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characteristics, profits and incomes in 1972

David S. Liao
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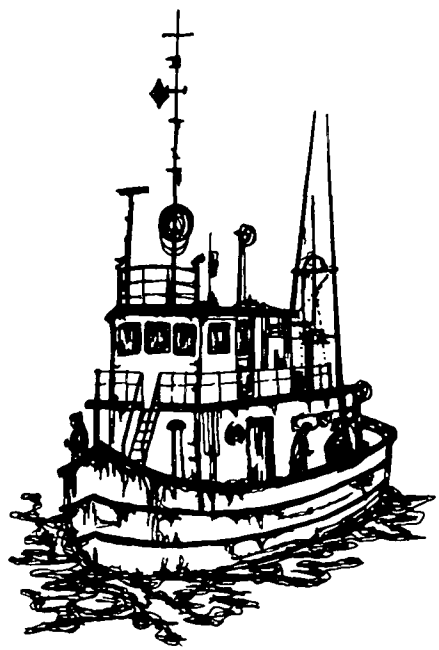

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authors

DAVID S. LIAO is a former research associate with the Department of Agricultural and Resource Economics at Oregon State University. He is now Assistant Marine Scientist and Marine Economist at the South Carolina Marine Science Research Institute, Charleston.

JOE B. STEVENS is Associate Professor of Agricultural and Resource Economics at Oregon State University.

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related publication

OREGON FISH FIGHTS, by Courtland L. Smith. Publication no. T-74-004. 15pp.

A history and analysis of conflicts between fishing groups in Oregon. In the late 1880's fish fights were violent, often bloody battles between rival groups of commercial fishermen. In more recent years fish fights have been fought at the ballot box, most often between sports anglers and commercial fishermen; violence has been traded for what Smith calls the "politics of conservation."

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contents

tables and figures

introduction

In recent years, attention has been focused on development of State-Federal Fishery Management Programs, and most recently, the National Fisheries Plan to improve the vitality of fishing firms. Development or determination of appropriate programs requires some knowledge of fishermen's operations and performance; hence, this survey was undertaken to improve understanding of Oregon's commercial fishermen.

This report presents some preliminary findings of the survey - specifically, information on (1) socioeconomic characteristics of fishermen, (2) costs and returns from commercial fishing, and (3) fishermen's income from fishery and nonfishery employment.

These data are basic in policy considerations relating to the well-being of fishermen. Financial institutions also need information about costs and returns. In addition, these data are useful to boat owners and skippers as benchmarks for comparing their costs and returns with those of average fishermen. The data comparing fishing and nonfishing income from part-time and full-time fishermen could be useful to fishermen and potential fishermen in their choice of occupation.

Table 1. Survey of Oregon's skippers[a/]

Type of fishermen	Sample size	Estimated[b/] population	Sample size (percent)
I. Fished in 1972			
Specialized:[c/]			
Renewal salmon	97	1170 to 1980	5% to 8%
Entry salmon	16	130 to 220	7% to 12%
Crab	11	35 to 60	18% to 35%
Combination:[d/]			
Salmon-tuna	24	120 to 205	12% to 20%
Salmon-tuna/crab	30	95 to 155	19% to 32%
Drag (Shrimp and/or bottomfish, with crab and/or tuna)	25	50 to 85	29% to 50%
Subtotal for 1972	203	1600 to 2705	8% to 13%
II. Fished in 1971 Only			
Exit salmon	11	385 to 575	2% to 3%
III. Total	214	1985 to 3280	6% to 11%

a/ Excludes gillnetters, specialized tuna, clam diggers, shad, etc.

b/ The total number of skippers in each "type" is not known; thus, a range is given. The smaller numbers were derived from the sampling frame. The larger numbers reflect an upward adjustment of the sampling frame in order to reconcile the number of skippers with the number of commerical boat licenses issued by the Fish Commission. The latter figures were 3,487 in 1971 and 3,314 in 1972; these include an undetermined number of gillnet fishermen.

c/ Obtained at least 85 percent of the total value of their landings from a single fishery.

d/ Obtained at least 10 percent of the total value of their landings from each of two or more fisheries, with at least 85 percent from these two or more fisheries combined.

