SOUTHERN BLUEFIN TUNA SURVEY

1980-81 and 1981-82

Project 62300

Bureau of Agricultural Economics
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FOREWORD

At present the Southern Bluefin Tuna Fishery is the only fishery in Australian waters to be managed through a system of individual transferable quotas. The success or otherwise of this particular management scheme, introduced in October 1984, will have major implications for the direction of management in other fisheries.

Evaluating the management of the southern bluefin tuna requires data on the state of the fishery both before and after management is implemented. This report contains physical and financial information on the fishery prior to the introduction of quotas, and thus forms a reference point for measuring changes in the fishery. These changes will be analysed in a later Bureau project, to assess the effectiveness of the management scheme.

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Within the Bureau, Stan Jarzynski was responsible for conducting the survey and undertaking some initial processing of the data. Roger Buckland had primary responsibility for the final processing and production of the report, and he was assisted in the closing stages by Satish Chandra and David Collins.

The report is the fifth in a series on the economic status of various fisheries, prepared under the supervision of Jos Haynes.

CONTENTS

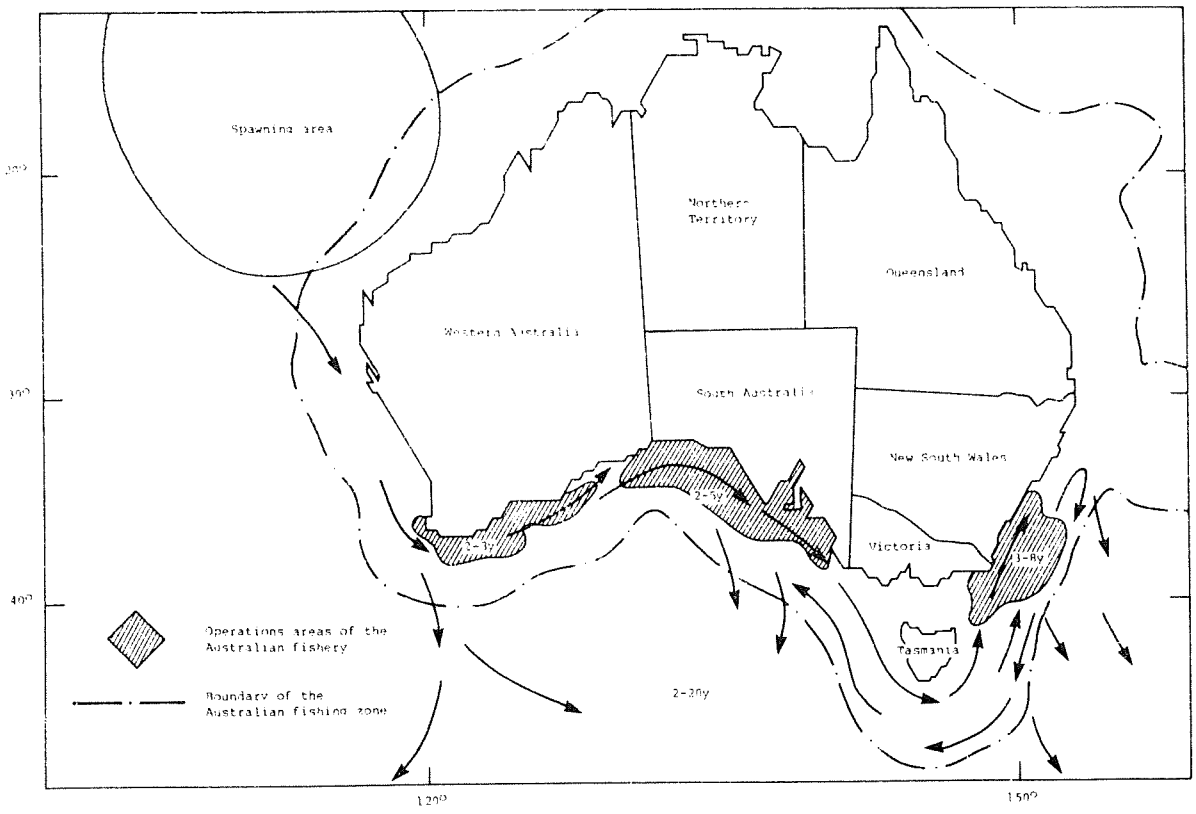
1. INTRODUCTION

The southern bluefin tuna [Thunnus maccoyii (Castlenau)] is principally exploited by Australia and Japan, which together take over 95 per cent of the total annual catch. The Australian catch is predominantly of juvenile fish - that is, under eight years of age - with an average weight of 13.5 kg. The Japanese generally catch older fish, averaging 54 kg. Southern bluefin tuna can live for 20 years and attain a weight of 200 kg.

The tuna spawn in waters south of Java and afterwards migrate south to cooler waters (see map). The fish spawn for the first time at eight years of age, each fish producing about 15 million eggs a year between October and March. The parental biomass is estimated at 220-250 kt.

In recent years, concern has been expressed that the southern bluefin tuna industry is under severe economic threat, mainly attributed to the taking of an excessive number of small fish. It was thought that an effective management regime was essential if the tuna stocks were to be preserved. This survey of the fishery was therefore commissioned, in late 1982, to ascertain the physical and economic status of the fishery. The preliminary results were used by the Bureau in its submission to the Industries Assistance Commission's 1984 inquiry into the industry. Further analysis has since been carried out, and this report presents the final results on the physical and financial characteristics of the fishery in the period preceding the introduction of individual transferable quotas in October 1984. It thus provides reference points against which the effects of the new management scheme can be measured.

SOUTHERN BLUEFIN TUNA FISHERY AREAS , SHOWING MIGRATION FLOWS



Source: Kennedy and Watkins (1985)

2. DESCRIPTION OF SURVEY

The target population for the survey comprised all boats in the Australian southern bluefin tuna fishery, defined as all boats which landed tuna in 1981-82 using purse seine or poling methods. Data on these boats were obtained from records compiled by CSIRO and the Western Australian Department of Fisheries and Wildlife. Fishermen catching tuna by trolling were excluded because their catches are usually very low and used only for lobster bait. The fleet is divided into two regions according to base ports and ranges of the boats: those based in New South Wales and South Australia, and those based in Western Australia. These regions will be referred to here as Central/Eastern and Western, respectively.

The target population of boats was classified on the basis of fishing method, region and boat size (measured as underdeck volume); the purse seiners were too few to justify their classification into regions. In 1981-82, the defined target population comprised 122 vessels. Of these, five were purse seiners, the remainder being pole vessels, 49 of which operated in the Central/Eastern region of the fishery and 68 in the Western region. A survey sample of 45 boats was drawn from this population; of these, 35 boats were also operating in the fishery in the 1980-81 financial year.

The populations and sample sizes for each year are presented in Table I.

3. PRESENTATION OF RESULTS

Throughout this report, results are presented according to fishing method and region, because major differences were found between boats in these groups. In addition, results are analysed by boat size category (as measured by underdeck volume) and, for 1981-82, by rate of return to capital and management. (The latter analysis was not undertaken for 1980-81 because separate estimates of replacement costs for capital items used in the earlier year were not collected.)

Results are presented in two sections. In the first section, average physical characteristics of boats are provided, together with form of ownership. Data on the financial performance of business operations in the years 1980-81 and 1981-82 are presented in the second section. These data, which are given as averages, include returns and cost items and such derived performance measures as returns to capital and management. For the second year, 1981-82, information is also provided on the average capital structure of the fishery and the rates of return to capital invested.

