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Cost-Earnings Study of the Hawaii-Based Domestic Longline Fleet

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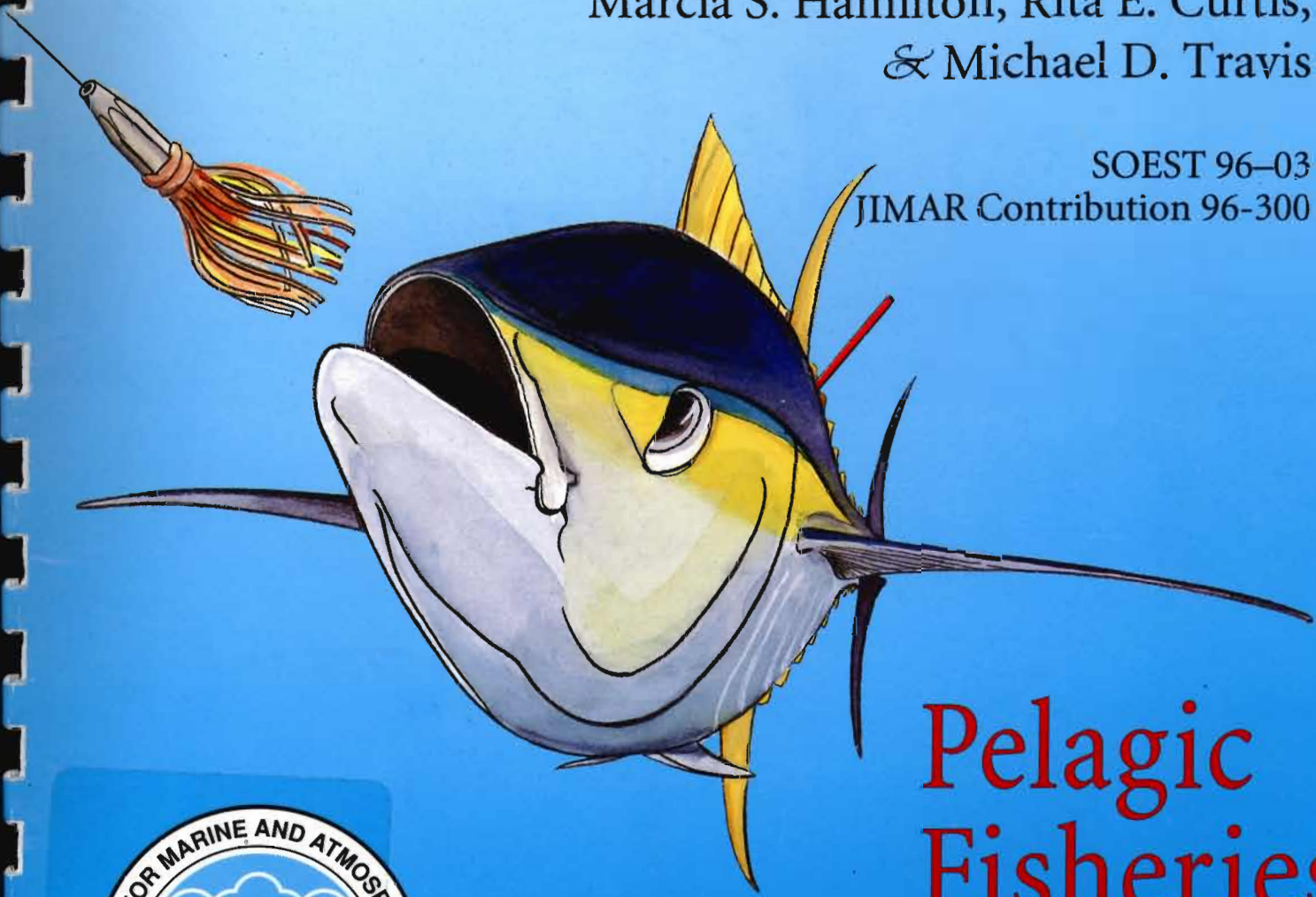

Pelagic Fisheries Research Program

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PREFACE

This project was conducted by three researchers from the University of Hawaii's Joint Institute of Marine and Atmospheric Research (JIMAR) under the Pacific Pelagic Fisheries Research Program (PFRP). The first is Marcia Hamilton, who prepared this report, the others are Rita Curtis and Michael Travis, who were also involved in planning, conducting and compiling the information from the survey; Curtis and Travis are preparing separate papers analyzing the economic relationships and other information revealed by the survey. Further assistance was supplied by University of Hawaii at Manoa graduate assistant Minling Pan. Together these researchers are termed the Hawaii Fishing Industry and Vessel Economics (HIFIVE) group. Additional assistance was supplied by Robert Dollar, Russell Ito, Kurt Kawamoto, Walter Machado and Sam Pooley of the NMFS Honolulu Laboratory. Data on vessel permits and permit applicants were supplied by Alvin Katekaru of the NMFS Pacific Area Office.

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INTRODUCTION

The impetus for this project was to provide baseline information to fishery managers and participants in the Hawaii based domestic longline fishery. The focus of study was the 1993 Hawaii based domestic longline fleet. This fishery has been a limited entry fishery since 1991. In 1993 there were 167 permits issued to longline vessels, of which 122 vessels made at least one landing. Total 1993 fleet landings as estimated by National Marine Fishery Service were 25 million pounds with an ex-vessel value of $55 million. This report provides a summary of 1993 vessel operations and earnings; information on other years can be expected to vary substantially.

METHODOLOGY

Survey instrument

A sample of the primary survey form is attached as Appendix 1. Several variations were used depending on whether the respondent was an owner and operator (captain), a hired captain, or an owner who did not operate his vessel. The survey was developed specifically for this study and its objectives. There are approximately 75 questions which can be divided into five areas:

- vessel characteristics,
- fishing and targeting strategies,
- demographics,
- comments about fishery regulations,
- economic information consisting of **variable costs**, which are incurred only if a trip is taken (fuel, oil, ice, bait, etc.) and **fixed costs**, which are not strictly related to the number of trips taken (insurance, accounting, etc.)

Preliminary drafts of the surveys were pre-tested on cooperative industry members in order to ensure that the questions were interpreted by respondents as expected. Revisions and clarifications to the final survey form were then made based on these interviews.

Survey administration

The survey was fielded by the three JIMAR researchers in teams of two with assistance from University of Hawaii graduate assistant MinLing Pan. Surveys were conducted from May to December of 1994 and focused on 1993 vessel operations. Each survey interview lasted between one and two hours. Whenever possible, 1993 vessel owners and operators were interviewed (127 out of 130 interviews). When this was not possible, 1994 vessel owners and operators were questioned. Personal interviews were chosen as most likely to yield a high response rate as well as more accurate data and were used with over 90% of respondents. As 99 of the 101 vessels surveyed port in Honolulu, the direct interview approach was employed with ease. Personal interviews were also used for the two participants who port their vessels in Kona. One respondent had moved to the U.S. mainland and was interviewed by telephone. Of the Honolulu vessels, four respondents asked to have a copy of the survey which they then filled out themselves and returned (a "user friendly" survey form was used).

Several adjustments were made to the survey process for participants who may have had difficulty with English. In the case of Vietnamese speaking respondents, a translator was contracted to be on hand to assist during interviews. The translator manages a local fishing

supply operation and is familiar with longlining as well as with the Vietnamese owners and operators. In the case of four Korean speaking participants, the written survey was translated into Korean and, after pre-testing and clarification, was distributed to those owners and operators who requested it. Their written responses were then translated back into English. With the exception of the Korean-only speaking group, all respondents were sent a copy of the interviewer's notes for verification. At this time participants were also asked if there was any additional information which they wanted to add to their responses.

Table 1 summarizes the fielding effort by vessel size and target. The fishery was divided into categories according to vessel target and size. Based on interview data (Question 18) each vessel was categorized by target species. The five target category titles used here are

- **Tuna** = every trip (and set) targeted tunas,
- **Mixed** = every trip (and set) was "catch whatever you can,"
- **Sword** = every trip (and set) targeted swordfish,
- **Varied** = target varied by trip, and
- **Set** = target varied by set.

Vessel size categories were based on overall vessel registered length in feet as filed with the Pacific Area Office of the National Marine Fisheries Service and were defined as **Small(S)** <= 56 ft.; **Medium(M)** between 56 and 74 ft.; and **Large(L)** >= 74 ft.[1]

Table 1 presents the number of vessels surveyed and included in this analysis (the numerator) as well as the total number of 1993 active vessels in each of the 15 size and target categories represented (the denominator). Information on two vessels that fished from the island of Hawaii is not included in this analysis as they operated under substantially different conditions than those vessels that fished out of Honolulu. In addition, three vessels that also fished in other fisheries for part of 1993 (e.g. South Pacific, Gulf of Mexico) were surveyed but are not included in this report. Finally, one vessel was dropped from the database because its one trip in 1993 consisted of only one set, which is far outside normal operating behavior. Thus, the total number of vessels considered in this analysis is 95.

Table 1. Number of vessels surveyed/Number of active vessels per category

Target Size	Tuna	Mixed	Sword	Varied	Set	Total
Small	15/22	1/4	0/1	3/3	0/0	19/30
Medium	14/16	12/15	10/10	4/6	1/1	41/48
Large	3/3	19/22	11/15	1/3	1/1	35/44
Total	32/41	32/41	21/26	8/12	2/2	95/122

Data management

Survey responses from vessel owners and operators were entered into a comprehensive database. Following this initial data entry, range checks and data verification were conducted which resulted in an "individual level" survey database. Individual survey forms of hired captains and vessel owners were then combined into a "vessel level" survey database (this step was unnecessary for those vessels which were owner-operated). In general, the information in this "vessel" survey database concerning vessel operations and trip costs is based on the

[1] Vessel size categories were selected by NMFS and the Western Pacific Fishery Management Council for an earlier analysis (Amendment 7 to the Pelagic Fishery Management Plan, Western Pacific Fishery Management Council, 1994).

responses received from vessel captains. Information on vessel investment and fixed costs is based on responses from vessel owners. Deviations from this approach were allowed under one of two circumstances. First, if information normally obtained from the captain or the owner was missing, responses from the other party were substituted if available. The second circumstance in which substitutions were made was based on the judgment of survey interviewers concerning the level of involvement and knowledge of respondents. For example, the hired captains of vessels whose owners are located on outer islands or the U.S. mainland often knew more about all types of vessel costs and operations than did those vessels' owners. In other instances, newly hired captains were not as knowledgeable about vessel operations as were vessel owners. In both of these cases, responses from the more informed participant were entered into the "vessel" survey database.

When neither respondent answered a given question and missing information could not be obtained through follow up interviews, missing values were filled in using the mean value of vessels for that vessel's size and target category. These substitutions included labor shares, individual fixed costs, operating patterns, and in one case, vessel revenue.

Sales (pounds sold) and revenue information as reported on State of Hawaii Department of Aquatic Resources (HDAR) commercial catch reports were used to calculate 1993 sales and revenue for each vessel surveyed. Revenue reported to HDAR, however, may be incomplete for several reasons: unreported trips, underestimates of revenue, aggregation of two or more trips into one catch report (allowable under HDAR procedures), and non-reporting by vessels. To illustrate the magnitude of the problem, the NMFS *estimate* of total fleet longline revenue for 1993 was $55.1 million (25.3 million pounds) based on Federal longline logbooks; the HDAR longline fleet revenue figure for 1993 was $46.2 million (16.8 million pounds) based on HDAR catch reports (Pooley, 1995, unpublished). One reason for the above "discrepancy" in weights is that NMFS estimates are based on the whole weight of swordfish sold while HDAR catch reports generally record only the processed (e.g., headed and gutted) weight of swordfish sold. An additional problem that arose in the preparation of this report was that it was not always possible to link the HDAR catch reports to a particular trip. While the NMFS tracks vessel activity according to permit number, HDAR tracks individual license owners. An initial review shows that 78% of 1993 longline trips reported in Federal longline logbooks could be matched with specific HDAR catch reports.

An identifiable difference in actual revenue versus that reported to HDAR was found in association with several vessels that utilized export brokers rather than the local auction or wholesalers to sell their catch. This may be because the HDAR catch report is due by the tenth day of the first month following a trip landing. Fish which were sold to an export broker were taken on a commission basis and the actual revenue received was often not reported back to fishermen until several months later. As a result, these fishermen either estimated their revenue for their catch report or turned their reports in late. In contrast, fishermen who sold their catch to the auction or local wholesalers received sales and revenue statements within three days. A comparison of the catch reports of this group to auction data gathered by NMFS Fishery Monitoring and Economic Program technicians found a high degree of consistency between the reporting of pounds sold and revenue to HDAR and auction sales receipts. In the case of fishermen who sold to brokers (generally vessels which target swordfish), examination of HDAR catch reports indicates that nine vessels may have based the revenue or pounds sold portions (or both) of at least one of their reports on estimates. This statement is based on the fact that these vessels generally reported values in increments of five to ten thousand whereas other vessels reported these figures to the single dollar or pound. In order to provide accurate information for this report, dealer reports of pounds sold by vessel, trip and species were obtained from relevant brokers. These pounds-sold figures were used in place of HDAR reports wherever they were

greater than the HDAR report (HDAR reports may legitimately be greater than broker reports as many vessels sell only a portion of their catch to brokers). Estimated revenues were corrected through a substitution of estimated per pound prices with mean non-estimated prices secured by the applicable broker for the relevant species and calendar month. Revenues for each trip were then recalculated as pounds sold multiplied by this price per pound. Finally, actual sales reports were sought, obtained and used for two vessels which failed to file HDAR catch reports for the majority of their 1993 trips.

Data on trip lengths, as well as the number of fishing days per trip, were obtained from federal databases on a per vessel basis. *Fishing days* are the number of sets made per trip as reported in vessel logbooks, days between sets are counted as travel days. Total trip lengths were based on the NMFS Vessel Inventory Database, which tracks vessel arrivals and departures from Honolulu harbor.