THE COMMERCIAL FISHERMEN SURVEY (TABLE 1)

All Oregon skippers in the major fisheries constituted the "population" for the survey. An Oregon skipper was defined as a boat captain who had a commercial fishing license and resided in Oregon. Landing data cards for 1971 were processed

to estimate the number of skippers and to identify a "type of fisherman" category for each license holder.

The main reason for basing the survey on the type of *fisherman* instead of the type of fishery was that the former was a more homogenous classification. There were seven types of fishermen:

Renewal Salmon - fishermen who trolled for salmon in both 1971 and 1972.

Entry Salmon - fishermen who trolled for salmon in 1972 but not in 1971.

Exit Salmon - fishermen who trolled for salmon in 1971 but not in 1972.

Crab - fishermen who landed crab in 1972.

Salmon and Tuna - fishermen who fished for salmon and tuna in 1972.

Salmon and/or Tuna with Crab - fishermen who fished for salmon and/or tuna, and for crab, in 1972.

Drag - fishermen who fished for shrimp and/or bottomfish, and for crab and/or tuna, in 1972.

The sample size and estimated population size for each type are shown in Table 1. The sample size was based upon the availability of research funds and the research objectives. The sample fishermen to be interviewed were selected on a random basis. The questionnaires were administered after pretesting. A total of 214 skippers were interviewed.

Table 2. Estimated number of skippers in the five major "types of fishermen" in 1971 and 1972.[a/]

	1971		1972
	Total	Exit[b/]	Total
Specialized:			
Crab	75 to 115	12%	35 to 60
Salmon	1,600 to 2,400	24%	1,300 to 2,200
Combination:			
Salmon-tuna	95 to 145	11%	120 to 205
Salmon-tuna/crab	95 to 140	7%	95 to 155
Drag	45 to 65	2%	50 to 85
Total:	1,910 to 2,865	22%	1,600 to 2,705

a/ See footnote b/, Table 1.

b/ "Exit" means those who left the fishery entirely.

NUMBER OF FISHERMEN (TABLE 2)

Although the Fish Commission of Oregon sold 6,386 and 5,630 commercial fishing licenses in 1971 and 1972, respectively, the number of actual fishing enterprises is much smaller for at least two reasons: many crewmen were included in the total,

and some skippers were licensed but did not fish.

The estimated number of licensed skippers in each of the five major types of fishermen is shown in Table 2 for 1971 and 1972. The most obvious figure is the predominant number of specialized salmon trollers. This one type made up about 80 percent of the total number of skippers. This is also a category of high turnover; about one-fourth of the specialized salmon trollers left the fishery after the 1971 season. Less than eight percent of the combination skippers left the fishery after the same season.

The total number of skippers declined between 1971 and 1972, primarily because salmon fishermen who left the fishery outnumbered those who entered. Many renewal fishermen chose to enter new fisheries and/or abandon previous ones, with a net movement away from specialized crab enterprises and toward combination enterprises.

CHARACTERISTICS OF COMMERCIAL FISHERMEN

This section describes the "average" characteristics of the fishermen who were interviewed. The subjects discussed are characteristics of skippers, fishing boats, fishing effort, and nonfishery employment.

Table 3. Characteristics of Oregon's commercial fishermen, 1972

Characteristics	Average for specialized fishermen				Average for combination fishermen		
	Renewal salmon	Entry salmon	Exit salmon	Crab	Salmon-tuna	Salmon-tuna crab	Drag
Age	44	46	45	55	49	45	47
Formal education (years)	12	11	11	10	12	12	11
Vocational training (months)	5	8	9	2	5	5	5
Nonfishery job training (months)	8	6	6	5	11	6	7
Nonfishing employment experience (years)	21	14	15	12	14	10	4
Family size	3.3	3.1	2.6	2.9	3.0	3.4	3.1
Number of earners	1.7	1.6	1.2	1.6	1.5	1.5	2.0
Miles from home town to port	27	28	45	0	15	0	0
Fishing experience (years)	8	2	10	24	16	18	22
Years as skipper	7	2	9	21	14	15	17
Years as crewman	1	0	1	3	2	3	5
Father and/or father-in-law was a fishermen (percent)	16	0	9	46	25	50	36

CHARACTERISTICS OF SKIPPERS (TABLE 3)

1. The skippers among the seven types of fishermen are alike in average age, formal education, vocational training, nonfishery job training, and family size.

