

**Fisheries-related marine career training needs
on the Oregon coast, 1971-1975**

*A special report of the Sea Grant Marine Advisory Program
Oregon State University Cooperative Extension Service*

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FISHERIES-RELATED MARINE CAREER TRAINING NEEDS
ON THE OREGON COAST, 1971-1975

Angling may be said to be so like the mathematics
that it can never be fully learnt.

IZAAK WALTON---The Compleat Angler

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Oregon State University Cooperative Extension Service
Marine Advisory Program

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FISHERIES-RELATED MARINE CAREER TRAINING NEEDS
ON THE OREGON COAST, 1971-1975

A study of fisheries-related marine career training needs, conducted on the Oregon Coast in December, 1970, resulted in: 1) specific opportunities for short course and workshops to be conducted by community colleges or extension educators or in combination; 2) ideas for combinations of course work with on-the-job training at both community college and high school levels; and 3) little direct evidence of a need for additional two-year curricular programs.

The study, which involved questionnaire contact with 534 Oregon fishermen, marine firms, and educational groups and interviews with about 45 Oregon mariners, covered vocational training requirements, through 1975, of fishermen, seafood processors, charter boat and marina operators, aquiculturists, vessel construction and maintenance firms, and marine supply houses. Of the 534 questionnaire contacts, we received a 53% return, or 283 completed questionnaires. Fisheries career training facilities and interests were determined through questionnaire contact with 10 community colleges, 60 high schools, two federal training centers, and the OSU Marine Advisory Program.

Data of varying sophistication were obtained on skill requirements, employment opportunities, industry salaries, and job stability for the variety of fisheries-related careers.

The study survey was conducted at the request of Southwestern

Oregon Community College with support from the Oregon State Department of Education. Gary Van Gerpen, Extension Marine Science Education Specialist, designed and conducted the questionnaire and some interview surveys. Statistical and questionnaire design aid was obtained from several departments at Oregon State University. R. Barry Fisher, Associate Professor of Fisheries, OSU, provided significant guidance and evaluation.

Field interviews, followup, and final evaluations were provided by staff of the OSU Marine Advisory Program. Donald Giles, Marine Science Education Specialist, directed the study. We acknowledge additional aid from local, state, and federal agencies and all segments of Oregon's marine industry. This is not to imply that any individuals or the organizations which they may represent are necessarily in agreement with the results of this study. The conclusions and recommendations are ours alone.

1.0 Introduction.

Harvesting the living products of the sea is an historic and fascinating United States industry. From the days of first settlement, codfishing on the Grand Banks, whaling around the world, oystering in Chesapeake Bay and the Gulf--and later the harvest of "living gold"--salmon in the Northwest, have been intertwined with national development. As a seafaring nation we had few equals. About a hundred years ago, however, with the increasing tempo of the industrial

revolution, we turned our national back to the sea, in a frenzy to subdue the land. Fishing and other marine industries were subtly ignored, if not forgotten.

1.1 The United States fell from second in sea harvest nations in 1956 to a 1969 level of fifth in producing products of the ocean. Now a resurgence of interest is noted at federal, state, and local levels. Through support by President Nixon and the Congress in 1970, the National Oceanic and Atmospheric Administration was formed, in the U. S. Department of Commerce, to focus federal efforts on development of ocean resources. The National Sea Grant College and Program Act of 1966 brought major educational projects to bear on applied ocean research, training of ocean scientists, technicians and skilled workers, and marine advisory (extension) programs designed to put ocean information to use by mariners.

As a part of the renewed interest, marine vocational training centers at the community college and high school levels have been proposed or established in areas adjacent to major marine resources availability and development. Formal training, historically, has been largely separated from the fishing, fish processing, and other industries connected with marine resource use. Independent and skilled by years of experience, fishing boat captains, seafood plant managers, marine construction groups, and others

trained their own employees by apprenticeships and trial and error since little organized training was available.

Clatsop Community College pioneered curricular development for marine-related vocations on the Oregon Coast with two-year programs in Oceanographic Technician Training, Marine Technician Training, and recently, Fisheries Technician Training.

Southwestern Oregon Community College together with the Oregon Department of Education desired to find out whether additional programs for fisheries-related marine careers should be developed through a community college and/or high schools. If programs should be developed, how could this best be accomplished and what skills should be taught?

This report supplies the results of a study of fisheries-related marine career training needs on the Oregon Coast, 1971-1975, conducted by the Oregon State University Cooperative Extension Service Marine Advisory Program during the fall and winter of 1970-1971.

1.2 Procedure.

Data were obtained by means of a pre-tested questionnaire sent to 534 fishermen, seafood processors, charter boat and marine operators, aquiculturists, vessel construction and maintenance firms, marine supply houses, and educational institutions. Of the questionnaires sent, 53% or 283 were returned. Formal interviews were conducted with 45 mariners.

Additionally, informal contacts were made with several hundred people employed in Oregon's marine industry.

Although statistical tests for significance and randomization show reasonable accuracy, it quickly became apparent that the OSU Marine Advisory Program, with frequent and intensive contact with all segments of marine industry in Oregon, could not conduct a completely unbiased sampling of marine training needs. Rather, we were "insiders", an inseparable part of the group we were attempting to measure. This provided opportunities for adding inferences not available to a normal study. Where inferences add dimension or contradiction to questionnaire responses, we have set these apart in script type. Further, the section on aquiculture is set totally in script since it is based on experience with Oregon industry.

We have chosen to present study results based both on questionnaire tabulation and subjective evaluation. The tabulations and percentages should be viewed as an arithmetic response from those contacted. Evaluations of numerical data presented is affected by close contact and group knowledge of status and trends in Oregon marine industry.

SOUTHWESTERN OREGON COMMUNITY COLLEGE STUDY REPORT

2.0 Results of Career Training Survey of Oregon Commercial Fishermen.

2.1 Includes the following standardized occupational titles and numbers (1):

- 431.884 Net, Seine, and Trap Fishermen
- 432.884 Line Fishermen
- 433.884 Miscellaneous Gear Fishermen
- 197.133 Fishing Vessel Captain
- 197.130 Fishing Vessel Engineer
- 911.887 Deckhand-General

2.2 Profile of Oregon Commercial Fishermen.

In 1970 nearly 6,000 commercial fishing licenses were issued. These fishermen produced a crop of primary wealth weighing 98.3 million pounds valued ex-vessel at \$23.5 million (2). Fish are caught through a variety of methods, each requiring specific skills and gear.

2.21 Fishermen may fish for one commodity (e.g. salmon) or a variety of commodities (e.g. tuna, crab, shrimp, salmon). Figures 1 and 2 graph the "At Sea" and "On Shore" duties identified by fishermen by percentage of those fishermen that listed the duty in response to Question 7 (Appendix A). It can be argued that all duties listed are equally important and that the heavier response infers a bias toward

Figure 1. "At Sea" Duties Identified by Oregon Commercial Fishermen

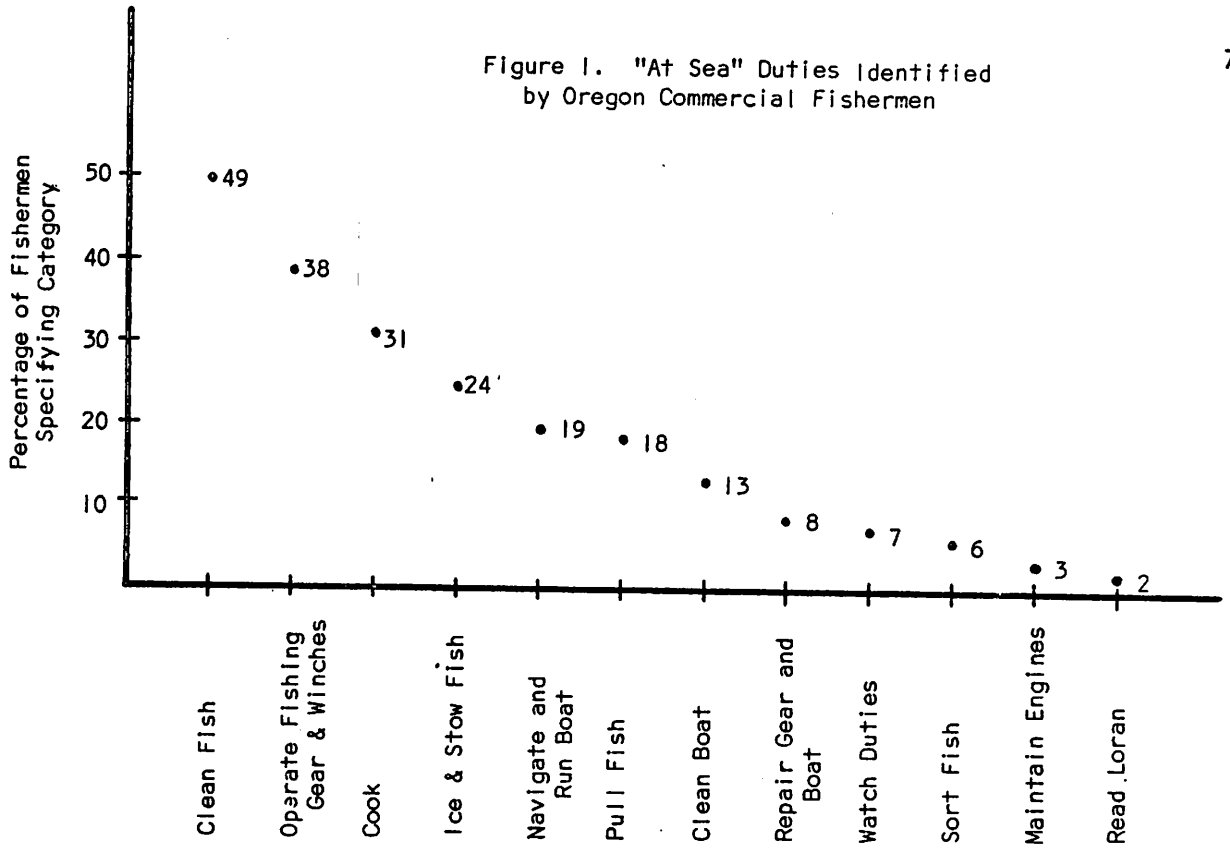
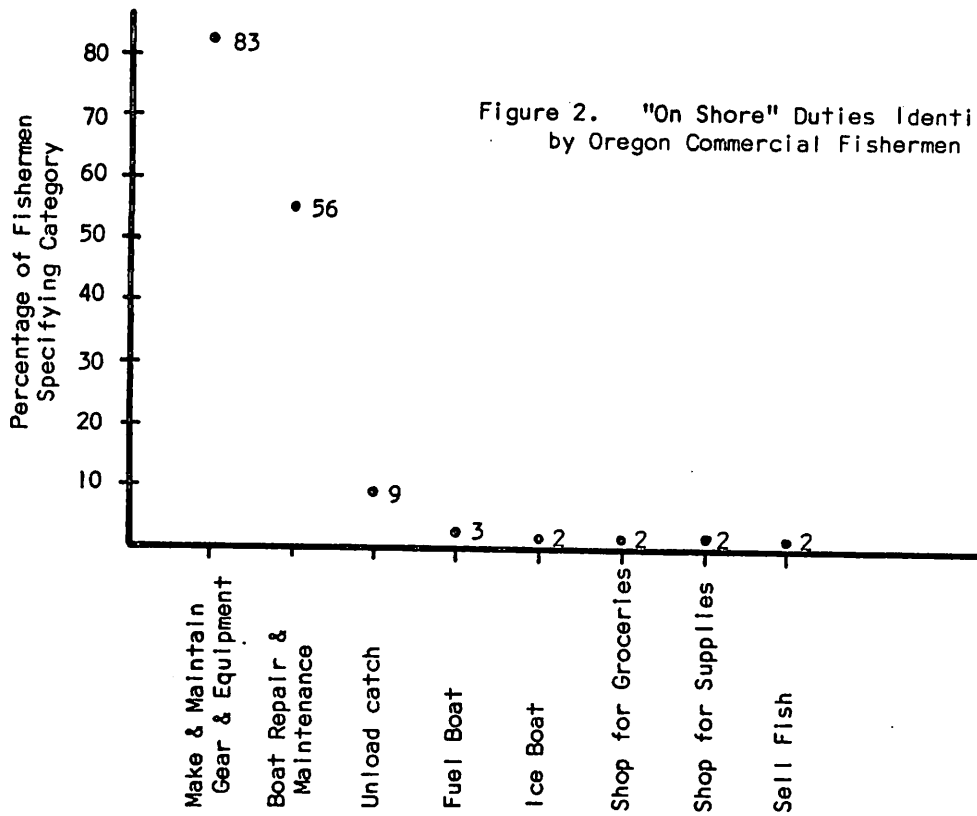


Figure 2. "On Shore" Duties Identified by Oregon Commercial Fishermen



the troll fishery. Although duties vary, depending on resources fished, commonality exists in relation to vessel, gear, sanitation, navigation, and personal welfare.

