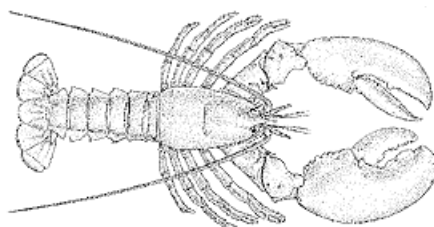


**STUDY ON THE OPERATING RESULTS
OF MAGDALEN ISLAND LOBSTER BOATS**

LAURENTIAN REGION



**Fisheries and Oceans Canada
October 1999**

ACKNOWLEDGMENTS

We would like to thank all the fishers who agreed to take part in this study. Without their cooperation, this initiative would not have been possible. In addition, we would like to underscore the cooperation of fishers' associations and their representatives who greatly facilitated our work. Finally, this economic portrait benefited from the financial support of the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec.

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COSTS AND REVENUES STUDIES

A TOOL THAT IS USEFUL TO FISHERS FOR DECISION-MAKING

The *Costs and revenues studies*, carried out by Fisheries and Oceans Canada, make it possible to determine the average profitability of fishing fleets as well as their main financial characteristics. These studies are used to orient and evaluate the various measures in the fisheries management field.

Here are a few examples of how *Costs and revenues studies* can be useful to you:

1. FOR FISHING FIRMS

“The Costs and revenues studies present an evaluation of the average performance.”

For fishers, these studies are a management tool allowing them to compare their firm with the fleet average. That way, fishers can:

2 Compare their financial performance with the average observed¹ for the fleet.

For example, fishers can easily zero in on some of their costs which are much higher than the fleet average. The average operating costs as well as certain characteristics of the fleet are reference points for fishing firm managers.

2 Know the average break-even point of the fleet.

The average break-even point of the fleet is an important indication, which makes it possible to determine the landings needed to pay the average fixed and variable costs of the fleet. A fleet that exceeds its average break-even point may, for example, benefit from an amount that can be used to pay wages to the captain and to obtain a profit.

It is important to note that the average break-even point of the fleet, presented in the Study, takes into account only those fixed and variable costs compiled as part of the survey.

2. FOR ALL PLAYERS IN THE FISHERIES SECTOR

“The studies provide a better knowledge of the fisheries sector.”

The Costs and revenues studies allow participants to have an overview of the sector and of the various fishing fleets.

The Policy and Economics Directorate hopes that you enjoy reading this report! If you require additional information, please contact us at (418) 648-3817.

¹ The results presented are averages calculated based on the information collected from fishers and are not a representation of the top performing firms.

INTRODUCTION

This document sketches a financial portrait of Magdalen Island lobster boats. This portrait is the result of a survey carried out among a sample of fishers and deals with the 1998 operating year. The average cash flow and the characteristics of the fleet are presented in this document. Moreover, the analysis includes the notion of the break-even point as well as the various scenarios involving variations in the landing price for lobster. This study on the operating results takes on particular importance when determining the economic stakes and the financial characteristics of Magdalen Island lobster boats.

1. Methodology

This study is based on a survey conducted among Magdalen Island lobster boats between February and March 1999. The fishing zone of these lobster boats is illustrated in Appendix 1 and corresponds to zone 22. The methodology employed to carry out the survey is described in the following section.

1.1 Compilation of data

The Magdalen Islands have 327 holders of a special lobster fishing licence. Of that number, 322 obtained their main fishing income from lobster and represent the initial population for the survey. Two samples were taken from this population to carry out the survey. Hence, the population of lobster boats was divided into two fleets:

- Specialized: firm the value of whose lobster landings represents more than 75 % of the value of the total landings
- Diversified: firm the value of whose lobster landings represents less than 75 % of the value of the total landings

The specialized fleet has 291 lobster boats and 18 boat owners were interviewed for the purposes of the study. The diversified fleet has a population of 31 fishers and 10 of them were interviewed. Moreover, a letter was sent to these fishing firms chosen at random to facilitate the work of the interviewers and to obtain a high response rate. The interviews with fishers were carried out by two research officers, broken down according to the main geographical regions of the sample. The data were collected from February to March 1999.

