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THE CAPE BRETON ISLAND FISHING INDUSTRY

Economic and Commercial Analysis
Report No. 57

Fisheries and Oceans
Pêches et Océans

Canada

THE CAPE BRETON ISLAND FISHING INDUSTRY

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Program Coordination and Economics Branch
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Economic Development Division, Program Coordination and Economics Branch, Scotia-Fundy Region. 1989. The Cape Breton Island Fishing Industry. Econ. Comm. Anal. Rep. No. 57, Department of Fisheries and Oceans: 61 p.

Cape Breton Island is very dependent upon the fishing industry. Few alternatives exist for rural communities with an economic base built solely on fishing. Catches include groundfish species, shellfish, and pelagic. Opportunities to expand the harvesting and processing of traditional species are constrained by physical overcapacity and resource reductions. With sufficient technical and marketing development, non-traditional or underutilized species have some potential, but the main opportunity lies in utilizing existing infrastructure, with improved efficiency, to produce value added traditional products. Aquaculture has assumed an important role in fish production but development has slowed because of low prices and technical problems. There is a potentially strong role for the sport fishery in concert with development of the tourism sector in Cape Breton. Sustainable development of the Cape Breton commercial fishery requires the cooperation of all government departments and agencies concerned as well as industry participants.

Résumé

Division du développement économique, Direction de la coordination de programme et de l'économique, Région de Scotia-Fundy. 1989. L'Industrie de la Pêche de l'Ile du Cap-Breton. Rap. de l'Anal. Econ. Comm. No. 57, Ministère des Pêches et des Océans: 61 pp.

L'économie de lîle du Cap-Breton est repose beaucoup sur l'industrie de la pêche. Peu d'alternatives sont disponnibles pour les communautés rurales dont l'économie est basée uniquement sur la pêche. Les prises incluent le poisson de fond, les crustacés et les espèces pélagiques. La surcapacité physique ainsi que la réduction des stocks constraignent les opportunités d'accroîssement de la récolte ainsi que la transformation des espèces traditionnelles. Avec l'amélioration du développement technique et de la mise en marché, les espèces sous-utilisées démontreront un certain potential. Les opportunités par contre demeurent avec l'utilization des infrastructures existantes, l'accroissement de la productivité afin de développer les produits de valeur ajouté. Malgré l'accroissement de la contribution de l'aquaculture à l'industrie de la pêche, ce secteur a connu un ralentissement d'activités dû à la diminution des prix et certains problèmes techniques. La pêche sportive en concert avec le développement de l'industrie touristique risque de jouer un rôle accru dans le développement économique du Cap-Breton. Le développement soutenu du secteur de la pêche au Cap-Breton necessite la coopération de tous les ministères et agences gouvernementales impliqués ainsi que le secteur privé.

PART I OVERVIEW

THE NATURE OF THE FISHERY

Historical Tradition

The commercial fishery of Cape Breton has a long history dating from the earliest European enterprises off North America. The resident fishery was established during the 18th century. Since that time, the fishery has matured with well-established methods and traditions, and is still the dominant way of life for the majority of small coastal communities.

Local Importance

While the fishery employs a relatively small share of the Cape Breton labour force and makes up a small proportion of the total provincial landed value, it is extremely important at the local community level. This local importance is more clearly discernible when one excludes the industrial northeastern portion of the Island. The rest of Cape Breton consists of dispersed communities which have a narrow economic base. Employment in the fishery has been a significant factor in sustaining rural community life.

Aquaculture

Despite recent setbacks, aquaculture has been assuming an increasingly important role in fish production. Cape Breton has produced most of the provincial output of finfish and has made a significant contribution to mollusc aquaculture production. Present development is at a standstill due to low prices and several technical constraints.

Sport Fishing

Sport fishing has been important not only as a source of recreation, but also as a tourist attraction providing economic benefits to the Island. By and large, it is an inland sport fishery for Atlantic salmon and trout. It brings anglers to Cape Breton from many areas of the world each year.

BASIC CHARACTERISTICS OF THE CAPE BRETON COMMERCIAL FISHING INDUSTRY

Main Species

Groundfish species constitute the major component of the Cape Breton fishery followed by shellfish and pelagics. Cod is the single most important groundfish; lobster and snow crab predominate in the shellfish category; and the main pelagic catches are herring and mackerel.

Fishing Areas

Inshore vessels usually fish areas adjacent their home communities, while mobility to offshore areas is characteristic of larger groundfish vessels. The Northwest Atlantic Fisheries Organization (NAFO) sub-areas and divisions fished by vessels with home ports in Cape Breton include: 4RST in the Gulf of St. Lawrence; 4VWX on the Scotian Shelf; 3Pn, 3Ps off southern Newfoundland; and to a limited extent the 2J3KL northern stocks off northeastern Newfoundland. These are shown in Figure 1. In addition, some fishing takes place in the Bras d'Or Lakes.

Fisheries Management Areas

The fisheries of Cape Breton Island are managed within two regions of the Department of Fisheries and Oceans: the Scotia-Fundy Region with headquarters in Halifax, and the Gulf Region with headquarters in Moncton. Management of the large vessel fleet is conducted on an Atlantic-wide basis with specified shares of each of the major stocks. Each region has established a number of different management zones for such inshore fisheries as lobster, crab, herring and the small vessel inshore groundfish fleet (vessels under 19.8 metres or 65 feet) which are managed on a sector basis.

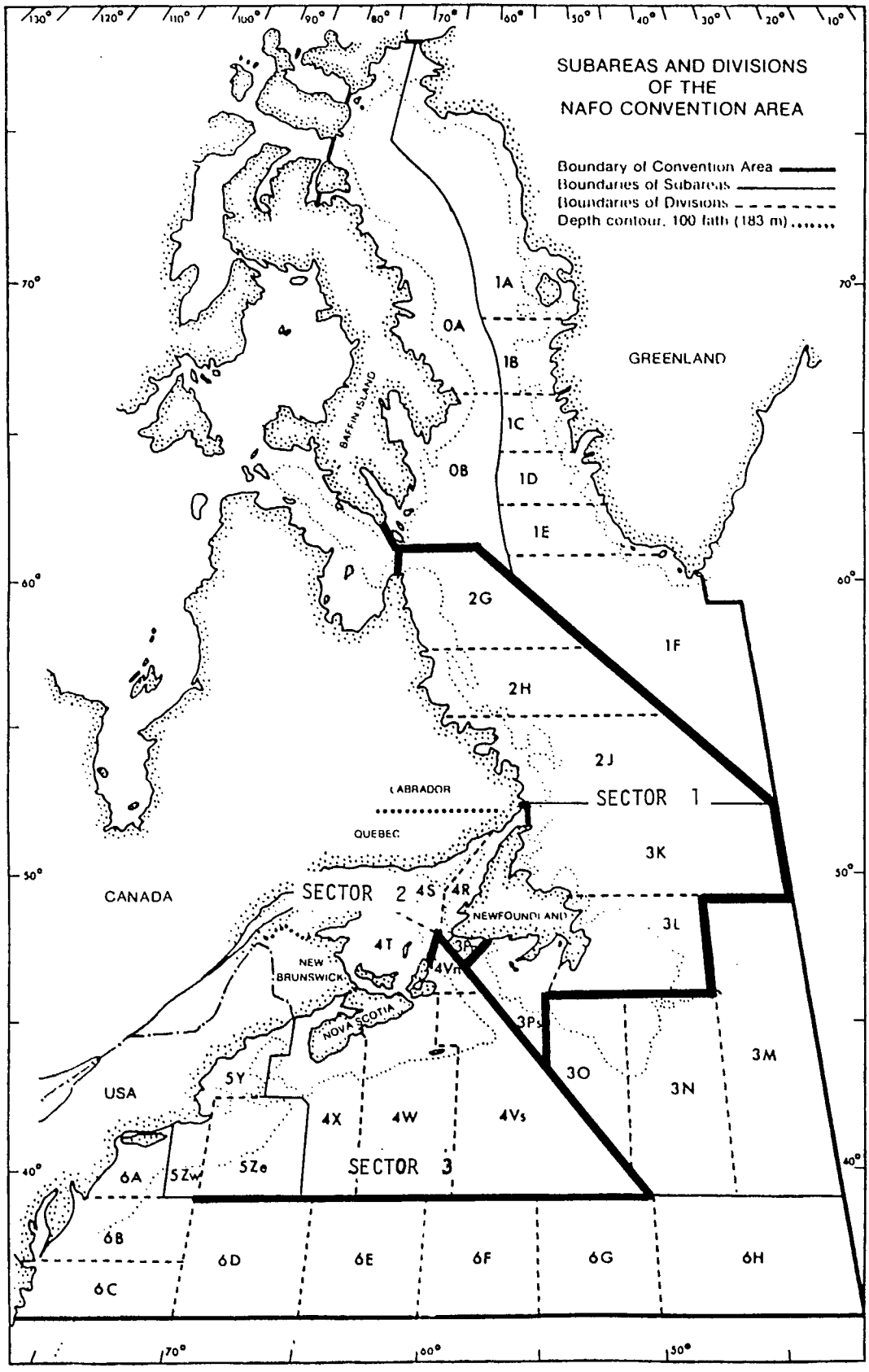

Figure 1. NAFO Subareas and Divisions, showing Canadian Fisheries Management Sectors.

Sector Management

Sector management was implemented in 1982. It divides the Atlantic region into three management sectors as shown in Figure 1 and, under this approach, vessel licences are not transferable between sectors. Cape Breton Island is partly in Sector 2 and partly in Sector 3. The main purpose of sector management is to achieve a better balance between the available resource in each sector and the resident inshore fleet exploiting it. It should be noted, however, that those vessels from communities near sector boundary lines which traditionally fished on both sides are permitted to fish in the NAFO subdivision adjoining their home port division. Authorized overlaps relevant to Cape Breton ports are:

Home port division	Authorized overlap
4T	4Vn
4Vn	4T

A number of the larger mobile inshore vessels (10.6-19.8 metres or 35-65 feet) have, in the past, participated in fisheries beyond the authorized areas of overlap. These vessels are being allowed to continue fishing in specific areas on the basis of historical overlap if they fished there within the period 1978 to 1980.

Small Craft Harbours

Government-owned harbour infrastructures are located in 70 Cape Breton communities as shown in Figure 2. The Small Craft Harbours Branch of the Department of Fisheries and Oceans is responsible for the general maintenance of marine facilities in these locations including new works for improvements as well as the development of new harbours. The total investment in small craft harbours in Cape Breton has been estimated at $79.6 million.[1]

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[1] Estimates were provided by the Small Craft Harbours Branch, Fisheries and Oceans, based on the assumption that the value is that amount which it would cost to rebuild existing structures in 1985. If all desirable expansion and rebuilding were to be done, another $40 million is estimated as the amount which would be required.