The method of table numbering used in this report is designed to facilitate comparison between tables and to be as consistent as possible with other BAE fishery reports. All physical information is presented in the first section in tables with Roman numerals (Table I, II,...). Tables in the financial section have three digits, which show precisely the nature of the information provided. The first digit refers to the year covered, year '1' being the earlier year surveyed. The second digit refers to the type of information provided, and the third indicates the type of breakdown. The full key to the numbering system in this report is:

Table no.	Information in table
1.x.x	1980-81
2.x.x	1981-82
x.1.x	Components of cash costs and returns
x.2.x	Performance measures
x.3.x	Capital profile
x.x.1	by fishing method (total fishery)
x.x.2	by region (pole boats)
x.x.3	by underdeck volume (pole boats)
x.x.4	by rate of return (pole boats)

Thus, Table 1.1.2 contains information for 1980-81 on cash costs and returns for pole boats, by region.

4. DEFINITION AND TREATMENT OF ITEMS

An explanation and definition of each of the main terms used in this report is presented below.

4.1 Physical and Capital Items

(a) Business unit

The production unit to which all results refer is the individual boat, operating in the fishery in any given year.

(b) Underdeck volume

Underdeck volume is calculated by multiplying a boat's length by its beam and its maximum draught. It provides a measure of the size of a vessel and, consequently, serves as a proxy for potential effort or harvest capacity. The underdeck volume interquartile groups (see Appendix) are a convenient set of divisions of this measure; in the case of the pole boats, enabling the results for different boat sizes to be compared.

(c) Capital value of boat

The capital value of a boat is estimated as the depreciated value of all capital items, including the hull, engine, radio, sonar and fishing gear. Valuation was performed by depreciating individual items, using replacement costs (see 4.2(e), below), and then aggregating them. Overall, the values thus obtained were very close to the estimates of current market value provided by the boat owners.

4.2 Costs and Returns

(a) Total returns

Total returns gained from the operation of a boat comprise returns derived from fishing and also from other sources.

(b) Fishing return

Fishing return is defined as the returns from the sale of marine products caught during the operations of boats in the fishery within the relevant financial year.

(c) Other return

The term 'other returns' refers to all boat returns not directly derived from the sale of fish. Such returns may be derived from charter fees, profits from the sale of capital items connected with the business unit, and rebates, refunds or discounts relevant to the fishing activity - for example, payments by fishing co-operatives.

(d) Cash costs

Cash costs are grouped into trip costs, boat costs, administrative costs and miscellaneous charges, as follows:

. Trip costs

These comprise charges for fuel, labour (family and non-family), provisions, bait and ice. Broadly speaking, these trip costs are the variable costs associated with the fishing operation. Excluded from these costs is an allowance for the owner-operator, which is reported separately.

. Boat costs

Boat costs are those costs incurred in maintaining the productive capacity of the boat and include repairs and maintenance to boat, gear and engines.

. Administrative costs

These costs comprise charges for telephone, stationery, bank dealings, accountancy, electricity and subscriptions.

. Miscellaneous costs

These costs include all those not stated elsewhere which are incurred in the operation of the business unit. Included are charges for interest, commission and handling, insurance, leased items and rent, licences, harbour dues, rates and taxes, motor vehicle expenses, freight, cartage, packing costs, aerial spotting, protective clothing and travelling expenses.

(e) Non-cash costs

Non-cash costs of the business unit are allowances for owner-operator labour and for depreciation, as follows:

. Owner-operator allowance

An allowance for the input of owner-operator's labour into the business unit was calculated on the basis of then current commercial rates. This value specifically excludes any component relating to returns to management by the owner.

. Depreciation

Individual depreciation rates, on a diminishing balance basis, were used for different capital items based on their average economic life. Depreciation was then calculated from the current replacement cost and the age of the item. Depreciation is therefore an estimate of the cost of the decline in productive services derived from capital items.

4.3 Measures of Performance

(a) Cash operating surplus

Cash operating surplus is defined as total returns less total cash costs. (Since total cash costs include payments to family labour, the measure is not the same as the 'farm cash operating surplus' used in BAE agricultural surveys.)

(b) Boat cash income

Boat cash income is defined as total returns less total cash costs and the owner-operator allowance. It represents the cash surplus which is available for consumption or investment, and thus provides a measure of short-term cash availability for the business unit. However, some of this surplus may be required to compensate for decline in productive services derived from capital items.

(c) Return to capital and management

The monetary return to the capital and managerial skills employed in the fishing enterprise is measured by deducting depreciation from boat cash income.

(d) Full equity return

Full equity return is defined as the return to capital and management after adding back all interest payments incurred by the business unit. It represents the return which would have been earned by the business unit had the boat been fully owned by the operator. It is therefore a measure of the total returns to capital employed in the business, and allows a comparison of such returns across all boats in the fishery.

(e) Rate of return to capital and management

The rate of return to capital and management is obtained by dividing the return to capital and management by the capital value of the boat (see above, 4.1) and multiplying by 100.

(f) Owner-operator income from fishing

Owner-operator income is the return to capital and management, plus the owner-operator allowance for those businesses which are owned by a sole operator or a husband-and-wife partnership. It represents the funds over which the owner-operator has disposition rights after meeting all costs of the business. This measure is included to indicate the net income level of the owner-operator in a traditional, family-owned business unit.

(g) Debt and equity

Business equity is derived by deducting total debt from the capital value of the business unit. The equity ratio expresses the business equity as a proportion of total capital employed. Only those debts and investments that relate specifically to the business unit are taken into account.

5. RELIABILITY OF SURVEY ESTIMATES

5.1 Sampling Errors

Estimates of boat characteristics based on a sample of boats are likely to differ from the values - known as the census values - which would have been obtained had information had been collected from all boats. (The values shown for the purse seine boats are in fact the census values.) The differences are called sampling errors, and their likely sizes are shown in this report as relative standard errors, which are expressed as percentages of the estimates. In general, the smaller the relative standard error, the more reliable the estimate.

In general, also, sampling errors will be greater at lower levels of aggregation than at higher levels of aggregation: for example, at the regional level than for the fishery as a whole. Note that when estimates are small they tend to have large relative standard errors, and that an alternative measure of sampling error is the actual standard error, which can be seen by multiplying the relative standard error by the estimate and dividing by 100.

Statistical theory enables a particular sample survey estimate and its associated sampling error to be used to establish a range of possible values within which the (unknown) census value has a given probability of falling. If, for example, total returns per boat were estimated at $100 000 with a relative standard error of 6 per cent, there would be about 19 chances out of 20 that the census value of total returns per boat would be within 2 x 6 per cent of $100 000 - that is, between $88 000 and $112 000.

5.2 Non-sampling errors

The values obtained in both a census and a sample survey are affected by errors other than those relating directly to sample size and method. These non-sampling errors can occur at any stage of a census or sample survey. For example, sections of the target population may be omitted; the questionnaire may contain ambiguous questions; the survey responses may be influenced by the interviewer; non-respondents may differ from respondents in relation to the estimates being reported; and mistakes may occur in the editing and processing of data.

The extent to which these results have been affected by non-sampling errors is very difficult to measure. However, the Bureau's experience in conducting sample surveys has resulted in procedures designed to minimise the occurrence of non-sampling errors in the data it releases. Nevertheless, readers should keep in mind the possibility of non-sampling as well as sampling errors when assessing the reliability of the survey estimates.

6. MAIN FEATURES OF THE RESULTS

The dominant form of business organisation in the fishery (83 per cent) was partnership, with husband-and-wife partnerships predominating in the Western region and other partnerships in the Central/Eastern region (Table II).

Of the Western pole boats, 90 per cent had wooden hulls (Table III), whereas 55 per cent of the Central/Eastern pole boats had steel hulls, as did all the purse seiners. Similar differences between the groups can be seen in the form of refrigeration employed. While all the purse seiners and all the Central/Eastern region pole boats had refrigeration of some kind, 76 per cent of the Western boats had none, relying instead upon ice boxes (Table IV). In terms of refrigeration capacity, the purse seiners were equipped on average with more than twice the capacity of the Central/Eastern pole boats.