A questionnaire drawn up by the Department was also used in the survey. This questionnaire contains all the information pertaining to the needs of the study. It is important to emphasize that this information is confidential in nature and that the results presented in this report are only averages. The main information collected with the help of this questionnaire is described in Appendix 2.

1.2 Validation of data

The data were validated by comparing certain variances from the average for the fleet and by crosschecking with interviewers if an inconsistency was detected. A few adjustments were necessary. Landings are a case in point: some fishers reported landing volumes in various forms. These data were converted to live weight to have a similar basis for comparison purposes.

2. Results and analysis

2.1 Cash flow

Table 1 presents the average gross revenues and the average operating costs in 1998 for each fleet. These data are used to calculate the average cash flow. The cash flow is a financial result that takes into account the revenues and the outlays made during the year by the fishing firm. It does not take into account the depreciation of assets (which are not outlays), but rather loan repayments made during the year. The cash flow corresponds to the amount available to the owner, after all expenses have been paid.

The cash flow may occasionally be overestimated. Indeed, some expenses, such as maintenance costs can be financed by loans or by funds from previous years, which does not result in any cash outlay for the current fiscal year. Moreover, the calculation of the cash flow that follows takes into account the assumption whereby the owner met all his obligations during the year (with the exception of the finance charges for which the actual payments are considered). Hence the cash flow is considered as follows:

TOTAL REVENUES *minus* - Variable operating costs (*details in Appendix 2*)
 - Fixed operating costs (*details in Appendix 2*)

Total revenues correspond to the sum of the revenues from the sale of fish and other revenues associated with the operations of the fishing firm.

Variable operating costs correspond to the costs directly related to fishing operations as well as the variable costs related to the use of assets other than the boat, such as vehicles, facilities and equipment.

Gear costs include the net acquisition of fishing gear (purchases minus sales) as well as the cost of maintaining and repairing this gear.

Maintenance costs include all the costs incurred to maintain in good working order the assets of the firm, including vehicles, facilities and equipment used on land. However, these costs do not include the costs related to the maintenance and repair of fishing gear.

Fixed operating costs include the fixed annual expenses associated with equipment and facilities such as finance charges, insurance, licences, etc. These costs may also include labour costs when the latter are paid on a fixed basis.

The results (table 1) show an average cash flow of \$12,960 for the specialized fleet and of \$17,142 for the diversified fleet. A greater difference is noted between the gross revenues from fishing of the two fleets. Indeed, this difference is \$29,110. It is the diversified fleet that has the highest gross revenues from fishing with a total of \$84,897. Indeed, even though this fleet obtains less than 75 % of its revenues from

lobster, the structure of its landings includes other species that generate additional revenues. Section 2.2 deals with the structure of landings in greater detail.

However, if we examine the operating costs, we find that those of the diversified fleet are higher than those of the specialized fleet. This difference is mainly attributable to the variable costs, labour costs and finance charges. The main cost for both fleets is that of labour. This fixed cost, which includes the firm's contributions (employment insurance, CSST, RRQ and RAMQ), represents, on average, 36 % of the total operating costs for the specialized fleet and 30 % for the diversified fleet. It is important to note that crew members' wages are paid on a fixed basis (fixed wages) for both fleets. As for finance charges, they represent 17 % of the total operating costs for the specialized fleet and 21 % for the diversified fleet.

Table 1
Average cash flow and structure of operating costs
Magdalen Island lobster boats
1998

	Specialized		Diversified	
	<i>Cash flow</i> (\$)	<i>Share in</i> <i>percentage</i> (%)	<i>Cash flow</i> (\$)	<i>Share in</i> <i>percentage</i> (%)
REVENUES				
Gross revenues				
Gross revenues from fishing	55,787	-	84,897	-
Total revenues	55,787	-	84,897	-
OPERATING COSTS				
Variable costs				
Fuel, oil and grease	2,981	7	6,535	10
Other (bait, dock-side inspection, etc.)	7,976	19	11,030	16
Subtotal:	10,958	26	17,565	26
Fishing gear costs	3,802	9	8,861	13
Maintenance costs	1,427	3	1,088	2
Fixed costs				
Labour costs	15,458	36	20,201	30
Finance charges	7,246	17	14,062	21
Insurance	1,050	2	1,523	2
Other (registration, licences, association, etc.)	2,887	7	4,456	7
Subtotal:	26,641	62	40,241	59
Total operating costs	42,828	100	67,755	100
CASH FLOW	12,960		17,142	