2.22 The 160 questionnaire responses from fishermen represented a 41% return. Fishing experience from those sampled varied from one year to 54 years. Years of experience are shown in Figure 3.

2.23 Annual income and portion of gross income derived from fishing both show a bi-modal aspect, Figures 4 and 5.

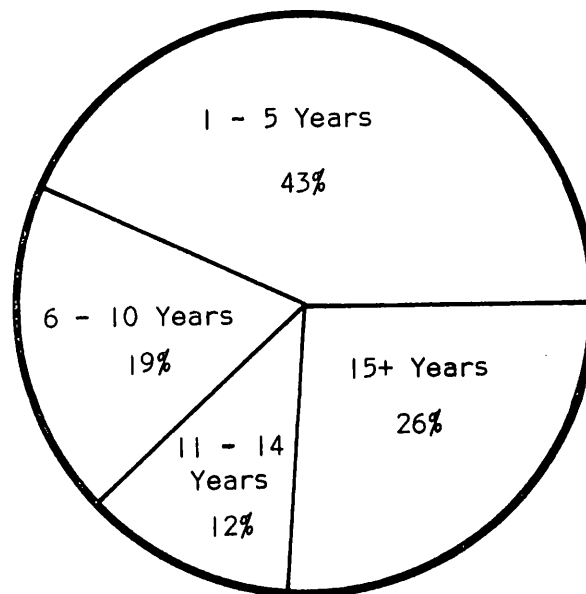
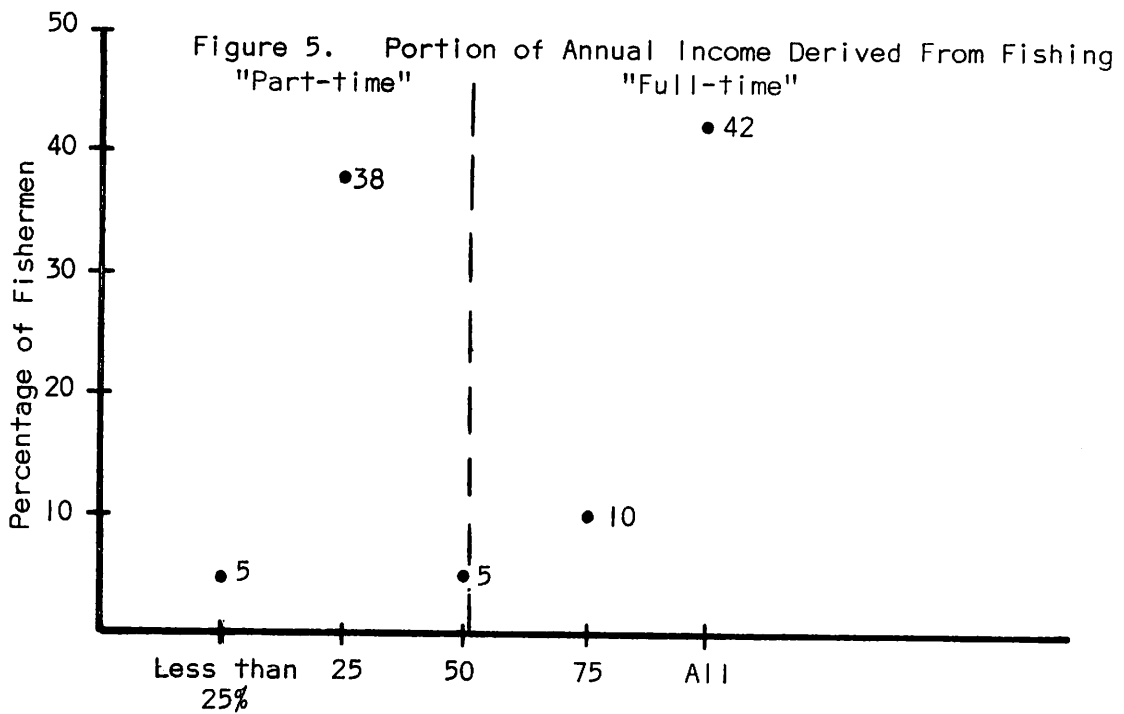
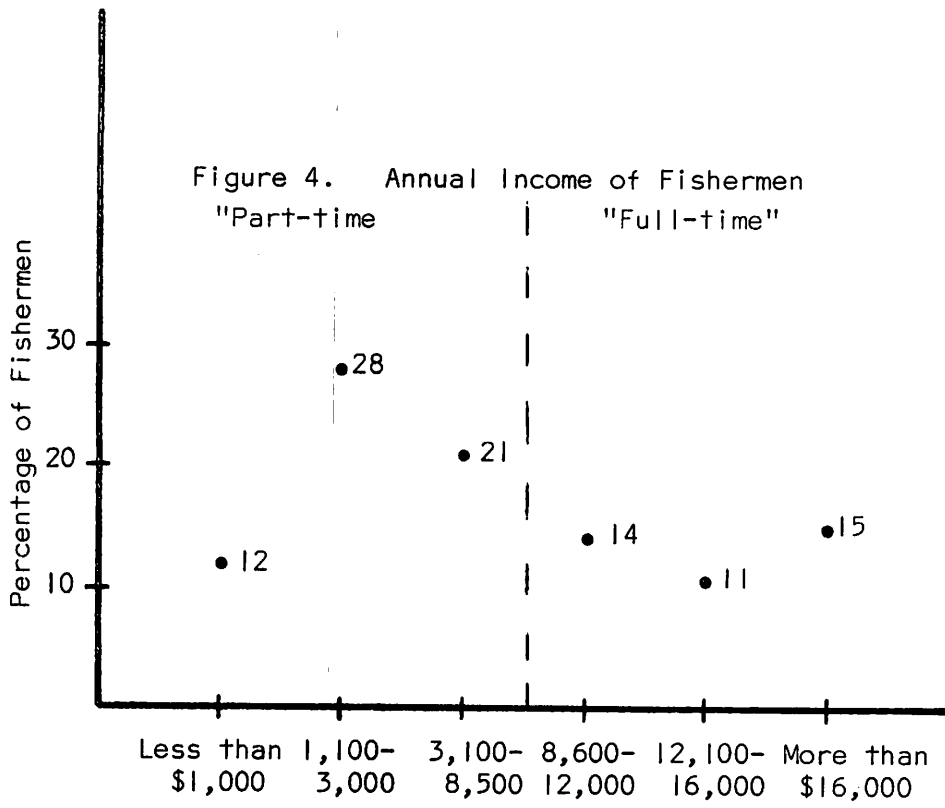


Figure 3. Years of Fishing Experience
Among Oregon Commercial Fishermen



About 50% of Oregon's commercial fishermen are not full-time. *We suggest, arbitrarily, that those who spend 50% or less of their time and earn \$6,000 annually or less are part-time fishermen.*

2.24 From the formal education standpoint, 68% of the respondents had completed high school or beyond. About 29% had some college training while only 9% had not finished the eighth grade. One person had finished 19 years of school. Only 3% had taken vocational fisheries training in school.

In a recent British Columbia study (4), 24% of the respondents had completed high school or beyond. About 35% had achieved grade eight or less. *Oregon commercial fishermen appear to be a comparatively well-educated group.*

2.3 Employment as a Fisherman.

2.31 More than 80% of those responding to this survey considered themselves to be a self-employed captain rather than a crew member. Of the captains, 44% employed one crew member, 25% employed two crew members, and 25% hired no help.

Overwhelmingly, crew members are either changed very seldom (indicating stability through more than one season) or seasonally. About 8% changed crew during the season. Depending on the resource fished, regular

crewmen can anticipate employment for most of the year, Figure 6.

Seasonal crewmen are sometimes added during peak fishing periods with the expectation of not more than two months of employment. Employment stability and length of season may vary according to conditions of weather, resource availability, and equipment efficiency.

2.32 Employee benefits for fishermen were listed by respondents as Social Security, hospitalization, bonuses, and unemployment compensation. On hospitalization,

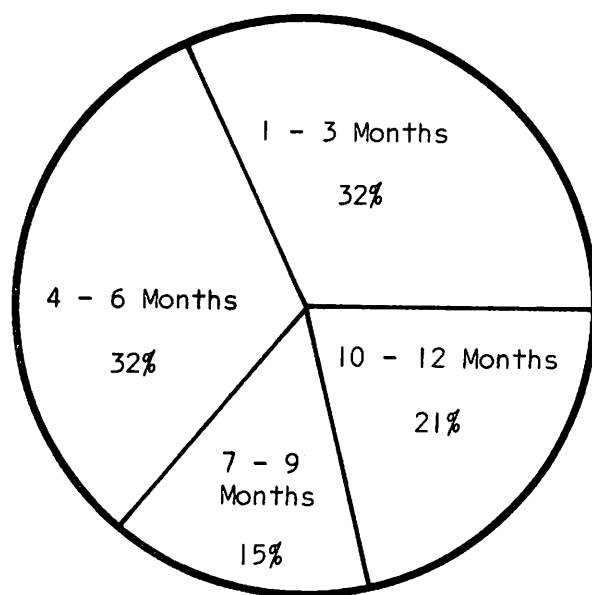


Figure 6. Months of Work Constituting Full Employment for Regular Crewmen on Oregon Commercial Fishing Vessels

captains and regular crew members fishing aboard documented vessels are eligible for U. S. Public Health Service coverage after 60-days' employment aboard the vessel. Type or source of bonuses was unspecified.

Unemployment compensation, although identified by fishermen as an employee benefit, is not currently available to Oregon commercial fishermen.

Most crew fish on a percentage of catch (share) basis. As such, they are personal contractors and may have to arrange for some of their own benefits.

2.33 Magnitude of Employment Opportunities for Fishermen.

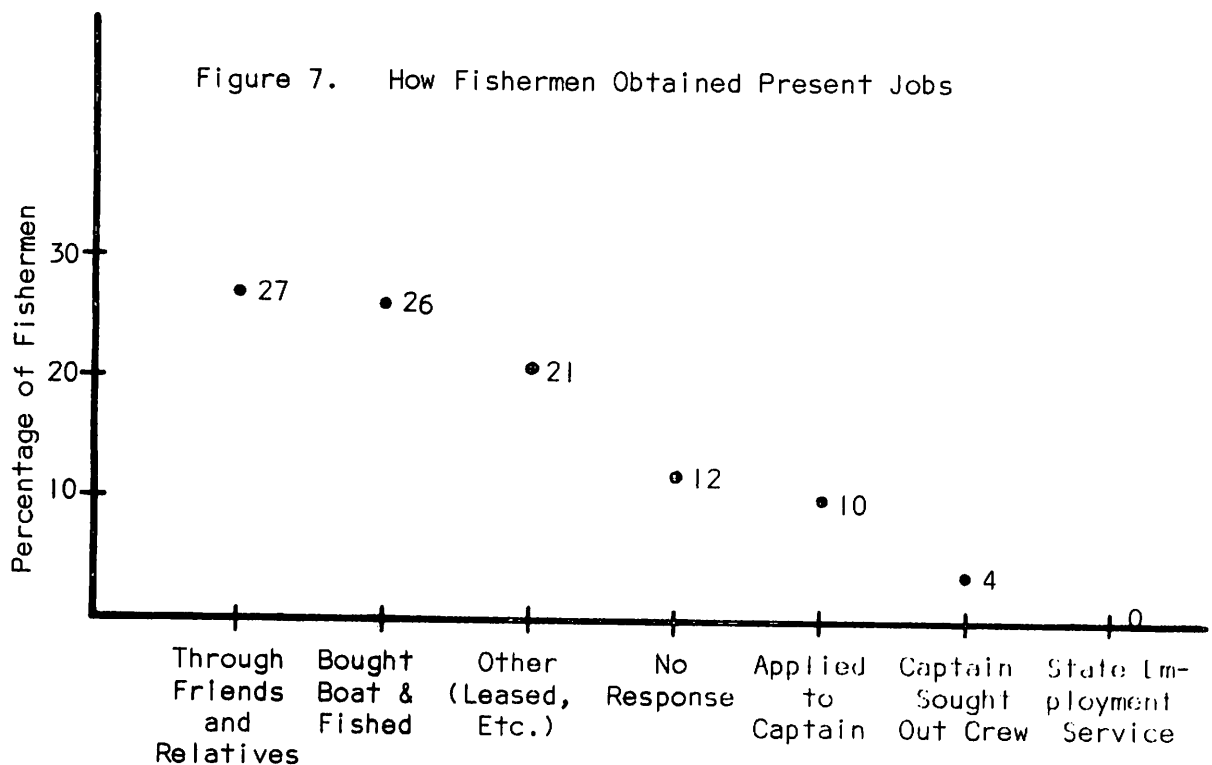
Since unlimited entry currently prevails--employment magnitude cannot be accurately deduced. Conceivably all citizens could enter the fishery--although few would make expenses.