Because the physical characteristics as well as methods of operation of the purse seiners and the pole boats are so different (Table V), detailed financial analyses on a quartile basis (see Appendix) have not been carried out over the fishery as a whole. The pole boats, however, are not too dissimilar in the two regions to allow the Central/Eastern and Western boats to be grouped together for the purpose of analysis. Nevertheless, the distribution of the pole boats by underdeck volume shows that the smaller sized half of the fleet (the first two quartile groups) contains only boats from the Western region (Table VI) - though this is not true of rate of return to capital (Table VII).

When physical characteristics of pole boats are grouped according to rate of return to capital (Table VIII) some pertinent features emerge. For example, the lowest rates of return were in general earned by the newest boats, and the highest rates by the oldest. Furthermore, it was the smallest boats, with the least engine power, which earned the highest rates of return.

During 1980-81, average total returns per boat for the fishery as a whole were $196 700, of which 94 per cent was derived from sales of tuna (Table 1.1.1). The average total returns for purse seiners in 1980-81 ($566 100) were twelve times the average received by Western pole boats and over 50 per cent larger than as those of the Central/Eastern pole boats (Table 1.1.2).

In the following year, average boat returns were substantially lower (Table 2.1.1), due to the significantly lower prices received for tuna and the marginally lower catch that year. The proportion of total returns arising from tuna dropped to 84 per cent because of this decline. In the Western region, the importance of returns from species other than tuna increased from an average of 19 per cent of total returns per boat in 1980-81 to 28 per cent in 1981-82 (Tables 1.1.2 and 2.1.2).

Costs associated with the actual fishing trips - that is, crew costs, fuel and oil, and costs such as for food, bait or ice - represented the major component of total costs incurred by operators in their fishing ventures in both survey years. In 1980-81, labour represented approximately 60 per cent of average trip costs for the fishery as a whole, though only about 50 per cent in the case of the smaller Western pole boats. The fall in average trip costs in 1981-82 to an average of

$62 200 mostly reflects the 29 per cent drop in payments to crews as lower prices and lower catches resulted in reduced shares paid to crew members.

Boat costs, principally repairs and maintenance to the boat or gear, represented about 22 per cent of total costs in both years, although they declined by about 12 per cent in 1981-82 to an average of $23 900. This reduction, however, was more than offset by a rise in miscellaneous costs - principally in interest charges - to average $22 600 in 1981-82, nearly 55 per cent higher than in the previous year.

Overall, total cash costs fell by 10 per cent, to an average of $111 500 for the fishery as a whole in 1981-82. However, the average total costs of purse seiners increased by 7 per cent, to $474 600 during 1981-82, contrary to the experience of the fishery as a whole. This was almost entirely the result of increases in the interest costs incurred by that group.

For pole boats as a group, as for the fleet as a whole, labour represented the largest single cost item. Generally, the larger the vessel, the higher the proportion of total costs associated with labour. Interest costs and insurance costs were also larger relative to total cash costs for the larger vessels.

Overall, for the fishery as a whole, the sharp decline in total average returns from $196 700 in 1980-81 to $129 200 in 1981-82, with a less marked decline in total cash costs from $124 700 to $111 500, resulted in average cash operating surplus per boat falling by some 76 per cent, to $17 600 (Tables 1.2.1 and 2.2.1). The cash operating surplus of purse seiners declined to an average of $49 800. Depreciation was generally large in proportion to total returns in each boat category, ranging from 15 per cent for the Western pole boats in 1980-81 to 28 per cent for the Central/Eastern pole boats in 1981-82, and 25 per cent for the purse seiners in both years.

In the fishery as a whole, average boat cash income in 1980-81 was $56 600. After deducting depreciation, this resulted in an average return to capital and management of $23 000. However, this is an average of a very large range: returns for the purse seiners were negative, whereas the Central/Eastern pole boats had an average return of $56 300 in the same year and the smaller Western pole boats had average returns of $4600.

In the second year, average boat cash income in the fishery was substantially lower, at $4700. This fall came almost entirely from large reductions in the boat cash incomes of the purse seiners and the Central/Eastern region pole boats, with little change in those of the Western region. Returns to capital and management likewise declined substantially, becoming negative on average (-$27 800) for the whole fishery (Table 2.2.1) and for both purse seiners and pole boats (Table 2.3.1), though small positive rates of return were still experienced on average in the Western region (Table 2.3.2). Adjustment of rates of return for full equity did not alter this pattern.

Clearly, average returns to capital and management in the tuna fishery were substantially lower in 1981-82 than they had been in the previous year. While the catch certainly declined, the major reason for the fall in returns was the large fall in tuna prices on world markets, which

translated into a 30 per cent drop in ex-vessel prices. Without this price fall, the longer term threat to the viability of the fishery from a reduction in its biomass might not have been recognised so quickly.

REFERENCE

Kennedy, J. and Watkins, J. (1985), 'The impact of quotas on the Southern Bluefin Tuna Fishery', Australian Journal of Agricultural Economics 29(1), 65.

SOUTHERN BLUEFIN TUNA FISHERY

Boat Details: 1981-82

Table I: POPULATIONS AND SAMPLE SIZES, BY GROUP

Group	Population 1981-82	Sample 1980-81	Sample 1981-82
	no.	no.	no.
Purse seiners	5	5	5
Central/Eastern pole boats	49	15	17
Western pole boats	68(a)	15	23
Totals	122	35	45

(a) Estimated number of boats which landed tuna in 1981-82; the number registered as tuna boats in the Western region in 1981-82 was 97.

Table II: OWNERSHIP OF BOATS, 1981-82

Ownership type	Purse seiners	Central/Eastern pole boats	Western pole boats	Total fishery
	no.	no.	no.	no.
Sole owner	-	4	7	11
Husband-and-wife partnership	-	4	56	60
Other partnership	2	34	5	41
Private company	3	4	-	7
Estate or trustee company	-	3	-	3
Total	5	49	68	122

Table III: BOAT MATERIALS AND TYPES, 1981-82

Hull	Purse seiners	Central/Eastern pole boats	Western pole boats	Total fishery
	no.	no.	no.	no.
Material				
Planked timber	-	22	40	62
Steel	5	27	-	32
Plywood	-	-	21	21
Fibreglass	-	-	7	7
Type				
Displacement	5	49	66	120
Semi-planing	-	-	2	2

Table IV: REFRIGERATOR TYPES, 1981-82

Type	Unit	Purse seiners	Central/Eastern pole boats	Western pole boats	Total fishery
No refrigeration	no.	-	-	52	52
Refigeration					
Sea water only	no.	2	11	-	13
Brine only	no.	2	38	16	56
Refrigerated sea water and brine	no.	1	-	-	1
Average capacity	kL	130	56 (12)	1.6 (38)	29 (9)

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table V: PHYSICAL CHARACTERISTICS OF BOATS, 1981-82

Characteristic	Unit	Purse seiners	Central/Eastern pole boats	Western pole boats	Total fishery
Engine power	kW	633	393 (11)	141 (8)	262 (7)
Draught	m	3.5	3.1 (5)	1.4 (5)	2.2 (3)
Beam	m	7.1	6.4 (3)	3.9 (2)	5.0 (2)
Length	m	31.0	21.8 (4)	11.5 (3)	16.4 (2)
Age	y	11	8 (18)	16 (12)	12 (9)

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table VI: REGIONAL POLE BOAT FLEETS, BY UNDERDECK VOLUME, 1981-82

Region	Unit	Underdeck volume (a) 0-50 m	51-116 m	117-392 m	393+ m	All pole boats
Eastern	no.	0	0	22	27	49
Western	no.	24	29	10	0	68
Total fishery (b)	no.	29	29	32	27	117

(a) These ranges are bounded by estimates of quartiles; for explanation see Appendix (Table A.1). (b) Divisions not exactly equal because the sample boats were weighted unequally.