Source: Survey of a sample of fishers

Note: Labour costs are considered as being fixed as Gaspé Peninsula lobster boats mainly pay wages to fisher helpers on a fixed basis (weekly wages)

Table 2
Average total revenues of owners
Magdalen Island lobster boats
1998

	<i>Specialized</i>	<i>Diversified</i>
<i>Cash flow</i>	12,960	17,142
<i>Employment insurance</i>	10,336	9,282
<i>Research, tourism cruises, etc.</i>	0	700
Total	23,296	27,124

Source : Survey of a sample of fishers

The cash flow does not take into account other revenues such as employment insurance income. Table 2 presents the total revenues of the owner. These revenues are greater than those obtained when we only take into account the revenues directly associated with fishing operations.

2.2 Structure of landings

Table 3
Structure of average landings
Magdalen Island lobster boats
1998

Species	Specialized			Diversified		
	(\$)	(kg)	(\$/kg)	(\$)	(kg)	(\$/kg)
Lobster	53,165	5,514	9.64	57,170	5,962	9.59
Mackerel	1,623	3,479	0.47	5,120	9,979	0.51
Herring	898	5,976	0.15	3,640	22,634	0.16
Scallop*	0	0	-	9,475	3,828	2.48
Rock crab	0	0	-	7,404	11,391	0.65
Other	101	62	1.63	2,088	4,723	0.44
Total	55,787	15,031		84,897	55,144	

* : Full form

Source: Survey of a sample of fishers

We note a marked difference between the gross revenues from fishing of the two fleets. Indeed, the difference in revenues between the two fleets is \$29,110. Moreover, lobster represents 95 % of the total revenues of the specialized fleet and 67 % in the case of the diversified fleet. A major difference in the two fleets concerns landings of species other than lobster. Scallop and rock crab landings of the diversified fleet total \$16,879 in revenues. The diversified fleet takes advantage of revenues from other species, which is not the case for the specialized fleet.

2.3 Characteristics of Magdalen Island lobster boats

Table 4
Characteristics of Magdalen Island lobster boats
(average values)
1998

Description	Specialized fleet	Diversified fleet
Average age of the fleet	7	5
Average length of boats	36	38
Purchase cost of boat	\$56,111	\$94,190
Major additions or modifications	\$23,875	\$36,056
Depreciation	\$28,571	\$35,181
Value of assets as at December 31, 1998	\$51,415	\$95,065
Balance on loans	\$23,802	\$62,798
Debt/Asset Ratio	0.46	0.66

Source: Survey of a sample of fishers

On the basis of this table, we note that the average age of the fleet is 7 years for the specialized fleet and 5 years for the diversified fleet. The purchase cost of the boat, including major changes, makes it possible to calculate the value of the assets before depreciation. Taking depreciation into account, the value of the assets reaches \$51,415 for the specialized fleet and \$95,065 for the diversified fleet at the end of 1998.

Moreover, by calculating the *debt/asset* ratio, we can determine what proportion the debt represents in relation to the assets of the firm. The specialized fleet has a ratio of 0.46 whereas that of the diversified fleet is 0.66. These results mean that the debt represents 46 % of the value of the assets for the specialized fleet and 66 % for the diversified fleet.

2.4 Break-even point

The following table presents the quantity of lobster needed to reach the break-even point for Magdalen Island lobster boats. This calculation method can be used to analyze the profitability of a firm. In this case, the break-even point makes it possible to calculate the quantity of lobster needed to cover all the average expenses (operating costs) of the fleet. When making this calculation, we assume that the landings of other species do not vary.