2.34 How is Employment Obtained?

A closed society appears to exist within the fishing industry. This is especially apparent to those seeking employment. Few job opportunities ever appear in normal employment channels. For example, in answer to the question "How did you get your present job as a fisherman?", none used the State Employment Service. More than one-fourth of all jobs were obtained through contact with friends or relatives. On the other hand, about one-fourth simply bought a boat and fished. Other

responses are shown in Figure 7.

As experienced fishermen become involved in career training programs as teachers, advisors, and participants, it seems probable that employment opportunities will become available through their active involvement. In essence, the experienced fisherman's involvement in training programs should tend to make the students "insiders" and assume the role of "friend" in the employment picture. The judicious selection of a respected,



experienced, fishing-methods teacher may be paramount to the acceptance of students by the fleet.

2.35 Oregon fishermen seem reasonably confident that employment opportunities will either remain the same or increase in the 1971-73-75 period. As indicated in Figure 8, a slight increase is projected.

2.4 Training of Fishermen.

The need for fisherman training and the types and methods of training which would be most useful strikes at the heart of this study.

2.41 Oregon fishermen believe that pre-job fisheries training would be of "some" or "lots" of value by a

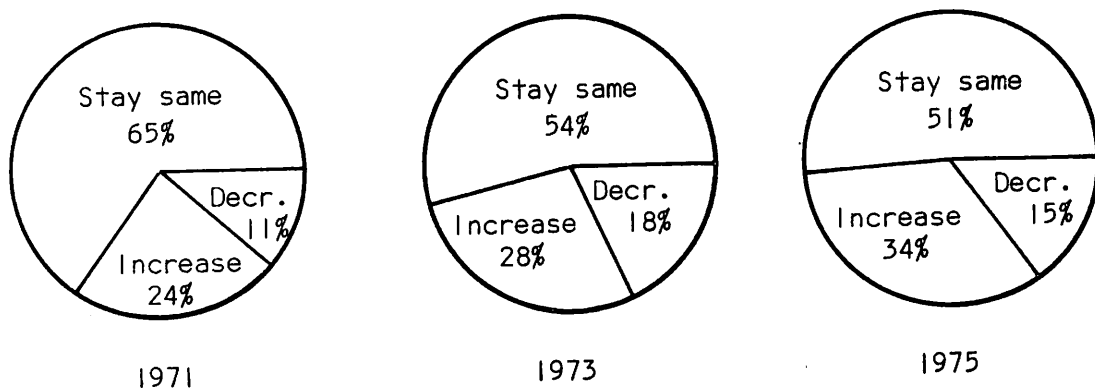


Figure 8. Will Employment Opportunities for Oregon Fishermen Increase, Decrease, or Stay the Same, as Compared with 1970?

four to one margin, Figure 9. This is reinforced by the willingness of nearly two-thirds of the respondents to cooperate (at least in spirit) in the establishment of a fisheries manpower training program--by serving as an advisor, Figure 10. Although 40% of the total group indicated willingness (but lack of time) to help, some of this interest can probably be harnessed as an aggressive training program develops.

2.43 A wide variety of skills are indicated by fishermen as needed. In Figure 11, results from two separate groups are shown. The "select" sample is response from 27 successful "highline" fishermen. The "random" sample shows response from 160 fishermen. Differences do exist, but the uniformity shows a strong similarity of skill identification.

The major items relate to boat maintenance, navigation, care of the catch, and equipment operation. Several subjects deal with business management and record keeping. Not surprisingly, the basics of "reading, writing, and arithmetic" are also considered.

2.43 Types of Training Preferred.

Several types and combinations of vocational training methods were offered to fishermen. Results are shown in Table 1. The first choice, occupational workshop training for employed fishermen, probably reflects the response

Figure 9. Fishermen Estimation of Value of Pre-Job Fisheries Career Training

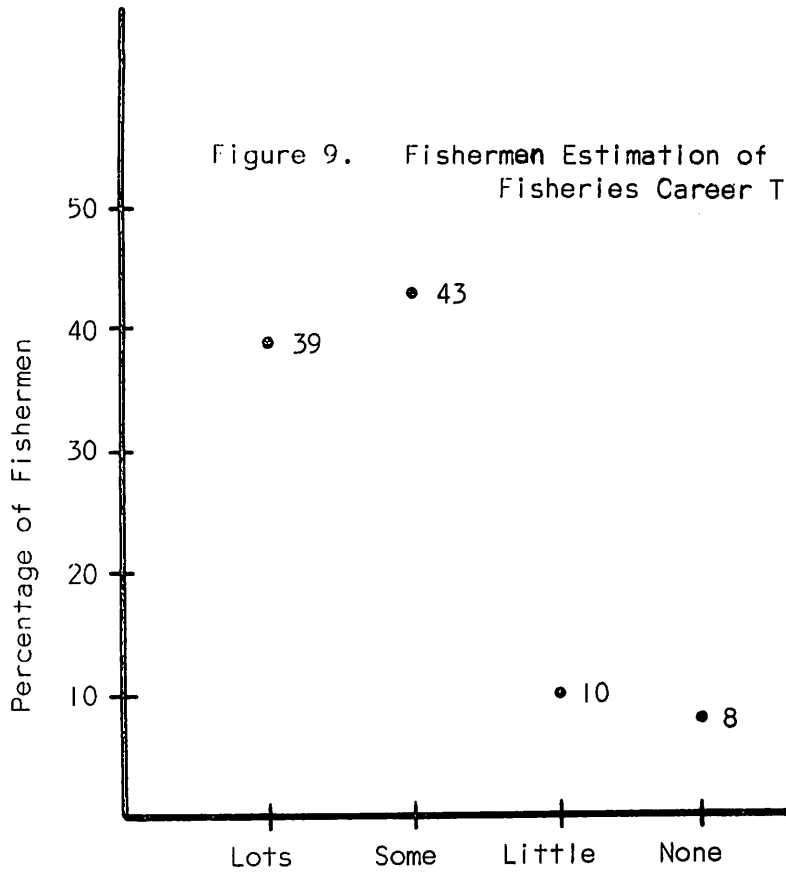


Figure 10. Willingness of Fishermen to Serve as Advisor to Fisheries Manpower Training Program

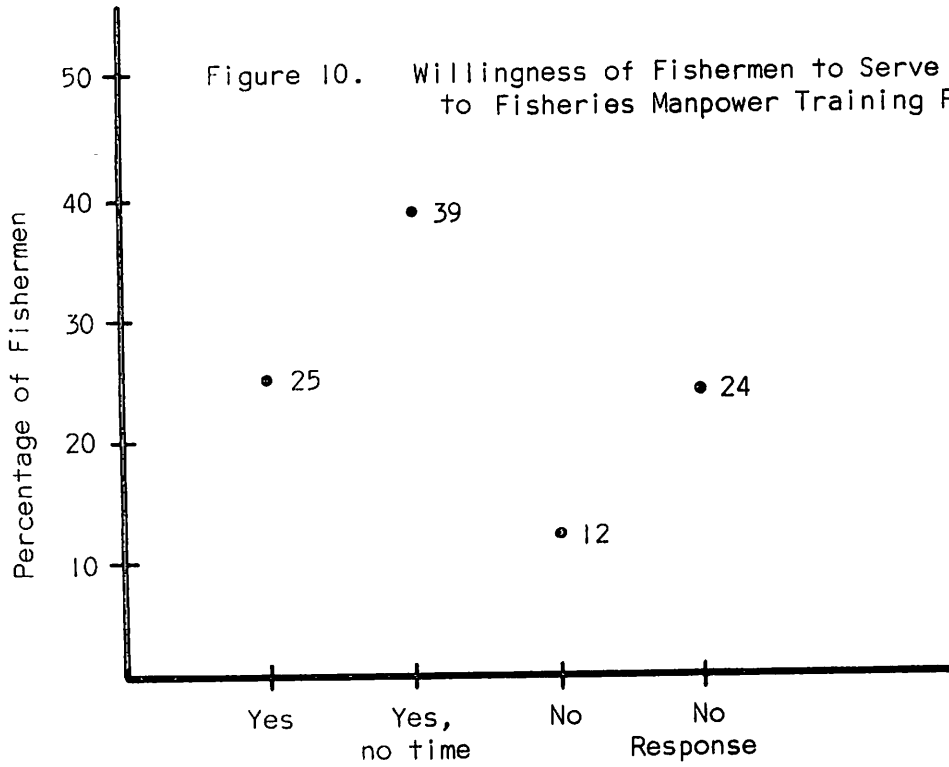


Figure 11. Skills Needed for Success as an Oregon Commercial Fisherman



Table 1
Fisheries Vocational Training Preference

	Preference											Rank
	1st		2nd		3rd		4th		5th		Total Value	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value		
Pre-job training at high school level	16	80	14	56	20	60	13	26	18	18	240	4
Pre-job and on-the-job training at high school level	44	220	29	116	6	18	8	16	4	4	374	2
Occupational workshop training for employed fishermen	56	280	16	64	20	60	5	10	9	9	423	1
Two-year college level fisheries training	3	15	5	20	11	33	23	46	30	30	144	5
Two-year college level fisheries training and on-the-job training	18	90	20	80	18	54	21	42	9	9	275	3

experienced by marine extension and community college programs around the country. Existing fishermen welcome useful course work which is designed to make better fishermen out of them. There are many opportunities for workshops and short (a week or two to a term) courses covering a wide variety of technical (e.g. hydraulics) and general (e.g. accounting) subjects.

The second and third choices both indicate the pragmatic approach of classroom and on-the-job training programs. *Successful fishermen appear to be eminently practical men. On-the-job training would, perhaps, tend to weed out the unsuited. Continued pure classroom training may waste the time of student and teacher alike.*

3.0 Career Training Survey of Oregon Seafood Processors.

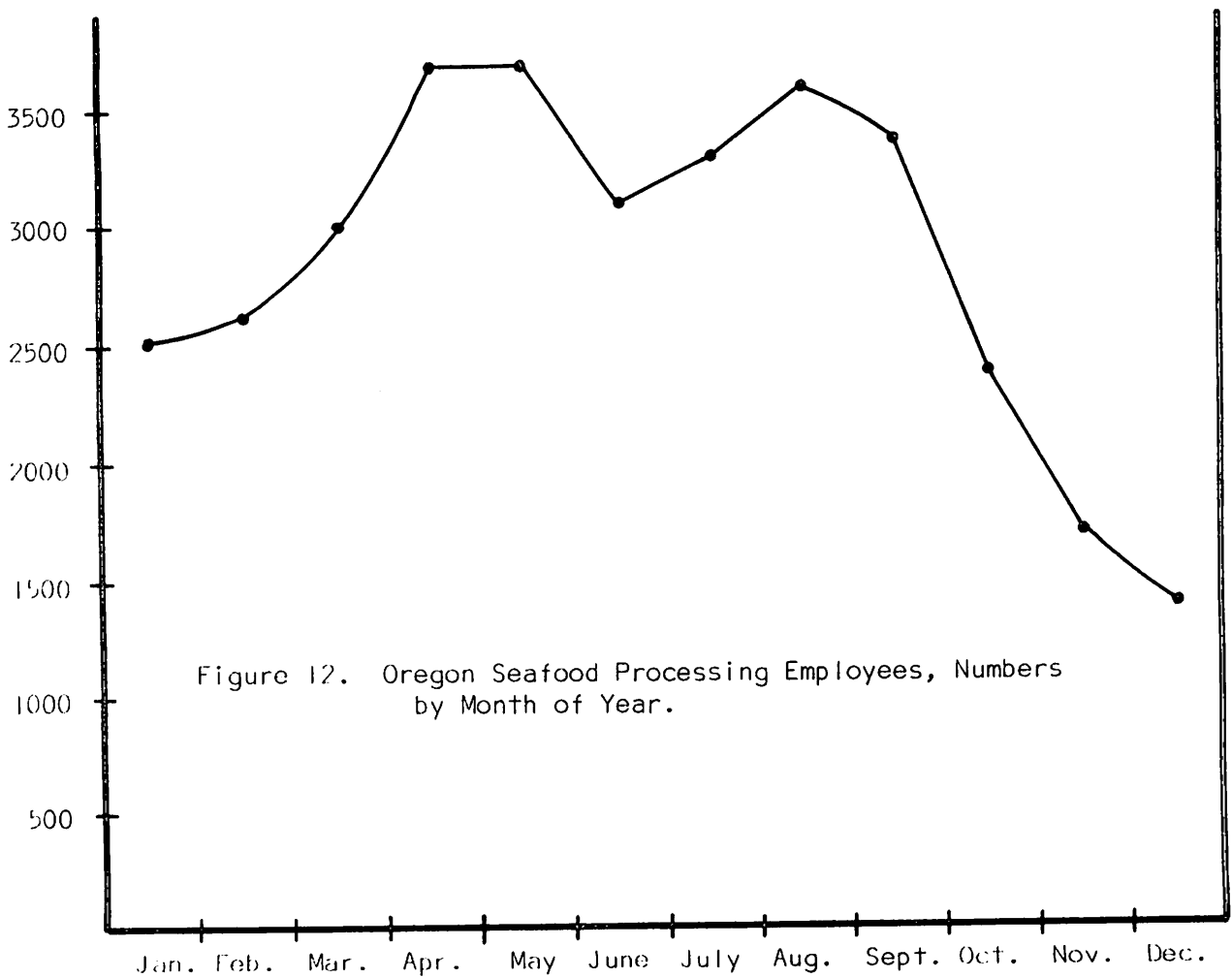
Questionnaires were returned from 10 major seafood processing firms in Oregon. These firms represent more than 50% of seafood processing employees in Oregon.