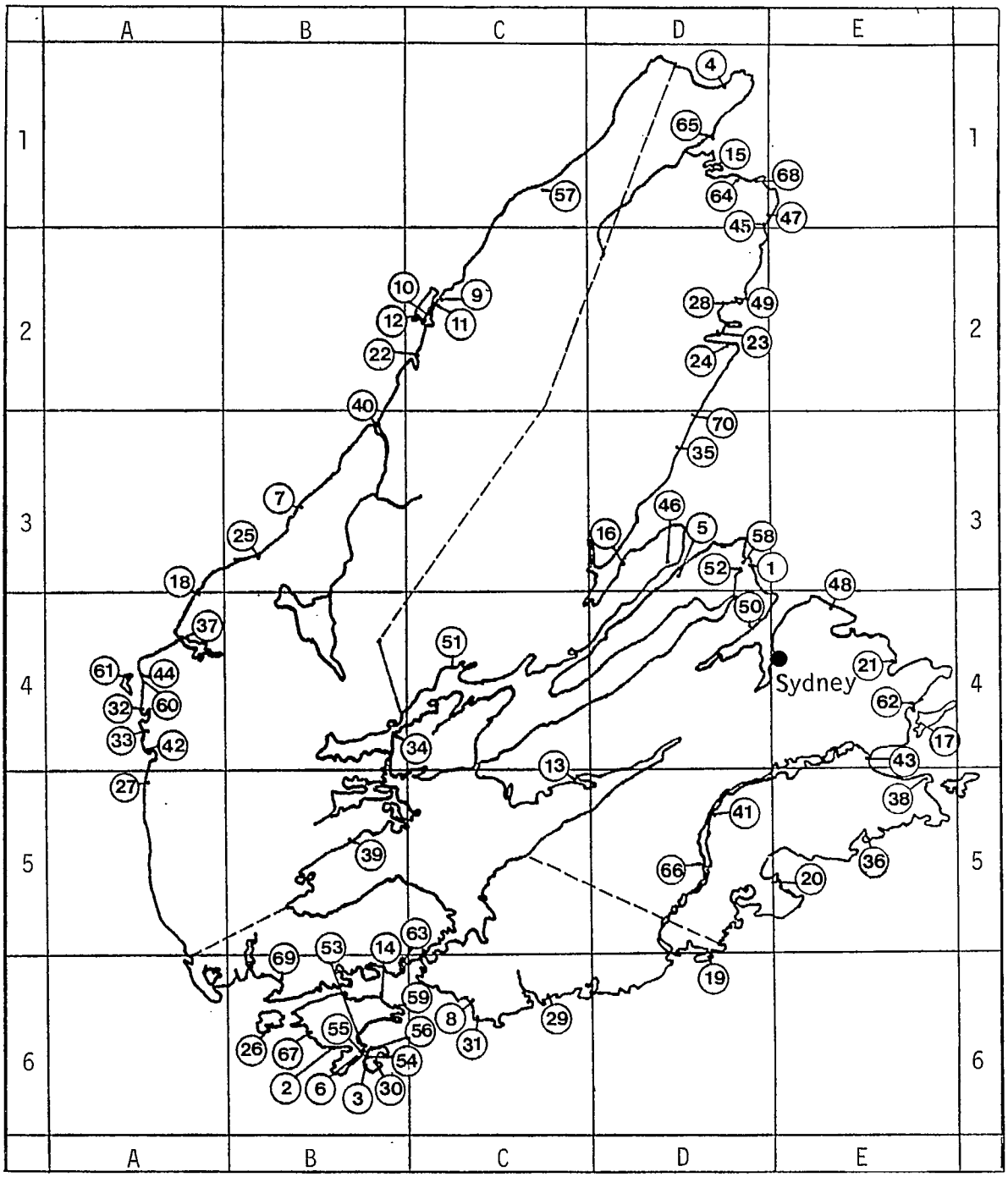

Figure 2. Small craft harbours, Cape Breton
(Source: Small Craft Harbours Branch, Fisheries and Oceans, Halifax)

1 (D3) Alder Point
2 (B6) Arichat
3 (B6) Arrow Point
4 (D1) Bay St. Lawrence
5 (D3) Big Bras D'Or
6 (B6) Boudreauville
7 (B3) Broad Cove Marsh
8 (C6) Chapel Cove
9 (C2) Cheticamp (Dig)
10 (C2) Cheticamp (Town wharf)
11 (C2) Cheticamp (Co-op)
12 (C2) Cheticamp Point
13 (C5) Crane Cove (Eskasoni)
14 (B6) D'Escousse
15 (D1) Dingwall
16 (D3) Englishtown
17 (E4) False Bay
18 (A4) Finley Point
19 (D6) Forchu
20 (E5) Gabarus
21 (E4) Glace Bay
22 (C2) Grand Etang
23 (D2) Ingonish Beach
24 (D2) Ingonish Ferry
25 (B3) Inverness
26 (B6) Janvrin Harbour
27 (A5) Judique
28 (D2) King's Cove
29 (C6) L'Archeveque
30 (B6) Little Anse
31 (C6) Little Harbour (L'Ardoise)
32 (A4) Little Judique Harbour
33 (A4) Little Judique Ponds
34 (B4) Little Narrows
35 (D3) Little River
36 (E5) Louisbourg
37 (A4) Mabou Harbour
38 (E5) Main-À-Dieu
39 (B5) Marble Mtn.
40 (B3) Margaree Harbour
41 (D5) Marion Bridge
42 (A4) McKay's Point
43 (E4) Mira River (Gut)
44 (A4) Murphy's Pond
45 (D1) Neil's Harbour
46 (D3) New Campbellton
47 (D1) New Haven
48 (E4) New Waterford
49 (D2) North Ingonish
50 (D4) North Sydney (Ballast Grounds)
51 (C4) Nyanza
52 (D3) Dyster Creek
53 (B6) Petit de Grat (Fisherman's)
54 (B6) Petit de Grat (Co-op)
55 (B6) Petit de Grat (Fish Plant)
56 (B6) Petit-de-Grat (North Entrance)
57 (C1) Pleasant Bay
58 (D3) Point Aconi
59 (B6) Poirierville
60 (A4) Port Hood
61 (A4) Port Hood Island
62 (E4) Port Morien
63 (B6) River Bourgeois
64 (D1) Smelt Brook
65 (D1) Sugar Loaf
66 (D5) Victoria Bridge
67 (B6) West Arichat
68 (D1) White Point
69 (B6) Whiteside
70 (D3) Wreck Cove

PART II CURRENT STATUS

Fishing Incomes

Statistic Canada's most recent report on net taxable earnings indicates that fishermen in Cape Breton have experienced a considerable increase in annual total income, from $12.1 million in 1981 to $36 million in 1987. An increase took place every year with the exception of 1984 when earnings from fishing dropped by 8% from the previous year. Fishing income statistics for 1988 and 1989 are expected to show a decrease from 1987, which was one of the best years ever for the fishing industry of the region. The landed value of the Cape Breton fishery at the end of 1988 fell by 16% from 1987. The total annual income of tax filing fishermen in Cape Breton increased between 1981 and 1987, from $24.5 million to $61.7 million; the average total income per fisherman in 1981 was $13,066 as compared with $24,190 in 1987. Fishing income has tended to be around 50% of the total income in Cape Breton, although the percentage increased in 1986 and 1987 to 56% and 59% respectively. Unemployment insurance benefits fluctuated around 20% of the total annual income for tax filing fishermen from 1981 to 1983 and then increased in 1984 to 28%, and fell to 22% by 1987. The remaining 20% to 30% of the total income of tax filing fishermen is composed of other employment income (outside fishing) and other transfer payments.

Labour Input

The total number of people who were registered to fish commercially in Cape Breton during 1988 was 4,383. A large portion of that number was made up of vessel crews; many were part-time fishermen or, as in the case of about 900 fishermen located on the Gulf side of the Island, were registered to fish only from vessels under 50 feet long. Only thirty-four percent were full-time, bona fide fishermen. The total number of fishermen registered in all categories constitutes just over 6% of the 1986 census of the labour force of Cape Breton. Many of the full-time fishermen are located in Cape Breton County; there were 687 in 1988, constituting 46% of Island fishermen in the full-time category.

Licensing records show a 20% increase in the number of registered fishermen in Cape Breton from 1986 to 1988. The increase may be more on paper than real, however, due to a change in the Atlantic Fisheries Regulations in January 1986. The change required all persons wishing to engage in commercial fishing operations, no matter how short the duration, to register with the Licensing Unit of the Department of Fisheries and Oceans. Previously, a person could fish up to 15 days without registering, and thus, many of the casual fishermen now being recorded as registered fishermen were previously excluded from annual licensing statistics. Some real increase may have resulted from part-time fishermen upgrading to full-time status. The increase in the number registered may also reflect a generally high unemployment situation where more people are available in communities to help out on fishing boats.

Fishing Fleet

Currently, there are on the order of 3,160 limited fishery licences issued to operators of 1,466 vessels. The limited fisheries for which licences are issued to vessel operators in Cape Breton include: groundfish; lobster; snow crab; shrimp; scallop; herring; mackerel; and tuna. The fleet comprises mainly inshore boats (97% in 1988) under 45 feet length overall. Vessels of intermediate length, from 45 feet to 65 feet, make up 2% of the fleet, while the larger offshore vessels of 100 feet and over comprise less than 1%. The small vessels are distributed around the Island; the larger vessels are concentrated in only a few ports in Cape Breton and Richmond counties.

There was an increase in the number of registered fishing vessels with home ports in Cape Breton during the period 1984 to 1988. One factor which would have had some effect on this increase occurred among fishermen who normally used one vessel to fish for both lobster and groundfish species. Improvements in the groundfish fishery appear to have motivated these fishermen to split their licences between two vessels, acquiring a new one, with more capacity, to harvest groundfish and using the previously existing vessel for lobster fishing. The

practice was ended, by regulation, in 1988. An increase in the number of commercial handliners appears to have been considerably more important in accounting for the vessel increase as people tried to supplement pension income and earnings in other industries. Since handlining is open to all who wish to participate, it also may be providing a point of access to individuals wishing to qualify as full-time fishermen and thus be in a position to obtain a limited fishing licence at some future date. The total increase between 1984 and 1988 was 173 registered fishing vessels. Most of the increase was in the less than 45′ category.

Harvesting Overcapacity

Physical overcapacity in the harvesting sector of the fishing industry is recognized as a factor underlying such problems as early quota closures and conflicts between groups of fishermen competing for resource allocations, as well as a major obstacle to economic profitability. In effect, physical overcapacity means that the fleet is capable of exerting more fishing effort[1] than is necessary for full exploitation of the available resource. In addition to the actual effort exerted by active vessels, there is a latent harvesting capacity which exists among underused vessels which hold groundfish licences. For example, in the Scotia-Fundy portion of Cape Breton, a total of 465 limited fishing licences[2] were either not used or used very little for groundfish fishing. If these licences were to become active, the increased effort would put additional stress on the resource and reduce average fishing incomes.

Because of overcapacity, the traditional harvesting sector affords next to no openings for expansion. While some potential may exist for the existing fleet

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1 Defined as the amount of time and/or quantity of gear used to catch fish. STACAC Standards Document No. 1, Fisheries and Oceans, Ottawa (n.d.)

2 Defined as a commercial fishing licence authorizing the holder to participate in a limited fishery in which the number of participants is controlled.

in a number of new fisheries, some of which are currently being pursued[1], the key development opportunities appear to be in improving existing fisheries particularly by way of quality enhancement and controlled fishing capacity. Similarly, overcapacity in the processing sector has moved the direction of incentives and initiatives away from plant construction and expansion toward improving the efficiency of existing facilities and product quality[2].

Fish Buyers

A total of 101 fish buyers operated in Cape Breton in 1988. Twenty of these were identified as major buyers, having minimum individual purchases of $1 million. Together they purchased 85.1% of the total 1988 groundfish landings. The number of non-resident buyers increased significantly from 1985 to 1988 (See Table 14). However, their share of the product did not increase proportionately, and local buyers maintained the major share of fish purchased. Looking back three years from 1988, the largest portion of annual fish purchases by non-residents occurred in 1987, with purchases amounting to 17% of the total landings in Cape Breton. Although the supply of fish to the local companies has been decreasing gradually, as a group they have been successful in maintaining a constant level of supply. Information on the destinations of products purchased by local buyers is not available. Some of these buyers may be shipping to other plants in the Maritimes or even directly to the United States.

Processing Capacity Underutilization

The outflow of raw material from Cape Breton Island is not due to the inability of local fish plants to process the product, but rather, it is a result of a large demand for fish products elsewhere and the demand for unprocessed fish in

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1 For example, Stimpson surf clam, shrimp, silver hake, dogfish and sand lance.

2 As per Public Investment policy guidelines first introduced in 1986 and revised in 1989.

the U.S. market (See page 12 under Constraints). In terms of the total manual and mechanical processing, and based on the number of days each plant was in operation, only 5 out of 14 processing plants were operating at a capacity utilization above 50% in 1986. With decreases in stock availability, and the increase in demand for raw material by plants on Cape Breton Island and mainland Nova Scotia (due to underutilization of capacity), strong competition for raw material may be expected to continue. Any expansion of processing facilities would have to be well-planned and concentrated in areas where an opportunity for real development exists.

Processors

The most recent Fisheries and Oceans survey (1989) indicated that there were 40 registered fish processing plants in Cape Breton. A total employment figure for all 40 plants is not available due to incomplete information from plants. However, the total number of employees in 34 plants was 1,803 (i.e. the usual number in a normal shift). The estimated investment value of 18 plants surveyed by Co-fish Consultants Ltd., in 1986, was $21.1 million. A similar survey in 1989 indicated an investment value of $28.9 million.