RESULTS

Fleet information

Descriptive information and operating characteristics for the 95 vessels included in this report are presented in Table 2. Economic information collected on these vessels is summarized in Table 3 (detailed information is presented in Appendix 2). Revenue represents the mean gross revenue received per vessel for 1993 sales. Mean variable costs are those costs which vary with the number of trips taken (e.g., fuel, oil, ice, bait, food, fishing supplies, excise taxes, labor costs and sales charges). Fixed costs consist of maintenance, insurance, loan payments, drydock, depreciation, accounting and non-trip miscellaneous costs. Drydock expenses are calculated on a pro-rated basis, meaning that if a vessel goes to drydock once every three years, a third of that cost is included as (annual) drydock expense. With the exception of an excise tax charge of 0.5% of gross sales, tax costs (income, employee, etc.) are not included in this analysis due to the difficulty of obtaining and apportioning such expenses and the variety of accounting and labor practices that exist within this industry. Depreciation charges are based on physical wear and tear rather than tax charges. For tax purposes, depreciation is a method of deducting the purchase price of vessels over a number of years; the calculation of this deduction begins again each time the vessel is purchased by a new owner. However, in financial analyses such as this, it is the value of investment which is relevant. Thus, the annual decrease in the value of the investment due to wear and tear is estimated as a percentage of purchase price plus additional investment in major improvements regardless of the date of purchase. The depreciation charges used in this report are based on a 30-year useful vessel life. Although vessel technology may become obsolete, a properly maintained vessel operating in Hawaii's waters is believed to be of use for fishing for up to 30 years. Obviously, the application of a shorter useful life will increase depreciation charges proportionately and in turn reduce net returns. Accordingly, the net returns reported here may be regarded as optimistic. Although depreciation is a cost of business, it is a non-cash charge and not an out-of-pocket expense. Thus, it is added back to each vessel's annual net return in order to determine the cash return realized by vessel owners.

Table 2. Average Hawaii-based domestic longline vessel characteristics.

	Mean
Vessel Length (Feet)	69
Gross Tons	94
Total Horsepower	457
Purchase Price ($1,000)	$267
Additional Investment ($1,000)	$106
Value of Electronics ($1,000)	$34
Number of Trips in 1993	10.8
Travel Days Per Trip	9.6
Fishing Days (Sets)/Trip	10.6
Total Pounds Sold Per Trip	18,021

Table 3. Average annual Hawaii-based domestic longline vessel economic information. (thousands of dollars)

	Annual Mean	Range	Median
Revenue	$504	$58–$1,153	$481
Variable Costs	$377	$40–$831	$361
Fixed Costs	$100	$31–$239	$98
Net Return	$27	($219) –$253	$28
Add Back Non-Cash Depreciation Charge	$12	$3–$36	$11
Cash Return	$40	($205) –$262	$38

Because all cost and revenue information was calculated on a per vessel basis, the mean annual revenue and costs portrayed do not equal the product of mean trip costs multiplied by annual trips portrayed. In other words, all economic values in this report represent the mean of individual vessel values, rather than the values of one "average" vessel. Throughout this report, the term "annual net return" refers to the mean annual return realized per vessel after all variable and fixed costs (including depreciation) are subtracted.

On average, Hawaii-based domestic longline vessels earned an annual net return of $27,000 in 1993. The median net return was $28,000, indicating a roughly normal distribution of net returns throughout the fleet as illustrated in Figure 1 (see Figures section, following text). The fleet low was a loss of $219,000, the high was a gain of $253,000. Of the 95 vessels included in this analysis, 63 realized a positive annual net return in 1993; the remaining 32 realized a net loss.

Sensitivity analysis

Several simulations were conducted for this report. Although no new management issues have been proposed for the Hawaii-based longline fishery, "what if" analysis was used to determine the potential effect of a **restriction** in the number of fishing days per trip (Table 4).

Table 4. Average result of a one-day reduction in fishing days/trip for Hawaii-based domestic longline fishing vessels. (thousands of dollars)

	Annual Mean	Change
Revenue	$456	-$48
Variable Costs	$345	-$32
Fixed Costs	$100	$0
Net Return	$12	-$15
Add Back Non-Cash Depreciation Charge	$12	$0
Cash Return	$24	-$16

Simulation modeling was next used to assess the impact of an **increase** in the mean travel days per trip (with mean fishing days per trip at their original level). Such a situation could occur as a result of a change in the migratory patterns of the fish or from a widening of the closed areas (shoreline "buffer" zones) in which longliners are prohibited from fishing. These buffer zones currently range from 25 to 75 miles from the shoreline and vary by geographic area and season. The results of this simulation are presented in Table 5.

Table 5. Average result of a one-day increase in travel days/trip for Hawaii-based domestic longline fishing vessels. (thousands of dollars)

	Annual Mean	Change
Revenue	$504	$0
Variable Costs	$381	+$4
Fixed Costs	$100	$0
Net Return	$24	-$3
Add Back Non-Cash Depreciation Charge	$12	$0
Cash Return	$36	-$4

The third simulation concerned the minimum level of operations required for vessels to **break-even** (meaning that gross revenue equals the total of variable and fixed costs). Table 6 presents the mean costs and earnings per vessel associated with this break-even level of operations.

Table 6. Average annual returns for Hawaii-based domestic longline vessels at break-even operating levels. (thousands of dollars)

	Annual Mean	Change
Revenue	$407	-$97
Variable Costs	$307	-$70
Fixed Costs	$100	$0
Net Return	$0	-$27
Add Back Non-Cash Depreciation Charge	$12	$0
Cash Return	$12	-$28

Obviously many factors will affect vessel net returns, including the pounds sold per trip, prices received, and input prices paid. However, these are generally beyond fishery managers' control and thus this analysis focuses only on the number of trips taken and assumes that the pounds sold per trip, prices received and input prices remain unchanged. The result of this simulation is that, on average, vessels would have needed to take only 8.04 trips (a reduction of 2.4 trips) in 1993 in order to break even.

Analysis by vessel targets

There were significant differences in vessel characteristics and operations according to vessel targets (Table 7). Information on vessels whose target varied by set cannot be presented here for confidentiality reasons as there are less than three observations in this category. Tuna and swordfish vessels represented the two ends of a spectrum in terms of vessel horsepower, gross tons, total investment (purchase price plus additional investment), number of trips, trip length, travel days, and fishing days. Mixed and varied target vessels fell in the middle, with mixed vessels tending to be larger but with lower levels of investment.

Table 8 presents a summary of annual economic information by target. The highest net return was achieved by those vessels who use a mixed target strategy (mixed vessels) followed by tuna vessels, those whose target varies by trip (varied vessels), and swordfish vessels. Figures 2 through 5 (see Figures section) illustrate the above economic relationships across target groups.

Table 7. Average vessel characteristics by target.

Vessel Target	Tuna	Mixed	Sword	Varied
Vessel Length (Feet)	60	75	72	64
Gross Tons	65	109	118	91
Total Horsepower	342	519	566	362
Purchase Price ($1,000)	$172	$236	$446	$277
Additional Investment ($1,000)	$133	$84	$94	$110
Value Of Electronics ($1,000)	$22	$23	$79	$19
No. Of Trips In 1993	12.6	10.8	7.7	11.9
Total Days Per Trip	13.8	18.8	32.2	19.6
Travel Days Per Trip	4.6	9.0	18.2	8.9
Fishing Days (Sets) Per Trip	9.2	9.8	14.0	10.8
Total Pounds Sold Per Trip	12,187	18,811	26,132	12,373

Table 8. Average annual economic information per vessel by target (thousands of dollars).

Vessel Target	Tuna	Mixed	Sword	Varied
Revenue	$355	$566	$633	$491
Labor Cost	$113	$135	$139	$132
Supply Cost	$96	$237	$252	$179
Total Variable Costs	$245	$432	$495	$361
Total Fixed Costs	$89	$87	$127	$125
Net Return	$20	$47	$11	$5
Add Back Non-Cash Depreciation Charge	$10	$11	$18	$13
Cash Return	$31	$58	$29	$18

Tables 9 through 12 present more detailed economic information based on vessel targets.

Table 9. Average annual tuna vessel economic information.
(thousands of dollars)

	Annual Mean	Range	Median
Revenue	$355	$58–$795	$356
Variable Costs	$245	$40–$488	$252
Fixed Costs	$89	$31–$162	$93
Net Return	$20	($91) –$253	$16
Add Back Non-Cash Depreciation Charge	$10	$3–$27	$9
Cash Return	$31	($80) –$262	$33

Table 10. Average annual mixed vessel economic information.
(thousands of dollars)

	Annual Mean	Range	Median
Revenue	$566	$174–$929	$574
Variable Costs	$432	$172–$680	$430
Fixed Costs	$87	$32–$194	$82
Net Return	$47	($83) –$147	$54
Add Back Non-Cash Depreciation Charge	$11	$3–$32	$10
Cash Return	$58	($78) –$154	$66

Table 11. Average annual swordfish vessel economic information.
(thousands of dollars)

	Annual Mean	Range	Median
Revenue	$633	$121–$1,153	$682
Variable Costs	$495	$204–$831	$526
Fixed Costs	$127	$57–$194	$116
Net Return	$11	($219) –$227	$7
Add Back Non-Cash Depreciation Charge	$18	$9–$36	$16
Cash Return	$29	($205) –$240	$24

Table 12. Average annual varied vessel economic information.
(thousands of dollars)

	Annual Mean	Range	Median
Annual Revenue	$491	$178–$823	$473
Variable Costs	$361	$136–$606	$343
Fixed Costs	$125	$51–$239	$120
Net Return	$5	($197) –$116	$23
Add Back Non-Cash Depreciation Charge	$13	$8–$23	$12
Cash Return	$18	($185) –$129	$35

A comparison of means to medians in Tables 9 through 12 reveals that the distribution of net returns was skewed slightly negatively for both tuna and swordfish vessels and skewed positively for mixed and varied vessels. Of the 32 tuna vessels studied, 19 had positive annual net returns in 1993; the remaining 13 showed negative returns. Within swordfish vessels, 11 had positive net returns while 10 realized net losses. For mixed vessels, 28 had positive annual net returns and four had negative returns. Finally, four varied vessels showed positive net returns in 1993; the remaining four had negative annual net returns. Histograms of these distributions are presented in Figures 6 through 9.

Analysis of economic highliners

Tables 13 through 17 present mean values summarizing the operations of the **economic highliners** of both the entire fleet and each target group. For the purposes of this study, **economic highliners** are defined as the three vessels which earned the highest annual net return within a given group. These were not necessarily the vessels with the highest catches of their target species (a commonly used definition of a highliner).

Table 13. Comparison of fleet highliners to all other vessels.

	Highliners	All Others
Number Of Trips	12.3	10.7
Total Trip Length (Days)	22.1	20.1
Pounds Sold Per Trip	27,276	17,699
Price Per Pound	$3.04	$2.81
Total Trip Revenue ($1,000)	$86	$49
Annual Gross Revenue ($1,000)	$967	$489
Annual Variable Costs ($1,000)	$645	$368
Annual Fixed Costs ($1,000)	$88	$100
Annual Net Return ($1,000)	$233	$21

Table 14. Comparison of tuna highliners to all other tuna vessels.

	Highliners	All Others
Number Of Trips	15.7	12.3
Total Trip Length (Days)	13.8	13.8
Pounds Sold Per Trip Of Target Species Target Species = Tunas	10,252	5,932
Price Per Pound For Target Species	$2.95	$3.20
Revenue Per Trip From Target Species ($1,000)	$30	$19
Total Trip Revenue ($1,000)	$39	$27
Annual Gross Revenue ($1,000)	$616	$329
Annual Variable Costs ($1,000)	$398	$230
Annual Fixed Costs ($1,000)	$62	$92
Annual Net Return ($1,000)	$156	$6

Table 15. Comparison of mixed highliners to all other mixed vessels.

	Highliners	All Others
Number Of Trips	11.0	10.8
Total Trip Length (Days)	19.9	18.7
Pounds Sold Per Trip	24,628	18,209
Price Per Pound	$2.89	$2.85
Total Trip Revenue ($1,000)	$71	$52
Annual Gross Revenue ($1,000)	$780	$544
Annual Variable Costs ($1,000)	$560	$418
Annual Fixed Costs ($1,000)	$89	$87
Annual Net Return ($1,000)	$131	$39

Table 16. Comparison of swordfish highliners to all other swordfish vessels.

	Highliners	All Others
Number of Trips	7.7	7.7
Total Trip Length (days)	34.2	31.9
Pounds Sold Per Trip of Target Species Target Species = Swordfish	27,357	19,809
Price Per Pound For Target Species	$3.71	$3.33
Revenue Per Trip From Target Species ($1,000)	$98	$65
Total Trip Revenue ($1,000)	$117	$77
Annual Gross Revenue ($1,000)	$908	$587
Annual Variable Costs ($1,000)	$609	$476
Annual Fixed Costs ($1,000)	$112	$129
Annual Net Return ($1,000)	$187	($18)

Table 17. Comparison of varied target highliners to all other varied target vessels.

	Highliners	All Others
Number Of Trips	13.3	11.0
Total Trip Length (Days)	16.0	21.9
Pounds Sold Per Trip	11,928	12,640
Price Per Pound	$4.28	$3.16
Total Trip Revenue ($1,000)	$51	$38
Annual Gross Revenue ($1,000)	$673	$382
Annual Variable Costs ($1,000)	$484	$287
Annual Fixed Costs ($1,000)	$106	$136
Annual Net Return ($1,000)	$83	($41)

On average, economic highliners sold more pounds of their target species than other vessels in their group. They also tended to secure higher prices for their fish, as well as to maintain lower mean costs. Figures 10 through 13 illustrate the differences in revenue, costs, and returns between highliners and other vessels. Both variable and fixed costs (Figures 11 and 12) are presented as percentages of annual revenue in order to allow comparisons between groups of vessels with widely varying revenues.

The relative differences in variable costs between highliners and other vessels were generally less than 10 percentage points. However, it is interesting to note that while highliners paid less in supply costs and sales fees, they had higher labor costs. Crew shares represent the percentage of shared revenue which each crew member received and were the standard way in which crew members were paid. Shares were calculated based on trip revenue less shared costs (generally fuel, oil, bait, ice, miscellaneous fishing gear, food, and excise taxes), so that

Labor costs = Crew shares X (Gross revenue - Shared costs).

Highliners tended to pay each crew member a lower percentage of shared revenue than did other vessels but they generally used more crew members per trip. Table 18 presents a comparison of labor requirements and crew shares paid between highliners and other vessels. The number of crew listed in Table 18 does not include the captain.

Table 18. Comparison of labor requirements and shares for highliners to other vessels.

