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## 2.0 DESCRIPTION OF THE FISHERY AND AFFECTED GROUPS

### 2.1 Sablefish Fixed Gear Fleet Harvest and Management Regulations

The following is a table that shows the acceptable biological catch (ABC), optimum yield (OY), nontrawl gear allocations and exvessel values for sablefish. All of the numbers in this table are in thousands.

Year	ABC (mt)	OY (mt)	Nontrawl Allocation (mt) <sup>a/</sup>	Hook-and-Line and Fishpot Catch (mt)	Exvessel Value of Hook-and-Line and Fishpot Catch (dollars)
1984	13.4	17.4	None	4,846.0	3,231
1985	12.3	13.6	None	6,391.2	6,420
1986	10.6	13.6	6.1	5,689.5	6,306
1987	12.0	12.0	5.8	6,169.6	8,580
1988	10.0	9.2-10.8	4.8	5,167.8	8,014
1989	9.0	10.4-11.0	4.6	4,489.6	6,049
1990	8.9	8.9	3.6	3,636.5	5,240
1991	8.9	8.9	3.6	4,444.8	9,746
1992	8.9	8.9	3.6	3,773.0	7,626
1993	5.0-7.0	7.0	2.8	3,125.0	5,336
1994	7.0	7.0	2.6	-	-

a/ Nontrawl limited entry allocation beginning in 1994.

Trawl/Nontrawl Allocation. The trawl/nontrawl allocation actions for 1986-1993 were as follows:

- August 22, 1986      Emergency regulation establishes 55 percent trawl/45 percent nontrawl gear split of remaining quota (OY = 13,600 mt).
- 1987                      52 percent trawl/48 percent nontrawl gear split of the sablefish quota (OY = 12,000 mt).
- 1988                      52 percent trawl/48 percent nontrawl gear split of the sablefish quota (OY = 10,000 mt).
- 1989                      52 percent trawl/48 percent nontrawl gear split of the sablefish quota (OY = 10,378 mt).
- April 26, 1989        Revised quotas establish what was effectively a 58 percent trawl/42 percent nontrawl gear split of the 1989 sablefish OY.

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1990	58 percent trawl/42 percent nontrawl gear split of the sablefish quota (OY = 8,900 mt) (8,600 after deducting tribal catch).
1991	58 percent trawl/42 percent nontrawl gear split of the sablefish quota (OY = 8,900 mt) (8,600 after deducting tribal catch).
1992	58 percent trawl/42 percent nontrawl gear split of the sablefish quota (OY = 8,900 mt) (8,600 after deducting tribal catch).
1993	58 percent trawl/42 percent nontrawl gear split of the sablefish quota (OY = 7,000 mt) (6,700 after deducting tribal catch).

Nontrawl Gear Regulations. The nontrawl gear regulations for 1982–1993 were as follows:

October 13, 1982	3,000 pound trip limit.
December 6, 1985	Closed (all gears).
October 23, 1986	Closed.
October 14, 1987	Closed.
August 26, 1988	Closed.
July 17, 1989	100 pound trip limit.
October 4, 1989	Trip limit of the lesser of 2,000 pounds or 20 percent of total weight on board (no percentage restriction if less than 100 pounds of sablefish on board).
January 1, 1990	Trip limit of the lesser of 2,000 pounds or 20 percent of total weight on board (no percentage restriction if less than 100 pounds of sablefish on board).
January 30, 1990	All trip limits removed after the Secretary of Commerces' disapproval.
June 24, 1990	500 pound trip limit.
July 25, 1990	200 pound trip limit.
October 3, 1990	2,000 pound trip limit.
January 1, 1991	1,500 pound trip limit.
April 1, 1991	No limit (except limits on small fish).
May 24, 1991	500 pound trip limit.
July 1, 1991	Closed.
September 30, 1991	300 pound trip limit.
January 1, 1992	500 pound trip (daily) limit.
March 1, 1992	1,500 pound trip (daily) limit (unless it appears over 440 mt will be harvested, in which case the trip limit will revert back to 500 pounds).
March 21, 1992	500 pound trip (daily) limit.
April 17, 1992	250 pound trip (daily) limit.
May 12, 1992	No limit (except limit on small fish).