Table VII: REGIONAL POLE BOAT FLEETS, BY RATE OF RETURN, 1981-82

Region	Unit	Rate of return (a) -16 per cent or less	-15 to -5 per cent	-4 to 6 per cent	over 6 per cent	All pole boats
Central/ Eastern	no.	17	18	10	4	49
Western	no.	9	15	20	24	68
Total (b)	no.	26	33	30	28	117

(a) The ranges are bounded by estimates of quartiles; for explanation see Appendix (Table A.2). (b) Divisions are not exactly equal because the sample boats were weighted unequally.

Table VIII: PHYSICAL CHARACTERISTICS OF POLE BOATS, BY RATE OF RETURN, 1981-82: Average per boat

Character-istic	Unit	Rate of return(a) -16 per cent or less	-15 to -5 per cent	-4 to 6 per cent	Over 6 per cent	All pole boats
Engine power	kW	301 (22)	284 (17)	261 (7)	135 (5)	246 (8)
Underdeck volume	m^3	372 (26)	290 (30)	186 (36)	97 (15)	236 (16)
Fuel capacity	kL	14 (40)	16 (39)	8.3 (14)	3.1 (15)	10 (19)
Age	y	8 (34)	12 (25)	15 (14)	18 (10)	14 (9)

(a) The ranges are bounded by estimates of quartiles; for explanation see Appendix (Table A.2).

Note: Figures in parentheses are relative standard errors, expressed as percentages.

SOUTHERN BLUEFIN TUNA FISHERY

Financial Details: 1980-81

Table 1.1.1: COMPONENTS OF COSTS AND RETURNS: TOTAL FISHERY, BY METHOD, 1980-81: Average per boat

Item	Purse seiners	Pole boats	Total fishery
	$	$	$
RETURNS			
Tuna return	539 439	168 972 (20)	184 122 (18)
Other fish return	25 551	10 511 (41)	11 127 (37)
Other return	1 065	1 442 (51)	1 427 (49)
Total	566 055	180 926 (17)	196 675 (15)
CASH COSTS			
Trip costs			
Labour	159 704	43 768 (17)	48 509 (15)
Fuel and oil	81 547	23 419 (22)	25 796 (19)
Other	14 811	5 268 (19)	5 658 (17)
Total	256 061	72 455 (18)	79 963 (16)
Boat costs			
Repairs and maintenance			
- boat	61 930	16 329 (17)	18 194 (15)
- gear	60 205	3 180 (21)	5 511 (11)
Other	10 989	3 249 (19)	3 565 (17)
Total	133 124	22 757 (14)	27 270 (11)
Administration costs	10 304	2 489 (18)	2 808 (15)
Miscellaneous costs			
Interest	18 807	6 102 (29)	6 622 (26)
Selling charges	184	2 036 (48)	1 960 (48)
Insurance	21 342	4 165 (16)	4 868 (13)
Licences and Wharfage	1 524	793 (29)	823 (27)
Other	411	334 (70)	308 (70)
Total	42 269	13 430 (15)	14 609 (14)
Total cash costs	441 758	111 130 (12)	124 651 (11)

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 1.1.2: COMPONENTS OF COSTS AND RETURNS: POLE BOATS, BY REGION, 1980-81: Average per boat

Item	Central/Eastern pole boats	Western pole boats	All pole boats
	$	$	$
RETURNS			
Tuna return	353 038 (23)	36 854 (19)	168 972 (20)
Other fish return	12 833 (76)	8 845 (26)	10 511 (41)
Other return	2 719 (63)	526 (52)	1 442 (51)
Total	368 590 (20)	46 224 (13)	180 926 (17)
CASH COSTS			
Trip costs			
Labour	93 464 (19)	8 098 (23)	43 768 (17)
Fuel and oil	40 280 (25)	4 856 (12)	23 419 (22)
Other	8 554 (25)	2 909 (29)	5 268 (19)
Total	151 298 (21)	15 863 (17)	72 455 (18)
Boat costs			
Repairs and Maintenance			
- boat	32 353 (20)	4 827 (24)	16 329 (17)
- gear	6 031 (25)	1 133 (29)	3 180 (21)
Other	4 488 (26)	2 359 (28)	3 249 (19)
Total	42 872 (17)	8 319 (22)	22 757 (14)
Admistration costs	4 490 (23)	1 052 (16)	2 489 (18)
Miscellaneous costs			
Interest	12 807 (33)	1 289 (27)	6 102 (29)
Selling charges	3 613 (63)	905 (43)	2 036 (48)
Insurance	8 806 (17)	834 (21)	4 165 (16)
Licences and wharfage	1 380 (40)	371 (13)	793 (29)
Other	721 (79)	56 (52)	334 (70)
Total	27 328 (18)	3 455 (11)	13 430 (15)
Total cash costs	225 987 (14)	28 689 (16)	111 130 (12)

Note: Figures in parenthesis are relative standard errors, expressed as percentages.

Table 1.1.3: COMPONENTS OF COSTS AND RETURNS: POLE BOATS, BY UNDERDECK VOLUME, 1980-81: Average per boat

Item	Underdeck volume (a)				All pole boats
	0-51 m^3	52-122 m^3	123-392 m^3	393 m^3 and over	
	$	$	$	$	$
RETURNS					
Tuna return	34 086 (26)	30 939 (41)	165 425 (18)	462 857 (24)	168 972 (20)
Other fishing return	9 174 (57)	11 537 (17)	18 399 (61)	1 020 (149)	10 511 (41)
Other return	838 (70)	386 (47)	2 060 (80)	2 399 (121)	1 442 (51)
Total	44 099 (19)	42 862 (23)	185 884 (12)	466 276 (23)	180 926 (17)
CASH COSTS					
Trip costs					
Labour	7 470 (33)	7 080 (47)	48 838 (29)	114 793 (25)	43 768 (17)
Fuel and oil	4 186 (23)	5 269 (19)	20 078 (26)	67 357 (26)	23 419 (22)
Other	2 410 (72)	2 223 (36)	6 018 (21)	10 575 (32)	5 268 (19)
Total	14 066 (26)	14 573 (32)	74 933 (26)	192 724 (25)	72 455 (18)
Boat costs					
Repairs and maintenance					
- boat	3 659 (37)	5 325 (49)	21 020 (32)	35 617 (44)	16 329 (17)
- gear	825 (40)	771 (38)	5 309 (29)	5 544 (50)	3 180 (21)
Other	1 232 (53)	2 109 (30)	4 762 (26)	4 735 (46)	3 249 (19)
Total	5 717 (29)	8 205 (39)	31 091 (25)	45 897 (38)	22 757 (14)
Administration costs	1 209 (16)	670 (36)	3 866 (42)	4 008 (16)	2 489 (18)
Miscellaneous costs					
Interest	1 284 (38)	1 143 (32)	4 552 (51)	18 423 (35)	6 102 (29)
Selling charges	1 041 (82)	1 139 (49)	5 090 (59)	195 (150)	2 036 (48)
Insurance	654 (54)	917 (36)	4 529 (28)	10 892 (20)	4 165 (16)
Licences and wharfage	436 (31)	358 (12)	1 164 (51)	1 160 (80)	793 (29)
Other	109 (55)	5 (102)	17 (62)	1 316 (77)	334 (72)
Total	3 525 (14)	3 562 (12)	15 353 (33)	31 987 (25)	13 430 (15)
Total cash costs	24 517 (19)	27 010 (31)	125 243 (25)	274 617 (16)	111 130 (12)

(a) These ranges are bounded by estimates of quartiles; for explanation see Appendix Table A.1.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 1.2.1: PERFORMANCE MEASURES: TOTAL FISHERY, BY METHOD, 1980-81: Average per boat