	Number of Crew (excluding captain)	Mean Crew Share Per Person (%)	Mean Captain Share (%)
Fleet Highliners	4.5	8.1	13.4
All Others	4.3	8.3	14.3
Tuna Highliners	4.0	8.6	15.7
Other Tuna Vessels	3.7	8.9	18.2
Mixed Highliners	5.0	7.7	11.4
Other Mixed Vessels	5.0	8.1	9.6
Swordfish Highliners	4.0	7.8	17.3
Other Swordfish Vessels	4.5	7.4	16.8
Varied Highliners	4.7	8.7	8.9
Other Varied Vessels	3.7	9.0	14.4

Analysis by fishing targets and vessel sizes

In order to further understand the factors which led to profitable operations, the fleet was examined by sectors based not only on target but also on vessel lengths within target groups. Again, information on those sectors with less than three observations cannot be presented for confidentiality reasons. For this section's detailed analysis, data on three tuna vessels which took less than five trips in 1993 were deleted to eliminate those vessels which operated on a less than full-time basis and thus facilitate a more accurate understanding of those elements which distinguish fleet sectors.

Figure 14 presents the mean annual net return for each sector which contains three or more observations. The highest mean annual net return was realized by medium-sized varied target vessels, followed by medium-sized mixed target vessels. The lowest mean net return was realized by medium-sized swordfish vessels. There was considerable variation in net returns within some sectors, as illustrated by the differences between means and medians presented in Table 19.

Table 19. Annual net returns by sector. (thousands of dollars)

Vessel Size & Target	Annual Net Return	
	Mean	Median
Small Tuna	$48	$36
Medium Tuna	$22	$16
Medium Mixed	$55	$56
Large Mixed	$46	$54
Medium Sword	($11)	($24)
Large Sword	$31	$9
Medium Varied	$58	$60

The next step in this analysis was to examine the sources of differences in net returns between sectors, and to determine if any single cause dominated. First, differences in annual (gross) revenue were examined. Results are presented in Figure 15. In general, large vessels realized higher gross revenues than did medium or small vessels. The highest gross revenue was earned by large swordfish vessels, the lowest by medium tuna vessels.

Figure 16 illustrates each sector's mean annual variable or trip costs. These consist of fuel, oil, ice, bait, gear, food, and miscellaneous minor equipment, as well as excise taxes, labor costs, and sales fees or commissions associated with the selling of the catch. These costs are presented

as a percentage of annual revenue, as it is the efficiency of input use rather than the dollar amounts spent which is most relevant to this analysis.

Swordfish vessels had higher variable costs than did other vessels for several reasons. First, these vessels took longer trips and made more sets per trip than did other vessels which led to greater fuel, food, and bait expenses. Second, swordfish vessels used more lightsticks per set than other types of vessels. Finally, these vessels tended to sell their fish through export brokers, whose sales fees include shipping costs as well as commissions.

The role of fixed costs is examined in Figure 17. Fixed costs are those costs that are assumed not to vary with the number of trips taken and consist of accounting costs, mooring fees, drydock expense, maintenance costs, insurance premiums, loan payments, depreciation expense and similar miscellaneous expenses. Of all sectors, fixed costs comprised the highest percentage of annual revenue for medium swordfish vessels whereas they are lowest for medium mixed vessels. Medium swordfish vessels paid the highest percentage of their annual revenue for insurance payments as well as for the category "other fixed costs" (other fixed costs are composed of depreciation and drydock charges, accounting charges, mooring fees, and miscellaneous expenses such as travel costs). In addition, medium swordfish vessels ranked second in maintenance costs as a percentage of annual revenue. Medium mixed vessels ranked last in both actual and relative insurance costs and loan payments.

There are two components to mean insurance and loan costs. The first is the number of vessels within each group which did not have either insurance or loans or both. The second is the mean payment per vessel. This information is presented in Table 20, along with the dollar costs of other major components of fixed costs.

Although medium mixed vessels paid a higher dollar amount for some fixed costs than several other groups, their costs as a percentage of annual revenue were consistently lower. In addition, these vessels are least likely to have outstanding loans or to carry insurance (tie with medium varied vessels).

To more completely understand the relative performance of each sector, Figure 18 illustrates the relevant rates of return on investment. Return on investment is defined as the annual net return divided by the total investment (vessel purchase price plus the cost of major improvements). Medium mixed target vessels showed the highest return on investment, followed by small tuna vessels. The lowest return on investment was earned by medium swordfish vessels.

Assuming that vessels were already covering their operating costs, as well as minimizing their trip costs and maximizing their trip revenues, profitability and return on investment could only be increased by increasing the number of trips taken per year (or switching targets, which isn't covered in this analysis). The maximum number of trips that could be taken by each vessel was calculated based on a 335 working day year (leaving one month per year for drydock or repairs). Total days required per trip is the sum of the mean actual 1993 trip length plus the mean days required to turn around between trips as stated by survey respondents. Thus, the maximum number of trips possible was calculated as 335 divided by total days required per trip. Table 21 presents both the actual number of trips taken and the maximum trips possible as calculated.[2]

[2] Although this question was asked of survey participants (Question 54) very few usable responses were received. Thus, the above formula was used to calculate the maximum trips possible per vessel.

Table 20. Major components of fixed costs by size and target.

Target	Tuna		Mixed		Sword		Varied
Size	Small	Medium	Medium	Large	Medium	Large	Medium
Percent With No Loans	33%	42%	58%	53%	70%	27%	50%
Percent With No Insurance	20%	0%	25%	16%	0%	9%	25%
Mean Annual Loan Cost ($1,000)	$18	$14	$14	$20	$15	$29	$27
Mean Annual Insurance Cost ($1,000)	$21	$23	$13	$20	$33	$36	$21
Mean Annual Depreciation Charge ($1,000)	$9	$12	$8	$13	$15	$21	$12
Mean Annual Drydock Cost ($1,000)	$7	$11	$9	$12	$4	$10	$8
Mean Annual Maintenance Cost ($1,000)	$17	$29	$26	$30	$30	$23	$27

Figure 19 presents the effect on each sector's return on investment of increasing vessel operations to their maximum levels. At maximum operating levels, the greatest rate of return on investment would be earned by medium mixed vessels, followed by small tuna vessels. The lowest return on investment would be earned by medium swordfish vessels.

Table 21. Actual annual and maximum annual number of trips per vessel by size and target.

Target	Tuna		Mixed		Sword		Varied
Size	Small	Medium	Medium	Large	Medium	Large	Medium
Actual Number of Trips Taken	13.9	13.3	12.1	9.8	6.7	8.6	13.0
Maximum Trips Possible	17.1	17.5	14.5	11.6	7.9	8.8	13.6

Demographic information

The number of survey responses by vessel target and respondent type is illustrated in Table 22. Hired captains are captains who operate vessels which they do not own, "absent" owners are the owners of these vessels. Owner operators are respondents who own the vessels which they operate.

Table 22. Number of survey responses by vessel target and respondent type.

Target Respondent	Tuna	Mixed	Sword	Varied
Hired Captain	8	10	17	2
Absent Owner	7	7	15	0
Owner Operator	22	20	6	6

Tables 23 and 24 present the mean age of survey respondents, as well as their mean years of longlining experience. In general, mixed boat owners and operators are younger and have less longline experience than do other groups.

The self-reported ethnicities of survey respondents are illustrated in Table 25. The majority of tuna vessels are owned and operated by fishermen of Korean ancestry, most varied and mixed vessels are owned and operated by ethnic Vietnamese and the majority of swordfish boats have Caucasian operators and owners.

Table 23. Mean age of survey respondents by vessel target and respondent type.

Target Respondent	Tuna	Mixed	Sword	Varied
Hired Captain	41	31	37	N/A
Absent Owner	48	36	56	N/A
Owner Operator	45	36	41	45

Table 24. Mean years of longline experience by vessel target and respondent type.

Target Respondent	Tuna	Mixed	Sword	Varied
Hired Captain	14	6	13	N/A
Absent Owner	15	4	22	N/A
Owner Operator	14	5	6	6

Table 25. Ethnicity of all survey respondents (captains and owners) by vessel target: number of people.

Target	Tuna	Mixed	Sword	Varied
Hawaiian	1	0	0	0
Caucasian	7	0	34	3
Japanese	2	0	0	0
Korean	23	1	0	0
Vietnamese	0	36	4	5
Other	4	0	0	0

Fishermen's comments

The last question asked of fishermen was a request for comments regarding fishery management and regulations. Their responses fell into six major categories and are summarized below.

Limited entry and permits:

In general, almost all of the surveyed fishermen thought that the limited entry system was necessary. Most of the "local" fishermen (i.e. those who were fishing in Hawaii prior to the large influx of boats in 1989 and thereafter) maintained that it should have been imposed sooner. Many fishermen said that there were currently too many boats in the fishery and that this had generally led to lower fish prices. However, there were no clear cut ideas on how to decide who should stay and who should go—with the exception that the "local" fishermen said that it should be decided on a first come-first serve basis. Also, some of the larger boats' owners and operators believed that the number of vessels would eventually regulate itself.

With regard to permit rules, most comments were negative. Many said that the rule change allowing permit transfers would benefit wealthy corporate boat owners who could buy up permits. In addition, many small boat owners (and some large boat owners) insisted that the rule change would cause more large boats to enter the fishery. In turn, these large boats would out-compete and drive out the smaller boats and the industry would be dominated by corporations that owned many large boats. Also, some fishermen were unhappy about their inability to switch into other limited entry fisheries (i.e. bottomfish and lobster) when longlining conditions turn bad.

Area closures (shoreline "buffer" zones):

The owners and operators of the boats targeting tuna and the medium-sized mixed target boats complained the most about the closures. Many said that 25 miles would have been sufficient to deal with the gear conflict problems between themselves and the non-longline fishermen. Almost all of the longline fishermen insisted that the closures had increased their operating costs by causing them to take longer trips. Longer trips increased their main trip expense—fuel. Since trips were longer, they also had to take more of other supplies as well. As some fishermen pointed out, this increased the economic risk of fishing because a zero or low catch trip meant greater losses than it did before the area closures. Some respondents reported that switching to targeting swordfish was too expensive and, due to vessel limitations, often not possible. In addition to higher costs and risk, many say they were affected on the catch and revenue side as well. Specifically, the longliners could not access the yellowfin tuna stocks during the summer season when they are close to the Main Hawaiian Islands. Since bigeye tuna and swordfish are not relatively abundant in the summer, many longliners considered this a major loss. Lastly, some fishermen (generally the local tuna fishermen who did not qualify) thought that the closed area fishing exemptions were not given out in a fair manner. A few swordfish and mixed boats said that the Northwestern Hawaiian Island closures created more problems for them than the Main Hawaiian Island closures.

Observers:

Many fishermen said they did not mind having observers on their boats and that the observers were actually providing a service (i.e. more information and research about what the fishermen do and do not do). The fishermen who did complain were those who operated small boats. Their contention was that the observer takes up space and forces them to take one less crew member (and one crew member out of three is more significant than one out of five or six). This made

their fishing operations much more difficult and potentially less successful as a result. A few thought the observers' efforts were redundant as catch information is already provided in the logbooks. A few also thought that the 72 hour notice requirement kept them from turning around quickly when fishing was good. Some swordfish boat operators maintained that certain observers had counter-productive attitudes regarding interactions with sea turtles and that statistics could and have been inappropriately used (e.g. extrapolating results from only a handful of trips). Also, the English speaking boats' owners and operators had relatively more difficulties dealing with female observers. Apparently, the presence of female observers created problems with spouses and girlfriends.

Dock facilities:

Many fishermen said that lack of dock space was a major problem. Lack of space makes it more difficult to load supplies and unload fish. In addition, the less desirable docks were often without utilities. Feelings were exacerbated by what many felt was preferential treatment of the foreign fishing boats that temporarily port in Hawaii. Fishermen also did not like the automobile parking permit system at the docks, and the many parking tickets that have been issued.

Coast Guard:

Most comments on this issue came from the ethnically Vietnamese fishermen that dock at Pier 17. Their impression was that the Coast Guard had recently started to impose and rigorously enforce innumerable rules. These fishermen thought these rules were overly strict and confusing. They agreed that safety rules are necessary, however, they did not think that many of these regulations were related to safety concerns. They also maintained that the Coast Guard officers were not consistent in their enforcement of these rules (i.e. different officers did not equally enforce the rules and some unjustly picked on the Vietnamese fishermen more than other fishermen). These Vietnamese fishermen say that forcing them to pay for safety procedures training conducted by "specialists" brought in from the mainland is unfair. Language differences created significant communication problems between the Vietnamese fishermen (particularly the crew members) and the Coast Guard.

Non-regulation of other fishermen:

Non-regulation of other fishermen was the main concern (in terms of frequency and intensity of feeling) of the longline fishermen. Their comments dealt with two groups: 1) other Hawaii fishermen and 2) non-U.S. fishermen. With regard to local problems such as overfishing, longliners maintained that the contribution of other fishermen to these problems had not been properly studied. Moreover, they believed that, if anyone should be regulated, it should be the non-commercial (i.e. recreational) fishermen who do not rely on fishing for their livelihood. Also, because there were more non-longline than longline boats, they believe it is likely that the non-longliners have been major contributors to the fishery's problems. In addition, they think that the non-longliners greater numbers have given them more political power and a greater ability to avoid regulation. With regard to non-U.S. boats, longline vessel owners maintain that regulation of the domestic fleet has made them less competitive, which was particularly troublesome since the foreign boats sell fish in U.S. markets.

In either case, the longline fishermen thought that, if one group of fishermen is to be regulated, then all fishermen should be subject to the same regulations. At the least, it should be determined how much each group contributes to any over-fishing or protected species problems. In general, the fishermen thought that more research should have been done before most of the regulations were imposed. From the perspective of those longline fishermen who have been involved, the policy process would be more effective if more longline fishermen voiced their

opinions. However, some boat owners and operators from the East Coast insisted that regulations in Hawaii's longline fishery were still less strict than those in the Atlantic and Gulf of Mexico longline fisheries.

DISCUSSION

This study found that, while the Hawaii longline fleet averaged a positive net return from their 1993 operations (Table 3), the level of profits varied substantially between groups of vessels.

When analyzed by vessel target, mixed target vessels earned the highest net return in 1993 (Table 8). Although the gross revenue earned by this group was less than that earned by swordfish vessels, mixed vessels had somewhat lower variable costs and substantially lower fixed costs.