The break-even point takes into account the fixed costs and variable costs, and is calculated as follows:

$$BREAK-EVEN POINT = \frac{FC}{MBFC}$$

Where: FC: fixed costs or expenses (\$)

MBFC: margin before fixed costs = $1 - \frac{VC}{Landings}$

VC: variable costs or expenses (\$)

Table 5 presents the lobster landings needed to reach the break-even point. Any additional quantity of lobster allows the captain-owner to have wages.

Table 5
Quantity of lobster needed to reach the break-even point
(average values)
Magdalen Island lobster boats
1998

<i>Description</i>	<i>Units</i>	<i>Specialized</i>	<i>Diversified</i>
<i>Fixed costs (FC)</i>	\$	26,641	40,241
Variable costs (VC)	\$	16,187	27,514
Total landings (all species)	\$	55,787	84,897
Variable costs / Total landings		0.29	0.32
<i>Unit margin before fixed costs (MBFC)</i>		<i>0.71</i>	<i>0.68</i>
<i>Break-even point</i>	\$	<i>37,531</i>	<i>59,536</i>
LOBSTER LANDINGS NEEDED TO REACH THE BREAK-EVEN POINT	<i>kg</i>	<i>3,620</i>	<i>3,317</i>
VARIANCES WITH ACTUAL LOBSTER LANDINGS	<i>kg</i>	<i>-1,893</i>	<i>-2,645</i>

Source : Survey of a sample of fishers

Variable costs, in relation to the value of the total landings, represent roughly the same share for the two fleets: 29 % for the specialized fleet and 32 % for the diversified fleet. Hence, 71 % and 68 % (specialized fleet and diversified fleet respectively) of the average revenues is left to cover fixed costs (unit margin before fixed costs). To reach the break-even point, the specialized fleet must land 3,620 kg of lobster. This quantity needed to reach the break-even point is less for the diversified fleet: 3,317 kg. In both cases, this quantity is less than the actual landings of 1998 (this explains the negative sign for the variable “variances with actual lobster landings”). Indeed, Magdalen Island lobster boats landed enough lobster in 1998 to reach their break-even point and to allow the captain-owner to have wages.

2.5 Sensitivity analysis: break-even point and landing price of lobster

It is interesting to reflect on the impact of a variation in the price of lobster. A 10 % increase was made to the landing price of lobster for each fleet.

Table 6
Sensitivity analysis of the break-even point following a 10 % increase in the price of lobster
Magdalen Island lobster boats
1998

	<i>Units</i>	<i>Specialized</i>		<i>Diversified</i>	
		<i>Average price</i>	<i>Average price + 10 %</i>	<i>Average price</i>	<i>Average price + 10 %</i>
Average price of lobster	\$/kg	9.64	10.61	9.59	10.55
Fixed costs (FC)	\$	26,641	26,641	40,241	40,241
Variable costs (VC)	\$	16,187	16,187	27,514	27,514
Total landings	\$	55,787	61,104	84,897	90,614
Variable costs / Total landings		0.29	0.26	0.32	0.30
Unit margin before fixed costs (MBFC)		0.71	0.74	0.68	0.70
Break-even point	\$	37,531	36,242	59,536	57,788
SENSITIVITY IN % - IN RELATION TO THE BREAK-EVEN POINT	%	3 %		3 %	
LOBSTER LANDINGS NEEDED TO REACH THE BREAK-EVEN POINT	kg	3,620	3,170	3,317	2,850
VARIATION IN %	%	12 %		14 %	
VARIANCES WITH ACTUAL LOBSTER LANDINGS	kg	-1,893	-2,344	-2,645	-3,112

Source: Survey of a sample of fishers

The 10 % increase in the price of lobster has an impact on the break-even point (in terms of value) for each fleet. The reduction in the break-even point is identical for both fleets, namely 3 %. In other words, an increase in the price of lobster reduces the revenues needed to reach the break-even point for both fleets. Moreover, the quantity of lobster needed to reach the break-even point also declines when the price of lobster increases. This new quantity is 3,170 kg for the specialized fleet and 2,850 kg for the diversified fleet. These are 12 % and 14 % declines respectively for the fleets.