3.1 Includes the following standardized occupational titles and numbers (1):

- 525.884 General Fish Processing
- 529.887 Shellfish Processor
- 521.887 Shellfish Shucker
- 521.885 Fish Smoker

3.2 Profile of Oregon's Seafood Processing Industry.

Oregon seafood processors handled \$50 to \$60 million worth of seafood in 1969 (4). Employment by month varies from a low of about 1,500 in November-December to peaks of more than 3,500 employees in April-May and August, Figure 12.



Most plants process a variety of seafood commodities, Table 2. In winter, variety is limited to groundfish and crabs,

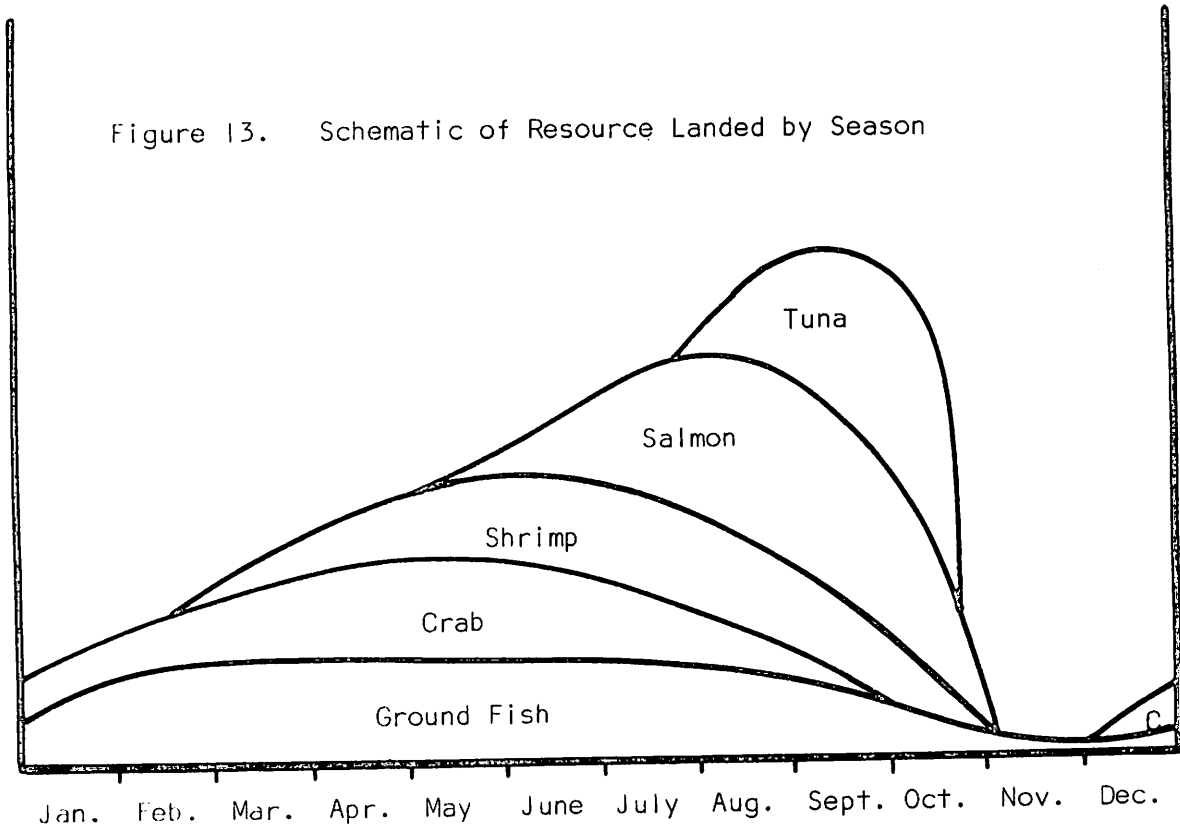
Table 2
Types of Commodity Processed* (10-Plant Sample)

Salmon	8
Dungeness Crab	7
Tuna	5
Groundfish	5
Shrimp	5
Clams	1

* Indicates product handled by plant.

plus some reprocessing. In spring and summer, shrimp, tuna, and salmon add to the workload, Figure 13. Weather contributes heavily to the sporadic employee use in fall and winter. Eight of the firms responding had been in business more than 15 years. The other two had operated for less than five years.

Figure 13. Schematic of Resource Landed by Season



3.3 Employment as a Seafood Processing Plant Worker.

Employment opportunities in Oregon seafood plants generally include three types of positions: supervisory-managerial in both product handling and office management; regular crew "line" employees; and seasonal employees. The most common work assignment is on the processing lines. *Often several "lines" operate simultaneously on separate commodities. Crews are sometimes distinct and non-overlapping--working only when the*

commodity--for example, crab, shrimp, or groundfish--is available. Other plants may alternate "lines" on two or more products.

3.31 Income varies with assignment and skill. Most "line" employees work on a production basis, with a guaranteed minimum hourly wage plus pay for poundage above minimum production. On an hourly average basis, supervisors can expect to receive \$4.35, regular employees \$2.93, and seasonal workers \$2.54.

Benefits vary. Most plants indicated provision of Social Security, hospitalization, and unemployment benefits. Some offer bonuses and other attractions.

3.32 All plant managers, responding to this survey, were optimistic about the future of seafood processing employment in Oregon--indicating either an increase or maintenance of 1970 levels in 1971-73-75, Figure 14.

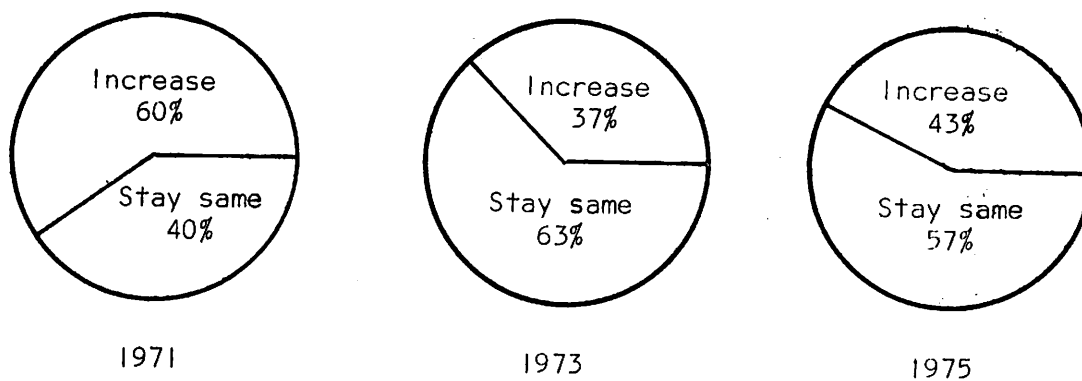
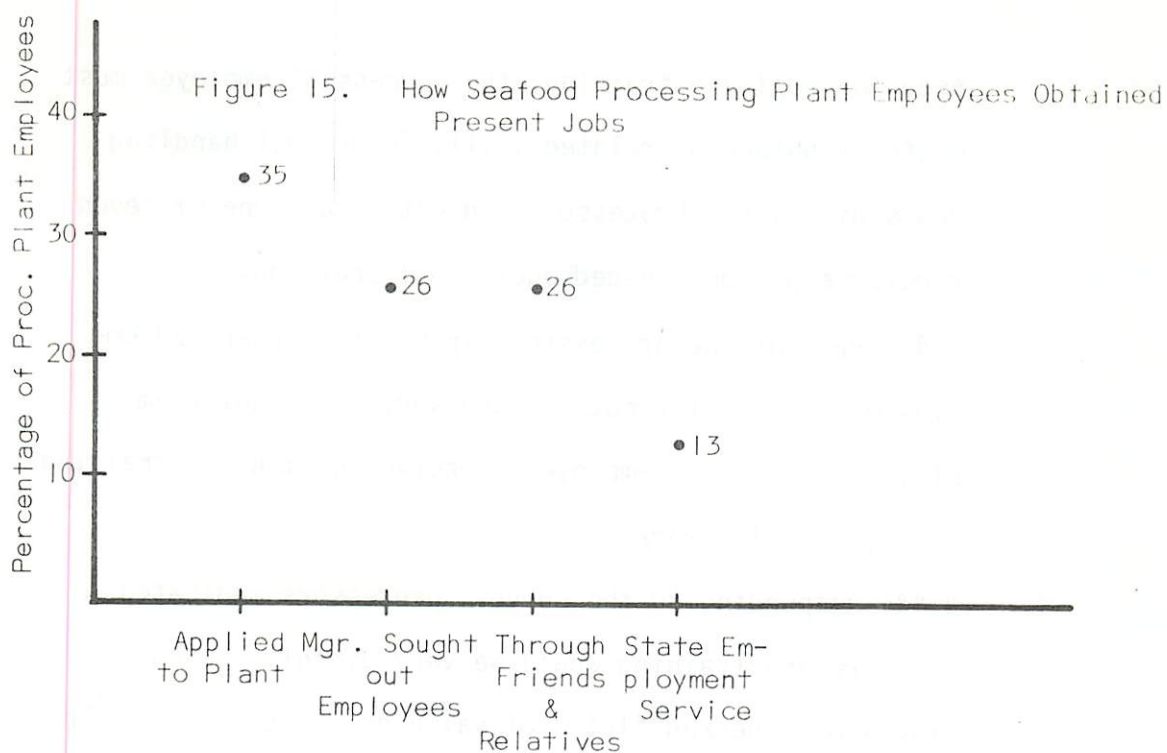


Figure 14. Will Employment Opportunities in Oregon Seafood Processing Plants Increase, Decrease, or Stay the Same as Compared with 1970?

3.33 Employment stability varies with catch, weather, season regulations, and market conditions. During the peak of the season, the plant crew may work long hours with demand for physical stamina. Supervisory-managerial employees can expect full-time employment; regular "line" employees about nine months (depending somewhat on commodity seasons). Seasonal employees may work for two weeks to two months. *Since dexterity commands a premium in processing by hand, beginning employees are closely monitored for production. Those with manipulative skills quickly join a regular crew while those with lesser talent are replaced. Methods training could probably increase individual and plant production.*

3.34 Seafood processing plant employment is obtained through more normal channels than a job as a fisherman. The majority of positions, however, are obtained through close contact with the processing plant, other employees, or friends, Figure 15. About 13% of the jobs are obtained through the State Employment Service.

3.35 Magnitude of employment opportunity is difficult to assess. *Interviews with plant managers indicate a rather consistent turnover rate. Most "line" jobs are held by women and often reflect the family's "second" job. The importance placed on this source of employment is indicated by the distance (up to 30 miles)*



which car-pool-loads of employees travel for processing plant work. Some "line" employees in Oregon have worked more than 15 years. Trends toward mechanization may reduce employment opportunities. Shrimp "peeling" machines have eliminated several hundred jobs in the past few years.

3.4 Training of Seafood Processing Plant Employees.

3.41 Although the seasonal influx of nearly one-half of all processing plant employees may indicate a limited

need for employee training, the successful employee must master a number of related skills in product handling and sanitation. Processors indicated that one of seven regular employees needed additional training.

3.42 Half of the processing firms offer organized employee training for both supervisory and regular employees. Seasonal employees receive rudimentary training before starting work.

3.43 Responding to the survey, processors indicated that pre-job training would be very useful. Seven processors checked "lots" of value or "some" value. Two felt it would be of "little" value. Processors are generally willing to advise and aid in setting up training programs.