2. Specialized salmon fishermen (renewal salmon, entry salmon, and exit salmon) have less commercial fishing experience than do other types of fishermen.

3. Specialized salmon fishermen have more nonfishery employment experience than other types of fishermen.

4. Crab, salmon-tuna/crab, and drag fishermen tend to live in coastal port areas; specialized salmon fishermen live farther away from the coast.

Table 4. Characteristics of Oregon's commercial fishing boats, 1972

Characteristic	Average for specialized fishermen			Average for combination fishermen		
	Renewal salmon	Entry salmon	Crab	Salmon-tuna	Salmon-tuna/crab	Drag
Age (years)	14	6	22	26	24	29
Length (feet)	26	23	37	39	44	54
Beam (feet)	9	8	11	11	13	15
Horsepower	104	113	164	138	168	237
Total value of boat ($)	7,016	5,420	22,000	30,054	30,936	66,761
Value of hydraulic gear ($)	575	367	2,100	1,557	3,150	5,060
Value of electronic equipment ($)	1,057	601	2,021	3,736	3,614	6,122
Equity ($)	6,558	3,969	18,563	14,709	18,441	33,541
Number of crab pots	0	0	215	0	254	171

CHARACTERISTICS OF FISHING BOATS (TABLE 4)

The boat operated by the average salmon fisherman is between 23 and 26 feet in length, and is valued between $5,000 and $7,000. The average drag fishermen's boat has a market value of about $66,750. The market value of all other fishermen's boats is between $22,000 and $30,000. Owner's equity in the boat varies among the six types of fishermen. Equity for specialized salmon fishermen averages approximately 80 percent, while the average drag fishermen has about 50 percent equity in his boat.

Table 5. Characteristics of fishing effort by Oregon's commercial fishermen

Characteristic	Average for specialized fishermen				Average for combination fishermen		
	Renewal salmon	Entry salmon	Exit salmon[a/]	Crab	Salmon-tuna	Salmon-tuna/crab	Drag
Days spent fishing for:							
Salmon	36	32	40	0	52	52	0
Crab	0	0	0	88	0	79	24
Tuna	0	0	0	0	33	27	1
Bottomfish	0	0	0	0	0	0	60
Shrimp	0	0	0	0	0	0	52
Total days fished	36	32	40	88	85	158	137
Days spent on maintenance and repair of boat and gear	19	14	8	34	34	47	50
Number of men on the boat	1.5	1.5	NA[b/]	2	2	3	3
Percent of fishermen who landed fish in another state	11	6	0	9	50	50	15

[a/] 1971 fishing season

[b/] Not available.

CHARACTERISTICS OF FISHING EFFORT (TABLE 5)

Specialized salmon fishermen spend about 30 to 40 days fishing and 10 to 20 days on maintenance and repair of boat and gear. Their total days devoted to the fishery are from 45 to 50. Crab and salmon-tuna fishermen spend about four months in the fishery; tuna/crab and drag fishermen, approximately seven.

Specialized salmon fishermen generally have a one- or two-man crew on their boats. Salmon-tuna fishermen generally employ one crew member; salmon-tuna/crab and drag fishermen usually employ two.

Only a few of the draggers, crabbers, and salmon trollers land fish outside of Oregon, compared to 50 percent of the salmon-tuna and salmon-tuna/crab boats.

Table 6. Occupational distribution and length of skipper's nonfishery employment, 1972

Characteristic	Average for specialized fishermen				Average for combination fishermen		
	Renewal salmon	Entry salmon	Exit salmon	Crab	Salmon-tuna	Salmon-tuna crab	Drag
Number of fishermen in sample	97	16	11	11	24	30	25
Number with nonfishery employment	81	15	9	2	12	7	5
Professional and technical workers	12	0	1	0	0	1	1
Managers, administrators and proprietors	5	1	2	0	2	0	1
Sales workers	2	0	0	0	3	0	0
Clerical and military	5	2	0	0	0	0	0
Craftsmen and skilled workers	25	3	0	1	5	2	1
Operatives	15	5	3	1	0	1	1
Service workers	4	1	1	0	1	1	0
Laborers	13	3	2	0	2	2	1
Number without nonfishery employment	16	1	2	9	12	23	20
Average length of nonfishery employment for *all* skippers (months)	9	10	10	2	4	1	1
Average length of nonfishery employment for *those working outside the fishery* (months)	11	11	12	7	8	4	5

Table 7. Comparison of salmon fishermen with all males employed in Oregon, by major occupation groups.