In 1985, the fish processing sector in Cape Breton differed from most other parts of the region in that it comprised relatively few, but large, plant establishments. This difference is illustrated in a number of comparisons with the processing sector in southwestern Nova Scotia. For example, in Shelburne County alone there are over 114 establishments compared with 20 in the four counties of Cape Breton. Associated with the larger size of the average Cape Breton plant is greater throughput and a larger number of employees. In 1985, Cape Breton's per plant requirement for raw material was more than four times that of Shelburne County's plants at an average of over 4,000 tonnes per plant compared with approximately 1,000 tonnes. On average, in 1983, plants in Cape Breton employed 88 production workers compared with 48 in Shelburne County.

The open access policy[1] in the fish processing industry has resulted in a doubling of the number of processors on the Island during a five year period. Cape Breton accounted for 40 of the 337 plants in Nova Scotia in 1989 as compared with 20 out of 262 in 1985. Some of the growth was created by necessity as four new plants were needed to service the aquaculture sector. One plant was identified as a smoking facility. Two of the 20 new plant registrations are actually vessels required to process surf clams. The other 11 operations have been added to process groundfish products for which capacity existed elsewhere. The result of such expansion is further competition for a decreasing resource base. This represents not only a decrease in viability of existing plants, but may impact upon the Cape Breton fishing industry as a whole. The processing of smaller amounts of fish decreases the contribution to overhead. Therefore, this could result in a lack of reinvestment in the industry, and further obstructing technology advancement and processing equipment for value-added production. At the same time, however, new technology could be sufficiently efficient to displace older operations.

Processing Sector Opportunities

Use of the value-added concept to expand the employment and revenue base of the fisheries sector has been contemplated by government and other development agencies for some time. The reality, however, is that the fishing industry in Cape Breton has chosen to increase the number of plants rather than expand into value-added production.

The processing sector tends to fall into three levels of processing:

1. fresh, usually headed and gutted;
2. fresh or frozen fillets; blocks; salted; smoked pickled; or marinated; and

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[1] In 1988, the N.S. Department of Fisheries established a limited access to permits for processing.

3. speciality packs, such as TV dinners, canned goods etc.

At least 13 of the 20 new plants have the capacity to process fish products at the level indicated in point 2 above. Of the seven other facilities, four are buying stations which handle fresh fish only. The other three plants serve the aquaculture sector. Depending upon the growth of the aquaculture industry, a possible expansion in processing of salmon and trout specialty products is possible. One of the major aquaculturalists has already expressed his interest in this activity and has begun construction of a modern processing facility. One should consider, however, that most trout and salmon products could be processed in an existing facility as long as distance and qualified labour does not become an obstacle.

Constraints

The remaining plants show little potential for value-added production. Investors should evaluate the feasibility of each project before proceeding.
Further development of products such as Stimpson surf clams will depend largely on the type of market established by the companies involved.

Advanced processing (level 3) is very capital intensive. Fixed cost is an important factor to consider in this case. Presently, many buyers prefer to sell fresh fish, as the mark up on a filleted product is not sufficient to warrant additional processing. For example, in November 1989, a pound of round, headed cod sold for $1.95 and fillets for $3.50. Converted to round weight, the price received was $1.21 and $1.09 per pound respectively. The real price amounted to approximately twelve cents difference in favour of the less processed product.

Another constraint to value-added production is market availability. In order to market such products, a broker requires consistency of supply. For most

existing plants, the supply of raw material is insufficient. In order to cover the overhead cost of a large capital infusion, the processors would require a large scale operation. If value-added production in Cape Breton is not built on the existing industry, the additional infrastructure is likely to jeopardize the viability of those in place.

Supply of Raw Material

In 1988, the total volume of fish landed in Cape Breton was 92,105t valued at $81.9 million. The catch was down from 1987 by 2.6% continuing the pattern of fluctuating annual catch. More significantly, the drop in landed value of the catch was 16%. This decrease, however, should be looked at in the context of the record year in 1987. The value of landings for 1987 was unusually high due to price increases (mainly in groundfish) which represented a 30% increase over the 1986 value. Cape Breton County set the trend for the Island with a 4,000t decrease in volume and an $11 million decrease in value in 1988 over the previous year.

Although landings during the last three years decreased, the total annual volumes remain somewhat higher than the 1984 and 1985 levels. The same was true for groundfish species which made the largest contribution to the economy in the form of added value and employment.

The volume and value of landings varied by county. Cape Breton County is by far the major contributor to the Island's annual catch. In 1988, 58% of the total volume, and 53% of the total landed value were attributable to Cape Breton County. Victoria, Richmond and Inverness Counties accounted for smaller shares of the volume landed with 9%, 15% and 18% respectively.

The share of the 1988 catch by species category was as follows: groundfish accounted for 80% of the volume and over 56% of the landed value; pelagic and estuarial species constituted 9% of volume and 8% of landed value; molluscs and crustaceans made up 10% of volume and 36% of landed value. Although all species have increased in volume since 1985, molluscs and crustaceans comprised a larger share of volume (only 6% in 1985). Molluscs and crustaceans accounted for a smaller share of value in 1988 compared to 1985.

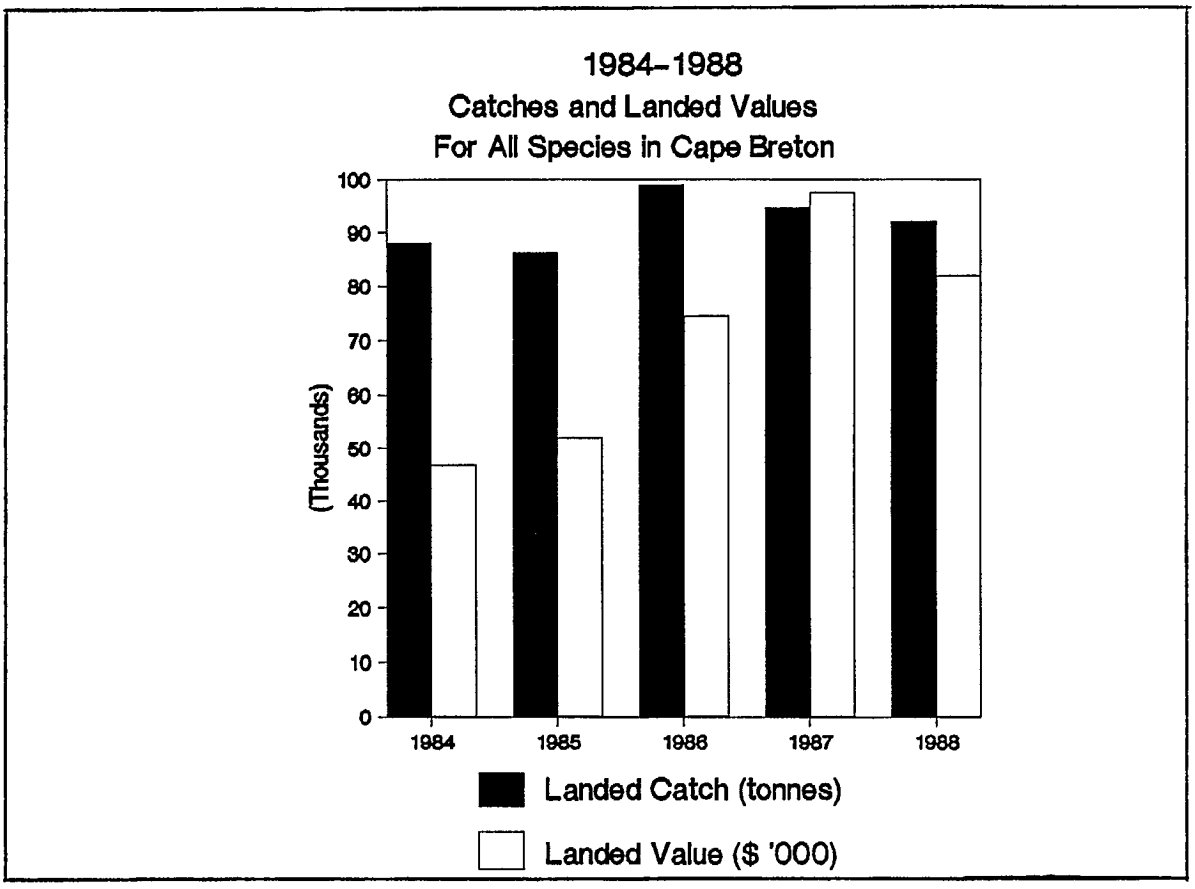

Figure 3.

Forecast

The 1989 groundfish landings have been somewhat lower primarily due to the reduction of northern cod stocks and to a lesser extent the reduction of groundfish stocks on the Scotian Shelf. It is not possible to make stock forecasts on a long-term basis. In fact, groundfish stocks are assessed annually. The 1990 total allowable catch (TAC) shows a decrease in the stocks supplying Cape Breton's fisheries. Table 16 shows a particularly large decrease in 4RS 3Pn cod for 1990.

Also of significance with respect to the level of groundfish landings is the expected decrease of 4X cod to levels below those of recent years. This could put additional pressure on southwest Nova Scotian (SWNS) vessels and plants to acquire supplies from the Cape Breton area. For the first time, the 1990 management plan will limit the percentage of fish that can be caught by SWNS vessels in waters adjacent to Cape Breton Island (4VSW). This new management measure will limit the possible entry of vessels from SWNS and assure a minimum amount of supply to Cape Breton ports.

In summary, landings of traditional species of groundfish are expected to decrease in 1989 and 1990, and then stabilize if stock recovery is achieved. Cape Breton Island, despite the decrease in absolute catch, could maintain, or possibly even increase, its share of landings of Gulf and Scotian Shelf stocks.

Cooperative Agreement

A cooperative agreement on fisheries between the governments of Canada and Nova Scotia has been signed and will be in effect from 1990 to 1994. The budget for the four year agreement is set at $8 million of which $4.8 million constitutes the federal contribution. Discussion is presently underway regarding the composition of the agreement. Areas under consideration include: aquaculture; inland and freshwater fisheries; underutilized species; groundfish fleet

rationalization; technology and human resource innovation and upgrading; and native fisheries development.

The purpose of the agreement is to seek opportunities and to eliminate growth constraints in the Nova Scotian fisheries. The funds identified for this purpose are expected to complement existing programs such as those managed by the Atlantic Canada Opportunity Agency (ACOA), Canadian Employment and Immigration Commission (CEIC), NS Department of Education, etc., in order to maximize the impact on the provincial fisheries.

PART III AQUACULTURE

Overview of Aquaculture in Cape Breton

Sea-Cage Culture and Land-Based Finfish Farms

The first attempt at sea-cage culture of salmonids on Cape Breton Island failed during the early 1970s due to fish mortalities caused by lethal water temperatures. The cold water problem was subsequently overcome by a strategy of seasonal production which could bring an acceptable size to market before the onset of winter.

However, several financial losses from overwintering costs, including costs due to winter mortalities have continued to occur in Cape Breton. Despite threats to production, several enterprises have met with some reasonable success. The operation which relies on heated water effluent produced by the generating station at Lingan has been successful in maintaining temperatures above ambient levels. However, it recently suffered a major setback through sea lice infestations.

During 1988, an experimental trout hatchery near St. Peters had a small production of rainbow and speckled trout which is expected to expand production in the future. Another producer operates near Baddeck with a modest annual production of Atlantic salmon and rainbow trout. A new seasonal operation located at Cape Auget near Petit-de-Grat, is expected to grow-out rainbow trout in sea-cages at a marine site; and a seasonal, freshwater rearing facility specializing in the grow-out of speckled and rainbow trout is operating at Margaree Forks.

Constraints and Opportunities for Finfish

The feed cost in rearing salmon and rainbow trout is significant, ranging from 40 to 70 percent of the production cost. It should be possible to reduce feed costs through the utilization of new technologies such as the production of

silage-based feed diets from fish carcasses produced in the herring roe fishery. The recent surge in feed production also should help reduce costs.

The problem of sea lice is a major constraint on future development of the industry. Unless an effective means of prevention is developed, fish farms will continue to suffer minor to major losses of farm stock. More biological research on sea lice must be conducted. A recent conference on the sea lice problem, held in Cape Breton, concluded that a coordinated, international effort has to be effected in order to produce a solution to this menacing problem.