3.44 Of the types of vocational training programs best suited to processing employees, processors chose pre-job and on-the-job training at high school level followed by community college combined with on-the-job and pre-training workshops for seasonal workers. For permanent employees, short courses and special subject workshops were suggested.

3.45 Skills needed by processing plant employees are separated into supervisory and "line" worker segments, Table 3.

Table 3
 Skills Required by Supervisors and Line Workers
 in Oregon Seafood Processing Plants
 (By Numbers of Responses from Processors)

Supervisors	Responses	"Line" Worker	Responses
Labor-Management Relations	10	Product Handling (Sanitation)	7
Elements of Supervision	9	English	5
Human Relations	8	Business Principles	3
Cost Control	6	Handling Equipment	2
Management Controls	6	Machine Operators	2
Communications	5	Marketing	2
Employee Development	5	New Materials	1
Safety Training	3	Customer Relations	1
Reading	1	Management Skills	1

For supervisors--human relations, labor relations, supervision, and personnel management are listed as prime needs. Safety and technical subjects were also cited.

Seafood plant workers require skills in product handling (including sanitation) operation of equipment, plus basic skills of reading and business principles.

4.0 Career Training Survey of Oregon Charter Boat and Marina Operators.

Recreationally-oriented charter boat and marina operations appear to be a growth industry on the Oregon coast. Tourism is the third largest industry in Oregon--and growing. Ocean-related recreation should capture a large share of this growth. In 1968, recreational salmon anglers made 290,000 trips offshore and landed 283,000 salmon.

The presence of fish to harvest, safe convenient harborage, and access to the water through boat launching areas, well-equipped marinas, or experienced charter boat operations are important keys to drawing clientele to an area as patrons.

4.1 Includes the following standardized occupational titles and numbers (1):

- 452.868 Charter Boat Operator (Hunting and Fishing Guide)
- 197.133 Fishing Vessel Captain
- 342.867 Boat Dock Operator

4.2 Profile of Charter Boat and Marine Industry.

About 40 charter boat and 65 marina businesses operated on the Oregon coast in 1970, employing between 500 and 600 people. Although some of these businesses offer a combination of sporting goods, boat rental, and charter boats, most ocean charter boat operations are separated from marinas.

4.21 An ocean charter boat operation may involve one boat, several boats with the same owner, or

several boats under "lease" arrangement operating under one business enterprise name and management. Charter operations are highly seasonal and sometimes sporadic. Charter service is usually available from May to October. Peak operations occur in July and August. *To a charter operator on the Oregon coast, "fish" means salmon. Groundfish--rockfish, lingcod, etc.--are sought on slow days. The recent abundant albacore tuna schools have drawn interest from some charter operators. Tuna fishing is a blue-water sport requiring faster and larger boats for runs of up to 100 miles offshore.*

For any ocean charter work, a sound, well-outfitted boat is required. Safe, dependable harborage and access to a protected bar or jetty are important. A vital requisite is adjacency to good fishing grounds. Fundamental, for repeat business, is a successful technique in handling people.

The charter boat captain must be licensed by the U. S. Coast Guard. Three types of licenses are available: 1) Motorboat Operator's License (up to six passengers, valid only in specified ocean areas; 2) Inland Operator's License (internal waters only); or 3) Ocean Operator's License (no limit on passengers or area of ocean).

4.22 Marine businesses service three main client groups:

1) those wishing to rent boats, motors, gear, and other goods for recreational fishing or boating (primarily within the coastal bays); 2) those sportsmen with boats that wish aid in launching plus bait and supplies; and 3) moorage services for commercial fishing vessels and larger recreational boats.

Catering to both recreational and commercial boats may be the key to successful marina operations. Although seasonally concentrated, the period of operation for marinas can be considerably longer than for ocean charters--especially for the enterprising operator.

4.23 Both charter boat and marina enterprises require managers and employees that are alert to the needs and attitudes of clientele and attuned to local resource availability. *Successful operators have an intimate knowledge of both human nature and how to enjoy, harvest, and utilize natural resources. Most Oregon firms responding indicated a business history of more than ten years.*

4.3 Employment in the Charter Fleet or in Marinas.

Although employment in the charter boat and marine operations may take many forms, there are certain constants.

4.31 First, this is a people-oriented industry. Fish are essential, equipment and handling skill is required, but treatment of clients is a key to return and continuing

business.

4.32 For both charter boat and marina operations, the season is short, three peak months plus a month or so on either end. During the season 16- to 18-hour days, seven days a week, are the rule, weather permitting. Supervisors and regular employees can anticipate four to six months of work. Seasonal workers can expect two weeks to two months of work.

4.33 Salaries for both supervisory and regular employees are normally figured as a percentage of the gross income of the firm. Seasonal employees are salaried at an average of about \$300 per month. Benefits normally include Social Security, hospitalization, and unemployment insurance.

4.34 A closed employment status is indicated. Three out of five jobs are obtained through friends or other employees. The other two are found through applying to the firm. None are located through employment services.

4.35 Those in the business believe the employment opportunities for 1971-73-75 will at least hold their own with chances for a slight increase for the next few years.

4.4 Training Requirements.

Charter boat and marina firms responding to the survey indicate unanimously that training would be of "some" value to the industry. All indicated willingness to cooperate (time permitting)

in advising the training program.

4.41 Most of the firms responding offered some form of employee training but no supervisory training. Corollary to this, unskilled employees were cited as needing skill improvement.

4.42 Occupational workshop training for permanent employees was cited as the method of choice. Pre-job and on-the-job training at the high school level were also listed.

4.43 Of the skills for which training is required, supervisors were cited as needing human relations. Regular employees should be trained in boat and gear maintenance, occupational skills (*probably including fishing gear*), fishing "strategy", and mathematics.

4.5 Discussion of Results and Suggestions for Implementation of Training Programs for Oregon Charter Boat and Marina Employees.

These businesses require a combination of service to the public and talent in a number of technical fisheries and business areas.

4.51 *Success at the charter boat and marina operation is akin to tempering by fire. Human relations and practical psychology are keys to success. At the same time, talent to start a balky outboard motor, physical strength to empty a swamped rowboat, and business acumen to stay on the black side of the ledger are also required.*

4.52 Successful 10-week short courses for fishing guides have been conducted by the OSU Cooperative Extension Service in Lincoln, Coos, and Curry Counties. Southwestern Oregon Community College cooperated on the Coos County program. With this experience as a base, a valuable training program can be continued. Required are courses in boat handling and safety, navigation, engine maintenance, electronics, finfish and shellfish life histories, harvesting methods, first aid, business management and record keeping, legal responsibilities, state laws, and related subjects. Human relations should occupy a prominent place in the training program.

It seems essential in attempting to set up a training program for charter boat and marine operators to involve existing groups such as the Oregon Guides and Packers in any segment of development.

5.0 Career Training Survey of Vessel Construction and Maintenance Firms.

5.1 Includes, but not limited to, the following standardized occupational titles and numbers (1):

- 806.381 Shipfitter
- 806.884 Boat Outfitter
- 860.887 Shipwright Helper
- 860.131 Foreman, Boat Builder

014. Marine Engineering

600.280 Machinist

5.2 Profile of Vessel Construction and Maintenance Firms.

About 42 fishing vessel construction and maintenance firms operated on the Oregon coast in 1970. Eight of the firms returned questionnaires. These companies perform one or all of the following functions: 1) construction, 2) major repair and modification, or 3) dismantling of vessels. This classification differs from 7.0 (Marine Supply Firms) in that equipment sales and repair is not the fundamental service offered. Marine shipyards, marine-oriented machine shops, and marine welders are included in 5.0.

5.21 Several Oregon firms are successful in the highly competitive business of new boat construction. *Readily identifiable and useful designs have become hallmarks of some firms. Not all new boats required by the Oregon fleet, however, are built in Oregon. Some even come from the Gulf and South Atlantic coasts.*

5.22 Major vessel repair and remodeling is an important task for Oregon firms. Drydocking and marine railways, necessary for haul-out and hull repair, are scarce and costly to provide. These facilities are sometimes provided by port commissions.

5.23 Vessel construction and maintenance firms appear to be experienced and stable. Of the eight firms

responding, three had been in business 11 to 14 years and five for more than 15 years. Employment requirements for 1971-73-75 will stay about the same as for 1970 with two firms indicating an increase by 1975.

5.24 Industry viability is to a degree dependent upon the availability of construction and maintenance loans from federal, state, and local sources. Some monies have been made available through National Marine Fisheries Service Loan and Vessel Mortgage and Loan Insurance funds. To date, Oregon coastal banks and other loan businesses have shown a marked reluctance to loan money for boat construction and repair.

5.3 Employment in Vessel Construction and Maintenance Firms.

5.31 Employment in vessel construction and maintenance firms require specialized skills in such subjects as shipwright, machinery, welding, etc. Possession of these skills, however, is not a guarantee of employment.

5.32 Assuming that the firm has contract work available, this employment is year-around in nature, Regular employees may plan on 10 to 12 months of work. Some short-term employees are added as needed.

5.33 Wages for supervisory and regular employees are usually paid on an hourly basis with a percentage of gross business sometimes included. Supervisors may

average about \$5.67 per hour, regular employees \$4.74, and short-term employees slightly less than \$4.00 per hour. Benefits include Social Security, hospitalization, unemployment compensation, and sometimes a training allowance.

5.34 Most jobs are obtained through personal application to the prospective employer. Employees and friends are often helpful in providing leads. One firm indicated use of the State Employment Service when searching for special skills.

5.4 Training Requirements for Employment in Vessel Construction and Maintenance.

At the present time, the labor supply exceeds the demand but the firms indicated that upgrading of employees would be of benefit to them.

5.41 More than one-half of the firms responding provide some sort of employee training but only one firm trained supervisors.

5.42 About three-fourths of the firms indicated that training would be "lots" or "some" value. The same proportion would be willing to advise in establishing a program.

5.43 As to best-suited vocational training, vessel construction and maintenance firms indicated that occupational workshop training for permanent employees

is the first choice. Pre-job and on-the-job training in high schools were second and pre-job and on-the-job training at the community college level ranked third.

5.44 Skills required by vessel construction and maintenance firms can be divided into training opportunities for supervisors and regular employees, Table 4.

Table 4

Skills Required by Supervisors and Regular Employees
of Oregon Fishing Vessel Construction and Maintenance Firms

(By Number of Responses)

<u>Supervisors</u>	<u>Responses</u>	<u>Regular Employees</u>	<u>Responses</u>
Cost Control	3	Written and Oral Communications	3
Safety Training and Fire Prevention	3	New Materials and Processes	3
Labor-Management Relations	2	Occupational Skills	3
Personnel Management	2	Blueprint Reading	3
Organization of Tasks	2	Sketching	2
Employee Development	2	Shop Maintenance	2
Human Relations	2		

6.0 Career Training Survey of Oregon Aquicultural Firms.

6.1 Includes the following standardized occupational titles and numbers (1):

436.884 Marine Life Cultivator
(oyster culture)

529.885 Shellfish Processor

521.887 Shellfish Shucker

6.2 *Oysters are the only marine animal currently being privately cultured in Oregon. The crop is valued at several hundred thousand dollars annually. Sea farmers in Tillamook Bay produce about 90% of Oregon's oysters. Oysters are also grown in Yaquina and Coos Bays. A complete overhaul of oyster land regulations in the 1969 Oregon legislative session has reorganized and stimulated interest in oyster culture. Lack of seedstock and the need for market expansion currently shackle production. Hatchery techniques for producing seed are reaching the practical stage.*

The next ten years should see a steady increase in Oregon oyster production. Heavy industrial development in Oregon estuaries, however, could wipe out oyster habitat and with it the oyster enterprise.

Other aquicultural crop possibilities include clams, mussels, and chum salmon. Potential thermal effluent from nuclear power plants could provide additional stimulus to sea farming.

Past and some present aquiculture was only slightly removed from wild hunting techniques. Oyster seed was planted on flat inter-tidal beds, cultivated slightly, inspected occasionally, and harvested. Recent variations involve stake, raft, and tray culture, genetic manipulation, and perhaps dequaration as a part of processing.

Advanced techniques portend the need for vocational training.

Training to the Bachelor's level probably will be required for hatchery management and similar positions. In certain areas, Coos Bay for example, the oyster (or other aquicultural commodity) industry could grow to the point that a community college would offer training in technical aquiculture. This most probably would require a combined curriculum of biology, agricultural engineering, processing technology, sanitation, business management, and marketing.

Aquiculture may never be a giant enterprise in Oregon but oyster production alone could be increased ten to twenty times over present production-using available habitat. Techniques may develop to make clams, mussels, and fish a sea-farming enterprise.