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May 21, 1992	250 pound trip (daily) limit.
January 1, 1993	250 pound trip (daily) limit.
May 8, 1993	Fishery closed.
May 12, 1993	No limit (except limit on small fish).
June 2, 1993	Fishery closed.
June 3, 1993	250 pound trip (daily) limit.
January 1, 1994	250 pound trip (daily) limit coastwide except Conception Area, 350 pound trip (daily) limit in Conception Area.
May 12, 1994	Fishery closed.
May 15, 1994	No limit (except small fish).

## 2.2 Harvesting Firms/Vessels

Harvesting vessels are held under a variety of types of ownership. Individuals, partnerships, corporations and trusts all own U.S. fishing vessels. Harvesting firms may employ one or several vessels.<sup>1/</sup> There are 4 vessel owners who are expected to receive 2 "A" permits each for their fixed gear vessels. Some harvesting firms are vertically integrated and may also process and wholesale fish. Generally, harvesters of sablefish also harvest other species of fish. Table 2-1 displays the number of vessels which participated in the fixed gear sablefish fishery in 1991 by the number of other fisheries in which they participated. The Alaska data in this table includes only those landings made at ports on the West Coast. Table 2-2 shows number of vessels by the year that they participated and other fisheries these vessel participated in during the year previous to and year subsequent to their participation in the year shown.

Table 2-3 displays number of nontrawl vessels in the sablefish fishery for the last 3 years and the number of those vessels expected to be receiving "A" permits for fixed gear. Table 2-4 shows the percent of revenue from West Coast landings which nontrawl vessels derived from the sablefish fishery in 1991 by total vessel revenue. Table 2-5 shows the same information for vessels receiving "A" permits for fixed gear.

## 2.3 Processors

According the Fishery Statistics Division of the National Marine Fisheries Service (NMFS) there are approximately 350 fish processors employing approximately 11,000 persons in Washington, Oregon and California (Fisheries Statistic Division, 1991). Each of these processors may have multiple fish buying and processing sites. Processor license information was examined to determine the total number of processing sites handling fixed gear sablefish in 1991. Table 2-6 shows number of fish receiving locations by total amount expended on all fish products and percent expended on fixed gear sablefish in 1991. Table 2-7 shows the number of processing sites and average expenditure on fixed gear sablefish in 1991.

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1/ For this reason, caution must be exercised in drawing conclusions about firms based on vessel level information.

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TABLE 2-1. Participation in other fisheries by vessels participating in the 1991 nontrawl sablefish fishery.

Other Fisheries	Vessels Expected to Receive "A" Permits	All Nontrawl Vessels
Tuna	7	19
Halibut	29	83
Salmon	23	89
Crab	41	109
Shrimp	1	90
Other Groundfish	15	436
Alaska <sup>a/</sup>	90	30
Other Fisheries	20	97
Total Vessels	117	492

a/ Includes only landings made on West Coast. Does not include Alaska catch landed in Alaska.

TABLE 2-2. Number of west coast nontrawl sablefish vessels by year, that participated in various west coast or Alaskan fisheries during the preceding or following year (non-exclusive categories).

	Sum	West coast		Other west coast		West coast		Alaska		No west coast or Alaska	
		sablefish	Alaska	groundfish	salmon	other species	sablefish	other species	Alaska	Alaska	
1985 sablefish vessels	172										
1984	172	63	29	105	45	105	20	38	34		
1986	172	104	45	136	69	121	39	50	16		
1986 sablefish vessels	237										
1985	237	104	38	166	93	161	28	46	31		
1987	237	117	60	184	89	163	63	71	27		
1987 sablefish vessels	246										
1986	246	117	51	171	83	163	45	58	45		
1988	246	125	54	194	79	180	47	56	21		
1988 sablefish vessels	253										
1987	253	125	53	194	78	165	53	61	36		
1989	253	128	56	185	79	180	56	64	35		
1989 sablefish vessels	256										
1988	256	128	47	202	76	168	43	50	31		
1990	256	135	42	209	71	177	39	49	22		
1990 sablefish vessels	267										
1989	267	135	41	222	102	186	35	43	21		
1991	267	154	*	207	80	178	*	*	40*		

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TABLE 2-3. Vessels participating in the nontrawl sablefish fishery in 1990 through 1992.