Trout products produced in Canada do not compete directly with the 1,000t of trout products which have been imported to Canada each year since 1981. Canadian trout are sold fresh and increasing amounts are sold smoked, or as trout fillets. Because the domestic product has the potential to be sold fresh year-round, it has the potential to displace imports. Up to now, there has been little advertising or promotion directed at the consumer markets.

Trout farming in Cape Breton could expand if the domestic market were to be developed further. Some opportunities exists for export to the northeastern United States. There is considerable expertise and knowledge related to fish farming in Cape Breton and there is no supply shortage of fingerlings to the industry. The Canadian product has a reputation of high quality and it commands a higher price than the imported trout from Idaho. In order to compete with the supply of trout from other parts of Canada and the U.S., a clever advertising campaign to emphasize the superiority of Cape Breton trout could be useful. A similar approach was adopted in Scotland with Scottish salmon.

Smolt production in Nova Scotia is not considered a constraint on industry development. The present oversupply of smolts, however, accompanied by lower market prices for the mature fish, (prices have dropped from $6.50 to $4.00 per pound) is reducing overall viability of the industry. For an analysis of the

impact of price changes on the net income of a hypothetical salmon sea-cage operation, see Tables 19 and 20.

Cape Breton is in an advantageous geographical position owing to its proximity to eastern North American markets. Fish grown in Cape Breton are within 12 hours delivery time of the major marketplaces of Canada and the United States.

The lack of public opposition to aquaculture in Cape Breton thus far bodes well for future expansion of the industry. However, one of the growth constraints of the Cape Breton finfish farming industry is the lack of suitable sea-cage sites. Several sites have been too cold for rearing salmon, and even existing sites which have been suitable for rearing salmonids for a number of years can experience lethal temperatures during unusually cold winters. The fact that there are not enough available sites may preclude the development of sea-cage culture. Additional production could come from land-based systems if they become more cost effective. The production cost of salmonids depends on the natural mortality rate, production capacity, feed costs, labour costs and capital costs. There is potential for salmonid production in land-based systems through pumping ocean water ashore. However, in addition to higher operating costs, the capital costs of land-based farming systems are higher than sea-cage operations. Thus, cash flow may be a problem during start-up years. The higher costs of land-based technology may impose economic constraints on the future development prospects of the industry. These higher costs may preclude competition with sea-cage salmon from elsewhere in Canada and from Europe. Land-based systems are technically feasible, but their commercial viability has yet to be established.

Before encouraging new, large-scale investments to increase the number of finfish operations in the industry, existing operations need to be made more fully operational and to be placed on a firm financial footing. This would help to ensure the industry's long-term development. More biological research is

necessary to overcome existing technical constraints such as lethal water temperatures, sea lice, and diseases.

Oyster Culture

The presence of self-sustaining populations of wild oysters is the best indicator of the suitability of an area for oyster culture. Cape Breton is known to have isolated, indigenous populations of the American oyster in the Bras d'Or Lakes, Aspy Bay, and in the Mira River. During the 1950s and 1960s, the oyster fishery was an important component of Cape Breton Island's rural economy. Today, there are two active oyster producers on the Island. There are about another 100 oyster lease holders, of which only 25 percent are still active, producing small quantities of oysters on private beds for personal consumption. The total output of cultivated oysters on the Island was about 112 tonnes during 1988.

Constraints and Prospects for Oyster Culture

Constraints on the future development of this species include the fact that coliform bacteria contamination is increasing in numerous estuaries containing oyster grounds. The other major constraint is that the best growing areas in the Bras d'Or Lakes are presently occupied by lease holders who are not attempting to enhance oyster production and only produce for personal use. A new policy regarding the utilization of inactive leases could increase oyster production.

There is evidence that pathogens can easily be transmitted between cultured and wild shellfish. Consequently, shellfish on Cape Breton Island are protected by federal regulations prohibiting the introduction of shellfish from the rest of Atlantic Canada. As a result of this policy, oysters in the Bras d'Or Lakes are still disease free. In order to enhance the activity of the oyster industry, research on the safe transfer of shellfish into Cape Breton is needed. Assuming that ways are found for safe transfers, the development of a shellfish hatchery

could maintain the seed supply and diversify the industry with new products and markets.

Research should be conducted on the economic viability of commercial oyster production. Producers in New Brunswick with similar growth constraints have questioned its viability.

Some other constraints facing the industry include limited seed supply, a long grow-out cycle, and cash flow problems. However, Cape Breton is in an advantageous geographical position as far as eastern U.S. markets are concerned. The demand for oysters in Eastern Canada has the potential to increase because the per capita consumption of oysters has traditionally been half what it is in the U.S. The industry in Atlantic Canada has yet not attempted to expand domestic sales through advertising or consumer awareness.

Mussel Culture

Mussel aquaculture production has increased in Cape Breton with most of the suspension culture activity occurring at Mabou Harbour and in the Lennox Passage area. Other active mussel producers on the Island are found at Orangedale, West Bay, Cleveland, River Bourgeois, and Englishtown. The total quantity of mussels produced during 1988 was 27 tonnes. Technically, the mussel farming industry on Cape Breton Island appears to have potential for future expansion.

Constraints and Prospects for Mussels

The mussel industry produces a premium product at a premium price. The Atlantic Canadian mussel industry competes against the semi-cultivated, bottom-grown mussel produced in the United States. Approximately 65% of Canadian mussel consumption is supplied by the U.S. wild and semi-cultivated product, but the Canadian price is higher. In order to secure markets for Canadian mussels, the industry must promote and convince consumers of the superiority of the cultured product.

The market potential for blue mussels is difficult to assess because of its dependence on promotion and advertising. A recent Fisheries and Oceans market study predicted that the supply of mussels will exceed demand as early as 1990. This has already occurred on the local market with an oversupply of fresh product. Since these marketing constraints will seriously restrict the growth of the industry, secondary processing and the development of new product lines could reduce the oversupply of mussels.

The growth cycle of mussels in Cape Breton, typically 20 to 24 months, is longer than in other parts of the Maritimes where the cycle ranges from 16 to 18 months. This is a constraint to industry growth particularly as it relates to financing during the early start up years. The industry is exposed to the risks of pollution and contamination, and the resulting impacts that follow a harvesting closure.

The production of cultivated mussels is a relatively costly, labour intensive process. Transportation costs range around 20 percent of the delivered costs to Montreal and Toronto. Mussels sell for approximately $2.20 per kilogram, which is not significant when the production, transportation, and marketing costs are taken into account.

The natural supply of mussel seed is abundant and adequate for existing operations throughout the Island. Additional effort should be made to expand the Canadian and U.S. market for what is essentially a new product. For a listing of aquaculture operations in Cape Breton, see Table 18 and Figure 4.

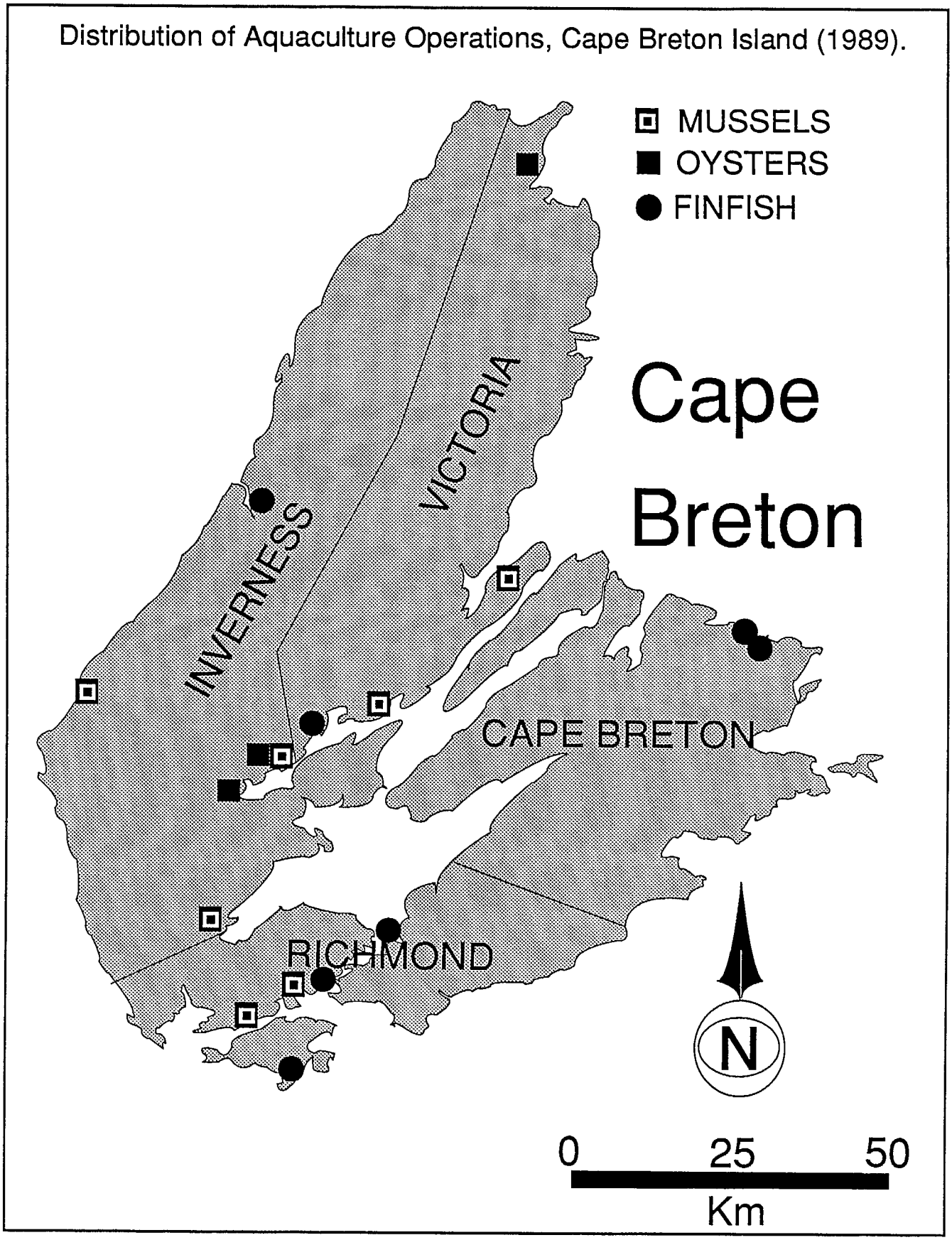
Distribution of Aquaculture Operations, Cape Breton Island (1989).
MUSSELS
OYSTERS
FINFISH
Cape
Breton
INVERNESS
VICTORIA
CAPE BRETON
RICHMOND
N
0
25
50
Km

Figure 4

PART IV SPORT FISHERY

Angler Licences

During the 1988/89 season, 13,478 licences were purchased by anglers in Cape Breton. The majority of purchases were made by Island residents (97%) which follows the trend of previous years. In terms of actual numbers, however, there has been a declining trend over the past five seasons during which the number of licences purchased in Cape Breton went from 16,508 in 1984/85 to 13,478 in 1988/89.

The relatively small number of angler licences purchased by non-residents of Cape Breton also decreased from 725 in 1984/85 to 379 in 1988/89. As a percentage of the total annual number of anglers in Cape Breton, the decrease amounted only to a two percent point change. The number of licences bought by non-residents is an important factor because these anglers bring additional income to the area. Their decreasing number means the loss of direct income from angler purchases and also the loss of induced benefits in other sectors of the Cape Breton economy.

Catches

Angler catches of Atlantic Salmon in Cape Breton have increased considerably since 1984. The annual catch level more than doubled from 1984 to 1985; it peaked in 1986 with a catch of 6,422 fish, and then dropped in 1987 and 1988 by approximately 1,000 fish. The 1988 catch was down by 13% from the high achieved in 1986.

The most important salmon river is the Margaree in Inverness County. In 1988 1,455 anglers caught a total of 2,934 Atlantic salmon. That was over half of the total Atlantic salmon catch in Cape Breton. Excellent fishing in the Margaree has enhanced its reputation and drawn anglers to it. Other salmon rivers are listed in Figure 5.