7.0 Career Training Survey of Oregon Marine Supply Firms.

7.1 Includes, but not limited to, the following standardized occupational titles and numbers (1):

Clerical and Sales Occupational Titles--plus

- 828.281 Electronics Mechanic
- 823.281 Radio Mechanic
- 621.281 Hydraulic Tester
- 625.281 Diesel and Gasoline Engine
Mechanic (Marine)
- 637.281 Refrigeration Mechanic

7.2 Marine supply firms are those businesses which offer sales and usually service of major marine supplies including electronics, refrigeration, commercial fishing gear, motors, and small marine hardware. These firms are known as ship's chandlers in other sections of the country.

There are approximately 80 marine supply firms on the Oregon coast. Of the 16 firms contacted, 12 responded to the questionnaire.

7.21 Marine supply firms appear to be stable in Oregon. All respondents had been in business for at least six years. Seventy-five percent were active for more than 15 years. Nearly 40% of the firms anticipated an increase in business through 1975, while 60% felt that business would remain at the existing 1970 level.

7.22 Marine supply firms along the Oregon coast usually carry a multi-line inventory of marine automotive and general hardware items. Some are specifically electronics, radio, refrigeration, or engine firms.

Others service both recreational and commercial needs for fishing gear.

7.3 Employment with a Marine Supply Firm.

7.31 Employment with a marine supply firm requires general skills in merchandising and customer relations. Specialized firms demand a high degree of technical skills in electronics, gear, motors, etc.

7.32 Employment is normally year-around in nature with peak employment centered around major fisheries seasons from April to September.

7.33 Wages depend on assignments. Supervisors may average nearly \$1,000 per month. Regular sales employees are paid an average of \$3.10 per hour while short-term employees make about \$2.29 per hour. Specially skilled electronics, refrigeration, and other workers may be paid a salary plus commission.

Benefits may include Social Security, hospitalization, unemployment insurance, bonuses, and in one case life insurance.

7.34 Employees are obtained principally through personal application to the firm or by the employer seeking out the specific candidates. Minor opportunities occur through friends, other employees, and the State Employment Service.

7.4 Training Requirements for Employment by Marine Supply Firms

7.41 Little employee training for either supervisory or regular employees are offered by Oregon marine supply firms.

7.42 Six out of eight firms indicated that pre-job training would be valuable. The same proportion would be willing to advise in setting up a program.

7.43 Of the types of training most suitable, marine supply firms specified preference for pre-job and on-the-job training at the high school level emphasizing distributive education. For present employees, occupational workshop training was indicated as of value.

7.44 Training areas for supervisors and regular employees are shown in Table 5.

7.5 Discussion of Results and Suggestions for Implementing Training Programs.

Survey results indicated that most training needs for marine supply firm employees could be provided in two ways. One, from the salesmanship and merchandising aspect, the requirements of marine supply firms do not differ significantly from those of any other distributive business. Thus, training required in merchandising display should and could be provided through regular distributive educational programs.

Specific training skills relating to major lines of marine equipment should be and most normally are provided by the .

Table 5
 Training Areas Beneficial to Supervisors
 and Regular Employees of Oregon Marine Supply Firms
 (By Number of Responses)

Supervisor	Responses	Regular Employees	Responses
Cost Control	3	Written and Oral Communications	3
Safety Training and Fire Prevention	3	New Materials and Processes	3
Labor-Management Relations	2	Occupational Skills	3
Personnel Management	2	Blueprint Reading	3
Organization of Tasks	2	Sketching	2
Employee Development	2	Shop Maintenance	2
Human Relations	2		

manufacturer.

Some specific training opportunities appear to be available. All employees of marine supply firms should understand the resources for which they are providing either materials or services. It is questionable that many of them have an adequate understanding of Oregon marine resources or management procedures. Further, information on emerging methods of

resource harvest and extraction could be provided in a training situation.

8.0 Interest and Involvement of Oregon Community Colleges and High Schools in Fisheries-Related Marine Career Training.

Questionnaires were sent to 83 high schools, ten community colleges, and three federal training schools. Geographically, the survey covered schools on the Oregon coast and up the Columbia River to Hood River County. A tabulation of questionnaire responses are shown in Table 6. Responses were obtained from 60 high schools, ten community colleges, and two federal training schools.

8.1 Only one high school offered fisheries vocational courses. An additional 15 high schools were interested in establishing courses. More than 200 students were identified as working in the fishing industry. Most high schools indicated that although fisheries vocational courses could be worthwhile, the program should be of limited scope based on the realities of job opportunity. Consensus seemed to favor holding the training in a detached facility to maximize practical on-the-job training. A number of schools felt more pertinent and beneficial priorities exist to fill the curricular needs of high school students.

8.2 Both federal training schools that responded showed an interest in developing fisheries-related training programs.

8.3 Of the ten community colleges responding, four presently offer some activity related to the fishing industry. Chemeketa

Table 6

Fisheries-Related Marine Career Training Interests in Certain Oregon Community Colleges, High Schools, and Federal Training Schools.

Question Asked	High School	Federal School	Community Colleges	
Questionnaire	Returned	60	2	10
	Mailed	83	3	10
Schools Offering Vocational Education	36	2	10	
Schools not Offering Vocational Education	24	0	0	
Students Taking Vocational Education	10,516	578	23,492	
Cost Average per Student Taking Vocational Education				
16-Week Course	\$107	Not Known	\$107	
36-Week Course	\$674	Not Known	Not Known	
2-Year Course	\$1,000	\$4,500	\$1,200	
Course Designated as Fisheries Job Training	0	0	0	
Fisheries Biology Training	0	0	0	
Interest in Establishing Training				
Definite	4	2	1	
Some Interest	11	0	0	
No Interest	22	0	9	
Method of Choice for Establishing Fisheries Training				
Establish Vocational Fisheries Training Courses	6	1	1	
Use Present Vocational Facilities & Adapt Course Toward Fisheries Training	9	1	1	
Establish a 2-Year Course	5	0	0	
Offer Educational & Vocational Training Courses at a Fisheries Center	27	1	0	
No Answer	15	1	9	

and Lane Community Colleges have offered a ten-week course in commercial salmon trolling. Linn-Benton provides short-course training in commercial salmon trolling and safe boating. Mt. Hood has established a fisheries science technical course. Clatsop Community College, as previously mentioned, offers several marine-related two-year curricula. -

Community colleges not interested in fisheries-related vocational training felt that the demand for training, other than short courses, is not justifiable with the limited job market.

8.4 Interest exists for the establishment of fisheries-related marine career training at Oregon high schools and community colleges to more than serve the potential job opportunities. High school districts, within close proximity, may wish to explore the potentials for joint coursework with one another or in a cooperative relationship with a community college.

9.0 Comments on Existing Curricula at Both High School and Community College Levels in Fisheries Vocational Training and Fisheries Technology.

A collection of information and curricula from several parts of North America accumulated during this project. These materials were examined for scope and sequence. An annotated list follows:

9.1 High School Programs.

9.11 Valdez, Alaska, High School.

A detailed course outline is available for this

one-year course. The general objective is to acquaint the student with the fishing industry in Alaska.

Major study segments include seamanship and navigation, meteorology, practical fishing, communications, personal safety, boat building, power plant maintenance and repair, oceanography, marine biology, scientific commercial fishing, preservation of the catch, small business methods, knots, ropes, and nets, and summer field experiences.

9.12 Ilwaco, Washington, High School.

This program, initiated by Sea Resources, Inc. and conducted jointly by Ocean Beach and Naselle-Grays River School Districts, involves students from Naselle and Ilwaco High Schools. Subject matter is divided into two broad curricula: 1) fishing techniques and fish biology, and 2) marine hull and engine repair. The program served a total of 36 students this past year. Classes are held at a vacated Washington State fish hatchery located at Chinook, three hours a day, five days a week. Both commercial and charter fishing problems are included in the curriculum. Students are required to complete 540 hours of instruction and three months of sea experience.

9.13 Ketchikan, Alaska, High School.

The Sea-Ed project at Ketchikan Gateway School is

patterened after an East coast Canadian program. In the several classes, 243 pupils are enrolled. A yearly program includes 360 hours of class instruction and 40 to 50 hours at sea. Objective is to prepare young men and women to work at sea or in shoreside marine industries. The program covers portions of three school years with specialized options in advanced marine biology, power mechanics, electronics, or advanced sea education available in the third year.

9.14 Gloucester Vocational School, Massachusetts.

This school developed a specific and precise course in fisheries and marine technology. Major course of study included fishing gear, nets, deck equipment, marlin-spike seamanship, capture and preservation, piloting, hydraulic equipment, marine and auxiliary engines, electric power, hydraulic winch operating, marine electronics, and welding. We were not able to ascertain the current status of this program or how many students have been involved. However, we do have the detailed course of study available including sample testing material.

9.15 To be successful, a high school marine vocational program must, apparently, be geographically and culturally close to the sea; be well-planned with inputs from the marine community; and have strong backing from

school administration.

9.2 Community College Curriculum Plus the Work-Study Program.

9.21 Clatsop Community College.

Clatsop offers several marine-related two-year curricula. A newer one deals with commercial fishing technology. The program is designed to provide an individual with marketable skills in commercial fishing. Instruction consists of a three-part program to prepare students with knowledge and skills required in commercial fishing programs for crab, salmon, groundfish, shrimp, and tuna. A class outline for a full year, 12-credit course is available.

9.22 Clover Park Education Center, Lakewood Center (Tacoma), Washington, offers a 40-week course, total of 560 hours in the classroom, combined with 12 weeks cooperative work at sea to provide the practical experience necessary to become a commercial fisherman. A course outline is available.

9.23 The bulletin, "Developing Alaskan Fisheries Through an Educational Program" by John P. Doyle of the University of Alaska (5), provides an outline for a proposed associate degree program in fisheries technology. The course outline covers a total of six 13-week semesters. This program is organized more on formal college lines with specific courses in fishing gear, seamanship, safety,

ocean resources, hydrology, vessel operation, mathematics, navigation, biology, power units, food technology, hull design, fisheries science, statistical procedures, food chemistry, refrigeration, instrumentation, business accounting, English, graphics, and public speaking. As far as we know, this program has not been initiated. Some compelling reasons are presented for the necessity of embarking on a program of technical training for fishermen and fisheries processors. These reasons include rapidly changing technologies and competitive use sophistications in the fishing industry.

9.24 The Canadians, especially on the Nova Scotia coast, have led in vocational programs for fishermen. We have available a brief curriculum description of a course which aims to train "deep sea fishermen, able fishermen, fishing boatswains, and other employee classifications". Other information on this program may be available through the Canadian Department of Fisheries, Ottawa.

9.25 The University of Rhode Island Department of Fisheries and Marine Technology has offered for several years a two-year curriculum in fishing and marine technology through the School of Agriculture. This program has been well accepted and one that could offer some guidance for a fairly sophisticated training program.

10.0 Implementation of Fisheries-Related Marine Career Training Programs.

Although a number of high school, community college, and extension fisheries vocational training programs are underway in the United States, this study emphasizes the localized nature of the problem and the need for continuing development of training opportunities for the many fisheries-related marine industries. From the survey there are audiences available for:

10.01 a multitude of short courses and workshops for mariners in several occupational groupings or in a general sense as specified below. These short courses can be presented by community colleges or through extension educational programs.

10.02 We sense an opportunity for at least a pilot program at the high school level and/or in combination with the community college of certain segments of classroom and on-the-job training.

10.03 There is little evidence, at least at this time, that additional curricula offerings leading to an associate degree are needed.

10.1 A wide variety of short courses and workshops can be successfully conducted in all Oregon ports and in certain inland cities (Figure 11, Page 17). The net mending program at Southwestern Oregon Community College is a good example of a skill-training program which is badly needed throughout the

Oregon net fishing industry. On the other hand, a recent request for a general accounting workshop by Brookings fishermen offers the generalized type of opportunity that community colleges can provide. *It is our opinion that one- or two-day sessions on lubricants aboard fishing boats, electronics, trouble-shooting, boat sanitation, pair trawling, marine insurance, and other specific subjects may best be handled through extension educational projects such as the Marine Advisory Program. There are opportunities where community colleges and extension programs can cooperate in providing one-, two-, or five-day workshops. In a sense, short workshops may serve to identify only the top of the iceberg. This is valuable but, more importantly, may stimulate a delayed second generation effect--teaching the fisherman that he needs training. From this realization, plans can develop for sophisticated in-depth courses.*

10.2 The 1970-71 SWOCC catalog describes courses and curricula programs which are readily applicable to the educational interests and needs of practicing mariners. Identification of a college fisheries-oriented administrative unit and an aggressive information effort through mass media and specially designed brochures to industry will communicate the opportunities available and the college's industry orientation.

SWOCC's Occupational Extension classes, as outlined on Page 20 of the current catalog, suggest two areas available

for immediate exploitation with minimum instructor modification of course structure. These are business classes and management-supervisory development. General concepts and processes, within these curricular areas, can be augmented with fishing industry case histories as easily as with wood products industry examples.