Measure	Purse seiners	Pole boats	Total fishery
	$	$	$
Total returns	566 055	180 926 (17)	196 675 (15)
Total cash costs	441 758	111 130 (12)	124 651 (11)
Cash operating surplus	124 297	69 795 (28)	72 024 (26)
Owner-operator allowance	33 431	14 673 (6)	15 440 (6)
Boat cash income	90 866	55 122 (33)	56 584 (81)
Depreciation	142 857	28 917 (23)	33 577 (19)
Return to capital and management	-51 991	26 205 (51)	23 007 (56)
Full equity return	-33 183	32 307 (46)	29 628 (48)
Owner-operator income (a)	na	16 821 (23)	16 821 (23)

(a) Income from fishing for sole owners and husband-and-wife partnerships only (see definitions, section 4.3). na Not applicable.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 1.2.2: PERFORMANCE MEASURES: POLE BOATS, BY REGION, 1980-81: Average per boat

Measure	Central/Eastern pole boats	Western pole boats	All pole boats
	$	$	$
Total returns	368 590 (20)	46 224 (13)	180 926 (17)
Total cash costs	225 987 (14)	28 689 (16)	111 130 (12)
Cash operating surplus	142 603 (32)	17 535 (14)	69 695 (28)
Owner-operator allowance	27 006 (7)	5 821 (13)	14 673 (6)
Boat cash income	115 597 (38)	11 714 (17)	55 122 (33)
Depreciation	59 307 (27)	7 104 (11)	28 917 (23)
Return to capital and management	56 291 (57)	4 610 (46)	26 205 (51)
Full equity return	69 098 (51)	5 899 (38)	32 307 (46)
Owner-operator income (a)	81 448 (41)	10 431 (25)	16 821 (23)

(a) Income from fishing for sole owners and husband-and-wife partnerships only (see definitions, section 4.3).

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 1.2.3: PERFORMANCE MEASURES: POLE BOATS, BY UNDERDECK VOLUME, 1980-81: Average per boat

Measure	Quartile groups (a) 0-51 m^3	52-122 m^3	123-392 m^3	393 m^3 and over	All pole boats
	$	$	$	$	$
Total returns	44 099 (19)	42 861 (29)	185 884 (12)	466 276 (23)	180 926 (17)
Total cash costs	24 517 (19)	27 010 (31)	125 243 (10)	274 617 (16)	111 130 (12)
Cash operating surplus	19 582 (28)	15 852 (27)	60 641 (42)	191 660 (34)	69 795 (28)
Owner-operator allowance	5 602 (18)	5 345 (27)	18 410 (6)	29 468 (21)	14 673 (6)
Boat cash income	13 979 (33)	10 506 (27)	42 231 (58)	162 192 (39)	55 122 (33)
Depreciation	7 148 (17)	7 630 (19)	18 824 (15)	87 363 (21)	28 917 (23)
Return to capital and management	6 831 (60)	2 876(135)	23 407(112)	74 829 (67)	26 205 (51)
Full equity return	8 115 (49)	4 019(105)	27 959 (99)	93 252 (58)	32 307 (46)
Owner-operator income (b)	12 433 (39)	8 222 (63)	33 294(101)	(c)	16 821 (23)

(a) These ranges are bounded by estimates of quartiles; for explanation see Appendix (Table A.1.) (b) Income from fishing for sole owners and husband-and-wife partnership only (see definitions, section 4.3). (c) Sample too small to estimate value.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

SOUTHERN BLUEFIN TUNA FISHERY

Financial Details: 1981-82

Table 2.1.1: COMPONENTS OF COSTS AND RETURNS: TOTAL FISHERY, BY METHOD, 1981-82: Average per boat

Item	Purse seiners	Pole boats	Total fishery
	$	$	$
RETURNS			
Tuna return	509 845	91 285 (18)	108 402 (11)
Other fish return	14 547	20 050 (34)	19 825 (33)
Other return	-	1 003 (38)	962 (39)
Total	524 393	112 338 (14)	129 189 (7)
CASH COSTS			
Trip costs			
Labour	150 866	29 451 (10)	34 417 (8)
Fuel and oil	82 675	20 544 (13)	23 085 (11)
Other	14 445	4 266 (8)	4 683 (7)
Total	247 986	54 261 (9)	62 184 (8)
Boat costs			
Repairs and Maintenance			
- boat	68 968	12 674 (8)	14 976 (6)
- gear	51 942	3 137 (18)	5 133 (11)
Other	7 285	3 675 (16)	3 822 (15)
Total	128 195	19 486 (7)	23 931 (6)
Administration costs	11 956	2 454 (16)	2 843 (13)
Miscellaneous costs			
Interest	56 295	9 543 (27)	11 455 (21)
Selling charges	1 410	4 166 (31)	4 053 (30)
Insurance	24 518	5 360 (9)	6 143 (7)
Licences and wharfage	3 603	680 (10)	799 (8)
Other	671	116 (45)	138 (45)
Total	86 497	19 864 (14)	22 589 (12)
Total cash costs	474 634	96 065 (7)	111 546 (6)

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.1.2: COMPONENTS OF COSTS AND RETURNS: POLE BOATS, BY REGION, 1981-82: Average per boat

Item	Central/Eastern pole boats	Western pole boats	All pole boats
	$	$	$
RETURNS			
Tuna return	180 058 (17)	27 565 (19)	91 285 (18)
Other fish return	32 115 (49)	11 390 (18)	20 050 (34)
Other return	862 (70)	1 104 (46)	1 003 (38)
Total	213 034 (11)	40 060 (12)	112 338 (14)
CASH COSTS			
Trip costs			
Labour	61 103 (12)	6 732 (18)	29 451 (10)
Fuel and oil	42 639 (15)	4 684 (9)	20 544 (13)
Other	6 653 (8)	2 554 (16)	4 266 (8)
Total	110 394 (11)	13 970 (13)	54 261 (9)
Boat costs			
Repairs and maintenance			
- boat	24 343 (9)	4 298 (18)	12 674 (8)
- gear	6 654 (13)	612 (27)	3 137 (18)
Other	5 471 (22)	2 385 (24)	3 675 (16)
Total	36 468 (8)	7 296 (17)	19 486 (7)
Administration costs	4 189 (22)	1 209 (13)	2 454 (16)
Miscellaneous costs			
Interest	20 340 (30)	1 793 (17)	9 543 (27)
Selling charges	8 643 (35)	952 (25)	4 166 (31)
Insurance	11 703 (10)	807 (17)	5 360 (9)
Licences and wharfage	1 058 (13)	408 (13)	680 (10)
Other	191 (78)	62 (56)	116 (45)
Total	41 934 (16)	4 022 (12)	19 864 (14)
Total cash costs	192 986 (8)	26 496 (12)	96 065 (7)

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.1.3: COMPONENTS OF COSTS AND RETURNS: POLE BOATS, BY UNDERDECK VOLUME, 1981-82: Average per boat

Item	Underdeck volume (a)				All pole boats
	0-50 m^3	51-116 m^3	117-392 m^3	393 m^3 and over	
	$	$	$	$	$
RETURNS					
Tuna return	16 106 (22)	31 220 (33)	96 369 (23)	232 201 (16)	91 285 (18)
Other fishing return	11 147 (35)	11 764 (28)	27 848 (72)	29 360 (66)	20 050 (34)
Other return	266 (63)	1 970 (54)	380 (55)	1 476 (74)	1 003 (38)
Total	27 520 (20)	44 954 (18)	124 597 (14)	263 037 (10)	112 338 (14)
CASH COSTS					
Trip costs					
Labour	4 498 (20)	8 038 (31)	33 203 (17)	75 368 (10)	29 451 (10)
Fuel and oil	3 548 (26)	5 474 (9)	20 731 (14)	55 207 (16)	20 544 (13)
Other	1 194 (40)	3 261 (16)	5 521 (9)	7 161 (12)	4 266 (8)
Total	9 241 (20)	16 773 (20)	59 455 (11)	137 735 (11)	54 261 (9)
Boat costs					
Repairs and maintenance					
- boat	1 708 (28)	6 021 (25)	18 516 (9)	24 748 (14)	12 674 (8)
- gear	143 (58)	1 024 (24)	2 994 (24)	8 858 (23)	3 137 (18)
Other	552 (18)	3 742 (26)	6 650 (21)	3 362 (22)	3 675 (16)
Total	2 403 (17)	10 787 (19)	28 160 (11)	36 969 (12)	19 486 (7)
Administrative costs	866 (21)	1 329 (20)	2 889 (26)	4 878 (29)	2 454 (16)
Miscellaneous costs					
Interest	1 300 (21)	1 782 (27)	5 040 (41)	32 392 (26)	9 543 (27)
Selling	1 394 (32)	546 (40)	8 778 (52)	5 581 (36)	4 166 (31)
Insurance	213 (35)	1 132 (15)	5 948 (10)	14 844 (8)	5 360 (9)
Licences and wharfage	374 (24)	506 (18)	655 (22)	1 230 (17)	680 (10)
Other	49 (68)	52 (71)	59 (50)	325 (61)	116 (45)
Total	3 330 (17)	4 018 (17)	20 480 (20)	54 373 (17)	19 864 (14)
Total cash costs	15 840 (17)	32 907 (17)	110 985 (8)	233 955 (7)	96 065 (7)