Vessels in the Nontrawl Sablefish fishery	Year		
	1990	1991	1992
All Vessels	478	492	730
Vessels with Fixed Gear "A" Permits	113	117	116
Vessels Expected to Recieve QS Under at Least One Allocation Option	107	114	105

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TABLE 2-4. Number of vessels nontrawl vessels by total revenue and percent revenue from nontrawl sablefish.

Total Fishing Revenue (\$1,000s)	Percent Revenue from Nontrawl Sablefish					
	<5	5-20	20-50	50-80	80-95	>95
<10	36	22	17	12	4	18
10-25	38	15	8	7	6	11
25-50	30	2	13	18	7	12
50-100	40	3	13	13	6	10
100-200	42	-	10	13	5	6
>200	43	1	3	7	-	1
Total	229	43	64	70	28	58

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TABLE 2-5. Number of vessels receiving permits by total revenue and percent revenue from nontrawl sablefish.

Total Fishing Revenue (\$1,000s)	Percent Revenue from Nontrawl Sablefish					
	<5	5-20	20-50	50-80	80-95	>95
<10	-	2	3	2	-	5
10-25	4	4	4	2	4	1
25-50	6	1	4	6	4	4
50-100	2	-	8	9	4	5
100-200	1	-	7	9	3	5
>200	1	1	2	3	-	1
Total	14	8	28	31	15	21



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TABLE 2-6. Fish receivers and expenditures on nontrawl sablefish as a percentage of West Coast landings received in 1991.

Total Expenditure on Landings (\$1,000s)	Percent Expended on Nontrawl Sablefish Landings					
	<5	5-20	20-50	50-80	80-95	>95
<20	21	3	3	2	1	-
20-100	27	2	2	6	-	3
100-500	28	10	1	1	-	1
500-1,000	22	6	5	-	-	-
1,000-2,000	26	5	4	1	-	-
>2,000	-	-	-	-	-	-
Totals	124	26	15	10	1	4

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TABLE 2-7. Number of processor fish receiving sites by dollars expended on nontrawl sablefish purchases in 1991.

Dollars Expended on Nontrawl Sablefish	Number of Processor Fish Receiving Sites
<1,000	83
1,000-10,000	34
10,000-20,000	9
20,000-100,000	31
100,000-500,000	20
>500,000	3
Total	180

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## 2.4 Crew

In 1988 a survey of longline and fishpot vessels catching sablefish off California, Oregon and Washington in 1987 was conducted by NMFS (contract with Robert Proctor and Associates). A random sample of 30 vessels stratified by principal sablefish gear, vessel size and state was interviewed to determine alternative fishing strategies (modes), number of trips in 1987 by mode, costs by mode and crew size by mode. These 30 vessels reported making an average of 10.6 sablefish trips in 1987 in waters subject to the Pacific Groundfish Management Plan.

The average crew size for these trips was reported as 4.94 (including the skipper). Average crew size was 5.43 for trips when the sablefish was dressed at sea and was 4.08 when fish were landed round. However, all of the vessels either landed round fish exclusively or dressed fish at sea exclusively, so that the difference in crew size confounds differences in vessels with the different requirements of landing dressed fish (if there is any difference). A higher percentage of California and Oregon landings by both gear types were not dressed at sea.

## 2.5 Local Communities

To examine "community" dependence redefined Pacific Coast Fishery Information Network database port codes were used to examine total exvessel revenues associated with various port areas and the percentage of these revenues attributed to the fixed gear sablefish fishery in 1991. This data is displayed in Table 2-8.

## 2.6 Consumers

In the past, most sablefish landings have been destined for the tables of overseas consumers. U.S. fish consumers average 14.9 pounds of fish per year, 6 pounds of which is composed of fresh and frozen finfish. The West Coast sablefish supply is a very small portion of the fish eaten by U.S. consumers.