Major occupation group	Salmon fishermen[a/]	Males employed in Oregon[b/] (14 years old and over)
	%	%
Professional and technical workers	12	13
Managers, administrators, and proprietors	8	15
Sales workers	2	7
Clerical and military	7	5
Craftsmen and skilled workers	26	19
Operatives	22	18
Service workers	6	7
Laborers	17	11
Occupation not reported	0	5
Total	100	100

a/ Includes renewal-salmon, entry-salmon, and exit-salmon fishermen.

b/ Source: 1970 Census of Population, Oregon.
Bureau of the Census, U.S. Department of Commerce, 1972.

CHARACTERISTICS OF NONFISHERY EMPLOYMENT (TABLES 6 AND 7)

Approximately 85 percent of all specialized salmon skippers had nonfishery employment. For those who worked outside the fishery, total time spent in nonfishery employment was about 11 months. Thus, salmon fishing is usually done to supplement income from employment outside the fishing industry.

Only 50 percent of the salmon-tuna fishermen have nonfishery employment, even though the length of their fishing season is only about four months.

Crab, salmon-tuna/crab, and drag fishermen spend the least time working outside the fishery. The 20 percent who do work outside the fishery spend, on the average, only four to five months at nonfishery jobs. Thus, in these three fisheries almost everyone is a full-time fisherman. These fishermen tend to live in coastal areas (Table 3) where nonfishery jobs are not always easy to find.

The occupational distribution of specialized salmon fishermen is compared with that of all males employed in Oregon (Table 7). While the two distributions are fairly similar, salmon fishermen tend to hold a higher percentage of "blue collar" jobs than would be found among the male Oregon work force.

COSTS AND RETURNS IN COMMERCIAL FISHING

The following analysis of costs and returns was based on those fishermen for whom complete data were available. Those fishermen who did not report their gross

return, all costs, crew size, and/or fishing days were excluded from the analysis.

Gross Returns (Table 8)

The gross returns are amounts received from the sale of fish landed during the survey year, regardless of where they were landed. The average gross returns of the seven types of fishermen varied considerably. Drag fishermen had considerably higher gross returns per year ($73,800) than other types of fishermen. Gross returns per fishing *day* were about $450 for drag fishermen and from $40 to $60 for salmon fishermen. Crab fishermen received about $300 gross returns per day.

Table 8. Comparisons of costs, returns, and efficiency among fishermen, 1972

Financial and efficiency indicators	Average for specialized fishermen				Average for combination fishermen		
	Renewal salmon	Entry salmon	Exit salmon[a/]	Crab	Salmon-tuna	Salmon-tuna crab	Drag
Sample size	67	12	9	8	21	19	16
Investment ($)[b/]	6,590	6,167	5,461	22,438	31,848	35,079	80,593
Costs and returns ($)							
Gross returns	2,215	1,229	1,154	25,721	11,369	36,807	73,808
Variable costs[c/]	1,651	1,078	1,568	14,531	5,080	17,465	35,978
Fixed costs[d/]	622	522	N/A	2,548	2,874	3,504	9,261
Gross returns less total costs	-59	-371	-414	8,643	3,415	15,838	28,569
Return to labor and management[e/]	-652	-926	-905	6,623	548	12,681	21,315
Return to investment[f/]	-944	-862	-875	-1,646	-1,133	1,115	-955
Efficiency ratios ($)							
Gross return per dollar of total investment	.40	.20	.40	1.20	.40	1.10	1.00
Gross return per dollar of total cost	1.00	.70	.80	1.80	1.40	2.30	1.70
Gross return per man fishing	1,376	716	----	15,279	6,060	12,129	20,254
Gross return per day fished	61	38	45	312	133	234	443
Total cost per day fished	87	270	90	217	114	141	273

a/ 1971 fishing season.

b/ Market value of the boat and gear.

c/ Costs that vary with fishing effort (fuel, boat repair, gear repair, crew's share, etc.)

d/ Costs that do not vary with fishing effort (insurance, license fees, association assessments, depreciation, etc.)

e/ Gross returns less total costs less opportunity cost of investment (9 percent of investment).

f/ Gross returns less total costs less opportunity cost of skipper's labor and management (40 percent of gross return).