The following illustrations present the impact of a variation in price on both the break-even point and the cash flow. Several increases were made to the price of lobster: 5, 10, 15 and 20 %. The more the price of lobster increases, the more the cash flow increases. As for the break-even point and the quantity of lobster needed to reach the break-even point, the relationship is the exact opposite. The more the price of lobster increases, the more these quantities decline.

For example, a 15 % variation in price would have the following impact:

Specialized fleet

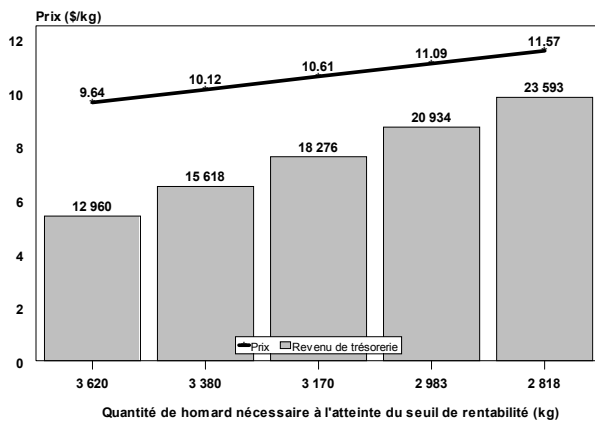
- A 637 kg or 18 % reduction in the quantity of lobster needed to reach the break-even point.
- A \$ 7,974 or 62 % increase in the cash flow.

Diversified fleet

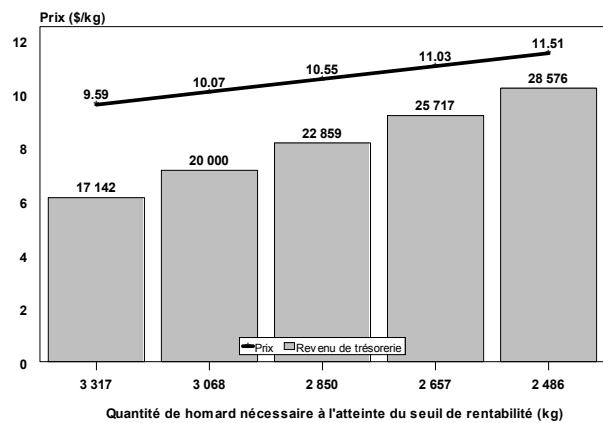
- A 660 kg or 20 % reduction in the quantity of lobster needed to reach the break-even point.
- An \$8,575 or 50 % increase in the cash flow.

Illustrations 1 and 2
Impact of a variation in the price of lobster
on the break-even point and the cash flow
Magdalen Island lobster boats