A survey was conducted of 8 processors who handled about one third of the total 1991 fixed gear sablefish catch. These 8 processors reported that between 85 and 99 percent of the fixed gear sablefish they handled was exported to foreign markets. This information indicates that a substantial portion of the West Coast sablefish product is exported.

## 2.7 Enforcement

Fisheries enforcement for NMFS is carried out by the NMFS Office of Enforcement. For the State of Oregon, fish and wildlife enforcement is carried out by a division of the Oregon State Police. For Washington and California, fish and wildlife enforcement is carried out by agents employed by the state fish and wildlife management agencies. State fisheries enforcement is important for meeting state conservation goals and the collection of landings taxes.

The Council's Enforcement Consultant committee provides a forum for enforcement agencies to come together and share resources in the effort to jointly enforce compatible state and federal regulations. The Council's Enforcement Consultant committee is composed of representatives from each of the enforcement agencies with responsibility for enforcing regulations governing

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TABLE 2-8. Dependence of ports on nontrawl sablefish landings in 1991.

Thousands of Dollars in Exvessel Value	Percentage of Exvessel Value Landed from Nontrawl Sablefish			
	<5	5-20	20-50	>50
<20	7	-	-	-
20-100	10	-	-	-
100-500	10	-	-	-
500-1,000	8	-	3	-
1,000-5,000	24	2	1	-
>5,000	13	4	-	-
Total	72	6	4	-

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Council-managed fisheries. The group is generally chaired by a state agency representative and has representatives from NMFS, the Coast Guard, and Oregon, Washington and California enforcement bodies.

A cooperative enforcement system is in place which involves cross deputation of agents between the states and NMFS. State and federal agents work in cooperation with each other as necessary. NMFS supplies no funds to the state for enforcement; however, the Magnuson Fishery Conservation and Management Act (MFCMA) does allow reimbursement of state agencies for help in the successful prosecution of federal fishery cases.

NMFS. The NMFS Office of Enforcement is responsible for enforcement of federal regulations related to the Marine Mammal Protection Act, Endangered Species Act and the MFCMA and the investigation of illegal take of fish and wildlife in violation of any other state, federal and international laws (including the Lacey Act). With respect to illegal takings, the NMFS enforcement office is primarily responsible for marine species and the U.S. Fish and Wildlife Service is responsible for freshwater and terrestrial species.<sup>2/</sup> The total budget for the NMFS Office of Enforcement is about \$10 million with a northwest area budget of \$1.5 million and a southwest area budget of \$1.8 million. These budgets are total figures representing all personnel, travel, contract, rents, communication, supplies and equipment costs. The northwest area staff consists of 19 supervisory and field enforcement officers and 4 administrative personnel. The southwest area staff includes 12 enforcement personnel for the California area and 8 assigned to Hawaii, Guam and American Samoa (Personal Communication from Deputy Special Agent in Charge, William Lutton).

Oregon. The State of Oregon budget for fisheries enforcement is \$390,000 for 5 field enforcement personnel and no support staff. The field enforcement personnel responsibilities include enforcement of all marine fishery regulations and providing routine assistance to NMFS and Coast Guard personnel in the performance of their enforcement duties. These duties include: licensing (sport, commercial, vessels, processors, etc.); monitoring landings of all state and federally regulated species (to ensure compliance with bag limits, trip limits, size and sex limits); monitoring closures (both of seasons and of areas); inspecting plants (to ensure accurate reporting offloadings); and inspecting vessel and gear (to ensure compliance with limited entry permits and harvest methods) (Personal Communication from Lt. L.A. Kraft, Oregon State Police).

Washington. The State of Washington budget for the 7 fishery patrol officers working the coast is \$424,341. These officers work all Pacific Ocean sport and commercial fisheries enforcing catch regulations, landing and recording regulations. They also enforce sport and commercial shellfish, sturgeon and salmon regulations, in inland waters and streams and are responsible for enforcement of habitat protection measures related to activities such as road building and some categories of wetland filling. Cross deputization by NMFS allows the officers to enforce federal laws which relate to their normal duties.