(a) These ranges are bounded by estimates of quartiles; for explanation, see Appendix (Table A.1).

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.1.4: COMPONENTS OF COSTS AND RETURNS: POLE BOATS, BY RATE OF RETURN, 1981-82: Average per boat

Item	Rates of return (a)				All pole boats
	-16 per cent or less	-15 to -5 per cent	-4 to 6 per cent	over 6 per cent	
	$	$	$	$	$
RETURNS					
Tuna return	98 878 (30)	83 824 (45)	104 335 (13)	79 196 (11)	91 285 (18)
Other fishing return	27 588 (82)	30 594 (59)	9 721 (35)	11 447 (27)	20 050 (34)
Other return	1 322 (100)	233 (49)	2 092 (48)	463 (49)	1 003 (38)
Total	127 787 (21)	114 651 (22)	116 148 (11)	91 106 (9)	112 338 (14)
CASH COSTS					
Trip costs					
Labour	40 446 (26)	28 405 (18)	29 527 (16)	20 259 (16)	29 451 (10)
Fuel and oil	26 580 (23)	27 310 (28)	19 716 (17)	7 808 (8)	20 544 (13)
Other	5 228 (10)	4 279 (19)	3 586 (19)	4 062 (13)	4 266 (8)
Total	72 254 (21)	59 995 (22)	52 828 (14)	32 129 (12)	54 261 (9)
Boat costs					
Repairs and maintenance	16 388 (21)	15 163 (11)	9 987 (12)	9 086 (18)	12 674 (8)
- boat	6 654 (30)	1 992 (30)	2 741 (35)	1 587 (11)	3 137 (18)
- gear	4 742 (42)	3 800 (32)	4 000 (34)	2 183 (33)	3 675 (16)
Total	27 783 (17)	20 955 (11)	16 727 (17)	12 855 (16)	19 486 (7)
Administrative costs	4 518 (34)	1 591 (21)	2 100 (15)	1 897 (12)	2 454 (16)
Miscellaneous costs					
Interest	27 163 (39)	5 342 (49)	4 836 (43)	2 834 (31)	9 543 (27)
Selling	3 528 (61)	6 803 (62)	1 728 (48)	4 235 (14)	4 166 (31)
Insurance	9 376 (12)	6 148 (26)	4 073 (12)	2 010 (10)	5 360 (9)
Licences and wharfage	1 130 (16)	523 (20)	540 (12)	586 (14)	680 (10)
Other	13 (67)	226 (81)	54 (65)	148 (31)	116 (45)
Total	41 211 (31)	19 042 (15)	11 230 (20)	9 812 (7)	19 864 (14)
Total cash costs	145 767 (17)	101 582 (16)	82 885 (12)	56 693 (11)	96 065 (7)

(a) These ranges are bounded by estimates of quartiles; for explanation see Appendix (Table A.2).

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.2.1: PERFORMANCE MEASURES: TOTAL FISHERY, BY METHOD, 1981-82: Average per boat

Measure	Purse seiners	Pole boats	Total fishery
	$	$	$
Total returns	524 393	112 338 (9)	129 189 (7)
Total cash costs	474 634	96 065 (7)	111 546 (6)
Cash operating surplus	49 759	16 273 (31)	17 643 (27)
Owner-operator allowance	26 229	12 378 (6)	12 945 (6)
Boat cash income	23 530	3 895(114)	4 698 (91)
Depreciation	129 614	28 359 (16)	32 499 (13)
Return to capital and management	-106 084	-24 464 (24)	-27 801 (21)
Full equity return	-49 789	-14 921 (31)	-16 347 (27)
Owner-operator income (a)	na	4 680 (44)	4 680 (44)

(a) Income from fishing for sole owners and husband-and-wife partnerships only (see definitions, section 4.3). na Not applicable.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.2.2: PERFORMANCE MEASURES: POLE BOATS, BY REGION, 1981-82: Average per boat

Measure	Central/Eastern pole boats	Western pole boats	All pole boats
	$	$	$
Total returns	213 034 (11)	40 060 (12)	112 338 (9)
Total cash costs	192 986 (8)	26 496 (12)	96 065 (7)
Cash operating surplus	20 048 (57)	13 564 (16)	16 273 (31)
Owner-operator allowance	22 029 (7)	5 451 (12)	12 378 (6)
Boat cash income	-1 981(525)	8 113 (20)	3 895(114)
Depreciation	59 065 (18)	6 318 (9)	28 359 (16)
Return to capital and management	-61 046 (23)	1 795 (80)	-24 464 (24)
Full equity return	-40 706 (26)	3 588 (43)	-14 921 (31)
Owner-operator income(a)	-16 597 (60)	6 955 (29)	- 4 680 (44)

(a) Income from fishing for sole owners and husband-and-wife partnerships only (see definitions, section 4.3).

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.2.3: PERFORMANCE MEASURES: POLE BOATS, BY UNDERDECK VOLUME, 1981-82: Average per boat

Item	Underdeck volume (a) 0-50 m^3	51-116 m^3	117-392 m^3	393 m^3 and over	All pole boats
	$	$	$	$	$
Total returns	27 519 (20)	44 954 (18)	124 597 (14)	263 037 (10)	112 338 (9)
Total cash costs	15 840 (17)	32 907 (17)	110 985 (8)	233 955 (7)	96 065 (7)
Cash operating surplus	11 680 (28)	12 048 (24)	13 612 (82)	29 081 (55)	16 273 (31)
Owner-operator allowance	3 836 (19)	6 077 (16)	14 858 (11)	25 516 (6)	12 378 (6)
Boat cash income	7 843 (33)	5 970 (34)	-1 247(786)	3 565(428)	3 895(114)
Depreciation	5 773 (13)	6 074 (13)	19 053 (15)	88 442 (12)	28 359 (16)
Return to capital and management	2 071 (98)	-103(2255)	-20 299 (50)	-84 876 (25)	-24 464 (24)
Full equity return	3 371 (58)	1 678 (145)	-15 259 (72)	-52 484 (30)	-14 921 (31)
Owner-operator income (b)	5 907 (46)	4 957 (69)	6 865(108)	(c)	4 680 (44)

(a) These ranges are bounded by estimates of quartiles; for explanation, see Appendix (Table A.1). (b) Income from fishing for sole owners and husband-and-wife partnerships only (see definitions, section 4.3). (c) Sample too small to estimate value.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.2.4: PERFORMANCE MEASURES: POLE BOATS, BY RATE OF RETURN, 1981-82: Average per boat