The lowest net returns were earned by varied and swordfish vessels. Varied vessels ranked third in gross revenues as well as variable costs but encountered high fixed costs. Swordfish vessels realized the highest gross revenue, however they also had the highest variable and fixed costs of all groups. These findings imply that the role of fixed costs in the ranking of net returns by sector may be more important than that of either gross revenue or variable costs. Several of the factors that contribute to high fixed costs are related to vessel value. These include loan payments, insurance costs and depreciation charges. Because the mean value (purchase price plus additional investment) for mixed vessels is 40% less than that of swordfish vessels and 18% less than that of varied vessels (Table 7), the mean charges for these fixed costs are significantly lower for mixed vessels than for swordfish or varied target vessels (Table 20).

An examination of economic highliners revealed that these vessels tended to achieve greater gross revenues through both higher sales levels and higher output prices as well as lower mean costs (Tables 13–17). It is this combination of higher revenues and lower costs which distinguished economic highliners within every group examined.

Finally, a detailed analysis of fleet sectors based on both vessel target and vessel size found that the sector with the lowest net return (medium swordfish vessels) ranked fifth in gross revenue but first in both variable and fixed costs as a percentage of annual revenue.

The highest net return was achieved by medium varied target vessels (Figure 14). Although this sector ranked third in gross revenue, (Figure 15), only tuna vessels, (both small and medium sized), had lower variable costs as a percentage of revenue (Figure 16) and only mixed vessels (both medium and large sized) had lower fixed costs when fixed costs were expressed as a percentage of revenue (Figure 17).

Thus, it appears that in the analysis of vessel profitability between vessel sectors, variable and fixed costs play a greater role than do gross revenues received.

ACKNOWLEDGMENTS

We would like to thank the many fishermen and other industry members who participated in this project. Their friendly and generous cooperation is greatly appreciated. We would also like to thank the staff of the National Marine Fisheries Service, Honolulu Laboratory, who provided us with essential background information. Finally, we would like to thank Sam Pooley (NMFS Industry Economist) for his unflagging support of this project.

Figures

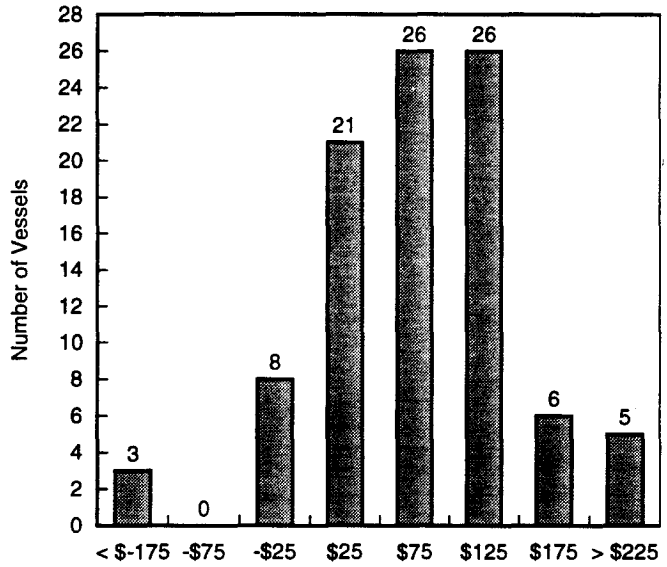

Figure 1. Distribution of fleet mean annual net returns (thousands of dollars).

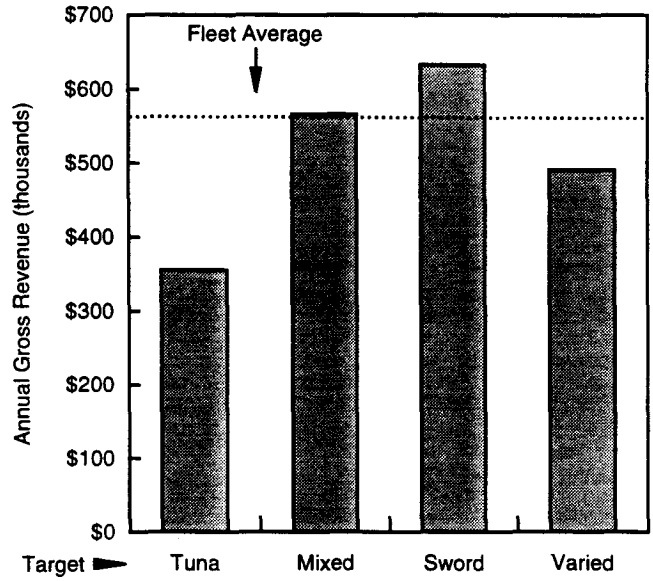

Figure 2. Mean annual gross revenue per vessel by target.

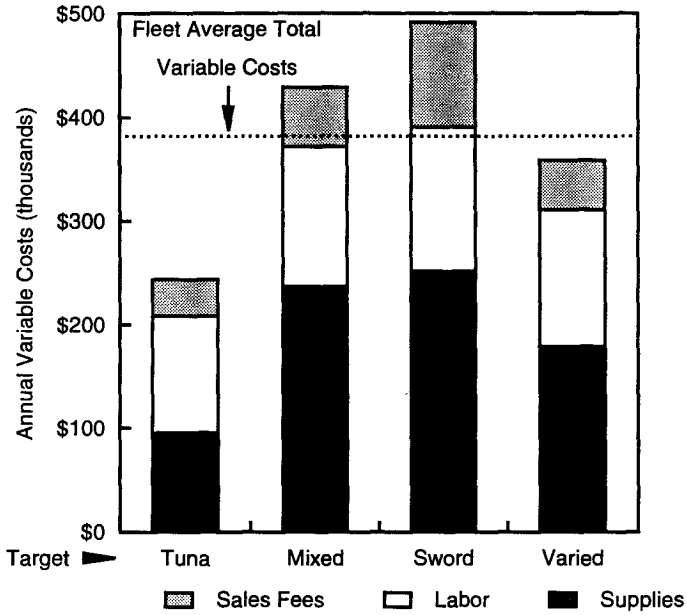

Figure 3. Mean annual variable costs per vessel by target.

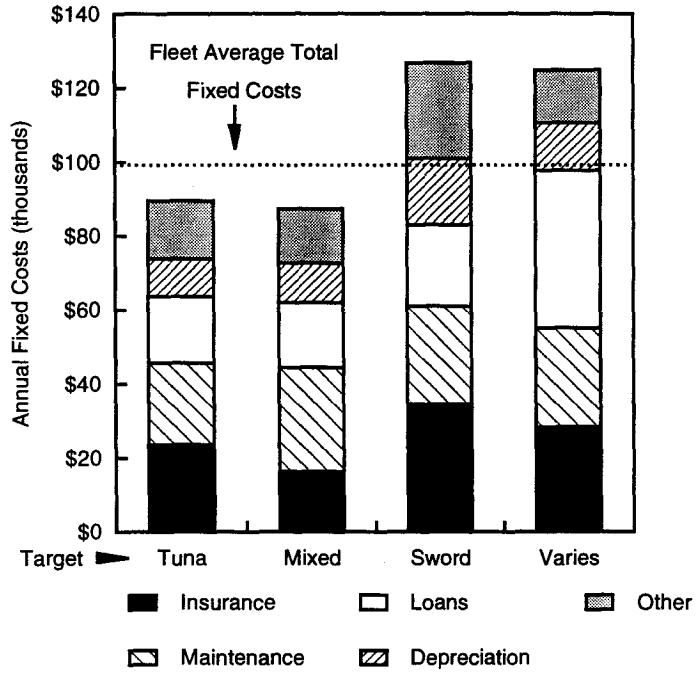

Figure 4. Mean annual fixed costs per vessel by target.

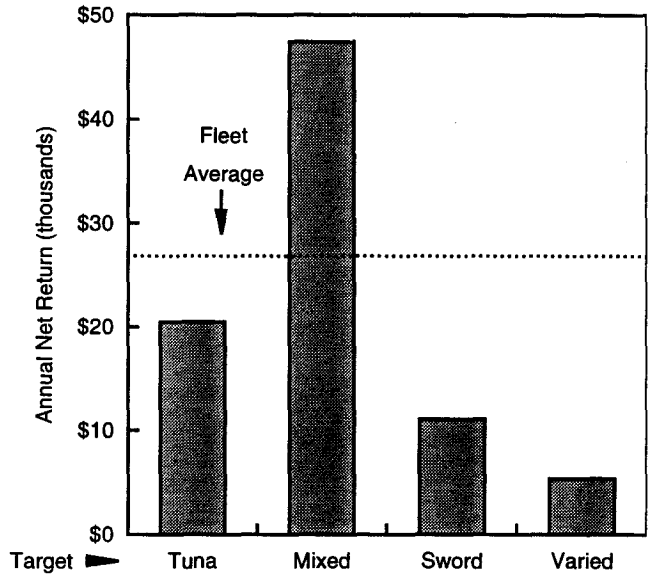

Figure 5. Mean annual net return per vessel by target.

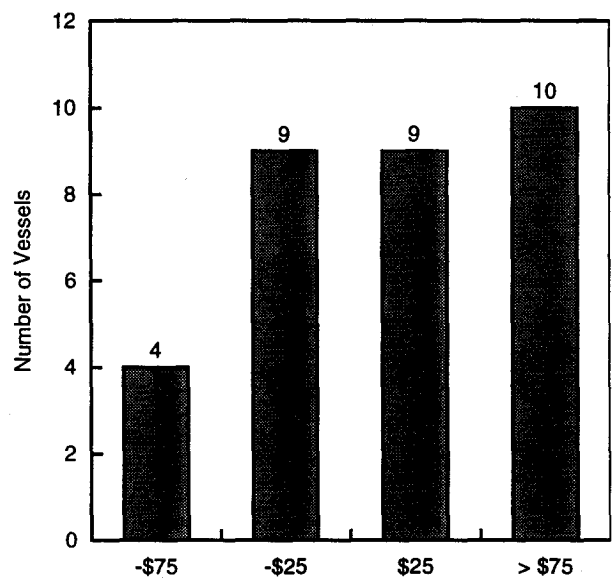

Figure 6. Distribution of tuna vessels' mean annual net returns (thousands of dollars).

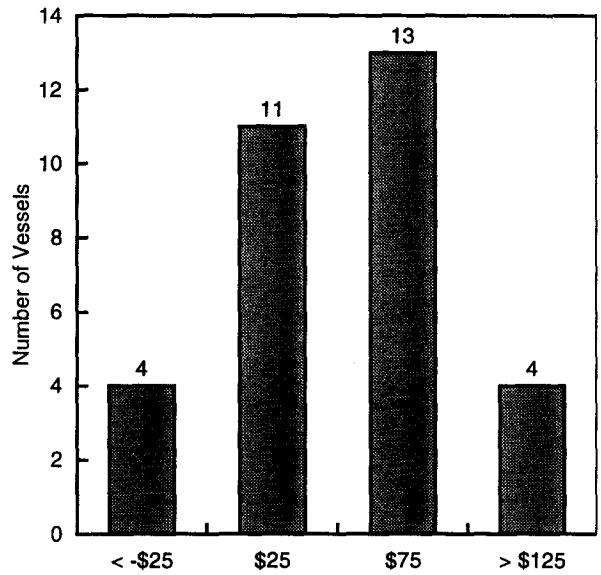

Figure 7. Distribution of mixed vessels' mean annual net returns (thousands of dollars).

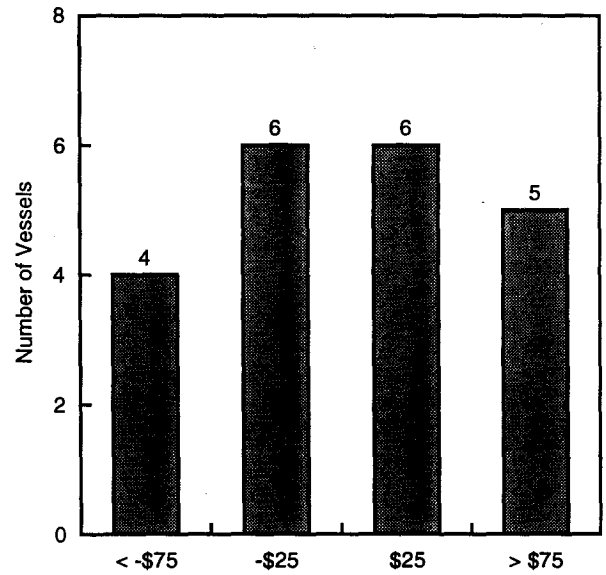

Figure 8. Distribution of swordfish vessels' mean annual net returns (thousands of dollars).

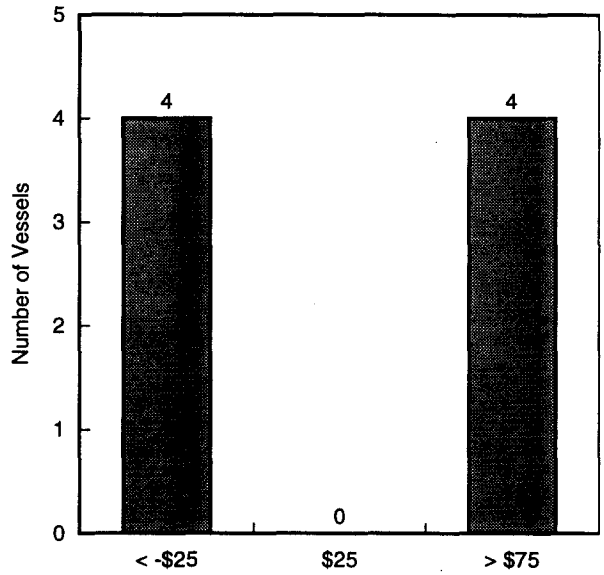

Figure 9. Distribution of varied vessels' mean annual net returns (thousands of dollars).

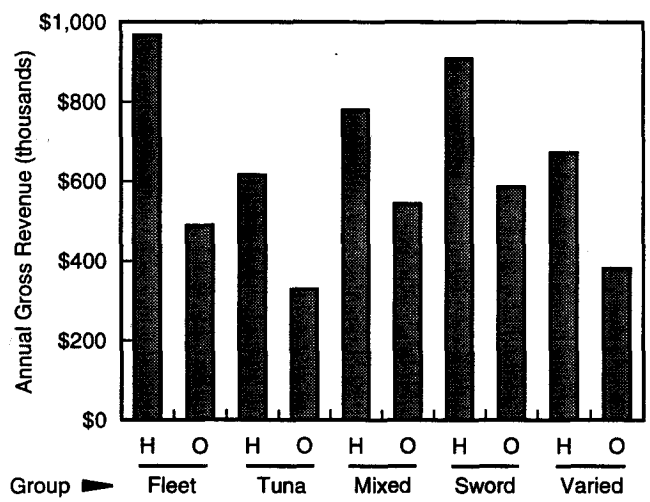

Figure 10. Comparison of mean annual gross revenue per vessel between highliners (H) and other (O) vessels.