The commercial salmon fishery has been closed throughout Nova Scotia since the end of the 1983 season and the current (1989) fishery management plan maintains the status quo. Conservation is the major priority of the management plan and, in the maritime provinces, the importance of the recreational fishery is given recognition surpassing that of the commercial fishery because of the larger potential benefits generated and to avoid damaging the stock. However, a continuing role for the commercial fishery is also recognized.

At present, the river systems of Cape Breton are not stressed, but they are running at capacity. Good harvests of speckled trout have occurred on some of the Cape Breton salmon rivers, but generally, brook trout are known to stand up poorly to exploitation. In some cases streams have been stocked with trout, but stocking is regarded as a last resort and is undertaken cautiously because of the potential for causing genetic changes in wild stocks and affecting their ability to survive.

Development Constraints

The key area of potential for sport fishery development is the Bras d'Or Lake system. Scientific advice on enhancement is that the ideal choice is a species which already inhabits the lakes, one which can be released at an early stage from a hatchery, and which will stay in the lake and attain trophy size.

Certain candidate species may have to be ruled out. For example, Atlantic salmon enhancement may be desirable, but because it is highly migratory it would not provide a lake fishery or significantly contribute to existing sport fishing in the river tributaries. Among the choices available, the rainbow trout has been singled out. Rainbow trout are known to make efficient use of the salt water environment. They grow rapidly and are prized by anglers. It should be noted that, while it may be possible to produce more fish in the lake by a stocking program, it is also possible that marginal increases in fishing may take place at considerable cost. The potential success of a stocking program may be

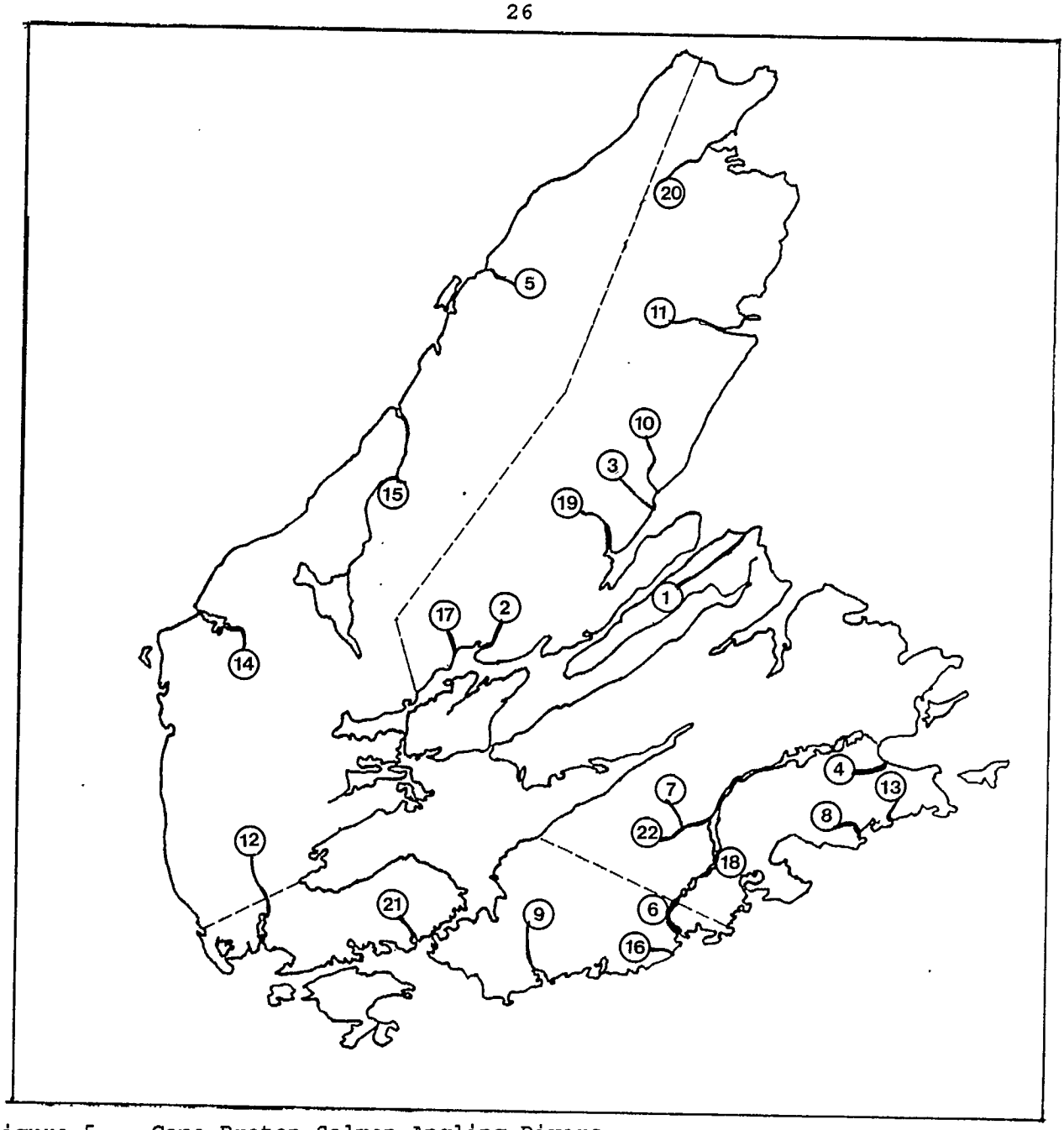

Figure 5. Cape Breton Salmon Angling Rivers.

Aconi Brook	1	Inhabitants	12
Baddeck	2	Lorraine Brook	13
Barachois	3	Mabou	14
Catalone	4	Maragaree	15
Cheticamp	5	Marie Joseph	16
Framboise	6	Middle	17
Gaspereau	7	Mira	18
Gerratt Brook	8	North	19
Grand	9	North Aspy	20
Indian Brook	10	River Tillard	21
Ingonish	11	Salmon	22

constrained by the need to attract enough additional anglers through tourism promotion. The connection between the productivity and popularity of the Bras d'Or Lakes may be tenuous.

The Bras d'Or Lake system is federally regulated with regard to fishing methods, daily limits, and seasons. Regulations have been varied in recent years to facilitate angling in the lakes by extending the season for existing rainbow trout fishing. Additional management measures may be necessary in the context of a large stocking program. Changes to regulations require consultations with user groups.

PART V UNDERUTILIZED SPECIES

Several underutilized species show promise for successful fisheries. There are opportunities for development, but also there are issues and technical problems constraining further development in the Cape Breton Island area.

Silver Hake

Silver hake is found in abundance in the canyons and the outermost slopes of the Scotian Shelf. The fishery takes place between April and late June and is presently conducted by the U.S.S.R. and Cuba. The quantity of silver hake fished by these two countries alone is in excess of the total landings of all species on Cape Breton Island. The present total allowable catch of silver hake is 135,000t. Progress has been made in recent years with experimental catches and some processing has been done in Nova Scotia. Some of the technical problems have been surmounted. For example, the quality of fish at landing has improved, enabling production of a frozen white fillet.

Constraints

Consistent high catch rates were not experienced by local fishermen despite various fishing trials. Many other technical constraints regarding harvesting still remain. The following are a few constraints that are general or particular to Cape Breton regarding this species:

1) Harvesting costs are high and revenues are relatively low.
2) High power vessels are required to fish silver hake due to depth and tow requirements.
3) April to June is a period of active groundfish fishing.
4) Refrigerated seawater is preferred due to the fast deteriorating nature of the fish.

5) The processing costs are high. Mechanized processing equipment, only now under development, is required to make onshore processing viable.
6) Marketing is a major problem. Interest in silver hake is very limited, and it therefore commands a very low price.
7) Due to the inclement weather of April and May, the near-shore and mid-shore fleets in Cape Breton would have difficulty in successfully fishing silver hake.

One advantage for Cape Breton over other areas is the proximity to the major silver hake stocks, as this could represent lower landing costs. The Department of Fisheries and Oceans is working to resolve the constraints listed above. In 1989/90 the Department's budget for silver hake was in excess of $300,000, with expectation of similar support in the future.

Offshore Clams

To date, three companies have been involved in the development of the Stimpson surf clam fishery. The companies are Nova Scotia Clams, Clearwater Fine Foods (Pursuit Fisheries) and Mother Snow Fisheries (affiliated with National Sea Products). The first two companies have harvested and processed a significant quantity of product. Such constraints as large capital infusion, harvesting techniques, locating the resource, etc., have, to a certain point been overcome by the agencies and companies involved.

Today, the major constraint to the development of surf clams is the availability of markets. Although the product has attracted the interest of the Japanese, a higher price and a larger demand are required for long-term viability. Due to colour and texture, the Stimpson surf clam has not yet found consumer acceptance on the U.S. market, despite the belief by Canadian producers that the product is of greater appeal than its U.S. substitute.

DFO, ACOA and industry are recommending a marketing study which would identify additional market potential. The results of this study should give direction to government and industry in the development of the fishery for the next five years.

Mackerel

An abundant stock of mackerel is presently available to the fishing sector of Cape Breton Island. This resource is highly underutilized as harvesting levels dictated by the market are lower than the resources available. Potential product availability would be on the order of 100,000t. This is compared with present harvests of less than 10,000t.

Constraints

A limited mackerel fishery by a number of inshore fishermen is presently in place. Further development of this fishery could affect the already unstable market available to the inshore fishermen. The price for mackerel on world markets is low, but there are some indications that demand might improve. If the fish can be landed at sufficiently low cost, mackerel could represent some potential.

The Scotia-Fundy Region has not issued any new licences to seiners. The fishery is presently restricted to small inshore vessels and would only be made available to large seiners if markets and catching problems could be overcome.

The major limitation to further exploitation of mackerel is market availability.

There was a trend in the mid-1970s on the European market to substitute mackerel for herring. However, this has been reversed by the recovery of North Sea herring. Eastern Bloc countries continue to search out access arrangements with foreign countries in light of dwindling supplies on their own fishing grounds. The Japanese, and to some extent the Latin American countries, are major

exporters of frozen and canned mackerel throughout the world. However, rising costs could reduce their competitiveness in the future.

The prospects for greater Canadian involvement in the mackerel fishery should, in the short-term, be considered on two fronts. Basically, the choice is to expand direct sales to foreign ships or to develop a domestic capacity to catch, process and market the species. International marketing will require the handling of large volumes on a low margin basis. Problems such as these will make it difficult for processors to rationalize necessary investments.

Dogfish

Dogfish is viewed as one of the largest underutilized finfish resources in the northwest Atlantic. Fishermen consider the species a nuisance as it damages gear and feeds on gillnet and longliner catches. Some fishermen have been requesting a dedicated fishery aimed at destroying the stock in order to decrease this problem. Markets have, however, improved for dogfish and some fishermen have directed for the species in order to supply markets mainly in the U.K., West Germany, and the Benelux countries.

Constraints

1) Dogfish must be processed quickly to prevent quality problems.
2) Dogfish will damage gear in addition to being difficult to retrieve from nets.
3) Processing is difficult and labour intensive as dogfish must be skinned by hand.
4) Disposal of waste could be a problem as not all fish meal operations will accept dogfish offal.

Because of small quantities, Canadian processors have been supplying U.S. firms which have established markets in Europe. Although prices are relatively low,

volume and direct marketing could result in a small fishery for Cape Breton fishermen and processors.

Shrimp

The present exploitation of shrimp off the coast of Cape Breton is mainly in the Canso, Louisbourg and Misaine holes. The shrimp fishery, mainly fished by Gulf shrimp vessels, expanded in 1983. Landings peaked in 1983 at 1,000t of a total allowable catch of 5,000t. Technology, both in harvesting and processing is sufficiently well known to conduct the fishery efficiently. Gulf shrimp vessel activity has since decreased as catch rates have dropped.

Constraints

By-catches of small groundfish are a problem. The impact of by-catches is regarded as more of a problem for stock conservation than a development constraint. The Department of Fisheries and Oceans is presently developing fishing gear to solve the by-catch problem.

Markets for shrimp do exist. Other than normal market fluctuations, there are no major problems related to this species.

