \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

# DISCUSSIONS ON THE 4T HERRING FISHERY

by Maurice Landry

The Gulf Small Pelagics Advisory Committee held its annual meeting in Montreal on January 28 last. One of the principle subjects discussed was the southern gulf (4T) herring fishery. The chairman of the Committee briefly summarized the results of the 4T inshore herring fishery seminar held last December 10-11. A consensus was obtained by the industry on the issue of managing the fishery by region, on a seasonal basis, rather than by quotas. The fishing effort would be controlled by gear limitations, minimum mesh sizes, daily catch limits etc.

At the Montreal meeting, the chairman advised the committee that the DFO has studied the various implications of the seminar recommendations and had adopted the following general policy for the 4T herring fishery:

- The long term strategy will be to exploit the fishery at the F0.1 level.
- The Department will apply the 50% rule, already used in the groundfish fishery, designed to minimize the economic impact of a drastic cut in quotas when biological advices are down. With the 50% rule, the quota is set at a value halfway between the fishery mortality rate of the preceding year and F0.1.

- The DFO is prepared to consider regional management for the inshore fishery. This implies the implementation of different management zones. Provincial quotas are not under consideration at present.

- The Department is prepared to collaborate with the industry to maximize economic returns from the fishery. For example, seasons could be opened according to maturity of roe in order to obtain the best possible prices.
- Quotas will be maintain-

ed as a limiting factor on catches.

Industry representatives indicated their disapproval on the DFO policy of managing the fishery with the help of quotas. Even if they agreed in principle to conserving and protecting herring spawning stocks, they believe the same results can be achieved without the use of quotas; especially since a general lack of confidence was expressed towards the scientific advice used to set the quotas.

## THE SPRING FISHERY

Concerning the 1987 spring fishery, the F0.1 exploitation level, based on catches of 15,000 tonnes in 1986, was estimated by the biologists to be 6,600 tonnes. By applying the 50% rule, the total allowable catch (TAC) was set at 10,200 tonnes for 1987. This represents a quota of 8160 tonnes for inshore fishermen and 2040 tonnes for seiners. In 1986, 6334 tonnes were caught by inshore fishermen,

For 1987, the DFO favours the subdivision of 4T into two management zones: Western 4T would include Isle Verte, Bay of Chaleurs and Escuminac, while Eastern 4T would include Western P.E.I., Fishermen's Bank, Pictou and the Magdalen Islands. The spring quota would be set at 5000 tonnes for the Western zone and at 3160 tonnes for the Eastern zone. The DFO also proposes to set

## GROUND FISH

(continued from page 2)

visory Meeting where all user groups would be present.

As a follow-up to this workshop, DFO will be distributing a record of proceedings to all interested parties and an historical record of catches for verification by vessel owners. Following this verification, options

up a committee to coordinate fishing activities in the Escuminac area. The committee, consisting of representatives for the Department, the province, the bloater industry and other processors buyers and fishermen, would try to predict available markets on a daily basis in order to prevent overfishing and wastage of the resource.

However, the majority of industry representatives was opposed to this two-zone concept proposed by DFO. They argued that fishermen from other parts of the Southern Gulf should not be made to compete with the glut fishery in Escuminac or bear the burden of problems associated with this fishery.

## THE FALL FISHERY

As for the 4T fall fishery, the biological advice called for a quota set at 17,100 tonnes. By applying the 50% rule, at TAC of 24,600 tonnes is obtained. The inshore quota would then be set at 19,680 tonnes and at 4920 tonnes for the seiners. It should be noted that these fall quotas are preliminary since they are based on the 1985 catches. In May, biologists will reevaluate their scientific advice in light of the 1986 catches. Another meeting of the Advisory Committee was planned for late February in order to discuss a provisional plan for the fall fishery.

for the establishment of enterprise allocations will be outlined. Should some or all of the vessel owners then decide to adopt an enterprise allocation program, DFO will consult with other user-groups to ensure all concerns are considered before actually embarking on this type of new program.

## CALLING ALL COD

Norwegian scientists have developed an automatic calling system that tells cod to come and feed. The call is a recording of a low-pitched note similar to the toot of a tuba. Cod are trained to come and feed at the sound of the call. According to tests undertaken in Norwegian fjords, cod can be trained relatively easily to approach when the call is played. By using this method, raising cod in a reduced area becomes possible; a bit like a sheperd grazing his flock. The calls can be regulated by computer and fish fed at regular hours by using an automatic feeder requiring little labor. When fresh cod is required, a call is sent out and fish are harvested as needed.

## NUMBER 1 GRADE ROE?

by Maurice Landry

The British Columbia herring roe fishery -which began in 1971 - is one of the most valuable fishery in Canada. In 1986, 16,214 short tons of herring were landed worth a total of \$37 million. The wholesale value of this produce was evaluated at around \$85 million. Fishermen were getting somewhere around \$1.00 a pound for round herring. The herring is fished almost exclusively for its roe which is sold on Japanese markets. Nearly 80% of the B.C. roe is of a number 1 grade. Lloyd Webb, DFO's Pacific Region Herring Coordinator, expressed the opinion during a recent visit to the Maritimes that it is technologically feasible for number 1 grade roe to be extracted from Atlantic herring given adequate fishing and extraction methods. Up to now, only number 2 grade roe has been obtained from Atlantic herring. Even though Atlantic and Pacific herring roes have different characteristics, he believes that East Coast industry should draw on B.C. expertise to attain similar results. Some of the steps to be taken: manage the fishery according to maturity of roe, train fishermen and processors to recognize ripe roe etc.

# SONAR

Volume 3 Number 4, February-March 1987

Published by-monthly by:  
The Communications Service  
Department of Fisheries and Oceans,  
Gulf region  
P.O. Box 5030,  
Moncton, N.B.  
E1C 9B6  
Tel: (506) 857-7748

SONAR is published for commercial fishermen and producers in the Gulf Region to inform them about the policies and programs of the Federal Department of Fisheries and Oceans. Reproduction is permitted, with an indication of the source.

Director; Rheal Boucher  
Editor: Maurice Landry  
Printing and composition by:  
Dartmouth Free Press Ltd.,  
Dartmouth, N.S.