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2/ The U.S. Fish and Wildlife Service is also responsible for walruses, sea otters and sea turtles when they come on shore.

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California. California Department of Fish and Game maintains 337 field officers statewide (including supervisors) and an additional 27.5 support staff. The total budget for these positions is \$22.5 million and includes vehicles, boats, supplies, benefits, etc. Responsibilities of these field officers include both fish and game enforcement and investigations of inland and coastal waters pollution violations. Of the field staff, there are about 65 wardens in coastal regions, 16 of which serve on boat crews which enforce marine fisheries laws. Most of the effort by state wardens pertains to state-managed fish. A few wardens familiarize themselves with the complexities of federal fisheries management regulations; however, this is primarily on their own initiative. Federal enforcement officials are largely relied on for enforcement of federal fisheries programs. (Personal Communication from Capt. Phil Nelms, California Department of Fish and Game)

Field Enforcement Activities. The following are the primary field elements of fisheries enforcement activities.

At sea            Coast Guard aerial observers note where vessels are and whether they have gear in the water.

The Coast Guard provides a platform for multijurisdictional boarding parties which may include NMFS and state enforcement officers along with Coast Guard personnel. During a boarding, gear is checked, amounts and species of fish are noted, log books are examined and the vessel is checked for proper documentation and permits.

Dockside        Enforcement officers may meet a vessel in order to determine whether the vessel has complied with trip limits.

Fish Plant      Information on specific landings made by a vessel is obtained from log books and weighout sheets during at-sea and dockside enforcement activities. Enforcement visits to plants may be made to cross check this information against fish plant records and landing tickets. Underreporting on fish tickets may be detected during these visits.

Plants may also be audited to determine whether records for product coming into the plant match with records for product leaving the plant. All shipments leaving the plant must be properly marked and be accompanied by shipping documents which indicate where the shipment came from, the species being shipped, amount shipped, dealer, date and time. Audits of plant inventories, along with receiving, shipping and financial records are one of the most important means by which enforcement officers can detect whether all fish are being reported. The current plant inventory and records provide evidence of the history of activity for the plant and a number of vessels for a period of time. When product is trucked directly from a vessel to market, an "audit" of the truck yields information on only a single or few landings.

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Product in Transit      Product in transit (for domestic or export markets) may be checked for proper documentation. If documents are present on all shipments from a plant and illegal or excessive quantities of fish have been received by the plant, some shipments of fish will either be (1) undocumented, (2) sent with documentation which incorrectly identifies the amount of the fish in the shipment or (3) sent with documents not matching shipment records at the plant. The only way to check the latter is with followup checks at the plant. When fish have been moved directly from a vessel to a truck, there must be similar consistencies between documents on the vessel and those with the truck.

## 2.8 Others

Other groups which may be affected by this program include anyone involved in sablefish market channels, including wholesalers, retailers, restaurants and those with an interest in the value of fishing assets (e.g., banks).

## 2.9 Social and Socioeconomic Characteristics of Fish Harvesters

Specific studies of the social characteristics of the West Coast sablefish and groundfish fisheries have not been conducted. The descriptive information provided in this section is drawn largely from a general review of the cultures of fishing people conducted by McGoodwin (1990) and studies of other West Coast and U.S. fisheries which may have relevance to the West Coast sablefish fishery.

In evaluating the applicability of information from other West Coast fisheries, it should be kept in mind that there are very few sablefish vessels which do not derive a substantial portion of their income from other fisheries. For example, in 1984, roughly 90 percent of the longline vessels participating in the sablefish fishery derived 50 percent or more of their income from other fisheries (Hastie, 1988). It follows, therefore, that individuals who own and work on these vessels are some segment of a broader fishing community and that studies of these broader communities are likely relevant in describing those who participate in the fixed gear sablefish fishery. The following descriptive information will provide the basis for evaluating some of the social impacts of an individual quota program.