Item	Rate of return (a)				All pole boats
	-16 per cent or less	-15 per cent to -5 per cent	-4 per cent to +6 per cent	over 6 per cent	
	$	$	$	$	$
Total returns	127 787 (21)	114 651 (22)	116 148 (11)	91 106 (9)	112 338 (9)
Total cash costs	145 767 (17)	101 582 (16)	82 885 (12)	56 693 (11)	96 065 (7)
Cash operating surplus	-17 980 (24)	13 069 (75)	33 263 (13)	34 412 (7)	162 273 (31)
Owner-operator allowance	14 310 (17)	12 446 (14)	11 788 (6)	11 102 (7)	12 378 (6)
Boat cash income	-32 289 (10)	622(1333)	21 475 (19)	23 311 (7)	3 895(114)
Depreciation	56 234 (32)	30 237 (32)	19 651 (17)	9 083 (10)	28 359 (16)
Return to capital and management	-88 523 (21)	-29 615 (69)	1 825 (69)	14 228 (9)	-24 464 (24)
Full equity return	-61 360 (19)	-24 273 (19)	6 660 (44)	17 061 (7)	-14 920 (31)
Owner-operator income (b)	-7 426 (16)	- 9 654 (45)	7 544 (15)	19 319 (10)	4 680 (44)

(a) These ranges are bounded by estimates of quartiles; for explanation, see Appendix (Table A.2). (b) Income from fishing for sole owners and husband-and-wife partnerships only (see definitions, section 4.3).

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.3.1: CAPITAL PROFILE: TOTAL FISHERY, BY METHOD, 1981-82: Average per boat as at 30 June 1982

Item	Unit	Purse seiners	Pole boats	Total fishery
Capital value of boat	$	1 267 017	266 806 (13)	307 710 (10)
Outstanding debt				
Overdraft	$	18 000	1 076 (41)	1 768 (24)
Term loans	$	72 000	61 069 (24)	61 516 (23)
Other loans (a)	$	92 000	1 848 (46)	5 535 (15)
Total	$	182 000	63 993 (23)	68 819 (21)
Equity	$	1 085 017	202 813 (12)	238 891 (10)
Equity ratio		0.85	0.76 (5)	0.77 (4)
Rate of return	%	-8.37	-9.16 (21)	-9.03 (18)
Rate of return adjusted to full equity	%	-3.92	-5.59 (29)	-5.31 (26)

(a) Includes fully drawn advances, commercial bills, bank bills, personal loans, credit cards.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.3.2: CAPITAL PROFILE: POLE BOATS, BY REGION, 1981-82: Average per boat as at 30 June 1982

Item	Unit	Central/Eastern pole boats	Western boats	All pole boats
Capital value of boat	$	549 448 (15)	63 928 (9)	266 806 (13)
Outstanding debt				
Overdraft	$	1 632 (57)	677 (52)	1 076 (41)
Term loans	$	131 929 (26)	10 206 (25)	61 069 (24)
Other loans (a)	$	1 786 (90)	1 893 (46)	1 848 (46)
Total	$	135 346 (26)	12 776 (21)	63 993 (23)
Equity	$	414 102 (14)	51 153 (9)	202 813 (12)
Equity ratio		0.75 (6)	0.80 (4)	0.76 (5)
Rate of return	%	-11.11 (20)	2.80 (78)	-9.16 (21)
Rate of return adjusted to full equity	%	-7.41 (26)	5.61 (41)	-5.59 (29)

(a) Includes fully drawn advances, commercial bills, bank bills, personal loans, credit cards.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.3.3: CAPITAL PROFILE: POLE BOATS, BY UNDERDECK VOLUME, 1981-82: Average per boat as at 30 June 1982

Item	Unit	Underdeck volume (a) 0-50 m^3	51-116 m^3	117-392 m^3	393 m^3 and over	All pole boats
Capital value of boat	$	49 029 (10)	61 633 (8)	221 899 (16)	781 363 (9)	266 806 (13)
Outstanding debt	$					
Overdraft	$	0	541 (89)	936 (67)	2 989 (56)	1 076 (41)
Term loans	$	4 206 (52)	11 273 (28)	29 293 (43)	215 421 (18)	61 069 (24)
Other loans (b)	$	2 110 (97)	1 924 (53)	366 (74)	3 271 (89)	1 848 (46)
Total	$	6 316 (36)	13 738 (24)	30 596 (42)	221 681 (18)	63 993 (23)
Equity	$	42 714 (16)	47 895 (9)	191 303 (21)	559 682 (12)	202 815 (12)
Equity ratio		0.87 (7)	0.77 (6)	0.86 (8)	0.71 (7)	0.76 (5)
Rate of return	%	4.22 (96)	-0.16 (2253)	-9.14 (51)	-10.86 (23)	-9.16 (21)
Rate of return adjusted to full equity	%	6.87 (57)	2.72 (146)	-6.87 (74)	-6.71 (28)	-5.59 (29)

(a) These ranges are bounded by estimates of quartiles; for explanation, see Appendix (Table A.1).
(b) Includes fully drawn advances, commercial bills, bank bills, personal loans, credit cards.

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table 2.3.4: CAPITAL PROFILE: POLE BOATS, BY RATE OF RETURN: 1981-82: Average per boat as at 30 June 1982

Item	Unit	Rate of return (a) -16 per cent or less	-15 to -5 per cent	-4 to 6 per cent	over 6 per cent	All pole boats
Capital value of boat	$	444 722 (30)	332 194 (35)	196 763 (40)	96 391 (14)	266 806 (13)
Outstanding debt						
Overdraft	$	1 925 (72)	363 (93)	1 520 (85)	645 (81)	1 076 (41)
Term loans	$	130 377 (44)	44 055 (58)	54 864 (57)	22 337 (28)	61 069 (24)
Other loans(b)	$	3 143 (66)	186 (93)	3 906 (83)	419 (63)	1 848 (46)
Total	$	135 445 (42)	44 605 (57)	60 291 (58)	23 402 (28)	63 993 (23)
Equity	$	309 276 (27)	287 589 (33)	136 471 (43)	72 989 (13)	202 813 (12)
Equity ratio		0.69 (8)	0.86 (5)	0.69 (18)	0.75 (6)	0.76 (5)
Rate of return	%	-19.90 (9)	-8.91 (21)	0.92 (89)	14.76 (11)	-9.16 (21)
Rate of return adjusted to full equity	%	-13.79 (18)	-7.30 (29)	3.38 (60)	17.70 (9)	-5.59 (29)

(a) These ranges are bounded by estimates of quartiles; for explanation see Appendix (Table A.2). (b) Includes fully drawn advances, commercial bills, bank bills, personal loans, credit cards.

Note: Figures in parentheses are relative standard errors.

Appendix

QUARTILE DISTRIBUTIONS

The analyses by rate of return and by underdeck volume use quartiles. Quartiles are those values of any variable by which the population is divided into four equal parts when the individual units are placed in ascending order of magnitude. Thus, the first interquartile group (0-25 per cent) consists of the 25 per cent of boats with the lowest rates of return or the smallest underdeck volumes, as the case may be, and the highest interquartile group (75-100 per cent) comprises the 25 per cent of boats with the highest rates of return or the largest underdeck volumes. Classification by quartiles was applied only to the pole boats, since the purse seiners were too few to allow such comparison without breaching the confidentiality of the individual figures.

Estimated boundaries for the quartile distribution of boats by underdeck volume and by rate of return are shown in the tables below.

Table A.1: UNDERDECK VOLUME QUARTILE BOUNDS: POLE BOATS

Year	Quartile bounds		
	25 per cent	50 per cent	75 per cent
	m^3	m^3	m^3
1980-81	51.8 (19)	122.2 (42)	392.7 (38)
1981-82	50.9 (13)	116.3 (37)	392.7 (28)

Note: Figures in parentheses are relative standard errors, expressed as percentages.

Table A.2: RATE OF RETURN QUARTILE GROUP BOUNDS: POLE BOATS: 1981-82

Item	Quartile bounds		
	25 per cent	50 per cent	75 per cent
	%	%	%
Rate of return	-15.3 (19)	-4.5 (111)	6.0 (54)

Note: Figures in parentheses are relative standard errors, expressed as percentages of the estimates.