1
Specialized fleet



2
Diversified fleet



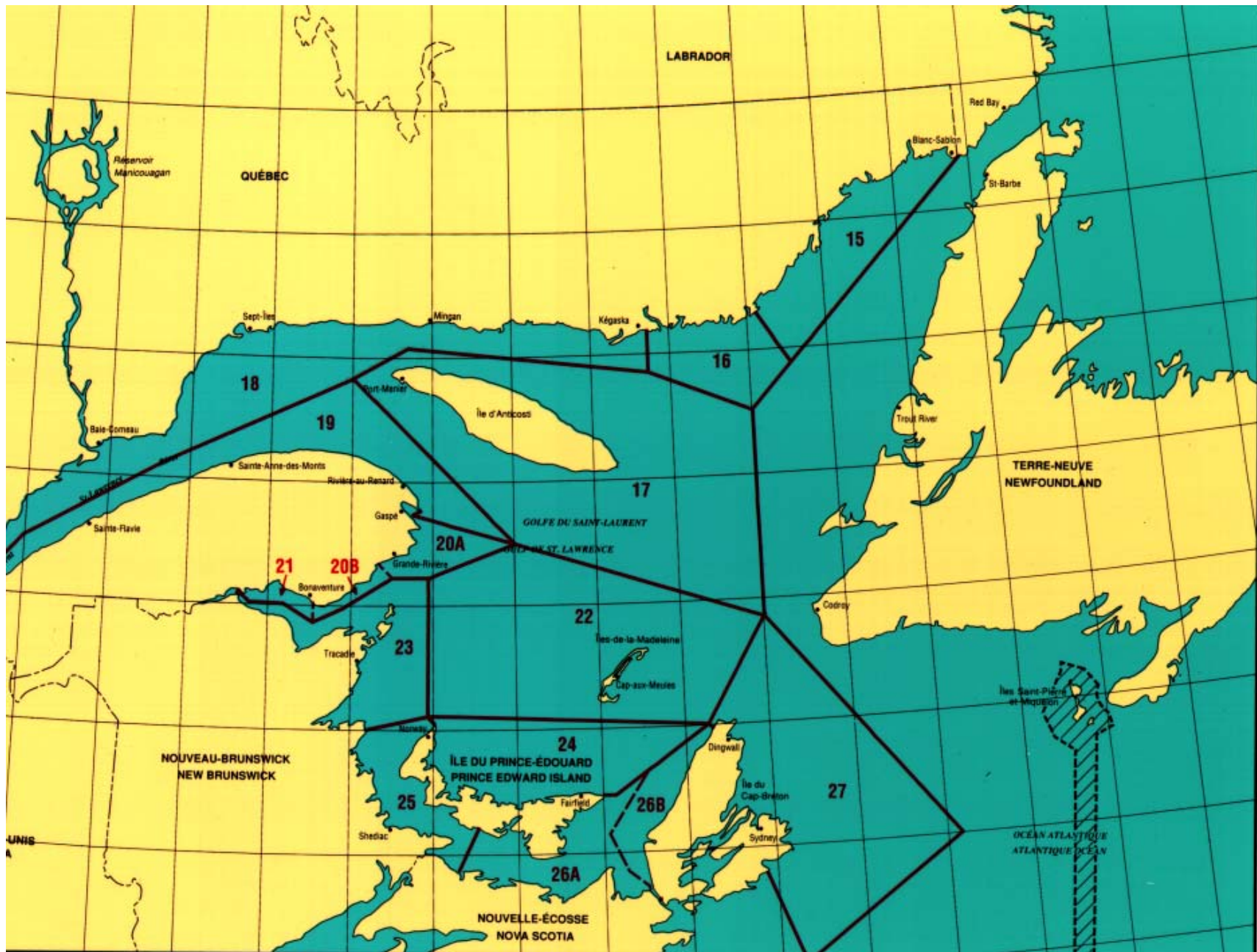
CONCLUSION

The 1998 operating results of Magdalen Island lobster boats allow the fleet to obtain a positive average cash flow. The Magdalen Island lobster boats already reach their break-even point and land quantities of lobster that generate a profit. The impact of an increase in price is present but does not radically alter the operating results of these lobster boats as they already have a positive average cash flow; any increase in price only improves their financial position.

APPENDICES

Appendix 1

Fishing zone of Magdalen Island lobster boats Zone 22



Appendix 2

Main information collected during the survey

- General characteristics of the firm (main boat and second boat)
 - CFVN
 - Length
 - Type of hull
 - Full tonnage
 - Brake horsepower
 - Year construction was completed
 - Year of purchase
- Capital
 - Breakdown of the initial purchase cost according to boat components
 - Major additions or changes made after the purchase
- Fishing effort
 - Number of days at sea and number of weeks by species
 - Number of trips
 - Size of crew per species
- Variable costs
 - Wages and fringe benefits (if any)
 - Fuel, oil and grease
 - Food
 - Bait, ice and salt
 - Boat maintenance and repairs
 - Repairs, replacement and acquisition of fishing gear
 - Dock-side inspections
 - Observers at sea
 - Vehicle expenses
 - Marketing plan
 - Co-management
- Fixed costs
 - Wages and fringe benefits (if any)
 - Registration, licence and immatriculation
 - Wharf charges
 - Boat storage
 - Association
 - Insurance
 - Administrative and legal fees
 - Quota rental
 - Boat rental
 - Interest charges
 - Loan repayment
- Loans
 - Balances
- Various types of revenues
 - Gross revenues from fishing
 - Quota rental revenues
 - Other