Production Costs (Table 8)

Production costs are broken down into two categories, variable and fixed. Variable costs comprise all cost items that are incurred only if the boat is actually used for fishing. Fixed costs include cost items that do not vary with fishing effort (annual depreciation, insurance, license fees, etc.). Depreciation was calculated on a straight line basis using 18 years of remaining life and a zero salvage value for the boat. (The average age of the larger boats is 22 to 29 years; this means that the expected life of a large boat is 40 to 49 years).

Variable costs for the average drag fishermen were about $36,000, compared to $1,000 to $1,600 for specialized salmon fishermen. Fixed costs were about $9,000 for drag fishermen and $600 for specialized salmon fishermen. Total production costs for drag fishing were about $45,000, some 20 to 30 times higher than total costs for specialized salmon fishermen, and twice as high as that for salmon-tuna/crab.

Efficiency Ratios (Table 8)

The ratios of gross return to total investment were relatively low for specialized salmon fishermen and salmon-tuna fishermen. The ratio of gross returns to total costs was the highest for salmon-tuna/crab fishermen, indicating high efficiency in their use of operating capital.

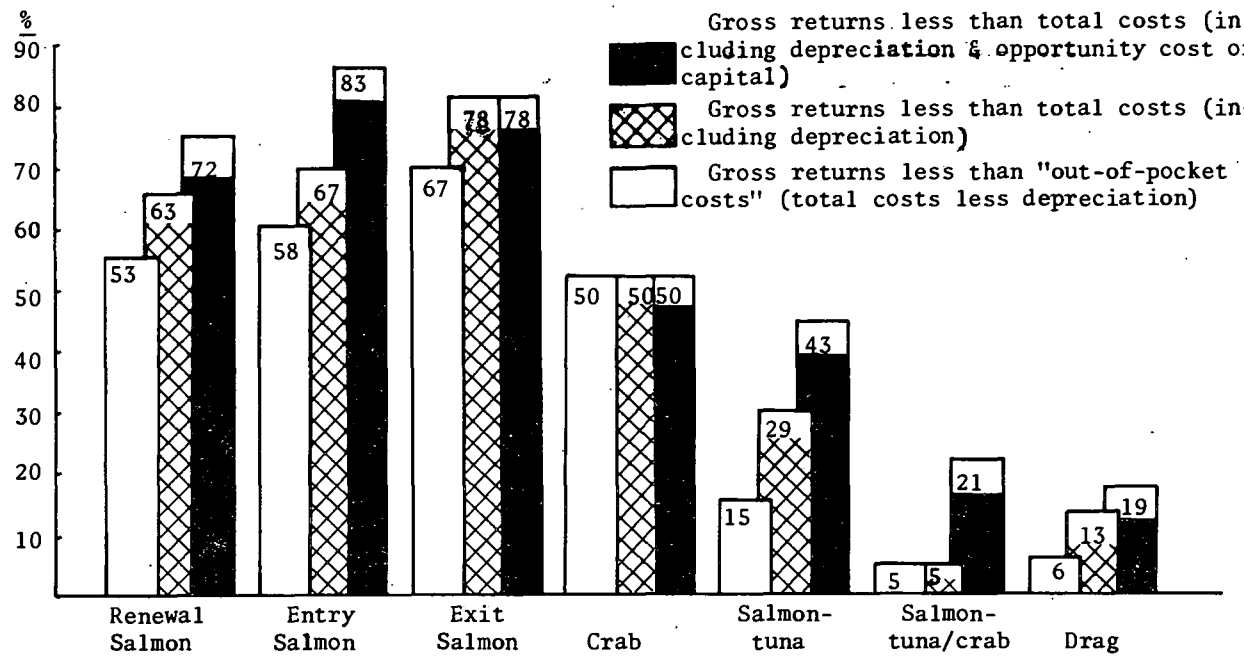
With regard to the efficiency of labor, the ratios of gross returns to numbers of men fishing indicated that specialized salmon fishermen produced very low returns to their labor input into the fishery. In addition, specialized salmon fishermen received low gross returns per day fished.