Table 2.2.2: SUMMARY OF PERFORMANCE MEASURES: BY BOAT LENGTH: TOTAL FISHERY: 1981-82: Average per boat

Measure	Less than 15.6 m	15.6 m and less than 17.6 m	17.6 m and less than 20.6 m	20.6 m and less than 23.6 m	23.6 m and over	Total fishery
	$	$	$	$	$	$
Total returns	103 328 (6)	197 480 (17)	192 799 (10)	471 000 (3)	427 286 (4)	348 265 (2)
Total cash costs	103 804 (6)	179 736 (10)	217 541 (9)	416 526 (2)	483 035 (4)	342 736 (2)
Cash operating surplus	-476 (a)	17 744 (99)	-24 742 (57)	54 474 (17)	-55 749 (32)	5 530 (116)
Owner operator allowance	10 412 (21)	5 154 (50)	1 290 (78)	561 (72)	na	1 863 (21)
Boat cash income	-10 888 (83)	12 589 (150)	-26 032 (53)	53 913 (17)	-55 749 (32)	3 667 (174)
Depreciation	14 525 (4)	25 212 (8)	31 857 (6)	48 767 (3)	57 792 (3)	42 272 (2)
Return to capital and management	-25 413 (36)	-12 623 (139)	-57 889 (25)	5 146 (181)	-113 541 (16)	-38 605 (17)
Full equity return	-19 637 (45)	53 (b)	-43 757 (30)	42 506 (25)	-84 372 (20)	-12 755 (51)
Owner-operator income(c)	-15 001 (58)	711 (d)	-20 424 (59)	na	na	-12 021 (76)

(a) RSE = 1807. (b) RSE = 30203. (c) Income from fishing for sole owner, and husband and wife partnerships only. (d) RSE = 3847. na, Not applicable.

Note: Figures in parentheses are relative standard errors (RSEs).

Table 2.2.3: SUMMARY OF PERFORMANCE MEASURES: BY RATE OF RETURN QUARTILE GROUPS: TOTAL FISHERY: 1981-82: Average per boat

Item	Quartile group				Total fishery	
	1-25 per cent	26-50 per cent	51-75 per cent	76-100 per cent		
	$	$	$	$	$	
Total returns	202 879 (6)	288 993 (7)	397 379 (5)	504 086 (6)	348 265	(2)
Total cash costs	343 263 (5)	311 730 (7)	350 627 (6)	365 558 (7)	342 736	(2)
Cash operating surplus	-140 384 (5)	-22 738 (17)	46 751 (6)	138 527 (9)	5 530	(116)
Owner operator allowance	2 771 (26)	3 014 (34)	1 037 (77)	624 (82)	1 863	(21)
Boat cash income	-143 155 (5)	-25 752 (14)	45 714 (6)	137 904 (9)	3 667	(174)
Depreciation	39 719 (4)	42 200 (7)	44 330 (4)	42 820 (5)	42 272	(2)
Return to capital and management	-182 875 (5)	-67 952 (6)	1 384 (157)	95 084 (12)	-38 605	(17)
Full equity return	-158 079 (5)	-49 103 (9)	32 789 (19)	123 445 (10)	-12 755	(51)
Owner-operator income(a)	-54 198 (10)	-33 241 (15)	8 058 (87)	69 176 (28)	-12 021	(76)

(a) Income from fishing for sole owner, and husband and wife partnerships only.

Note: Figures in parentheses are relative standard errors.

Table 2.3.1: CAPITAL PROFILE: TOTAL FISHERY: 1981-82: Average per boat

Measure	Unit	Non-fleet operations	Fleet operations	Total fishery
Capital value of boat	$	308 285 (7)	411 745 (0)	364 949 (2)
Capital value of endorsement	$	48 684 (6)	60 631 (0)	55 228 (3)
Total capital value	$	356 969 (6)	472 376 (0)	420 176 (2)
Outstanding debt	$	106 119 (22)	105 324 (0)	105 683 (10)
Equity	$	248 620 (10)	367 052 (0)	313 484 (4)
Equity ratio	no.	0.70 (8)	0.78 (0)	0.75 (3)
Rate of return	%	-4.58 (54)	-12.08 (0)	-9.21 (16)
Rate of return adjusted to full equity	%	1.96 (116)	-6.14 (0)	-3.61 (54)

Note: Figures in parentheses are relative standard errors.

Table 2.3.2: CAPITAL PROFILE: BY BOAT LENGTH: TOTAL FISHERY: 1981-82: Average per boat

Measure	Unit	Less than 15.6 m		15.6 m and less than 17.6 m		17.6 m and less than 20.6 m		20.6 m and less than 23.6 m		23.6 m and over		Total fishery	
Capital value of boat	$	121 667	(5)	219 493	(14)	259 679	(9)	441 039	(3)	478 276	(4)	364 949	(2)
Capital value of endorsement	$	40 000	(9)	47 129	(6)	47 212	(3)	64 806	(4)	54 741	(6)	55 228	(3)
Total capital value	$	161 667	(5)	266 621	(12)	306 891	(8)	505 846	(3)	533 017	(4)	420 176	(2)
Outstanding debt	$	38 897	(25)	73 009	(16)	58 619	(40)	155 504	(13)	99 392	(17)	105 683	(10)
Equity	$	122 770	(10)	193 613	(20)	248 272	(9)	350 341	(6)	433 626	(4)	314 493	(4)
Equity ratio	no.	0.76	(8)	0.71	(11)	0.81	(9)	0.69	(6)	0.81	(4)	0.75	(3)
Rate of return	%	-15.00	(36)	-4.00	(148)	-18.00	(24)	1.00	(181)	-21.00	(16)	-9.00	(17)
Rate of return adjusted to full equity	%	-12.15	(45)	0.02	(a)	-14.26	(30)	8.40	(24)	-15.83	(20)	-3.61	(54)

(a) RSE = 30 191.

Note: Figures in parentheses are relative standard errors (RSEs).

Table 2.3.3: CAPITAL PROFILE: BY RATE OF RETURN QUARTILE GROUPS: TOTAL FISHERY: 1981-82, Average per boat

Item	Unit	Quartile group: 1-25 per cent		26-50 per cent		51-75 per cent		76-100 per cent		Total fishery	
Capital value of boat	$	270 005	(6)	375 498	(7)	413 272	(5)	400 510	(6)	364 949	(2)
Capital value of endorsement	$	44 310	(2)	55 266	(4)	62 997	(8)	58 266	(6)	55 228	(3)
Total capital value	$	314 315	(5)	430 765	(6)	476 268	(4)	458 776	(5)	420 176	(2)
Outstanding debts	$	44 451	(30)	83 706	(13)	182 844	(18)	111 204	(18)	105 683	(10)
Equity	$	269 864	(6)	347 059	(7)	293 425	(10)	347 571	(6)	314 493	(4)
Equity ratio	no.	0.85	(5)	0.80	(3)	0.61	(10)	0.75	(5)	0.75	(3)
Rate of return	%	-58.00	(4)	-15.00	(5)	1.00	(156)	20.00	(10)	-9.21	(16)
Rate of return adjusted to full equity	%	-50.00	(5)	-11.00	(9)	6.00	(17)	26.00	(8)	-3.61	(54)

Note: Figures in parentheses are relative standard errors.

Appendix

QUARTILE DISTRIBUTION

The boundaries for the quartile distribution of boats by rate of return used in the financial tables are reported in the table below.

Table A.1: RATE OF RETURN QUARTILE GROUPS: TOTAL FISHERY: 1981-82

Item	Quartile groups			
	1-25 per cent	26-50 per cent	51-75 per cent	76-100 per cent
	%	%	%	%
Rate of return to capital and management	less than -28.91	-28.91 to -7.40	-7.41 to 8.71	greater than 8.71