Developmental licences have been allocated to fishermen in recent years. The lack of demand from local buyers has contributed to a lack of interest. Shrimp have been harvested and processed mainly by New Brunswick businesses. A consortium of Cape Breton fishermen and processors could possibly further develop this fishery.

Eels

Cape Breton Island is not recognized as a major eel fishing area. The harvesting of eels has, however, been conducted on an artisanal basis in most rivers on the Island. Little interest has been expressed by fishermen in harvesting eels on a commercial basis.

The eel fishery remains restricted, as fish licences must be obtained in order to pursue this species. Experimental licences can be obtained from DFO if all licensing conditions are met.

Constraints

1) The eel stocks in Cape Breton Island are relatively unknown and will remain so until fishermen show an interest in this fishery.
2) The poor demand for the product is noted for this region.

Eel fisheries in Nova Scotia represent an insignificant contribution to the total value of landings. This species, however, has contributed to the income of as many as 379 licence holders in 1988. It is expected that a small number of seasonal jobs could result from further exploitation of this product.

Rock Crab

Rock crab is commonly found in the Gulf of St. Lawrence and along the Nova Scotian Atlantic coastline. There has been no directed fishery for rock crab in Cape Breton. Lobster fishermen have treated rock crab as a nuisance because of its interference with lobster fishing and its low value.

Constraints

Direct fishing for rock crab is difficult as the by-catch of lobster is very high. Therefore, to date, only lobster fishermen are able to conduct the rock crab fishery. A modified lobster trap is used to catch crab outside the normal season. The traps are, however, still being tested. Processing rock crab is also a constraint. With upgraded processing technology and a higher demand for crab, the prospect of developing a rock crab fishery in Cape Breton will be greater.

Redfish

Redfish are found along the edge of the Scotian Shelf as well as in the Gulf of

St. Lawrence. Table 15 (advice for 1990) shows the various stocks available as well as catches for 1983 to 1988. In recent years the Canadian fleet has only taken 50 to 55% of its available quota. The percentage caught is much higher for stocks adjacent Cape Breton Island with only 35 to 40% of the stocks remaining in the water. Redfish in 4RST is the most exploited stock with 65% of the TAC landed.

Constraints

The major constraint regarding further development of redfish is market availability. The lack of new markets and a low price has discouraged additional effort in the redfish fishery. The market is also influenced by the size of the fish as large fish are in greater demand. The large proportion of smaller fish harvested in 4VWX has left the fishermen and processors less interested in this fishery.

To a lesser extent, parasites have caused problems for redfish processors. These problems are reflected in the handling cost and product quality.
Redfish is another example of a traditional species that has not yet been fully exploited due to economic and marketing factors. Additional redfish landings for Cape Breton are likely to occur as availability of cod, haddock and pollock decrease.

A number of other species such as sea urchins, sea cucumbers, and marine plants could have been included in this section. The limited selection was based on relevance to Cape Breton, potential for development, and interest expressed by individuals or organizations.

Very few constraints are linked significantly to technical aspects of the redfish fishery. Marketing and technical feasibility are the major constraints that are common to most underutilized or unutilized species.

A discussion paper entitled "Underutilized Fisheries Resources in Atlantic Canada" identifies the prospects for development of some 20 species of fish found in Atlantic waters and lists another dozen species which present potential.

PART VI CONCLUSIONS

Cape Breton Island has been, and will remain very dependent upon the fishing industry. Few alternatives exist for rural communities with an economic base built solely on the fishing industry. Despite structural and cyclical problems, the fishing industry has been able to survive in Cape Breton, providing employment and income where other industries have failed.

Although it is difficult to estimate the proportion of income derived from fishing employment, 4,383 fishermen and 1,803 plant workers have been to some degree dependent upon this sector.

Due to decreasing groundfish availability from the Scotian Shelf and the northern cod stocks, the landings have decreased for the last three years and will continue to drop as measures are taken to improve stocks. Despite recent reductions however, landings remain higher than 1985 levels.

The processing sector has experienced serious structural changes with a doubling of the number of registered processing establishments from 20 in 1985 to 40 in 1989. A typical characteristic of the processing industry is the smaller size of the operations and reduced resource availability.

The number of vessels is also in excess of required capacity. The lower prices recorded by fishermen for the landed product could further decrease the financial viability of many vessel owners.

Despite many setbacks, the aquaculture sector offers limited growth potential for Cape Breton Island. A strengthening of major investments already under development, and further development of the smaller scale oyster operations is encouraged. It is believed that recreational fishing provides an opportunity

for development to the extent that it can complement the existing tourism industry. The biological enhancement of rivers along with improved infrastructure (i.e. hotels and lodges) could provide a new economic base to the people along the inland waters.

It would be overoptimistic to assume that the solution to the resource problems is to place greater reliance on underutilized species. This deluding approach would only provide short-term gains. The major and most common constraint inhibiting the exploration of underutilized species is in marketing. Technical development is also necessary for many species for which harvesting and/or processing constraints exist.

In view of the overall context of the fishing industry on Cape Breton Island, government departments and agencies must cooperate in a concerted effort to create a viable industry. Development projects in the past have often capitalized on individual projects, creating employment to the detriment of other industry participants.

Recognizing structural problems of overcapacity and overcapitalization of both the harvesting and processing sectors, those departments and agencies which are able to influence economic development must do so in an orderly fashion.

Similarities and possible overlaps between Enterprise Cape Breton Corporation (ECBC), Enterprise Cape Breton (ECB), Industry Science Technology Canada (ISTC) and Cooperative Agreement Programs should be addressed in order to determine the role of individual departments in the development of the industry. Workshops and meetings between program administration should be held on a regular basis. Similar contacts with industry would assist in formulating programs and policies aimed at improving the development context of this industry.

PART VII: STATISTICAL COMPILATION

TABLE 1
NUMBER OF INCOME TAX FILERS WITH FISHERIES INCOME
CAPE BRETON ISLAND, 1981 - 1987

YEAR	NUMBER OF FILERS	FISHERMEN'S INCOME ($M)	FISH AS A % OF TOTAL INCOME (%)	UI BENEFITS ($M)	UI AS A % OF TOTAL INCOME (%)	TOTAL ($M)	AVERAGE INCOME ($)
1981	1875	12.1	49	4.5	18.3	24.5	13,066
1982	1950	14.7	50	6.0	20.5	29.2	14,980
1983	2125	16.8	51	7.7	23.4	32.9	15,472
1984	2175	15.4	48	9.1	28.2	32.3	14,860
1985	2150	19.5	51	10.2	26.8	38.1	17,700
1986	2325	27.7	56	12.0	24.4	49.0	21,083
1987	2550	36.5	59	13.5	22.0	61.7	24,190

SOURCE: Statistics Canada, Administrative data, Special Tabulation 1981-87.

TABLE 2
NUMBER OF FISHERMEN IN CAPE BRETON BY COUNTY, AND CATEGORY 1986 - 1988

CATEGORY	1986	1987	1988
INVERNESS COUNTY			
Full-Time (Bonafide)	273	263	268
Part-Time	37	43	49
Commercial	630	685	710
TOTAL FISHERMEN	940	991	1027
RICHMOND COUNTY			
Full-Time	176	182	196
Part-Time	256	293	308
TOTAL FISHERMEN	432	475	504
CAPE BRETON COUNTY			
Full-Time	612	650	687
Part-Time	876	1,183	1,264
TOTAL FISHERMEN	1,488	1,833	1,951
VICTORIA COUNTY			
Full-Time (Bonafide)	324	334	344
Part-Time	296	354	364
Commercial	176	183	193
TOTAL FISHERMEN	796	871	901
CAPE BRETON ISLAND			
Full-Time (Bonafide)	1,385	1,429	1,495
Part-Time	1,465	1,873	1,985
Commercial	806	868	903
TOTAL FISHERMEN	3,656	4,170	4,383

SOURCE: Licensing Units, Fisheries and Oceans, Halifax and Moncton.

NOTE: The licence categories, "full-time" (Scotia-Fundy) and "Bonafide" (Gulf) are equivalent; the part-time distinction pertains to Scotia-Fundy only; the commercial category designates fishermen of the Gulf Region who operate vessels under 50 feet (full-time or part-time).

TABLE 3
LIMITED FISHERY LICENCES, BY COUNTY IN CAPE BRETON
1984 TO 1988

LIMITED FISHERY		Inverness County	Richmond County	Cape Breton County	Victoria County	CAPE BRETON TOTAL
GROUNDFISH	1984	186	87	250	183	706
	1985	182	80	240	175	677
	1986	185	78	251	171	685
	1987	187	72	255	173	687
	1988	191	70	277	169	707
HERRING	1984	241	115	107	65	528
	1985	239	101	111	62	513
	1986	115	103	102	29	349
	1987	113	101	101	29	344
	1988	115	97	105	30	347
MACKEREL	1984	185	113	132	97	527
	1985	174	100	127	95	496
	1986	147	102	133	65	447
	1987	147	99	140	64	450
	1988	152	100	147	65	464
SALMON	1984	16	--	--	8	24
	1985	19	--	--	8	27
	1986	4	-	-	-	4
	1987	1	-	-	-	1
	1988	-	-	-	-	-
TUNA	1984	20	4	--	1	25
	1985	19	5	1	1	26
	1986	21	5	2	4	32
	1987	20	4	3	4	31
	1988	22	-	-	1	23
LOBSTER	1984	257	85	273	252	867
	1985	258	81	273	246	858
	1986	262	79	271	243	855
	1987	258	83	271	234	846
	1988	259	76	273	221	829
SCALLOP	1984	10	15	90	24	139
	1985	8	12	83	19	122
	1986	5	13	83	22	123
	1987	9	7	44	15	75
	1988	10	5	51	19	85
SNOW CRAB	1984	50	12	42	76	180
	1985	52	11	40	69	172
	1986	57	11	38	63	169
	1987	60	11	38	59	168
	1988	62	12	34	63	171
SHRIMP	1984	--	1	--	--	1
	1985	--	1	1	--	2
	1986	-	-	2	-	2
	1987	-	-	-	-	-
	1988	-	-	1	-	1
SQUID	1984	--	--	2	--	2
	1985	--	--	2	--	2
	1986	-	-	3	-	3
	1987	17	-	2	11	30
	1988	52	-	3	30	85
SWORDFISH	1986	41	21	193	114	369
	1987	45	27	220	126	418
	1988	49	28	237	134	448
TOTAL	1984*	965	432	896	706	2999
	1985*	951	391	878	675	2895
	1986	837	412	1078	711	3038
	1987	857	404	1074	715	3050
	1988	912	388	1128	732	3160

* 1984 and 1985 do not include swordish due to ban.
SOURCE: Licensing Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 4
NUMBER OF ACTIVE[1] AND INACTIVE[2] FISHING LICENCES
SCOTIA-FUNDY REGION, CAPE BRETON (1988)

LICENCE CATEGORY	NUMBER OF FISHING LICENCES		
	ACTIVE	INACTIVE	TOTAL
Longline < 35'	50	239	289
Longline 35-64'	75	101	176
Mobile gear < 45'	35	--	35
Mobile gear 45-64'	25	--	25
TOTAL	185	340	525

[1]Active fishing licences are defined as those utilized in 1988, on vessels which landed groundfish amounting to at least 80% of the vessel's total landed value.

[2]Inactive fishing licences are defined as those licences which were issued to fishermen in 1988 but either were not used or were issued to vessel operators who did not land enough groundfish to meet the criterion for an active vessel as defined for statistical purposes.

SOURCE: Licensing unit, Fisheries and Oceans, Halifax, 1988.