Table 9. Distribution of fishermen with loss or profit in their fishing business.

	Average for specialized fishermen				Average for combination fishermen		
Definition of "Profit"	Renewal salmon[a/]	Entry salmon[a/]	Exit salmon	Crab	Salmon-tuna	Salmon-tuna/crab	Drag
Gross returns less than "out-of-pocket" costs (total costs less depreciation)	53%	58%	67%	50%	15%	5%	6%
Gross returns less than total costs (including depreciation)	63%	67%	78%	50%	29%	5%	13%
Gross returns less than total costs (including depreciation and opportunity cost of capital at 9%)	72%	83%	78%	50%	43%	21%	19%
Gross returns greater than total costs (including depreciation and opportunity cost of capital at 9%)	28%	17%	22%	50%	57%	79%	81%

a/ As a side note, the average ex vessel prices for coho and chinook salmon were 50¢/lb. and 57¢/lb., respectively, in 1972.

Figure 1. Percent of fishermen incurring losses in 1972, by different definitions of "profit".



Profits (Tables 8 and 9)

The average specialized salmon fishermen had total costs greater than gross returns, while the average crab and combination fishermen had gross returns greater than total costs. Gross returns less total costs were about -$60 to -$400 for the specialized salmon fishermen, $3,400 for the salmon-tuna fishermen, $8,600 for crab, $15,800 for salmon-tuna/crab fishermen, and $28,600 for drag fishermen.

This study assumes that opportunity cost of a skipper's investment in fishing gear and vessel is nine percent of the market value of the investment. This percentage was chosen because Triple A-rated bonds are paying over nine percent interest; if a fisherman sold his boat at its market value and invested the money elsewhere, he could expect at least a nine percent return on his investment. When this opportunity cost is deducted from gross returns less total costs, the remainder is the return to the skipper's labor and management. The average return to labor and management was -$652 to -$926 for specialized salmon fishermen, $548 for salmon-tuna fishermen, $6,623 for crab fishermen, $12,681 for salmon-tuna/crab fishermen, and $21,135 for drag fishermen.

The percentages of fishermen who sustained losses in fishing are shown in Table 9 and Fig. 1. Among the renewal salmon fishermen, for example, 53 percent had gross returns which were less than "out-of-pocket" costs (i.e., total costs less depreciation). This group clearly had unprofitable operations in 1972. When a stricter definition of "profit" is applied (to include depreciation as a cost), 63 percent of the renewal salmon fishermen had unprofitable operations. (The difference between the 53 and 63 percent figures is the 10 percent who had gross returns sufficient to cover out-of-pocket costs but *not* depreciation.) When the definition of profit includes the opportunity cost of capital, 72 percent had unprofitable operations and only 28 percent could show a profit.

In contrast to specialized salmon fishermen, half or more of the fishermen in the other types had business enterprises which were clearly profitable in 1972. The highest percentages of profitable enterprises were among drag fishermen (81 percent) and salmon-tuna/crab fishermen (79 percent).

Table 10. Average income of Oregon's commercial fishermen, 1972

Item	Fishermen with nonfishery employment			
	Renewal salmon	Entry salmon	Exit[a] salmon	Salmon-tuna
Sample size	59	11	8	11
Fishery income ($):				
Gross returns	1,994	1,322	0	7,609
Total costs	2,149	1,611	0	7,246
Net fishery income	-155	-289	0	363
Nonfishery income ($):				
Skipper's labor income	7,981	9,736	8,344	6,270
Other family members' labor income	2,737	380	1,203	2,261
Other nonfishery income[b]	921			2,176
Total nonfishery income	11,639	10,116	9,547	10,707
Total family income[c]	11,484	9,826	9,547	11,070

Item	Fishermen without nonfishery employment				
	Renewal salmon	Crab	Salmon-tuna	Salmon-tuna/crab	Drag
Sample size	8	6	10	14	15
Fishery income ($):					
Gross returns	3,848	33,376	15,505	39,830	73,641
Total costs	3,200	21,542	8,733	25,947	45,507
Net fishery income	648	11,834	6,772	13,883	28,134
Nonfishery income ($):					
Skipper's labor income	0	0	0	0	0
Other family members' labor income	463	9,077	1,148	2,894	2,229
Other nonfishery income[b]	4,608	2,418	1,286	302	668
Total nonfishery income	5,071	11,495	2,434	3,196	2,897
Total family income[c]	5,719	23,329	9,206	17,079	31,031

[a] Income for 1971.