Characteristics of Fishers. Wilen *et al.* (1991) surveyed commercial license holders for all California marine fisheries. This survey included participants in salmon, crab, albacore, shrimp, herring, sea urchin, mackerel, squid and groundfish fisheries. Table 2-9 summarizes household socioeconomic characteristics for owner/operators, nonowner operators and crew members.

Fishers are generally characterized as physically hardy individuals who enjoy outdoor work and take pride in their occupation (McGoodwin, 1990, p. 23). While Gatewood and McCay (1990) stress that there is a great deal of diversity in the characteristics and attitudes of fishers, McGoodwin points out that there appear to be certain commonalities which apply across most

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TABLE 2-9. Fishing Household Socioeconomic Characteristics, California<sup>a/</sup>

	Total Sample	Owner Operators	Non- Owner Operators	Crew
<b>Fishermen's Characteristics</b>				
Age	45	48	40	38
Years of Education	14	14	13	14
Years of Fishing Experience	13	15	13	8
Years of Non-Fishing Experience	16	17	10	13
Health (scale from 1 to 5)	4.15	4.11	4.02	4.39
Percentage with Spouse	78%	84%	67%	65%
<b>Spouse's Characteristics</b>				
Age	44	45	37	41
Years of Education	13	13	13	13
Employment Experience	16	17	8	15
Health (scale from 1 to 5)	4.12	4.13	3.97	4.19
<b>Percentage with Children</b>				
Under 3	11	10	22	12
Between 4 and 6	9	9	15	7
Between 7 and 12	13	13	20	13
Between 13 and 18	15	17	13	12

a/ From: Wilen, James E., Tzy-Ning Chen, Frances Homaus. 1991. "Fishermen and Labor Markets: Participation, Earnings, and Alternatives in Pacific Coast Fisheries." Department of Agriculture Economics, University of California, Davis. Davis, California. Prepared for the National Marine Fisheries Service, Southwest Fisheries Center, Contract No. 50-ABNF-6-0016.



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of those in the fishing profession. Fishers have been found to have strong feelings of pride and satisfaction in nearly all studies, irrespective of culture and region. This pride in being identified as a fisher is held even by those who spend only a small percentage of time in the fishery (McGoodwin, 1990, p. 23). Though fishers may be proud of their occupation, they may often be held in low esteem by nonfishing neighbors. (McGoodwin, 1990, p. 26).

Fishers often manifest some attributes similar to those of gamblers: a predilection for economic and personal risks, emphasis on individualism and autonomy, desire to be socially unconventional and a need for excitement. (McGoodwin, 1990, p. 30). "Few land based occupations present individuals with the risk of losing all of their productive capital--as well as their lives--every time they go to work" (McGoodwin, 1990, p. 29).

Fishing is a dangerous activity. A study of fisheries in Britain showed a fatal incident rate 20 times greater than workers in manufacturing industries (Thompson *et al.*, 1983). In the U.S., it is more dangerous in terms of loss of life, than coal mining (Poggie, 1980, p. 123). The danger in the occupation may lend a heroic cast. For some, this excitement makes fishing more desirable than other higher income jobs which may provide a greater degree of safety. (McGoodwin, 1990, p. 28). Mortality rates for young crew members are substantially higher than for older fishers, a trend counter to that in most occupations. This higher than normal rate of young person mortality is not apparent for vessel owners and operators (Neutel, 1990). While the Coast Guard attributes many vessel accidents to equipment problems, fishers reviewing those same problems will often attribute accidents to the individuals involved (Van Noy, 1993).

Fishing Families. Table 2-10 indicates that 78 percent of California fishers responding to a survey were married and 36 percent had children. Owner operators were more likely to be married (84 percent) than crew (65 percent).

The physical remoteness of fishing activities has a strong influence on fishing families, particularly for those where the fisher is gone for extended periods of times. Division of labor by sex is reinforced. Fisher's wives may be more independent and accorded more respect within the community (McGoodwin, 1990, p. 24). Fishers who participate in long trips may become estranged from their families. On return to their families after prolonged absence, their presence is often disrupting to the established, ongoing social order. (McGoodwin, 1990, p. 35).