TABLE 5
NUMBER OF REGISTERED FISHING VESSELS IN
CAPE BRETON, BY COUNTY 1984 - 1988

COUNTY	1984	1985	1986	1987	1988
Inverness	320	331	345	338	353
Richmond	173	169	162	172	168
Cape Breton	468	492	525	579	595
Victoria	332	339	345	354	350
CAPE BRETON TOTAL	1,293	1,331	1,377	1,443	1,466

SOURCE: Licensing Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 6
NUMBER OF REGISTERED FISHING VESSELS IN CAPE BRETON, BY LENGTH OVERALL AND COUNTY, 1984 - 1988

COUNTY/YEAR		LENGTH OVERALL (FEET)									
		0-34	35-39	40-44	45-49	50-54	55-59	60-64	65-99	100 +	TOTAL
INVERNESS	1984	245	47	28	--	--	--	--	--	--	320
	1985	240	47	33	1	5	3	2	--	--	331
	1986	242	47	41	1	8	3	3	-	-	345
	1987	232	53	39	1	8	3	2	-	-	338
	1988	231	58	49	1	6	3	4	-	1	353
RICHMOND	1984	137	19	11	--	--	--	--	--	6	173
	1985	136	18	9	--	--	--	--	--	6	169
	1986	132	15	10	-	-	-	-	-	5	162
	1987	139	16	12	-	-	-	-	-	5	172
	1988	134	18	11	-	-	-	-	-	5	168
CAPE BRETON	1984	297	91	58	--	5	--	7	1	9	468
	1985	316	98	55	1	4	--	9	--	9	492
	1986	341	104	60	1	4	-	7	-	8	525
	1987	377	117	68	1	3	-	7	-	6	579
	1988	383	124	69	3	3	1	7	-	5	595
VICTORIA	1984	270	34	27	--	1	--	--	--	--	332
	1985	277	36	25	--	1	--	--	--	--	339
	1986	281	38	26	-	-	-	-	-	-	345
	1987	287	43	24	-	-	-	-	-	-	354
	1988	288	38	24	-	-	-	-	-	-	350
CAPE BRETON ISLAND	1984	949	191	124	--	6	--	7	1	15	1,293
	1985	969	199	122	2	10	3	11	--	15	1,331
	1986	996	204	137	2	12	3	10	-	13	1,377
	1987	1,035	229	143	2	11	3	9	-	11	1,443
	1988	1,036	238	153	4	9	4	11	-	11	1,466

SOURCE: Licensing Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 7
NUMBER OF FISH BUYERS BY COUNTY WITHIN CAPE BRETON, 1988

COUNTY	GROUNDFISH	LOBSTER	HERRING	SCALLOPS	OTHER SPECIES	TOTAL *
INVERNESS	14	9	7	1	9	16
RICHMOND	9	7	3	2	8	16
CAPE BRETON	66	23	8	12	19	84
VICTORIA	9	16	4	-	9	18
TOTAL CAPE BRETON	77	38	17	16	35	101

* The total number of buyers in each County does not necessarily equal the total number by species purchased as some buyers may buy several species.

SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 8
PERCENTAGE OF CAPE BRETON GROUNDFISH LANDINGS, BY COUNTY, PURCHASED BY MAJOR* BUYERS, 1988

		PURCHASES		PERCENT OF TOTAL GROUNDFISH LANDINGS	
BUYER	COUNTY	VOLUME KG	VALUE $	VOLUME %	VALUE %
TWENTY BUYER TOTAL	INVERNESS	11,065,029	5,172,919	83.3	89.3
	RICHMOND	12,394,166	4,471,173	97.2	94.3
	CAPE BRETON	36,398,825	20,053,902	85.7	82.7
	VICTORIA	2,223,493	1,474,149	49.5	48.9
	CAPE BRETON TOTAL	62,081,513	31,172,143	85.1	82.5

* Major buyer defined by minimum purchase of $1,000,000 for all species.

SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 9
SHARE OF PROVINCIAL LANDINGS ACCOUNTED FOR BY CAPE BRETON 1984 - 1988

Year	Total Quantity (%)	Value (%)	Groundfish Quantity (%)
1984	23.2	17.6	26.0
1985	18.5	16.1	25.0
1986	21.3	17.6	29.1
1987	19.6	18.6	21.9
1988	17.7	18.7	28.0

SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 10
NUMBER OF REGISTERED FISH PROCESSING ESTABLISHMENTS, BY COUNTY, WITHIN CAPE BRETON, 1980 - 1989

COUNTY	1980	1983	APR 84	SEPT 84	MAR 85	AUG 85	DEC 86	NOV 87	NOV 88	OCT 89
INVERNESS	2	3	3	4	4	4	4	5	7	7
RICHMOND	2	2	2	2	2	2	3	5	5	5
CAPE BRETON	12	11	11	11	12	14	17	18	20	22
VICTORIA	3	2	2	2	2	1	3	4	6	6
CAPE BRETON ISLAND	19	18	18	20	20	21	27	32	38	40

SOURCE: 1980 Plant Capacity Survey, Economics Branch, Fisheries and Oceans, Halifa
1983 Plant Capacity Survey Update, Economics Branch, Fisheries and Oceans, Halifax and Moncton.
1984-1986 Listing of Registered Fishing Establishments, Scotia-Fundy Regio and Gulf Region.
1985-1988 Listing of Registered Fishing Establishments, Scoita-Fundy Region and Gulf Region.

TABLE 11
CATCHES AND LANDED VALUES, BY MAIN SPECIES CATEGORY IN CAPE BRETON 1984 - 1988

Quantity (Q) in tonnes, - Value (V) in thousand dollars

SPECIES CATEGORY	1984		1985		1986		1987		1988*	
	Q	V	Q	V	Q	V	Q	V	Q	V
Groundfish	72,854	24,758	73,597	30,042	85,570	46,086	81,910	60,294	72,963	37,786
Pelagic and Estuarial	9,476	2,239	7,426	1,627	7,115	1,620	5,193	1,586	7,049	1,890
Molluscs and Crustaceans	7,598	19,898	5,189	20,192	6,225	26,802	7,452	35,576	12,092	42,226
Other	10	11	6	13	6	13	-	-	1	4
TOTAL	89,938	46,906	86,218	51,874	98,916	74,521	94,555	97,456	92,105	81,906

*Preliminary

SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 12
CATCHES AND LANDED VALUES, BY MAIN SPECIES CATEGORY, BY COUNTY IN CAPE BRETON 1984 - 1988

Quantity (Q) in tonnes - Value (V) in thousand dollars

SPECIES CATEGORY PER COUNTY	1984		1985		1986		1987		1988*	
	Q	V	Q	V	Q	V	Q	V	Q	V
INVERNESS										
Groundfish	12,522	4,425	11,469	4,940	14,211	7,980	13,040	10,433	13,278	5,795
Pelagic and Estuarial	1,524	334	641	185	909	367	350	144	410	146
Molluscs and Crustaceans	2,577	6,179	2,850	7,440	3,079	9,424	2,774	11,486	3,202	13,188
Other	3	2	--	--	-	-	-	-	-	-
TOTAL	16,626	10,940	14,960	12,565	18,199	17,771	16,164	22,063	16,890	19,129
RICHMOND										
Groundfish	13,127	3,795	13,505	4,169	13,345	4,782	12,476	5,100	12,746	4,740
Pelagic and Estuarial	359	88	595	184	371	122	599	250	736	265
Molluscs and Crustaceans	184	922	225	1,343	285	1,785	370	2,559	370	2,113
Other	--	--	1	1	--	--	--	--	--	--
TOTAL	13,670	4,805	14,326	5,697	14,001	6,689	13,445	7,909	13,852	7,118
CAPE BRETON										
Groundfish	43,799	15,174	44,881	19,012	53,799	30,048	51,302	39,508	42,451	24,235
Pelagic and Estuarial	5,015	776	3,935	657	4,629	749	2,999	754	3,634	618
Molluscs and Crustaceans	3,677	8,922	1,148	6,616	1,623	9,157	3,057	14,054	7,009	18,718
Other	7	9	5	12	5	11	-	-	1	4
TOTAL	52,498	24,881	49,969	26,297	60,056	39,965	57,358	54,316	53,095	43,575
VICTORIA										
Groundfish	3,406	1,363	3,742	1,921	4,215	3,276	5,092	5,253	4,488	3,016
Pelagic and Estuarial	2,578	1,041	2,255	601	1,206	382	1,245	438	2,269	861
Molluscs and Crustaceans	1,160	3,875	966	4,793	1,238	6,436	1,251	7,477	1,511	8,207
Other	--	--	--	--	1	2	--	--	--	--
TOTAL	7,144	6,279	6,963	7,315	6,660	10,096	7,588	13,168	8,268	12,084

*Preliminary
SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 13
CATCHES AND LANDED VALUES, GROUNDFISH AND ALL SPECIES IN NOVA SCOTIA, 1984 - 1988

Quantity (Q) in tonnes - Value (V) in thousand dollars

SPECIES CATEGORY	1984		1985		1986		1987		1988*	
	Q	V	Q	V	Q	V	Q	V	Q	V
GROUNDFISH										
Scotia-Fundy	254,248	109,191	273,713	133,059	277,249	170,822	259,229	219,359	245,671	157,679
Gulf	15,660	5,543	14,261	6,106	16,610	9,359	15,830	12,694	15,175	6,957
TOTAL N.S.	269,908	114,734	287,974	139,165	293,859	180,181	275,059	232,053	260,846	164,636
ALL SPECIES										
Scotia-Fundy	378,009	243,388	438,423	293,398	432,183	387,024	460,389	477,580	486,820	395,872
Gulf	24,781	21,899	27,770	27,885	30,609	35,736	33,041	46,614	32,783	41,765
TOTAL N.S.	402,790	265,287	466,193	321,283	462,792	422,760	493,430	524,194	519,603	437,637

*Preliminary

SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 14
CAPE BRETON LANDINGS BY TYPE OF BUYER
1985 - 1988

YEAR	Local Buyers	Purchases by Local Buyers	% of Landings Purchased by Local Buyers	Non C.B. Buyers
1985	28	76,100 t	85%	36
1986	33	82,713 t	87%	50
1987	40	76,000 t	83%	62
1988	35	74,014 t	86%	66

Quantities and percentage of landing would exclude landing for which the buyer is unknown; therefore, would not be comparable with total landing.

TABLE 15
TOTAL CAPE BRETON CATCHES AND LANDED VALUES, BY COUNTY AND PROVINCIAL COMPARISON 1984 - 1988

Quantity (Q) in tonnes - Value (V) in thousand dollars

Year		Inverness County	Richmond County	Cape Breton County	Victoria County	CAPE BRETON TOTAL	NOVA SCOTIA TOTAL
1984	Q	16,626	13,670	52,498	7,144	89,938	402,790
	V	10,940	4,805	24,881	6,279	46,906	265,287
1985	Q	14,960	14,326	49,969	6,963	86,218	466,193
	V	12,565	5,697	26,297	7,315	51,874	321,283
1986	Q	18,199	14,001	60,056	6,660	98,916	462,794
	V	17,771	6,689	39,965	10,096	74,521	422,757
1987	Q	16,164	13,445	57,358	7,588	94,555	493,428
	V	22,063	7,909	54,316	13,168	97,456	524,192
1988*	Q	16,890	13,852	53,095	8,268	92,105	519,603
	V	19,129	7,118	43,575	12,084	81,906	437,637

*Preliminary

SOURCE: Statistics Units, Fisheries and Oceans, Halifax and Moncton.