Target clients for business courses could be fishermen, charter boat operators, custom canners, office staffs of marine supply companies, boat builders, and related businesses. An important audience to reach are wives of fishermen, charter operators, and custom canners because it is often they who serve as managers of these small businesses.

The college's curriculum for management and supervisor development can be of service to processors and their supervisory personnel such as foremen and floor ladies. *It cannot be over-emphasized, however, that establishment of rapport with intended clients is a prerequisite to industry's participation.*

SWOCC's experiences with net mending and fisheries refrigeration classes offer encouragement for similarly designed courses in areas suggested by fishermen (Figure 11, Page 17). *Identification of appropriate instructors for these courses is of paramount importance.*

Offering special opportunities for regular two-year degree candidates are SWOCC's courses 2.261 and 2.262--Work Experiences.

Specific evidence is offered in this study that industry members are willing to become involved in programs such as this (Figure 10, Page 16).

There may be an opportunity to work with processors to train quality control technicians with courses in basic seafood technology, sanitizers, quality control, time-temperature requirements, production methods, and Good Manufacturing Practices regulations as determined by the U. S. Food and Drug Administration. The USFDA is developing more sanitation and food handling regulations for seafood processing plants. Some of these new regulations will become effective in 1973 with others to follow. Plant owners and supervisors acting in advisory capacity can give direction to SWOCC planning especially in determining 1) the anticipated needs for in-plant seafood technicians, 2) in-plant personnel training, and 3) whether a special degree curriculum should be developed.

10.3 Fisheries programs in high schools can provide input to the industry. However, it is not our recommendation that high school administrations within the SWOCC service area at this time establish separate and distinct career programs in this field.

10.31 We suggest that the high schools in cooperation with SWOCC begin by integrating marine-oriented experiences into established vocational programs such as welding, gas and diesel motors, electronics, metal

and wood working, business, etc.

Students exhibiting propensity in fisheries vocations may be guided toward internships or work experience aboard commercial fishing or charter boats, in processing plants, or at other industry businesses. This survey solicited responses from fishermen and other industry employers who are willing to participate in on-the-job training programs (Figure 10, Page 16). Names of these from the greater Coos Bay area are available.

10.32 Should one or more school districts wish to propose a pilot career program for the industry, it is our recommendation that this be oriented toward extraction phases. A project to prepare students with entry level skills could be packaged in either a two- or three-year block with summer industry experience.

Curriculum should include the following:

1. Shop

- | | |
|-----------------------------|---------------------------------|
| a. Nets, lines | f. Marine and auxiliary engines |
| b. Deck equipment | g. Electric power |
| c. Marlinspike seamanship | h. Hydraulics |
| d. Capture and preservation | i. Marine electronics |
| e. Piloting | j. Welding |
| | k. Boat maintenance |

2. Theory

- | | |
|---|-------------------------------|
| a. Basic mathematics | g. Meteorology-
weather |
| b. Trade mathematics | h. Safety at sea |
| c. Seamanship (navigation aids and rules) | i. First aid |
| d. Refrigeration | j. Fishing boats of the world |
| e. Diesel and gasoline engines | k. Fishing gear of the world |
| f. Sea surface | l. Fishing economics |

3. On-board experience of at least 16 weeks with cooperation from highly motivated captains.

Ideally, a student would work aboard more than one type of vessel, that is, a variety including drag, troll, crab, and shrimp.

Successful programs in other states have been organized to schedule students at the shop or other training areas (boats, for instance) for half days, five days a week. This block arrangement has been found to be most effective, but does place a strain on other classroom courses, teachers, and administrators.

Identification of appropriate instructors is essential. Among characteristics required are 1) expertise in a wide variety of fisheries skills, 2) the ability to communicate effectively with students, and 3) rapport with professional fishermen. Probably the least important criterion is educational credentials of the candidate.

EPILOGUE

We believe that it is important to remember that this survey reports responses, both objective and subjective, as evaluated in winter, 1970-71. Attitudes, conditions, and regulations change. A treatment of this subject at another time may offer differing recommendations.

As stated in Section 1.2, return of questionnaires met statistical requirements for reasonable validity. In addition, we have commented freely when our personal experiences with industry gave us opinions which we believed to be of value.

Technological developments, increased world-wide attention to oceanic resources, and differing philosophies among mariners may cause significant changes at all levels of marine resource development and use. What, for instance, might be the effect on manpower requirements, should limited entry or species area management regulations be developed? What if stronger seafood commodity commissions are formed in Oregon--or more sophisticated marketing techniques are implemented?

Questions like these could substantially alter planning. Constant input from industry members, government, and the universities will be required to keep abreast of developments. The Marine Advisory Program staff of the Oregon State University Cooperative Extension Service is pledged to offer continuing assistance as fisheries-related marine career training programs are developed.

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APPENDIX A
MARINE VOCATIONAL TRAINING
SURVEY OF FISHERMEN

THIS QUESTIONNAIRE DEALS WITH THE WAY EDUCATION CAN BENEFIT YOU.

1. How many years have you been a commercial fisherman?

1-5 years 6-10 years 11-14 years more than 15 years

2. Are you involved in dragging, gill netting, albacore trolling, salmon trolling, dungeness crabbing, bottomfish dragging?

<input type="checkbox"/> All of the above	<input type="checkbox"/> Salmon trolling
<input type="checkbox"/> Dragging (Shrimping)	<input type="checkbox"/> Dungeness crabbing
<input type="checkbox"/> Gill netting	<input type="checkbox"/> Bottomfish dragging
<input type="checkbox"/> Albacore trolling	<input type="checkbox"/> None of the above

3. Do you receive all, 75%, 50%, less than 50% or your income from this occupation?

<input type="checkbox"/> All	<input type="checkbox"/> 50%
<input type="checkbox"/> 75%	<input type="checkbox"/> Less than 50%

4. While fishing are you considered a self-employed captain, a crew member receiving a share, or an hourly paid employee?

(a) self-employed captain
(b) crew member receiving a share
(c) hourly paid employee

[If you marked "b" or "c" skip to Question No. 7; otherwise continue.]

5. (a) What was your maximum number of employees at any one time in 1969? _____

(b) How often do your crew members change?

Often During mid-season Seasonally Very seldom

6. How many months a year can your regular and/or seasonal crew members expect to work?

Regular Crew Members

1 to 3 months
 4 to 6 months
 7 to 9 months
 10 to 12 months

Seasonal Crew Members

1 to 2 weeks
 2 weeks to 2 months
 a trip once in a while

7. List the expected duties of a fisherman while on shore and while on boat.

Duties while on shore: (Example - repair pots, make gear)

Duties while on the boat: (Example - cook, clean fish, winch)

8. Would a fair estimate of your total gross income from fishing per year be \$1,000 to \$3,000; \$3,100 to \$8,500; \$8,600 to \$12,000; over \$12,000?

\$1,000 - \$3,000

\$3,100 - \$8,500

\$8,600 - \$12,000

\$12,100 - \$16,000

over \$17,000

9. Do you receive or pay any of the following benefits?

Social Security

Bonuses

Hospitalization

(marine insurance)

Training allowance

Unemployment compensation

Other (list)

10. How did you get your present job as a fisherman?

Volunteer application

Personal contact

State Employment Service

Relative

Through other employees

Through friends

None of these

11. (a) How many years of school have you completed? _____ Years

(b) Did you have any vocational fisheries training in school?

Yes

No

(c) Do you think pre-job fisheries training would be of little value, of some value, or of no value to the industry of fishing?

Little value

Some value

Lot of value

No value

(more)

12. Will the employment opportunities for the years 1971, 1973, 1975 within your occupation increase, decrease, or stay about the same?

1971	1973	1975
<input type="checkbox"/> Increase	<input type="checkbox"/> Increase	<input type="checkbox"/> Increase
<input type="checkbox"/> Decrease	<input type="checkbox"/> Decrease	<input type="checkbox"/> Decrease
<input type="checkbox"/> Stay the same	<input type="checkbox"/> Stay the same	<input type="checkbox"/> Stay the same

13. Which type of fisheries vocational training program would you judge to be the best suited for your occupation? (Select your choice by 1st, 2nd, 3rd, 4th, 5th.)

Pre-job training at high school level

Pre-job and on the job training at high school level

Occupational workshop training for employed fishermen

Two year college level fisheries training

Two year college level fisheries training and on the job training

14. Would you cooperate in the establishment of a fisheries manpower training program by serving as an advisor to such a program?

Yes No I would like to but do not have the time.

15. In the following list of skills mark the ones which you feel are needed in your occupation. Add to the list those skills which are absent.

<input type="checkbox"/> Net making and mending	<input type="checkbox"/> Sea surface conditions
<input type="checkbox"/> Pot construction	<input type="checkbox"/> Marine weather forecasting
<input type="checkbox"/> Pot fishing	<input type="checkbox"/> Business management
<input type="checkbox"/> Line fishing-trolling	<input type="checkbox"/> Record keeping
<input type="checkbox"/> Working on deck	<input type="checkbox"/> Basic sea law
<input type="checkbox"/> Fish handling	<input type="checkbox"/> Buying and selling products
<input type="checkbox"/> Sanitation	<input type="checkbox"/> Emergencies and first aid
<input type="checkbox"/> Hydraulics	<input type="checkbox"/> Knowledge of fish species
<input type="checkbox"/> Naval architecture	<input type="checkbox"/> Reading
<input type="checkbox"/> Welding and torch cutting	<input type="checkbox"/> Writing
<input type="checkbox"/> Practical electrical wiring	<input type="checkbox"/> Mathematics
<input type="checkbox"/> Electronic detection	<input type="checkbox"/>
<input type="checkbox"/> Navigation	<input type="checkbox"/>
<input type="checkbox"/> Maps and charts	<input type="checkbox"/>
<input type="checkbox"/> Engines - diesel and gas	<input type="checkbox"/>
<input type="checkbox"/> Small motor repair	<input type="checkbox"/>
<input type="checkbox"/> Boat maintenance	<input type="checkbox"/>

APPENDIX B



Phone 867-3011

COOPERATIVE EXTENSION SERVICE

OREGON STATE UNIVERSITY
MARINE SCIENCE CENTER
Marine Science Drive
NEWPORT, OREGON 97385

THIS QUESTIONNAIRE DEALS WITH THE WAY EDUCATIONAL TRAINING CAN BENEFIT YOU.

1. How many years has your firm been in the food processing business?
1-5 yrs. 6-10 yrs. 11-14 yrs. more than 15 yrs.

2. Does your company process shrimp, rock fish, clams, oysters, dungeness crab, salmon, tuna?

all of the above oysters
shrimp dungeness crab
rock fish salmon
clams tuna

3. Is your company providing organized supervisory and/or employee training programs?

Supervisory Training Employee Training
Yes No Yes No

4. In which of the following areas do you think your supervisory and/or management personnel would benefit from training?

Elements of supervision Communications for supervisors
Human Relations Safety training & fire prevention
Basic psychology for supervisors Developing the employee thru trn'g
Supervisor's responsibility for Management controls and the supvr.
management of personnel Reading improvement for supervisors
Organization and management Technical training for supervisors
Labor-management relations (special courses)
Industrial economics Don't know
Methods improvement for supervisors Others (Specify)
Cost control for supervisors
Job analysis

5. Which of the following areas would be of benefit to your employees?
(Not managers or supervisors.)

- | | |
|--|---|
| <input type="checkbox"/> Reading | <input type="checkbox"/> Blueprint reading |
| <input type="checkbox"/> Writing | <input type="checkbox"/> Product handling |
| <input type="checkbox"/> English | <input type="checkbox"/> Supervisory techniques |
| <input type="checkbox"/> Handling equipment | <input type="checkbox"/> New materials and processing |
| <input type="checkbox"/> Business principles | <input type="checkbox"/> Marketing |
| <input type="checkbox"/> Machine operations | <input type="checkbox"/> Customer relations |
| <input type="checkbox"/> Occupational skills | <input type="checkbox"/> Management skills |
| <input type="checkbox"/> Maintenance | <input type="checkbox"/> None of list |
| <input type="checkbox"/> Sketching | <input type="checkbox"/> Others _____ |
-

6. How many of the following types of regular employees do you think could benefit by improving their skills? (Give numbers.)

- | | |
|--|--|
| <input type="checkbox"/> Supervisor | <input type="checkbox"/> Unskilled laborer |
| <input type="checkbox"/> Office help | <input type="checkbox"/> None |
| <input type="checkbox"/> Skilled laborer | <input type="checkbox"/> Don't know |
-

7. Do you think pre-job fisheries training could be of little value, of some value, a lot of value or of no value to the processing industry?