[b] Includes Social Security payments, unemployment compensation, interest, dividends, rent, etc.

[c] Total family income = net fishery income plus total nonfishery income.

TOTAL INCOMES OF COMMERCIAL FISHERMEN (TABLE 10)

Some commercial fishermen have two sources of income; fishery and nonfishery. Nonfishery income includes money received for working outside the fishery by the skipper and other family members, from social security payments, interest, rent, etc. Net fishery income is measured as gross returns less total costs (including depreciation) of the fishing business. This is the amount available for the fisherman's living expenditure and investment in his fishery. This net fishery income was added to nonfishery income to obtain total family income.

The average net fishery incomes of five types of fishermen *without* nonfishery employment were much higher than that of four types of fishermen *with* nonfishery employment. Table 10 also indicates that full-time skippers had higher total costs and gross returns than those of part-time skippers. Thus, the high net fishery income of full-time fishermen was due to their high capital investment and large catches.

Renewal salmon fishermen with nonfishery employment reported the highest nonfishery income, averaging $11,639 per family. About 70 percent of this amount came from the skipper's employment outside the fishery. Most of the full-time fishermen received less than $3,000 in nonfishery income. The families of those crab fishermen who did *not* work outside the fishery, however, averaged over $11,000 from nonfishery income, primarily due to other family member's labor incomes.

The average family incomes of nine types of fishermen differed considerably. Those renewal salmon fishermen who did not work outside the fishery had the lowest total family income ($5,719); their major sources of income included Social Security and other retirement income. Drag fishermen had the highest family income ($31,031); a major contributing factor was fishing success.

In summary, the fisherman who had some nonfishery employment had an average income of $9,500 to $11,500. This corresponds very closely to the average U.S. household income of $11,282 in 1972. Those fishermen who did *not* report employment outside the fishery had a considerably higher average income than the national average, with the exception of the renewal-salmon and salmon-tuna fishermen.

summary

This report represents some preliminary findings of a commercial fishermen's survey, for which the sample frame was based on computer analysis of 1971 landing data cards and license data cards for 1971 and 1972. Fishermen were classified into seven types: (1) renewal salmon, (2) entry salmon, (3) exit salmon, (4) crab, (5) salmon-tuna, (6) salmon-tuna/crab, and (7) drag. A total of 214 fishermen were interviewed. The findings of this survey can be summarized in this way:

1. Among the seven types of fishermen, there were no real differences with respect to age, formal education, vocational training, nonfishery job training, or family size.

2. Specialized salmon fishermen had more nonfishery employment experience and less commercial fishing experience than did other types of fishermen.

3. Specialized salmon fishermen operated smaller fishing boats; crab and combination fishermen operated larger and more valuable boats.

4. The average number of fishing days for specialized salmon fishermen was between 32 and 40; the average number for crab and combination fishermen ranged from 85 to 148 days.

5. Those specialized salmon fishermen who worked outside the fishery (85 percent of them) spent on the average about eleven months in nonfishery employment in 1972; only about 20 percent of the crab, drag and salmon-tuna/crab fishermen worked outside the fishery in addition to fishing.

6. The average gross returns of the seven types of fishermen differed

considerably ($73,800 to $1,150).

7. Fifty-three and fifty-eight percent of the renewal salmon and entry salmon fishermen, respectively, had gross returns that were less than out-of-pocket costs.

8. Only 28 percent of the renewal salmon fishermen had gross returns which exceeded the sum of total costs and opportunity costs of capital. About 80 percent of drag and salmon-tuna/crab fishermen had profitable enterprises.

9. Total family income of part-time fishermen averaged between $9,500 and $11,500. This is very close to the average U.S. household income of $11,282 in 1972.

10. Drag fishermen received the highest average family income ($31,031).