A thesis by Van Noy (1993) hypothesizes that with the rapid expansion of fisheries in the 1970s and 1980s, many of those who have become involved in the fishery no longer have the training and experience which comes from taking part in family fishing operations. Van Noy posits the lack of this experience and source of training as a significant factor contributing to fishing accident rates.

Patterns of Work and Social Relations. Cooperative behavior is an important aspect of the fisher's work environment and may be more significant than in most other work situations. Such behavior is encouraged by the share system (under which most fishers are paid) and safety and survival considerations. The share system makes earnings less certain than for hourly workers (McGoodwin, 1990, p. 33-34). At the same time, the share system "enhances each individual's

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TABLE 2-10. Non-fishing employment alternatives reported by California fishers<sup>a/b/</sup>

Professional	Service	Skilled Labor	Labor
Accountant	Auto Salesman	Carpenter (7)	Laborer (10)
Aerospace	Apartment Manager	Boat Repair (12)	
Analyst	Barber	Electrician (4)	
Consultant (2)	Bartender	Dry Wall	
Engineer (6)	Bookkeeper (8)	Landscape (4)	
Teacher (9)	Fish Sales	Farmer (3)	
Dentist	Food Sales	Welder (7)	
	Health (2)	Logger (3)	
	Jeweler	Machinist	
	Law Enforcement (2)	Plumber (5)	
	Life Insurance	Waiter (4)	
	Mariculture	Mechanic (14)	
	Post Office	Millworker (2)	
	Printer	Painter (5)	
	Real Estate (6)	Roofer (2)	
	Retail	Service Station	
	Salesman (11)	Trucking (7)	
	Security	Assembly	
	Storage	Woodworker (2)	
	Museum		
	Technician (9)		
	Theater		
	Child Care		
	Finance		

a/ From: Wilen, James E., Tzy-Ning Chen, Frances Homaus. 1991.

"Fishermen and Labor Markets: Participation, Earnings, and Alternatives in Pacific Coast Fisheries." Department of Agriculture Economics, University of California, Davis. Davis, California. Prepared for the National Marine Fisheries Service, Southwest Fisheries Center, Contract No. 50-ABNF-6-0016.

b/ Responses are from 308 of 584 participants in a survey. The number of individuals specifying a category of employment alternatives is one unless otherwise specified by a number following the category.

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perception of himself as being a participant in a common endeavor." (Pollnac, 1988, p. 30). Gatewood and McCay (1990, p. 24) identify a positive relationship between the degree to which a fisher is involved in the strategic aspects of fishing and has control over the means of production and the degree of job satisfaction.

Kinship ties are often a strong factor underlying recruitment to the fishery "because of the need for highly coordinated teamwork at sea and the ever present problems of low incomes" (McGoodwin, 1990, p. 34).

Household Income. The average household incomes for owner/operators, hired operators and crew members responding to a survey of California fishers were \$55,700, \$43,200 and \$27,100, respectively. About 40 percent of fisher spouses work. Those working earn about \$20,000 and worked 43 weeks a year. Fishing income was about half of the total reported household income. Total (and weekly) fishing incomes for owner/operators, hired operators and crew members were \$33,225 (\$1,393 per week), \$32,807 (\$1,131 per week) and \$14,067 (\$730 per week), respectively. Less than \$10,000 was earned from fishing activities by 55 percent of crew respondents and 30 percent of owner/operators and nonowner/operators (Wilén et al., 1991). It should be noted that there may be response bias in the survey on which these numbers are based.

Alternative Employment Opportunities. "Compared with those who do not fish for a living, fishers are usually more mobile, especially geographically, and sometimes economically as well." (McGoodwin, 1990, p. 24).

In a survey of California fishers, a significant portion specified as their alternative trade jobs in the building (21 percent) and logging industries or other fisheries (Table 2-2). The realistic availability of the first two of these alternatives depends heavily on building and business cycles in the general economy. Fishers' income in their next best line of employment was expected to be substantially lower than their 1988 fishery income. Weekly earnings in alternative employment for owner/operators and crew members were expected to be \$627 and \$470, respectively. (Wilén et al., 1991).

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