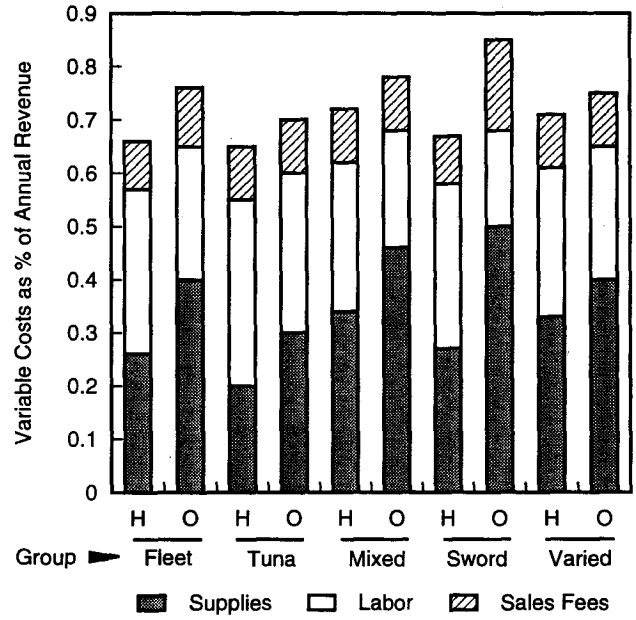

Figure 11. Comparison of mean annual variable costs per vessel between highliners (H) and other (O) vessels.

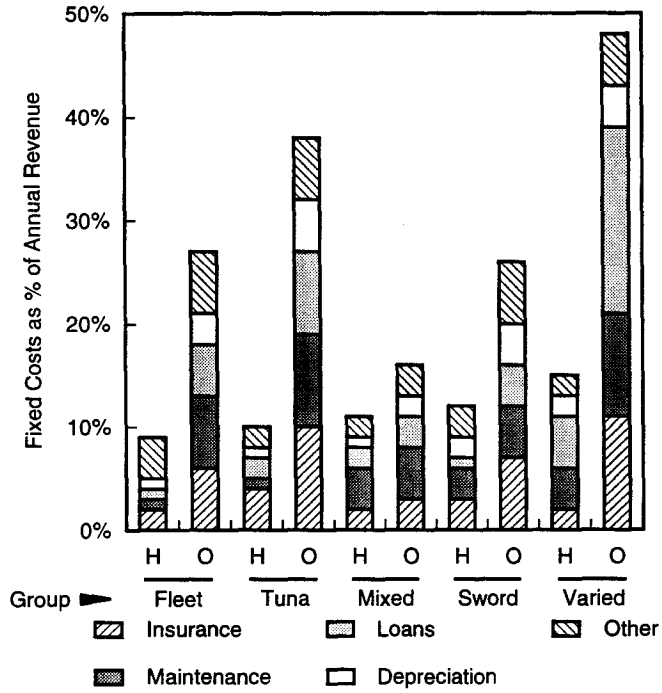

Figure 12. Comparison of mean annual fixed costs per vessel between highliners (H) and other (O) vessels.

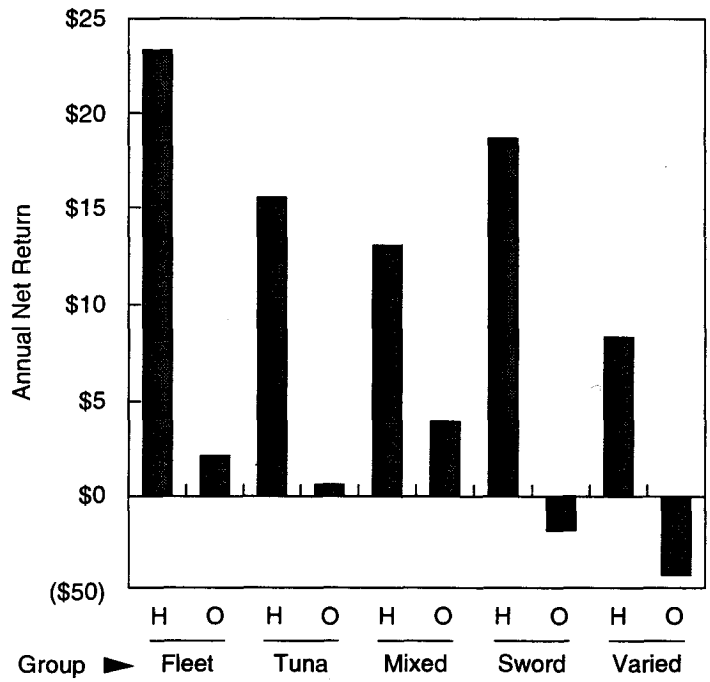

Figure 13. Comparison of mean annual net return per vessel between highliners (H) and other (O) vessels.

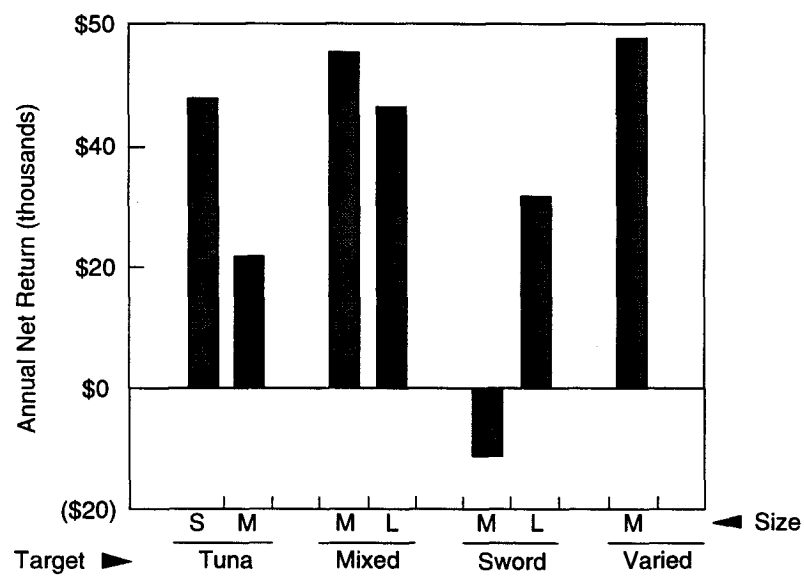

Figure 14. Mean annual net return per vessel by size and target.

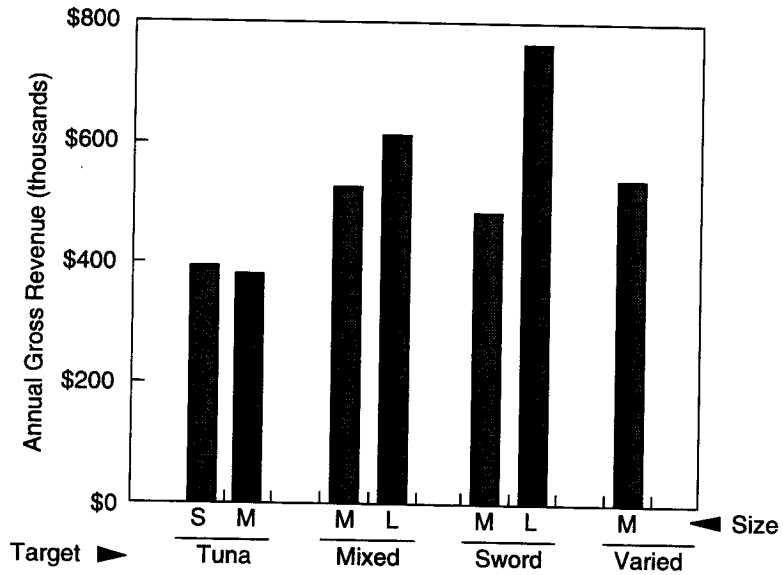

Figure 15. Mean annual gross revenue per vessel by size and target.

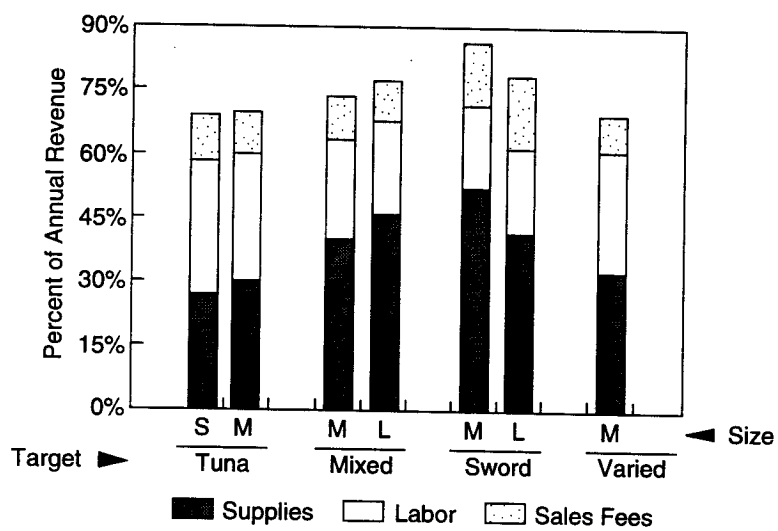

Figure 16. Mean annual variable costs per vessel by size and target.

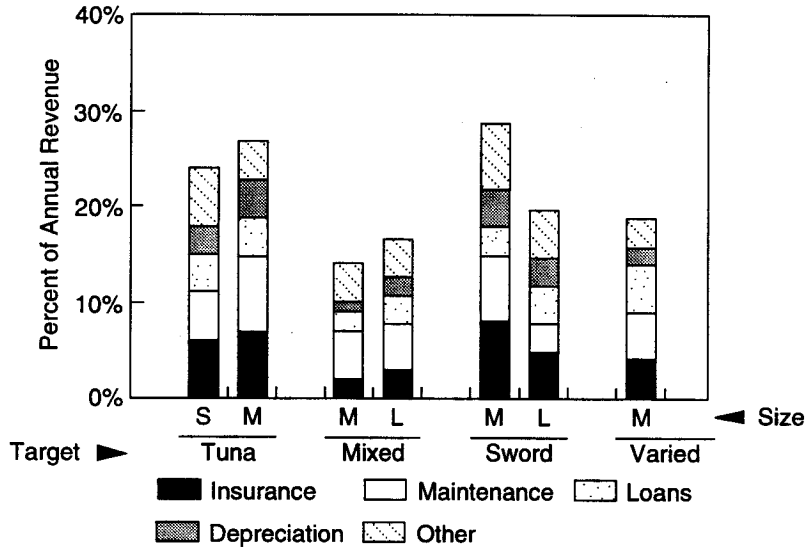

Figure 17. Mean annual fixed costs per vessel by size and target.

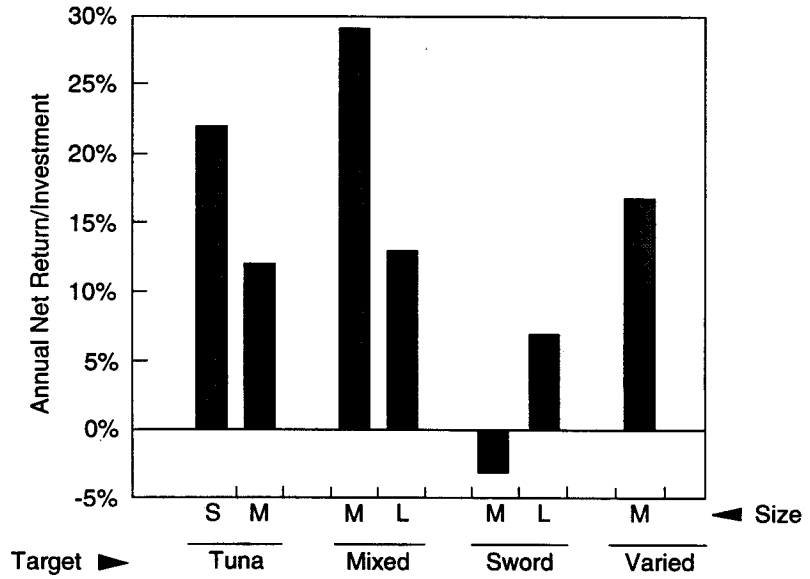

Figure 18. Mean annual return on investment per vessel by size and target.

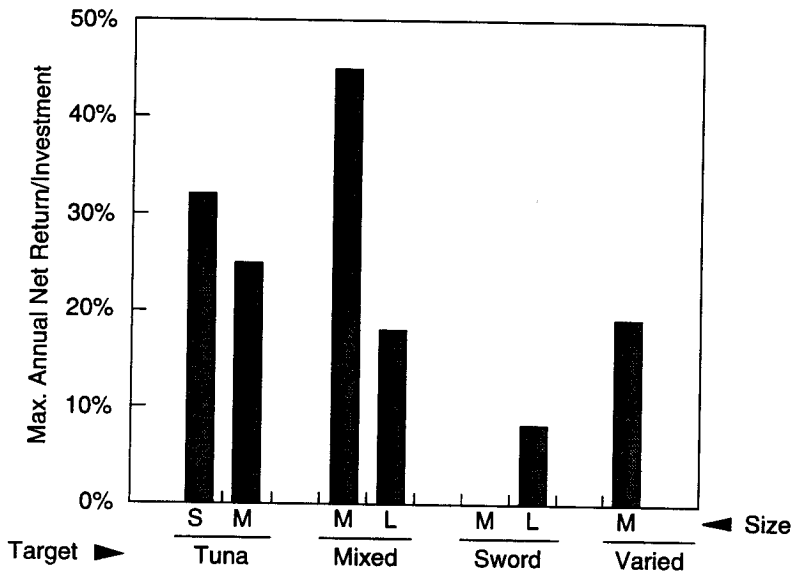

Figure 19. Maximum mean annual return on investment per vessel by size and target.

Appendix 1

Hawaii-based domestic longline economic survey instrument

SURVEY QUESTIONNAIRE—OWNER OPERATORS

Date:

Interviewer:

Vessel Identifier:

Logbook info:
# of tuna trips in 1993 _____
# of swordfish trips in 1993 _____
# of mixed trips in 1993 _____

VESSEL INFORMATION:

1. Year bought: _____

2. Purchase price: $ _____

This survey is about your operations in 1993, so if you can try to remember how you operated in 1993 that will be helpful.