- | | |
|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> little value | <input type="checkbox"/> lot of value |
| <input type="checkbox"/> some value | <input type="checkbox"/> no value |
-

8. Which type or types of fisheries vocational training program would you judge to be the best suited for your occupation?

- pre-job training at high school level.
 - pre-job and on-the-job training at high school level.
 - occupational workshop training for permanent employees.
 - two-year college level fisheries training.
 - two-year college level fisheries training and on-the-job training.
 - pre-trained seasonal helpers.
 - none of these.
-

9. Would you cooperate in the establishment of a fisheries manpower training program by serving as an advisor to such a program?
 Yes No I would like to but do not have the time.

10. By what means do you usually acquire employees?
 Voluntary application State Employment Service
 Personal contact Through employees
 Through friends Other _____

11. What was the number of regular and/or seasonal employees you had working during a particular time of year in 1969?
 _____ time of year regular employees
 seasonal employees

12. In your opinion, will the employment opportunities for the years 1971, 1973, 1975 within your occupation increase, decrease, or stay about the same?

1971	1973	1975
<input type="checkbox"/> increase	<input type="checkbox"/> increase	<input type="checkbox"/> increase
<input type="checkbox"/> decrease	<input type="checkbox"/> decrease	<input type="checkbox"/> decrease
<input type="checkbox"/> stay the same	<input type="checkbox"/> stay the same	<input type="checkbox"/> stay the same

13. Which of the following periods of time can best describe all regular and/or seasonal employees?

Supervisors	Regular Employees	Seasonal Employees
<input type="checkbox"/> 1-3 mos.	<input type="checkbox"/> 1-3 mos.	<input type="checkbox"/> 1-2 weeks
<input type="checkbox"/> 4-6 mos.	<input type="checkbox"/> 4-6 mos.	<input type="checkbox"/> 2 wks.-2 mos.
<input type="checkbox"/> 7-9 mos.	<input type="checkbox"/> 7-9 mos.	<input type="checkbox"/> help out once in a while
<input type="checkbox"/> 10-12 mos.	<input type="checkbox"/> 10-12 mos.	
<input type="checkbox"/> How many do you employ year around?	<input type="checkbox"/> How many do you employ year around?	<input type="checkbox"/> How many do you employ?

14. Do your supervisors, regular employees and seasonal helpers receive hourly wages, weekly wages, monthly salary, or working share?

Supervisors

Hourly wages of approximately \$ _____ per hour
 Weekly wages of approximately \$ _____ per week
 Monthly salary of approximately \$ _____ per monthly
 Working share of \$ _____

Regular Employees

Hourly wages of approximately \$ _____ per hour
 Weekly wages of approximately \$ _____ per week
 Monthly salary of approximately \$ _____ per month
 Working share of \$ _____

Seasonal Employees

Hourly wages of approximately \$ _____ per hour
 Weekly wages of approximately \$ _____ per week
 Monthly salary of approximately \$ _____ per month
 Working share of \$ _____

15. Which of the following benefits do you pay?

Social Security
 Bonuses
 Hospitalization
 (marine insurance)

Job related training allowances
 Unemployment compensation
 Other (list)

APPENDIX C



Phone 867-3011

COOPERATIVE EXTENSION SERVICE

OREGON STATE UNIVERSITY
MARINE SCIENCE CENTER
Marine Science Drive
NEWPORT, OREGON 97365

MARINE VOCATIONAL TRAINING SURVEY

THIS QUESTIONNAIRE DEALS WITH THE WAY EDUCATIONAL TRAINING CAN BENEFIT YOU.

1. How many years has your firm been in business?

1-5 yrs. 6-10 yrs. 11-14 yrs. more than 15 yrs.

2. Is your company providing organized supervisory and/or employee training programs?

Supervisory Training

Employee Training

Yes No

Yes No

3. In which of the following areas do you think your supervisory and/or management personnel would benefit from training?

Elements of supervision
 Human Relations
 Basic psychology for supervisors
 Supervisor's responsibility for management of personnel
 Organization and management
 Labor-management relations
 Industrial economics
 Methods improvement for supervisors
 Cost control for supervisors
 Job analysis

Communications for supervisors
 Safety training and fire prevention
 Developing the employee thru trn'g
 Management controls and the supvr.
 Reading improvement for supervisors
 Technical training for supervisors (Special courses)
 Don't know
 Others (Specify) _____

4. Which of the following areas would be of benefit to your employees? (Not managers or supervisors.)

Mathematics
 Written & oral communication
 Supervisory techniques
 New material & processing
 Science
 Occupational skills

Blueprint reading
 Sketching
 Maintenance
 Don't know
 Other (Specify) _____

5. How many of the following types of regular employees could benefit by improving their skills? (Give numbers)

- | | |
|--|--|
| <input type="checkbox"/> Supervisor | <input type="checkbox"/> Unskilled laborer |
| <input type="checkbox"/> Office help | <input type="checkbox"/> None |
| <input type="checkbox"/> Skilled laborer | <input type="checkbox"/> Don't know |

6. Do you think pre-job fisheries training could be of little value, of some value, a lot of value or of no value to the industry of fishing?

- | | |
|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> little value | <input type="checkbox"/> lot of value |
| <input type="checkbox"/> some value | <input type="checkbox"/> no value |

7. Which type of fisheries vocational training program would you judge to be the best suited for your occupation? (Select your choice by 1st, 2nd, 3rd, 4th, 5th.)

- pre-job training at high school level.
- pre-job and on the job training at high school level.
- occupational workshop training for employed fishermen.
- two year college level fisheries training.
- two year college level fisheries training and on the job training.

8. Would you cooperate in the establishment of a fisheries manpower training program by serving as an advisor to such a program?

- Yes No I would like to but do not have the time.

9. By what means do you usually acquire employees?

- | | |
|---|--|
| <input type="checkbox"/> Volunteer application | <input type="checkbox"/> Through employees |
| <input type="checkbox"/> Personal contact | <input type="checkbox"/> Through friends |
| <input type="checkbox"/> State Employment Service | |

10. What was the maximum number of all employees you had working during a particular time of year in 1969?

_____ time of year _____ number of employees

11. Will the employment opportunities for the years 1971, 1973, 1975 within your occupation increase, decrease or stay about the same?

1971	1973	1975
<input type="checkbox"/> increase	<input type="checkbox"/> increase	<input type="checkbox"/> increase
<input type="checkbox"/> decrease	<input type="checkbox"/> decrease	<input type="checkbox"/> decrease
<input type="checkbox"/> stay the same	<input type="checkbox"/> stay the same	<input type="checkbox"/> stay the same

12. Which of the following periods of time can best describe all regular and/or seasonal employees?

Supervisors	Regular Employees	Seasonal Employees
<input type="checkbox"/> 1-3 mos.	<input type="checkbox"/> 1-3 mos.	<input type="checkbox"/> 1-2 weeks
<input type="checkbox"/> 4-6 mos.	<input type="checkbox"/> 4-6 mos.	<input type="checkbox"/> 2 wks.-2 mos.
<input type="checkbox"/> 7-9 mos.	<input type="checkbox"/> 7-9 mos.	<input type="checkbox"/> help out once
<input type="checkbox"/> 10-12 mos.	<input type="checkbox"/> 10-12 mos.	<input type="checkbox"/> in a while

13. Do your supervisors, regular employees and seasonal helpers receive hourly wages, weekly wages, monthly salary or working share?

Supervisors

Hourly wages of approximately \$ _____ per hour
 Weekly wages of approximately \$ _____ per week
 Monthly salary of approximately \$ _____ per month
 Working share of \$ _____

Regular Employees

Hourly wages of approximately \$ _____ per hour
 Weekly wages of approximately \$ _____ per week
 Monthly salary of approximately \$ _____ per month
 Working share of \$ _____

Seasonal Employees

Hourly wages of approximately \$ _____ per hour
 Weekly wages of approximately \$ _____ per week
 Monthly salary of approximately \$ _____ per month
 Working share of \$ _____

14. Which of the following benefits do you pay?

<input type="checkbox"/> Social Security	<input type="checkbox"/> Hospitalization	<input type="checkbox"/> Training allowance
<input type="checkbox"/> Bonuses	<input type="checkbox"/> (marine insurance)	<input type="checkbox"/> Unemployment compensation
		<input type="checkbox"/> Other

APPENDIX D



Phone 867-3011

COOPERATIVE EXTENSION SERVICE

OREGON STATE UNIVERSITY
MARINE SCIENCE CENTER
Marine Science Drive
NEWPORT, OREGON 97365

MARINE VOCATIONAL TRAINING

SURVEY OF AQUICULTURISTS

THIS QUESTIONNAIRE DEALS WITH THE WAY EDUCATIONAL TRAINING CAN BENEFIT YOU.

1. How many years have you been an aquiculturist?

1-5 yrs. 6-10 yrs. 11-14 yrs. more than 15 yrs.

2. What type of marine product do you produce? List: (example - clams)

3. Does your business require employees?

Yes No

(If you marked "no" proceed to Question No. 9. Otherwise continue.)

4. Which of the following periods of time can best describe regular and/or seasonal employees?

Regular Employees

1-3 mos.
 4-6 mos.
 7-9 mos.
 10-12 mos.

Seasonal Employees

1-2 weeks
 2 weeks-2 months
 help out once in a while

5. What was the maximum number of employees you had working during a particular time of year in 1969?

_____ time of year; _____ number of employees

6. Would you list the duties of your employees?

Regular

Parttime or Seasonal

7. Can regular and/or seasonal employees expect to receive hourly wages, weekly salary, monthly salary, working shares?

Hourly wage of \$ _____ per hour
 Weekly wage of \$ _____ per week
 Monthly salary of \$ _____ per month
 Working share of \$ _____

8. Will the employment opportunities for the years 1971, 1973, 1975 within your occupation increase, decrease, or stay the same?

1971	1973	1975
<input type="checkbox"/> increase	<input type="checkbox"/> increase	<input type="checkbox"/> increase
<input type="checkbox"/> decrease	<input type="checkbox"/> decrease	<input type="checkbox"/> decrease
<input type="checkbox"/> stay the same	<input type="checkbox"/> stay the same	<input type="checkbox"/> stay the same

9. Do you think pre-job occupational training could be of little value, a lot of value, or of no value to your occupation?

little value
 lot of value
 no value

10. Which type of fisheries vocational training program would you judge to be the best suited for your occupation? (Select your choice by 1st, 2nd, 3rd, 4th, 5th.)

pre-job training at high school level.
 pre-job and on the job training at high school level.
 occupational workshop training for employed fishermen.
 two year college level fisheries training.
 two year college level fisheries training and on the job training.

11. Would you cooperate in the establishment of a fisheries manpower training program by serving as an advisor to such a program?

Yes No I would like to but do not have the time.

APPENDIX E



Phone 867-3011

COOPERATIVE EXTENSION SERVICE

OREGON STATE UNIVERSITY
MARINE SCIENCE CENTER
Marine Science Drive
NEWPORT, OREGON 97365

MARINE VOCATIONAL TRAINING SURVEY

1. Do you offer a vocational educational curriculum? Yes No

(If your answer is no, proceed to Question No. 8; otherwise, continue.)

2. How many students were enrolled in vocational training in 1969? _____ Number

3. What is your annual per student vocational training cost?

_____ Type of course _____ Length of course _____ Cost

4. From which of the following sources do you now receive funding for a vocational curriculum?

Budget support from within the school district only.

State aid direct to the school budget.

Federal aid direct to the school budget.

Private foundation grants direct to the school budget.

5. Does your vocational curriculum include designated vocational fisheries courses? Yes No

(More)

6. If your answer to Question No. 5 is yes, please list courses.

7. If your answer to Question No. 5 is no, would you be interested in establishing such fisheries courses? Yes No

8. Would you select the type of situation most beneficial to your facility for attaining a goal of fisheries training?

Establish vocational fisheries training courses.

Use present vocational facilities and adapt course work toward fisheries training.

Establish a two year vocational course to meet the needs of the fisheries industry.

Offer detached educational and vocational experience at a fisheries training center.

9. To your knowledge do any of your students work within the fishing industry? If so, how many? Yes No
 How many

10. Who do you designate as the recipient of further Marine Vocational Information:

Give: Name, address and zip code

APPENDIX F

INTERVIEWER'S FRANK APPRAISAL OF THE INTERVIEW

Person Interviewed	Title
Firm Interviewed	
Address	

INTERVIEWEE'S REACTION

<input type="checkbox"/> Cooperative	<input type="checkbox"/> Receptive to Survey
<input type="checkbox"/> Antagonistic	<input type="checkbox"/> Not Receptive to Survey

RELIABILITY OF SURVEY DATA

<input type="checkbox"/> High
<input type="checkbox"/> Low
<input type="checkbox"/> Questionable

REMARKS