TABLE 16
SUMMARY OF RECENT CATCHES (1983-1988)
AND TACS (1983-1990)

Stock		Nominal catches ('000 t)						TACs set ('000 t)							
		1983	1984	1985	1986[a]	1987[a]	1988[a]	1983	1984	1985	1986	1987	1988	1989	1990
COD															
	2GH	2	2	1	1	+	0.4	20	20	20	20	20	20	20	20
	4RS3Pn	106	104	88	80	66	48	100	100	100	92.1	80.3	73.9[i]	76.5	58
	4TVn(J-A)	61	55	62	63	51	52	62	67	67	60	45.2	54	54	53
	4Vn(M-O)	9	10	13	12	10	9	14	14	12	12	9	7.5	7.5	7.5
	4VsW	52	53	57	51	45	37	64	55	55	48	44	38	35.2	35.2
	4X	29	25	21	20	19	19	30	30	30	20	17.5	14	12.5	12
	5Zjm[e]	21	18	17	15	17	20	45	45	25[b]	11[b]	12.5[b]	12.5[b]	8[b]	?
HADDOCK															
	4TVW	9	8	11	17	4	4.5	19	15	15	17	-	-	6.7	6
	4X	25	20	15	15	14	11	32	32	15	15	15	12.4	4.6	4.6
	5Zjm[e]	7.7	6.6	5.2	5.6	6.1	5.7	28	20	5.1[b]	5.1[b]	8.3[b]	8.3[b]	8.3	?
POLLOCK															
	4WX+5Zc[e]	33	33	43	43	45	42	45	53	42[i]	40[i]	43[i]	43[i]	43[i]	38
REDFISH															
	2+3K	15	24	29	27	18	7	35	35	35	35	35	35	35	35
	3O	7	10	8	10	13	9	20	20	20	20	20	14	14	14
	3P	6	4	4	7	6	9	18	18	18	18	18	15	15	10
	4RST	25	35	28	33	34	36	31	50.6	50.6	55.6	50	56	57	57
	4VWX	13	10	14	13	24	18	30	30	30	30	30	30	30	30
AMERICAN PLAICE															
	2+3K	2	1	1	3	1	1	10	10	10	10	10	10	10	10
	3Ps	2	3	4	4.5	5	4	5	5	5	5	5	5	5	4
	4T[d]	6	10	10	7	8	6.7	10	10	10	10	10	10	10	10
WITCH															
	2J3KL	3	5	3	4	4	4	8	8	8	8	6	5	5	4
	3Ps	+	1	1	1	1	0.3	3	3	3	3	3	1	1	1
	4RS	1	1	1	1	1	1.1	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
ATLANTIC HALIBUT															
	3NOPs+4WVX+5Zc	2.3	3.1	4.0	3.3	2	2.1	-	-	-	-	-	3.2	3.2	3.2
	4RST	+	+	+	+	+	0.3	-	-	-	-	-	0.3	0.3	0.3
GREENLAND HALIBUT															
	4RST	1	2	2	7	11	7.5	5	5	5	5	8.7	10.5	10.5	10.5
FLATFISH															
	4VWX	10	11	8	7	9	7	14	14	14	14	14	14	14	14
WHITE HAKE															
	4T	7	7	6	5	6	3.8	12	12	12	12	9.4	5.5	5.5	5.5
ARGENTINE															
	4VWX	1	+	+	+	+	0.4	[c]	10	10	10	10	10	10	10

[a]Provisional statistics.
[b]Canadian quota only.
[c]No TAC but Japan allocated 3,100 t.
[d]American plaice and 90% of those recorded as "Flatfish not Specified".
[e]Catches and advice for new management unit.
[f]Canadian quotas are for Division 5Z.
[g]50% rule applied.
[h]Canadian quotas for SA5.
[i]Canadian quota for divisions 4VWX+SA5 to 1989.
[j]5,000 from Division 3K, 5,000 from SA2.
[k]Precautionary catch.
(-)Information inadequate to provide advice (see text).

TABLE 17

AQUACULTURE PRODUCTION ON CAPE BRETON ISLAND

The following table lists aquaculture production output for all operations on Cape Breton in 1988

SPECIES	Quantity(t)	Value ($)
Oysters	112	90,555
Mussels	27	49,850
Atlantic Salmon	0.2	2,500
Rainbow Trout	118	763,177

SOURCE: Department of Fisheries, Province of Nova Scotia.

TABLE 18
NUMBER AND LOCATION OF AQUACULTURE OPERATIONS IN CAPE BRETON, BY TYPE 1988

LOCATION	NUMBER AND TYPE OF OPERATION				
	MUSSELS	OYSTERS	SALMON	TROUT	TOTAL
Sydney Mines, C.B. Co.	1			1*	
Glace Bay, C.B. Co.			1	1	
Petit-de-Grat, Rich Co.	1		1	1	
Margaree Forsk, Inv. Co.				1	
Baddeck, Vict. Co.	1		1	1	
Dominion, C.B. Co.	1				
Dingwall, Vic. Co. *	2				
River Bourgeois, Rich Co.	1				
West Bay, Inv. Co.	1				
New Haven, Vict. Co.	1				
Orangedale, Inv. Co. *	2	2			
Martinique, Rich. Co.	1				
Englishtown, Vict. Co.*	1		1*	1*	
Louisdale, Rich. Co.*	2				
Cleveland, Rich. Co.	1				
St. Peters, Rich. Co.			1	1	
River Denys, Inv. Co.		1			
Port Hastings, Inv. Co.	1				

* These operations have recently ceased activities.

SOURCE: Department of Fisheries, Province of Nova Scotia.

TABLE 19

SALMON PRICE AT $4.00 PER POUND
HYPOTHETICAL SALMONID SEA-CAGE CULTURE OPERATION
INCOME STATEMENT ($1987)

	YEAR									
	1	2	3	4	5	6	7	8	9	10
venues(1)	0	537,600	537,600	806,400	806,400	806,400	806,400	806,400	806,400	806,400
tal penses	235,994	413,329	577,159	629,228	633,008	632,228	632,843	629,228	632,843	632,228
tal terest(2)	81,900	56,238	26,983	19,138	10,195	0	0	0	0	0
rnings fore Taxes	(317,894)	68,034	(66,541)	158,033	163,197	174,172	173,557	177,172	173,557	174,172
come Tax(3)	(143,052)	30,615	(29,944)	71,115	73,439	78,377	78,101	79,727	78,101	78,377
come Tax yable	0	0	0	0	2,173	78,377	78,101	79,727	78,101	78,377
t Income	(317,894)	68,034	(66,541)	158,033	161,024	95,794	95,456	97,444	95,456	95,794

) Based on the number of smolts in water in previous year X 84% survival rate X average weight of 8 lbs. at harvest X average price of $4.00 per pound.

) Interest on loans at 14% per annum.

) Income tax rate of 45% on net earnings before taxes.

RCE: Fiander-Good Associates, 1988.

TABLE 20

SALMON PRICE AT $6.60 PER POUND
HYPOTHETICAL SALMONID SEA-CAGE CULTURE OPERATION
INCOME STATEMENT ($1987)

	YEAR									
	1	2	3	4	5	6	7	8	9	
Revenues(1)	0	887,040	887,040	1,330,560	1,330,560	1,330,560	1,330,560	1,330,560	1,330,560	1,330
Total Expenses	235,994	416,823	580,653	634,470	638,250	637,470	638,085	634,470	638,085	637
Total Interest(2)	81,990	56,238	26,983	19,138	10,195	0	0	0	0	
Earnings Before Taxes	(317,894)	413,979	279,404	676,952	682,115	693,090	692,475	696,090	692,475	693
Income Tax(3)	(143,052)	186,291	125,732	304,628	306,952	311,891	311,614	313,241	311,614	311
Income Tax Payable	0	43,238	125,732	304,628	306,952	311,891	311,614	313,241	311,614	311
Net Income	(317,894)	370,741	153,672	372,324	375,163	381,200	380,861	382,850	380,861	381

(1) Based on the number of smolts in water in previous year X 84% survival rate X average weight of 8 lbs. at harvest X average price of $6.60 per pound.

(2) Interest on loans at 14% per annum.

(3) Income tax rate of 45% on net earnings before taxes.

SOURCE: Fiander-Good Associates, 1988.

TABLE 21
NUMBER OF ANGLING LICENCE SALES IN CAPE BRETON, BY COUNTY
1984-85 AND 1988-89

COUNTY	NUMBER OF ANGLING LICENCE SALES					
	1984-85			1988-89		
	Residents	Non-Residents	Total	Residents	Non-Residents	Total
Inverness	3,102	464	3,566	2,302	216	2,518
Richmond	1,126	32	1,158	1,037	26	1,063
Cape Breton	10,767	137	10,904	9,118	87	9,205
Victoria	788	92	880	642	50	692
CAPE BRETON TOTAL	15,783	725	16,508	13,099	379	13,478

SOURCE: Wildlife Division, Department of Lands and Forests, Province of Nova Scotia, Kentville, N.S.

TABLE 22

SALMON ANGLING CATCHES ON CAPE BRETON RIVERS, 1984-88

River	1984		1985		1986		1987		1988	
	No. of anglers	Catch[1]	No. of anglers	Catch[1]	No. of anglers[2]	Catch[1,2]	No. of anglers	Catch[1]	No. of anglers	Catch[1]
Aconi Brook	5	15	1	0	2	2	1	0	3	7
Baddeck	60	53	34	19	68	165	90	166	86	220
Barachois	7	3	5	3	7	22	17	57	15	20
Catalone	90	129	86	94	89	153	91	139	95	173
Cheticamp[3]	N/A	82	N/A	101	34	54	37	67	28	47
Clyburne	1	1	2	2	6	8	8	20	3	5
Framboise	81	205	90	191	77	133	78	120	62	167
Gaspereau	6	3	1	0	5	1	6	0	2	1
Gerratt	5	4	3	7	2	3	6	7	1	0
Grand	268	436	312	675	326	554	262	449	277	443
Indian Brook	9	20	0	0	9	25	11	32	11	21
Ingonish	2	17	0	0	0	0	6	37	2	34
Inhabitants	25	96	28	137	31	278	36	198	34	265
Little Lorraine	0	0	0	0	1	0	0	0	2	2
Lorraine Brook	22	30	29	57	18	27	15	36	20	44
Mabou	1	0	0	0	3	22	1	0	1	0
Margaree	680	548	793	1727	1131	3420	1441	2834	1455	2934
Marie Joseph	12	5	15	43	17	17	12	18	11	24
Middle (Vic. Co.)	83	112	39	50	76	152	114	174	131	200
Mira	10	8	14	8	15	4	14	6	16	38
North (Vic. Co.)	162	220	170	588	298	1245	263	772	202	699
North Aspy	3	1	2	1	6	30	12	43	21	93
River Bennett	0	0	0	0	1	5	0	0	0	0
River Deny's	1	0	1	0	1	0	0	0	2	18
River Tilliard	21	19	21	30	22	38	26	91	26	33
Saint Esprit	8	3	7	17	3	0	4	2	6	20
Salmon (C.B. Co.)	86	58	76	57	79	61	72	51	70	56
Skye	2	0	1	0	0	0	0	0	0	0
Sydney	0	0	2	0	3	3	4	13	0	0
TOTAL	1650	2068	1732	3807	2330	6422	2627	5332	2582	5564

[1]Catch includes retained and released fish.
[2]Cheticamp statistics received from Environment Canada personnel.

SOURCE: Special Projects Unit, Freshwater & Anadromous Division, Fisheries and Oceans, Halifax.

TABLE 23
NUMBER OF REGISTERED FISH PROCESSING ESTABLISHMENTS AND EMPLOYEES[a] IN CAPE BRETON, FOR SELECTED YEARS

	1980				1983			
	ESTAB-LISHMENTS	EMPLOYEES			ESTAB-LISHMENTS	EMPLOYEES		
		MALE	FEMALE	TOTAL		MALE	FEMALE	TOTAL
CAPE BRETON ISLAND	19	1,232	1,085	2,317	18	744	843	1,587

	1985/86				1989			
	ESTAB-LISHMENTS	EMPLOYEES			ESTAB-LISHMENTS	EMPLOYEES		
		MALE	FEMALE	TOTAL		MALE	FEMALE	TOTAL
CAPE BRETON ISLAND	27	977	877	1,854	40	916*	887*	1,803*

*Excludes 6 plants for which information was unavailable.

[a]The usual number of employees in a normal shift.

SOURCE: Processing Capacity Study (1980) and Updates (1983), (1985/86), and (1989), Economics Branches, Fisheries and Oceans, Halifax and Moncton.

TABLE 24
ESTIMATED INVESTMENT VALUE OF REGISTERED FISH PROCESSING ESTABLISHMENTS IN CAPE BRETON FOR SELECTED YEARS

YEAR	NUMBER OF PLANTS	ESTIMATED INVESTMENT VALUE
1985/86	18	$ 21,110,000
1989	23*	$ 28,854,500

* 23 out of 40 plants reporting.

SOURCE: Compiled from Co-fish Consultants Ltd. Plant capacities and investment values, 1986 and updated to 1989 were possible.

TABLE 25
CAPE BRETON REGISTERED FISH PROCESSING PLANT
COLD STORAGE CAPACITY, FOR SELECTED YEARS

COLD STORAGE CAPACITY								
	NUMBER OF PLANTS				TONNES OF STORAGE CAPACITY			
	1980	1983	1985/86	1989	1980	1983	1985/86	1989
0°F to -15°F or colder	12	13	9	19	3,068	3,151	2,629	4,191

SOURCE: Plant Capacity Survey (1980) and Updates (1983), (1985/86), and (1989), Economics Branches, Fisheries and Oceans, Halifax and Moncton.