ADDITIONAL VESSEL INFO:

3. Cost of major additions since purchase—examples: icemaker, electronics, bigger engine.

   $ _____

4. Ownership of boat:

   A) sole owner _____
   B) partnership (with someone in family) _____
   C) partnership (with someone outside family) _____
   corporate ownership: _____
   D) corporation with no outside stockholders _____
   E) corporation with outside stockholders _____
   F) S corporation _____
   other (describe): _____
   G) leased from another owner _____
   H) hui or other informal organization (describe) _____

5. Hold capacity—how many pounds of fish with ice can your vessel hold?

   Tuna _____ lbs.

   Swordfish _____ lbs.

   Mixed _____ lbs.

6. Number of reels used in 1993: _____ reels

7. Number of engines (main & auxiliary, specify):

   _____ main engines

   _____ auxiliary engines

8. Horsepower per engine:

   _____ first engine

   _____ second engine

9. Fuel capacity: _____ gallons

10. Fuel use:

    traveling _____ gallons per hour/day (specify)

    fishing _____ gallons per hour/day (specify)

11. Did you use an icemaker in 1993?

    no _____

    yes:
    A) saltwater _____
    B) freshwater _____
    C) mixed _____ (can do either one)

12. In 1993 did you use: (**fill in how many of each**)

depth sounder	_____	radar	_____
temperature sensor:		telex	_____
in hull	_____	weather fax	_____
bird	_____	cellular phone	_____
towed	_____	video plotter	_____
direction finder	_____		
GPS	_____		
single sideband radio	_____		
ham radio	_____		
VHF radio	_____		
comsat	_____	satnav	_____
osam	_____	doppler	_____
autopilot	_____		_____
other electronics (list)	_____		

13. Can you estimate the total cost of these electronics?
$_____

14. Did you use a lineshooter in 1993?

yes _____

no _____

15. Number of miles of line used per set in 1993:

tuna set: _____ miles per set

sword set: _____ miles per set

mixed set: _____ miles per set

other: _____ (fill in) _____ miles per set

16. Number of floats used per set in 1993:

tuna set: _____ floats

sword set: _____ floats

mixed set: _____ floats

other: _____ (fill in) _____ miles per set

17. Number of hooks between floats:

tuna set: _____ hooks

sword set: _____ hooks

mixed set: _____ hooks

other: _____ (fill in) _____ hooks

FISHING STRATEGY QUESTIONS:

18. Species targeted in 1993:

Tuna only _____
Swordfish only _____
Mixed only ____ (every trip is mixed, varies by set)
Varies by trip or season _____
Catch whatever you can _____ (every set is mixed)
Other _____

(If prompts are needed, read bold words.)

19. Why that and not (tuna/swordfish/mixed)?:

experience ____
equipment cost _____
expected **price** ____
season (location of fish) _____
season (weather)_____
season (abundance of fish) _____
feel confident about the catch level you will get _____
want to catch the most fish possible _____
vessel limitations _____
have gear for that target _____
trips are shorter _____
variable costs are lower _____
price is steady _____
catch is steady ____
other _____

20. If you had mixed targets on a trip, how did you decide when to switch targets?

experience _____
weather _____
based on what you had caught so far _____
based on how long you had fished already _____
distance to new species fishing ground _____
other _____

21. How do you decide when to go out?

fish **season** _____
weather _____
as soon as possible _____
based on condition of the vessel _____
based on last trip's catch or profit _____
based on **price** you expect to get for the catch _____
based on catch of other vessels _____
based on if you are in need of money _____
based on availability of crew _____
by moon phase _____
based on what other boats are doing _____
S.O.P. _____ (why that schedule?)
other _____

22. How do you decide what general area to go to?
vessel limitations _____
travel cost _____
target species _____
always go to the same area _____
a previously successful area _____
information/ (good catches) from another vessel _____
season (location of fish) _____
season (weather) _____
try different areas until you find a good one _____
by **weather** _____
satellite information (temperature) _____
"local knowledge"/experience _____
other ____

23. How do you decide where to set gear?
experience _____
sea surface temperature _____
water color _____
water currents _____
other _____

24. How do you decide when to come back in?
hold is **full** _____
running out of fuel _____
running out of ice _____ (icemaker?)
running out of bait _____ (for real?)
fish are getting old _____
getting tired _____
when you think you'll get the best price _____
getting a poor catch rate _____
based on what other vessels are doing _____
S.O.P. _____ (why that schedule?)
breakdowns _____
other _____

COST QUESTIONS:

We need some information about the cost of a normal trip. Can I ask you some questions about this or would you prefer to show us your receipts or accounting records and we can add them up?

For vessels that have varied targets, either by season or by trip: I know that you have different targets on different trips, can you tell me about the costs of a trip to target tuna _____, mixed trip_____, or swordfish _____ **(whichever they target most often)** in **1993**:

25. Approximate total cost per trip: $_____ (fuel, oil, ice, bait, food, fishing supplies)

	Unit	Number	Cost/unit	Total cost
Fuel:	gallons			
Engine Oil:				
Ice:	300 lb. blocks			

Bait:	# cases	case size	# per case	cost/case
A) squid				
B) sanma (aka sauri)				
C) saba				

Lightsticks:	number	unit	# per unit	cost/unit

Type:

A) Disposable

B) Reusable

26. Fishing supplies—hooks, branch lines, swivels, snaps, weights, gloves, boots, floats, dye, rattles.

    cost per trip $ _____

27. Where did you buy **most** of your supplies in 1993?
    A) Ahi Fishing Co _____
    B) P.O.P. _____
    C) Hawaii Fishing Supply _____
    D) Hi Seas Fishing Co. _____
    E) Pacific Fishing Supply _____
    F) Other (fill in):

28. Food cost per trip: $ _____

29. **If applicable**—Are there major differences in costs between the above and your other type of trips?

    Second trip target _____

    total cost of second type of trip in 1993: $ _____

    fuel _____ gallons per second type of trip

    oil _____ gallons per second type of trip

bait quantity per second type of trip:

	# cases	case size	# per case	cost/case
A) squid				
B) sanma				
C) saba				

ice _____ 300 pound blocks

supplies _____ cost per second type of trip

food _____ cost per second type of trip

lightsticks:

	number	unit	# per unit	cost/unit
A) Disposable				
B) Reusable				

30. Where did you sell your fish in 1993?
A) UFA _____
B) Tropics _____
C) Norpac _____
D) Pacific Island Seafood (Jed & Jeff's) _____
E) Other (fill in):

31. When you sold your fish, was there a auction or consignment fee?
no _____

yes:
How much did they charge? _____
A) % of revenue
B) per pound

32. Were there other costs you had to pay them for?
no _____

yes:
What were the charges for and how much were they?

33. **If applicable:** How about when you sold the second trip type of fish? (where, what were the charges?)

LABOR QUESTIONS:

34. How many crew members did you usually take (besides yourself)? _____ crew members

35. How long has the first mate/crew worked with you?

    first mate: _____ Trips/Month/Years

    crew: _____ Trips/Month/Years

36. How much longlining experience do they have?

    first mate: _____ Trips/Month/Years

    crew: _____ Trips/Month/Years

37. Did members of your family ever work as crew in 1993?

    no _____

    yes _____

    37.1 If **yes**, how many did you normally take?

    _____ family members

    37.2 If **yes**, did they all get paid (including minors)?
    no _____

    yes _____

38. Did everyone work on a crew share basis?
    no _____
    yes _____

    38.1 If **no**, how did they get paid?

39. If **yes**, did a certain percentage go to the boat or owner?
    no _____
    yes _____

40. If **yes (crew is paid by share method),** do you feel like telling me what these percentages were?

    no _____

    yes:
    boat/owner _____ (share or percent?)

    captain _____

first mate _____

crew1 _____ crew2 _____

crew3 _____ crew4 _____

crew5 _____ crew6 _____

40.1 **If crew share varies according to experience etc.** what is the smallest share that is given?
smallest share _____

40.2 What are the shared costs?
A) Trip Costs + Auction / Selling fees
B) Trip Costs (fuel/oil, ice, bait, food and fishing supplies)
C) Auction / Selling Fees
D) Other (describe):

41. How many hours did each crew member normally work unloading, cleaning up, repairing and reloading the boat to get ready to go out?

_____ hours

42. On days when you were fishing, about how many hours per day did the crew work?

_____ hours per day

OTHER COSTS:

43. Maintenance/repairs for 1993 $ _____

44. Dry dock—how often do you go? Once every _____ years

44.1 When did you last go? _____

44.2 How is it paid for (ex. on credit, in cash, take a loan)?

45. How much did it cost for your boat the last time you went? (scrape, zinc and paint only, not repairs covered above)

$ _____

46. Did you and/or the crew do the work or did you pay the yard to do it?
A) owner/captain/crew did the work _____
B) paid the yard to do it _____
C) combination _____

47. Mooring fees per day/month in 1993 (specify): $ _____

48. Boat loan payments/month in 1993: $ _____

48.1 Time remaining on the loan: _____ years

49. Insurance/month in 1993: $ _____

Includes:

_____ **A)** Vessel and liability
_____ **B)** Vessel (hull) only
_____ **C)** Liability ("P and I")
_____ **D)** Health (specify who is covered):
_____ **E)** Vessel, liability and health

50. Bookkeeping/accounting costs in 1993: $ _____ month/year (specify)

51. Are there any costs which I haven't included?
no _____

yes:
List:

MISCELLANEOUS QUESTIONS:

52. What was your average time to turn around between trips?

_____ days

53. What was your minimum time to turn around between trips?

_____ days

54. Given the weather and stock conditions that existed in 1993, and the area closures, would you have liked to have taken more trips or fished more days than you did last year?

no _____

yes _____

54.1 If you would have liked to fish more, what are the reasons why you didn't?

breakdowns _____

other jobs _____

fishing in another fishery _____

other _____

54.2 If not for the reasons you just mentioned, how many more trips would you like to have taken (or more days fished) last year?

_____ extra trips last year

_____ extra days fished last year or per trip (specify)

55. Did you also fish in other fisheries in 1993?

no _____

yes:
HI bottomfish _____

Mainland (what?) _____ Other _____

56. What percent of your family's income came from this fishing operation in 1993?
_____%

56.1 **If less than 100%** What were the other sources of income for your family?

57. Would you say that you made a reasonable living (or return) operating this fishing vessel in 1993?
no _____

yes _____

58. Would you sell this vessel if you could?
no _____

yes _____

58.1 If **yes,** why haven't you?

59. What do you estimate you could sell the boat for (in Hawaii)?

without the permit _____ dollars

with the permit _____ dollars

60. What do you think the permit alone would sell for?

$_____

61. What do you think you could sell the boat for worldwide?

$_____

62. Appraised value of boat—do you know the **appraised value**? (done for insurance purposes)

$ _____ market value

$ _____ replacement value

63. What are your main reasons for staying in the Hawaii longline fishery (vs. other fisheries)?

Enjoy the Hawaii lifestyle/weather	_____
This is what I know how to do	_____
Long-term family tradition	_____
Cost of converting vessel would be too high	_____
Operating costs would be too high	_____
Other fisheries unattractive due to regulation	_____
Cost of relocating would be too high	_____
All other fisheries are depleted	_____
Too risky to switch	_____
Have family here	_____
Market is steady here	_____
There are lots/enough fish here	_____
Other (fill in)	_____

EXPERIENCE/DEMOGRAPHICS:

64. How many years have you been fishing commercially? (**any kind**) _____ years

65. How many of those were longlining? _____ years

66. How many of those (longlining) years were as captain?

_____ years

66.1 And how many of those years were as a longline captain in Hawaii? _____ years

67. For how long have you captained this vessel?

_____ trips/years

68. Do you own other fishing vessels besides this one?

no _____

yes:
What are they used for?

Where are they?
in Hawaii _____
East Coast _____
Gulf _____
West Coast _____
Other (fill in): _____

69. What year were you born? _____

70. Were any of your close relatives a commercial fisherman? *Yes/No*
(e.g. father, mother, uncle, older brother)

71. How do you describe your ethnic background?

Vietnamese _____
Korean _____
Hawaiian _____
White _____
Samoan _____
Other (fill in) _____

72. Do you have a place that you own or rent?(In Hawaii or elsewhere, indicate where and how many)

Own _____
Rent _____
B live on boat _____

73. Did you graduate high school?

no _____ **A)** less than high school

yes _____

73.1 If **yes**, what's the highest level of education you achieved?

B) graduated high school _____
C) some college _____
D) graduated college _____
E) graduate school _____

74. Is there anything else you'd like to say? For example:

What do you think would be the best way to manage the longline fishery? What would you like the Council to do? How would you like to see things change?

We will summarize what you've told us and send you a copy so that you can make sure we haven't made any mistakes. Can I get your mailing address?

Vessel name:

Owner name:

Address:

Appendix 2

Detailed economic information

Hawaii-Based Domestic Longline 1993 Fleet Average (Std.)
(n=95)

VESSEL INFORMATION:				
NUMBER OF TRIPS	10.8	(3.6)		
TOTAL TRIP LENGTH (DAYS)	20.2	(8.2)		
TRAVEL DAYS	9.6	(6.0)		
FISHING DAYS	10.6	(2.9)		
PURCHASE PRICE	$266,801	(190,270)		
ADDITIONAL INVESTMENT	$105,857	(104,500)		
NUMBER OF CREW	4.4	(0.8)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$50,600	(27,471)	$504,323	(231,522)
VARIABLE COSTS				
FUEL	$5,322	(3,533)	$52,174	(33,472)
OIL	$199	(187)	$1,893	(1,571)
ICE	$819	(506)	$9,005	(5,692)
BAIT	$5,521	(2,942)	$55,125	(26,469)
LIGHTSTICKS	$3,007	(3,086)	$27,047	(26,763)
FOOD	$1,480	(861)	$14,917	(7,371)
MISC. GEAR	$2,875	(2,611)	$27,217	(20,878)
CAPTAIN WAGES	$3,613	(3,016)	$35,825	(23,473)
OTHER CREW WAGES	$9,010	(5,400)	$92,872	(52,688)
EXCISE TAXES	$245	(141)	$2,432	(1,173)
SALES FEES	$6,081	(5,544)	$58,553	(43,126)
TOTAL VARIABLE COSTS	$38,180	(20,511)	$377,149	(169,349)
NET OPERATING RETURN	$12,420	(8,688)	$127,174	(75,940)
FIXED COSTS				
MAINTENANCE	$2,751	(2,072)	$25,475	(14,129)
DRYDOCK	$1,023	(933)	$9,242	(5,633)
MOORING	$330	(319)	$2,862	(1,002)
INSURANCE	$2,669	(2,315)	$23,710	(14,583)
ACCOUNTING	$254	(424)	$2,358	(3,832)
LOAN PAYMENTS	$2,397	(3,598)	$20,765	(23,880)
MISCELLANEOUS	$414	(1,319)	$2,968	(8,653)
DEPRECIATION CHARGE	$1,403	(1,067)	$12,422	(6,608)
TOTAL FIXED COSTS	$11,242	(8,509)	$99,801	(44,474)
TOTAL COSTS	$49,422	(24,995)	$476,950	(188,282)
NET RETURN	$1,178	(10,319)	$27,373	(78,119)
ADD BACK NON-CASH DEPRECIATION CHARGE	$1,403	(1,067)	$12,422	(6,608)
CASH RETURN	**$2,581**	(10,026)	**$39,795**	(77,919)

Hawaii-Based Domestic Longline Tuna Target Vessels (n=32)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	12.59	(4.4)		
TOTAL TRIP LENGTH (DAYS)	13.84	(2.0)		
TRAVEL DAYS	4.6	(1.9)		
FISHING DAYS	9.2	(1.2)		
PURCHASE PRICE	$172,188	(106,965)		
ADDITIONAL INVESTMENT	$133,493	(125,515)		
NUMBER OF CREW	3.69	(0.7)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$27,954	(7,329)	$355,473	(165,309)
VARIABLE COSTS				
FUEL	$2,116	(848)	$25,504	(12,457)
OIL	$92	(59)	$1,168	(877)
ICE	$855	(325)	$10,209	(3,816)
BAIT	$2,463	(483)	$31,447	(12,421)
LIGHTSTICKS	$0	(0)	$0	(0)
FOOD	$1,013	(301)	$12,653	(5,591)
MISC. GEAR	$1,114	(650)	$14,540	(10,478)
CAPTAIN WAGES	$3,110	(1,213)	$39,531	(22,004)
OTHER CREW WAGES	$5,724	(2,398)	$73,385	(43,164)
EXCISE TAXES	$140	(37)	$1,777	(827)
SALES FEES	$2,714	(882)	$35,284	(17,213)
TOTAL VARIABLE COSTS	$19,341	(4,276)	$245,498	(106,348)
NET OPERATING RETURN	$8,614	(3,236)	$109,975	(61,472)
FIXED COSTS				
MAINTENANCE	$2,145	(2,089)	$21,993	(14,726)
DRYDOCK	$960	(1,082)	$8,766	(5,436)
MOORING	$378	(506)	$3,021	(1,019)
INSURANCE	$2,369	(2,280)	$23,660	(11,575)
ACCOUNTING	$214	(259)	$2,565	(4,059)
LOAN PAYMENTS	$2,031	(3,073)	$17,916	(16,973)
MISCELLANEOUS	$147	(287)	$1,379	(1,946)
DEPRECIATION CHARGE	$1,081	(1,090)	$10,189	(4,939)
TOTAL FIXED COSTS	$9,323	(8,668)	$89,489	(33,555)
TOTAL COSTS	$28,664	(9,775)	$334,987	(115,534)
NET RETURN	($710)	(9,309)	$20,486	(69,315)
ADD BACK NON-CASH DEPRECIATION CHARGE	$1,081	(1,090)	$10,189	(4,939)
CASH RETURN	**$371**	(8,553)	**$30,676**	(68,131)

Hawaii-Based Domestic Longline Tuna Target Small Size Vessels (n=15)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	13.93	(3.8)		
TOTAL TRIP LENGTH (DAYS)	13.43	(1.5)		
TRAVEL DAYS	4.2	(1.3)		
FISHING DAYS	9.2	(1.1)		
PURCHASE PRICE	$185,667	(122,078)		
ADDITIONAL INVESTMENT	$89,385	(49,461)		
NUMBER OF CREW	3.47	(0.8)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$27,415	(8,850)	$393,386	(179,194)
VARIABLE COSTS				
FUEL	$1,530	(448)	$21,444	(8,900)
OIL	$70	(45)	$1,032	(757)
ICE	$680	(163)	$9,631	(3,881)
BAIT	$2,353	(357)	$33,199	(11,023)
LIGHTSTICKS	$0	(0)	$0	(0)
FOOD	$883	(293)	$12,690	(5,389)
MISC. GEAR	$1,211	(628)	$17,146	(11,364)
CAPTAIN WAGES	$3,253	(1,374)	$46,038	(24,375)
OTHER CREW WAGES	$5,775	(2,869)	$84,023	(49,675)
EXCISE TAXES	$137	(44)	$1,967	(896)
SALES COST	$2,752	(884)	$39,514	(17,983)
TOTAL VARIABLE COSTS	$18,645	(5,194)	$266,685	(111,975)
NET OPERATING RETURN	$8,771	(3,770)	$126,701	(69,171)
FIXED COSTS				
MAINTENANCE	$1,308	(885)	$16,975	(10,714)
DRYDOCK	$515	(343)	$7,211	(5,846)
MOORING	$219	(194)	$2,491	(787)
INSURANCE	$1,489	(992)	$20,659	(11,560)
ACCOUNTING	$241	(337)	$3,435	(5,796)
LOAN PAYMENTS	$1,144	(1,045)	$17,707	(17,081)
MISCELLANEOUS	$85	(129)	$1,267	(1,909)
DEPRECIATION CHARGE	$752	(472)	$9,168	(3,758)
TOTAL FIXED COSTS	$5,754	(2,097)	$78,932	(36,335)
TOTAL COSTS	$24,398	(5,348)	$345,617	(130,849)
NET RETURN	$3,017	(4,688)	$47,769	(69,019)
ADD BACK NON-CASH DEPRECIATION CHARGE	$752	(472)	$9,168	(3,758)
CASH RETURN	**$3,769**	(4,479)	**$56,937**	(68,227)

Hawaii-Bsed Domestic Longline Tuna Target Medium Size Vessels (n=12)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	13.25	(2.7)		
TOTAL TRIP LENGTH (DAYS)	13.59	(0.9)		
TRAVEL DAYS	4.5	(0.9)		
FISHING DAYS	9.1	(1.4)		
PURCHASE PRICE	$180,250	(64,363)		
ADDITIONAL INVESTMENT	$171,667	(184,346)		
NUMBER OF CREW	3.88	(0.7)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$28,969	(6,803)	$382,182	(114,590)
VARIABLE COSTS				
FUEL	$2,482	(829)	$32,944	(12,680)
OIL	$87	(38)	$1,195	(596)
ICE	$924	(233)	$11,924	(2,351)
BAIT	$2,589	(498)	$34,125	(8,271)
LIGHTSTICKS	$0	(0)	$0	(0)
FOOD	$1,088	(270)	$14,221	(4,030)
MISC. GEAR	$1,017	(695)	$13,263	(8,423)
CAPTAIN WAGES	$3,028	(1,040)	$40,596	(16,308)
OTHER CREW WAGES	$5,962	(2,196)	$78,259	(30,728)
EXCISE TAXES	$145	(34)	$1,911	(573)
SALES FEES	$2,897	(680)	$38,218	(11,459)
TOTAL VARIABLE COSTS	$20,217	(3,864)	$266,654	(72,019)
NET OPERATING RETURN	$8,752	(3,113)	$115,528	(45,006)
FIXED COSTS				
MAINTENANCE	$2,227	(1,454)	$28,615	(17,108)
DRYDOCK	$884	(525)	$10,877	(5,034)
MOORING	$251	(110)	$3,070	(674)
INSURANCE	$1,759	(479)	$22,743	(5,967)
ACCOUNTING	$147	(107)	$1,838	(1,143)
LOAN PAYMENTS	$972	(1,037)	$13,566	(14,406)
MISCELLANEOUS	$119	(189)	$1,475	(2,194)
DEPRECIATION CHARGE	$972	(680)	$11,731	(6,046)
TOTAL FIXED COSTS	$7,331	(2,370)	$93,915	(25,690)
TOTAL COSTS	$27,548	(4,281)	$360,569	(78,078)
NET RETURN	$1,421	(4,303)	$21,613	(53,846)
ADD BACK NON-CASH DEPRECIATION CHARGE	$972	(680)	$11,731	(6,046)
CASH RETURN	**$2,393**	(4,008)	**$33,344**	(51,332)

Hawaii-Based Domestic Longline Mixed Target Vessels (n=32)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	10.8	(2.3)		
TOTAL TRIP LENGTH (DAYS)	18.8	(5.6)		
TRAVEL DAYS	9	(3.9)		
FISHING DAYS	9.8	(2.6)		
PURCHASE PRICE	$236,344	(137,039)		
ADDITIONAL INVESTMENT	$83,677	(86,241)		
NUMBER OF CREW	5	(0.4)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$53,961	(19,273)	$566,224	(196,744)
VARIABLE COSTS				
FUEL	$6,768	(3,122)	$69,377	(29,275)
OIL	$186	(151)	$1,869	(1,367)
ICE	$1,059	(324)	$11,131	(3,415)
BAIT	$6,685	(2,049)	$70,336	(22,402)
LIGHTSTICKS	$3,515	(1,798)	$36,501	(17,746)
FOOD	$1,648	(715)	$17,061	(6,587)
MISC. GEAR	$2,980	(2,538)	$30,607	(23,099)
CAPTAIN WAGES	$2,518	(1,352)	$26,400	(14,042)
OTHER CREW WAGES	$10,285	(4,944)	$108,768	(50,759)
EXCISE TAXES	$270	(96)	$2,831	(984)
SALES FEES	$5,396	(1,927)	$56,622	(19,674)
TOTAL VARIABLE COSTS	$41,310	(13,657)	$431,504	(136,045)
NET OPERATING RETURN	$12,651	(6,720)	$134,720	(66,869)
FIXED COSTS				
MAINTENANCE	$2,705	(1,513)	$28,077	(14,816)
DRYDOCK	$1,097	(824)	$10,544	(4,924)
MOORING	$330	(165)	$3,275	(920)
INSURANCE	$1,625	(1,224)	$16,410	(11,847)
ACCOUNTING	$78	(50)	$803	(482)
LOAN PAYMENTS	$1,668	(2,404)	$17,493	(23,784)
MISCELLANEOUS	$1	(1)	$11	(13)
DEPRECIATION CHARGE	$1,060	(707)	$10,667	(6,248)
TOTAL FIXED COSTS	$8,564	(4,801)	$87,281	(44,032)
TOTAL COSTS	$49,874	(17,633)	$518,785	(169,694)
NET RETURN	$4,087	(5,403)	$47,438	(49,194)
ADD BACK NON-CASH DEPRECIATION CHARGE	$1,060	(707)	$10,667	(6,248)
CASH RETURN	**$5,147**	(5,406)	**$58,106**	(50,216)

Hawaii-Based Domestic Longline Mixed Target Medium Size Vessels (n=12)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	12.1	(2.2)		
TOTAL TRIP LENGTH (DAYS)	14.7	(4.1)		
TRAVEL DAYS	6.1	(3.0)		
FISHING DAYS	8.6	(1.6)		
PURCHASE PRICE	$177,333	(63,209)		
ADDITIONAL INVESTMENT	$54,885	(67,937)		
NUMBER OF CREW	4.9	(0.5)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$44,404	(11,309)	$524,944	(127,690)
VARIABLE COSTS				
FUEL	$4,757	(1,847)	$57,299	(24,511)
OIL	$112	(60)	$1,313	(771)
ICE	$880	(209)	$10,640	(3,081)
BAIT	$6,081	(1,905)	$71,278	(20,266)
LIGHTSTICKS	$2,392	(1,190)	$29,688	(16,627)
FOOD	$1,225	(492)	$15,013	(6,685)
MISC. GEAR	$2,374	(1,835)	$28,307	(21,627)
CAPTAIN WAGES	$1,943	(698)	$22,705	(7,556)
OTHER CREW WAGES	$8,942	(2,708)	$104,397	(25,066)
EXCISE TAXES	$222	(57)	$2,625	(638)
SALES FEES	$4,440	(1,131)	$52,494	(12,769)
TOTAL VARIABLE COSTS	$33,369	(8,441)	$395,759	(100,107)
NET OPERATING RETURN	$11,035	(3,392)	$129,185	(33,951)
FIXED COSTS				
MAINTENANCE	$2,120	(1,504)	$26,125	(18,181)
DRYDOCK	$782	(305)	$9,006	(2,576)
MOORING	$291	(129)	$3,326	(1,035)
INSURANCE	$1,083	(710)	$12,500	(7,955)
ACCOUNTING	$70	(47)	$788	(458)
LOAN PAYMENTS	$1,134	(1,700)	$14,250	(20,764)
MISCELLANEOUS	$1	(1)	$13	(13)
DEPRECIATION CHARGE	$648	(250)	$7,741	(3,202)
TOTAL FIXED COSTS	$6,129	(3,263)	$73,748	(40,547)
TOTAL COSTS	$39,498	(11,004)	$469,507	(133,594)
NET RETURN	$4,906	(2,823)	$55,437	(25,390)
ADD BACK NON-CASH DEPRECIATION CHARGE	$648	(250)	$7,741	(3,202)
CASH RETURN	$5,553	(2,809)	$63,178	(24,821)

Hawaii-Based Domestic Longline Mixed Target Large Size Vessels (n=19)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	9.8	(1.9)		
TOTAL TRIP LENGTH (DAYS)	22.1	(3.8)		
TRAVEL DAYS	11.2	(2.6)		
FISHING DAYS	10.8	(2.5)		
PURCHASE PRICE	$282,105	(154,671)		
ADDITIONAL INVESTMENT	$105,213	(93,386)		
NUMBER OF CREW	5.1	(0.4)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$62,182	(18,264)	$612,925	(211,486)
VARIABLE COSTS				
FUEL	$8,338	(2,759)	$79,862	(27,055)
OIL	$240	(170)	$2,292	(1,535)
ICE	$1,201	(308)	$11,654	(3,597)
BAIT	$7,302	(1,803)	$71,818	(22,888)
LIGHTSTICKS	$4,361	(1,653)	$42,052	(16,693)
FOOD	$1,968	(670)	$18,774	(6,165)
MISC. GEAR	$3,236	(2,899)	$29,710	(22,760)
CAPTAIN WAGES	$3,012	(1,424)	$30,095	(15,621)
OTHER CREW WAGES	$11,667	(5,356)	$117,143	(57,744)
EXCISE TAXES	$311	(91)	$3,065	(1,057)
SALES FEES	$6,218	(1,826)	$61,293	(21,149)
TOTAL VARIABLE COSTS	$47,855	(11,980)	$467,758	(140,572)
NET OPERATING RETURN	$14,328	(7,576)	$145,168	(76,755)
FIXED COSTS				
MAINTENANCE	$3,161	(1,401)	$29,998	(12,653)
DRYDOCK	$1,316	(994)	$11,544	(5,920)
MOORING	$356	(187)	$3,203	(873)
INSURANCE	$2,052	(1,318)	$19,743	(12,890)
ACCOUNTING	$87	(51)	$855	(483)
LOAN PAYMENTS	$2,094	(2,765)	$20,463	(26,027)
MISCELLANEOUS	$1	(1)	$11	(13)
DEPRECIATION CHARGE	$1,364	(758)	$12,911	(6,842)
TOTAL FIXED COSTS	$10,431	(4,834)	$98,727	(43,650)
TOTAL COSTS	$58,286	(15,676)	$566,485	(170,749)
NET RETURN	$3,896	(6,542)	$46,441	(58,316)
ADD BACK NON-CASH DEPRECIATION CHARGE	$1,364	(758)	$12,911	(6,842)
CASH RETURN	**$5,260**	(6,529)	**$59,351**	(59,587)

Hawaii-Based Domestic Longline Swordfish Target Vessels (n=21)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	7.7	(1.6)		
TOTAL TRIP LENGTH (DAYS)	32.2	(5.4)		
TRAVEL DAYS	18.2	(4.0)		
FISHING DAYS	14	(2.8)		
PURCHASE PRICE	$445,714	(255,217)		
ADDITIONAL INVESTMENT	$93,780	(99,049)		
NUMBER OF CREW	4.4	(0.7)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$82,386	(28,215)	$632,596	(244,292)
VARIABLE COSTS				
FUEL	$8,342	(2,943)	$66,551	(34,611)
OIL	$398	(237)	$3,092	(2,058)
ICE	$391	(672)	$3,687	(7,059)
BAIT	$8,814	(1,931)	$68,792	(24,161)
LIGHTSTICKS	$7,175	(2,184)	$56,049	(22,620)
FOOD	$1,914	(1,338)	$14,082	(9,913)
MISC. GEAR	$5,319	(2,753)	$39,515	(20,620)
CAPTAIN WAGES	$6,432	(5,067)	$46,642	(33,676)
OTHER CREW WAGES	$12,036	(7,114)	$92,257	(56,297)
EXCISE TAXES	$412	(141)	$3,163	(1,221)
SALES FEES	$13,019	(8,062)	$100,873	(67,723)
TOTAL VARIABLE COSTS	$64,252	(16,075)	$494,704	(161,243)
NET OPERATING RETURN	$18,133	(14,000)	$137,892	(104,239)
FIXED COSTS				
MAINTENANCE	$3,734	(2,483)	$26,419	(13,901)
DRYDOCK	$943	(761)	$7,459	(6,826)
MOORING	$289	(128)	$2,117	(715)
INSURANCE	$4,763	(2,436)	$34,585	(16,217)
ACCOUNTING	$658	(705)	$5,067	(5,495)
LOAN PAYMENTS	$2,982	(3,167)	$22,041	(21,779)
MISCELLANEOUS	$1,628	(2,459)	$11,146	(15,944)
DEPRECIATION CHARGE	$2,446	(1,012)	$17,983	(7,300)
TOTAL FIXED COSTS	$17,441	(7,279)	$126,817	(42,214)
TOTAL COSTS	$81,693	(19,168)	$621,521	(175,576)
NET RETURN	$692	(13,900)	$11,075	(103,478)
ADD BACK NON-CASH DEPRECIATION CHARGE	$2,446	(1,012)	$17,983	(7,300)
CASH RETURN	**$3,138**	(13,848)	**$29,058**	(103,884)

Hawaii-Based Domestic Longline Swordfish Target Medium Size Vessels (n=10)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	6.7	(1.2)		
TOTAL TRIP LENGTH (DAYS)	33.7	(3.9)		
TRAVEL DAYS	20.5	(2.4)		
FISHING DAYS	13.2	(2.9)		
PURCHASE PRICE	$330,000	(141,814)		
ADDITIONAL INVESTMENT	$121,213	(109,902)		
NUMBER OF CREW	4.1	(0.6)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$72,285	(26,815)	$486,825	(195,045)
VARIABLE COSTS				
FUEL	$6,520	(1,891)	$43,630	(14,746)
OIL	$312	(199)	$2,041	(1,399)
ICE	$153	(228)	$963	(1,450)
BAIT	$8,017	(2,062)	$53,841	(16,784)
LIGHTSTICKS	$6,468	(2,390)	$43,425	(17,872)
FOOD	$2,250	(1,318)	$14,450	(8,375)
MISC. GEAR	$6,537	(2,793)	$44,356	(22,003)
CAPTAIN WAGES	$6,042	(4,173)	$40,290	(28,229)
OTHER CREW WAGES	$10,352	(7,106)	$69,309	(48,250)
EXCISE TAXES	$361	(134)	$2,434	(975)
SALES FEES	$10,169	(6,382)	$70,106	(47,754)
TOTAL VARIABLE COSTS	$57,180	(14,256)	$384,846	(116,536)
NET OPERATING RETURN	$15,105	(13,896)	$101,980	(91,748)
FIXED COSTS				
MAINTENANCE	$4,728	(2,936)	$30,478	(16,635)
DRYDOCK	$701	(341)	$4,489	(2,016)
MOORING	$299	(161)	$1,886	(730)
INSURANCE	$5,074	(2,777)	$32,969	(16,359)
ACCOUNTING	$558	(716)	$3,808	(5,015)
LOAN PAYMENTS	$2,460	(3,962)	$14,761	(23,771)
MISCELLANEOUS	$1,644	(2,240)	$9,925	(13,669)
DEPRECIATION CHARGE	$2,326	(718)	$15,040	(3,233)
TOTAL FIXED COSTS	$17,791	(7,675)	$113,358	(37,881)
TOTAL COSTS	$74,971	(17,356)	$498,203	(120,572)
NET RETURN	($2,686)	(13,507)	($11,378)	(89,065)
ADD BACK NON-CASH DEPRECIATION CHARGE	$2,326	(718)	$15,040	(3,233)
CASH RETURN	**($360)**	(13,259)	**$3,662**	(88,981)

Hawaii-Based Domestic Longline Swordfish Target Large Size Vessels (n=11)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	8.55	(1.5)		
TOTAL TRIP LENGTH (DAYS)	30.83	(6.3)		
TRAVEL DAYS	16.1	(4.2)		
FISHING DAYS	14.7	(2.6)		
PURCHASE PRICE	$550,909	(294,294)		
ADDITIONAL INVESTMENT	$68,841	(85,523)		
NUMBER OF CREW	4.68	(0.6)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$91,568	(27,391)	$765,115	(211,073)
VARIABLE COSTS				
FUEL	$9,999	(2,787)	$87,389	(34,598)
OIL	$476	(250)	$4,047	(2,179)
ICE	$608	(865)	$6,163	(9,143)
BAIT	$9,539	(1,555)	$82,384	(22,073)
LIGHTSTICKS	$7,817	(1,857)	$67,525	(20,776)
FOOD	$1,609	(1,342)	$13,748	(11,540)
MISC. GEAR	$4,213	(2,304)	$35,115	(19,234)
CAPTAIN WAGES	$6,787	(5,948)	$52,418	(38,392)
OTHER CREW WAGES	$13,568	(7,096)	$113,119	(56,904)
EXCISE TAXES	$458	(137)	$3,826	(1,055)
SALES FEES	$15,609	(8,823)	$128,842	(72,893)
TOTAL VARIABLE COSTS	$70,681	(15,441)	$594,575	(129,366)
NET OPERATING RETURN	$20,887	(14,167)	$170,540	(108,137)
FIXED COSTS				
MAINTENANCE	$2,830	(1,638)	$22,729	(10,294)
DRYDOCK	$1,162	(971)	$10,158	(8,527)
MOORING	$279	(96)	$2,327	(664)
INSURANCE	$4,480	(2,177)	$36,054	(16,737)
ACCOUNTING	$749	(716)	$6,212	(5,893)
LOAN PAYMENTS	$3,457	(2,326)	$28,659	(18,409)
MISCELLANEOUS	$1,612	(2,752)	$12,256	(18,368)
DEPRECIATION CHARGE	$2,554	(1,249)	$20,658	(8,980)
TOTAL FIXED COSTS	$17,124	(7,261)	$139,053	(43,895)
TOTAL COSTS	$87,805	(19,426)	$733,628	(139,780)
NET RETURN	$3,763	(14,158)	$31,487	(115,385)
ADD BACK NON-CASH DEPRECIATION CHARGE	**$2,554**	(1,249)	**$20,658**	(8,980)
CASH RETURN	**$6,317**	(14,211)	**$52,146**	(115,007)

Hawaii-Based Domestic Longline Varied Target Vessels (n=8)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	11.9	(3.8)		
TOTAL TRIP LENGTH (DAYS)	19.7	(6.8)		
TRAVEL DAYS	8.9	(4.4)		
FISHING DAYS	10.8	(2.6)		
PURCHASE PRICE	$277,264	(120,553)		
ADDITIONAL INVESTMENT	$110,325	(72,693)		
NUMBER OF CREW	4.1	(0.7)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$43,124	(17,728)	$491,177	(224,889)
VARIABLE COSTS				
FUEL	$4,149	(3,044)	$48,106	(38,192)
OIL	$124	(60)	$1,332	(475)
ICE	$724	(516)	$8,423	(6,537)
BAIT	$4,363	(1,603)	$51,711	(22,192)
LIGHTSTICKS	$2,068	(1,842)	$19,653	(15,703)
FOOD	$1,477	(662)	$16,915	(7,310)
MISC. GEAR	$3,207	(2,651)	$32,581	(21,929)
CAPTAIN WAGES	$2,884	(1,534)	$32,477	(14,525)
OTHER CREW WAGES	$8,422	(3,869)	$99,534	(55,347)
EXCISE TAXES	$116	(35)	$1,386	(624)
SALES FEES	$4,219	(1,732)	$47,866	(22,263)
TOTAL VARIABLE COSTS	$31,853	(13,070)	$361,055	(159,544)
NET OPERATING RETURN	$11,271	(4,952)	$130,122	(67,740)
FIXED COSTS				
MAINTENANCE	$2,740	(2,175)	$26,631	(6,421)
DRYDOCK	$1,161	(1,310)	$10,272	(5,800)
MOORING	$252	(209)	$2,469	(963)
INSURANCE	$2,970	(2,378)	$28,493	(13,268)
ACCOUNTING	$94	(95)	$974	(962)
LOAN PAYMENTS	$5,280	(7,920)	$42,584	(42,329)
MISCELLANEOUS	$58	(110)	$431	(607)
DEPRECIATION CHARGE	$1,276	(763)	$12,920	(4,382)
TOTAL FIXED COSTS	$13,832	(14,221)	$124,774	(56,671)
TOTAL COSTS	$45,684	(19,909)	$485,830	(159,768)
NET RETURN	($2,560)	(15,408)	$5,348	(96,544)
ADD BACK NON-CASH DEPRECIATION CHARGE	$1,276	(763)	$12,920	(4,382)
CASH RETURN	**($1,284)**	(14,935)	**$18,267**	(96,524)

Hawaii-Based Domestic Longline Varied Target Medium Size Vessels (n=4)
1993 Averages (Std.)

VESSEL INFORMATION:				
NUMBER OF TRIPS	13	(2.0)		
TOTAL TRIP LENGTH (DAYS)	18.46	(5.4)		
TRAVEL DAYS	8	(3.1)		
FISHING DAYS	10.5	(2.7)		
PURCHASE PRICE	$238,278	(91,293)		
ADDITIONAL INVESTMENT	$115,000	(78,209)		
NUMBER OF CREW	4.13	(0.6)		
COST AND EARNINGS INFORMATION:	PER TRIP		PER YEAR	
REVENUE	$42,223	(13,741)	$538,973	(169,009)
VARIABLE COSTS				
FUEL	$3,617	(1,045)	$46,415	(13,754)
OIL	$104	(38)	$1,365	(610)
ICE	$685	(511)	$8,694	(6,867)
BAIT	$4,713	(1,749)	$59,996	(21,404)
LIGHTSTICKS	$1,498	(1,380)	$17,466	(12,682)
FOOD	$1,329	(633)	$16,330	(4,407)
MISC. GEAR	$2,063	(997)	$27,137	(15,083)
CAPTAIN WAGES	$2,829	(1,395)	$34,785	(10,679)
OTHER CREW WAGES	$9,084	(3,300)	$117,519	(47,962)
EXCISE TAXES	$85	(24)	$1,716	(506)
SALES FEES	$3,930	(1,245)	$50,833	(18,258)
TOTAL VARIABLE COSTS	$30,064	(9,987)	$383,236	(120,600)
NET OPERATING RETURN	$12,159	(3,770)	$155,737	(48,643)
FIXED COSTS				
MAINTENANCE	$2,121	(596)	$26,700	(2,694)
DRYDOCK	$620	(442)	$7,625	(5,089)
MOORING	$183	(60)	$2,367	(860)
INSURANCE	$1,756	(1,526)	$20,909	(15,711)
ACCOUNTING	$110	(137)	$1,238	(1,377)
LOAN PAYMENTS	$1,929	(2,227)	$27,000	(31,177)
MISCELLANEOUS	$15	(31)	$216	(432)
DEPRECIATION CHARGE	$921	(147)	$11,776	(1,019)
TOTAL FIXED COSTS	$7,655	(2,784)	$97,829	(35,777)
TOTAL COSTS	$37,719	(11,472)	$481,065	(135,455)
NET RETURN	$4,504	(3,595)	$57,908	(50,160)
ADD BACK NON-CASH DEPRECIATION CHARGE	$921	(147)	$11,776	(1,019)
CASH RETURN	**$5,425**	(3,597)	**$69,683**	(49,977)