

### 3-2 Survey on Fisheries Development Program (Work II)

#### 3-2-1 Survey Objectives and Method

##### (1) Survey objectives

The objectives of this survey are to consider the rational use of useful demersal fish resources; to conduct surveys of the fisheries, fishermen's activities, fishing ports, distribution systems, and associated facilities along the northern Pacific coastal region of Costa Rica; and eventually to formulate fisheries development programs to effect improvements in problem areas.

##### (2) Survey regions

Areas sampled in this survey were 12 fishing villages along the northern Pacific coast of Costa Rica, as well as the country's largest fishing port of Puntarenas, and the consuming cities of San Jose and San Ramon.

##### (3) Survey methods

In a preliminary field survey the points covered in this survey, the number of items surveyed, and the survey methods were thoroughly discussed with a local counterpart; questionnaire forms were then produced in Japan for the survey.

The field survey was conducted by specialists from Japan in Liberia, Puntarenas, and San Jose, in cooperation with locally hired survey personnel. The cooperation of fishermen and others in the fishing industry in this survey was also sought through local newspapers and radio.

Samples for the interviews were selected with the intentional selection method. However, all the fishermen's cooperatives were surveyed.

#### (4) Counterpart

The Ministerio de Agricultura y Ganaderia (MAG) is the counterpart for the fisheries development plan survey, and it oversees agriculture, livestock farming, forestry, and fisheries, and the specific section of this ministry overseeing fisheries administration is the Fisheries Resources Bureau.

The members of the Fisheries and Aquaculture Service include technologists, administrators, secretaries, and others for a total of 91 persons. Within this is the Fisheries Industries Resources Department, and Ocean Fisheries Resources Survey, the Economic Survey, Market Survey, Product Quality Control, and Statistics are all supervised by this department, and actual operations and data collection are performed by the regional offices which are sections of this agency (refer to the MAG organization chart).

(5) Details of the survey

① Surveyed items

A. Fishing villages

<p>1). Survey of main fishing villages  i Survey of main fishing villages  ii General survey of fisheries (fishing boat survey)</p>	<p>In order to ascertain the state of employment for self-supporting and employee households, as well as the basic production system, the survey covered fishing households in 12 main fishing villages and the city of Puntarenas.  A. In order to ascertain the general state of the fishing villages and the present state of the fisheries, the survey covered the 12 main fishing villages in Guanacaste Province and the city of Puntarenas.  B. A survey of the fishing terminal in Cuajiniquil.</p>
<p>2). Survey of fishing families</p>	<p>In order to ascertain the state of fishing revenues and expenditures, and the household expenses of self-supporting fishing households, the survey covered the 12 main fishing villages.</p>
<p>3). Survey of fishing family intentions</p>	<p>A. In order to ascertain the predilections and wishes of self-supporting fishing households with regard to the running of their fishing businesses, the survey covered the 12 main fishing villages and the city of Puntarenas.  B. A follow-up survey on the fishermen who wish to expand their operations.</p>
<p>4). Distribution survey</p>	<p>In order to ascertain the state of purchasing and selling by the middlemen, who play the principal role in the distribution systems, the survey interviewed 23 middlemen in Guanacaste Province.</p>
<p>5). Survey of fishing cooperatives</p>	<p>A. In order to ascertain the state of activities by the fishing cooperatives (fishing associations), the survey covered the five existing fishing cooperatives (fishing associations) in Guanacaste Province.  B. A survey covering the management of the 5 fishing cooperatives/associations.  C. Survey of Fishing Cooperative Unions.</p>

Note: Items 1) through 3) include the fishing village areas in Puntarenas.

B. Urban areas

<p>1) .Distribution survey  i Survey of middlemen  ii Survey of retailers</p>	<p>In order to ascertain the state of purchases and sales by middlemen, the survey covered six middlemen in the city of San Jose.  A. In order to ascertain the state of purchases and sales by retailers, the survey covered 30 general retail stores and supermarkets within the city of San Jose.  B. A survey covering the purchases and sales of CNP.</p>
<p>2) .Survey of consumption and preferences</p>	<p>In order to ascertain preferences for marine products and household revenues and expenditures, the survey covered 1,103 households in the cities of San Jose and San Ramon</p>
<p>3) .Manufacturing and processing survey</p>	<p>In order to ascertain the state of processing plant management and operations, the survey covered 13 processing plants in San Jose and Puntarenas.</p>
<p>4) .Survey of fisheries business entities</p>	<p>In order to ascertain the state of the business entities involved in fishing that are located in Puntarenas Port, the survey covered 20 business entities located in said port.</p>
<p>5) .Awareness of problems among, and proposals by, knowledgeable persons</p>	<p>Questionnaires concerning problems in the Costa Rican fishing industry were send to 50 Costa Rican knowledgeable persons (31 responses) familiar with the problems of the fishing industry in the survey region.</p>

② Survey items and locations

Type of survey (survey content)	Puerto Soley	El Jobo	Cuajinil	Playas del Coco	Brasilito	Tamarindo	Lagarto	San Fanillo	Nosara	Garza	Samara	Carillo	Puntarenas	San Jose	San Ramon	Total
Survey of main fishing villages (includes fishing vessel survey)	9	15	181	350	10	10	10	10	19	10	72	14	50			760
General state of fisheries survey	1	1	1	1	1	1	1	1	1	1	1	1	1			13
Survey of fishing family economies	3	10	29	60	4	4	4	1	7	5	20		10			157
Survey of fishing family intentions	3	10	28	62	4	4	4	4	7	5	20	4	10			165
Distribution survey																
Survey of middlemen	1	2	6	6	1	2	1	1			3			6		29
Survey of retail stores														30		30
Survey of fishing cooperatives			1	1			1		1			1				5
Survey of consumption and preferences															1103	1103
Survey of manufacturing and processing													7	6		13
Survey of companies based in Puntarenas Port													20			20
Total	17	38	246	480	20	21	21	17	35	21	116	20	98	1145		2295

### ③ Survey results

#### A. First field survey

The objectives of this survey were to gather basic data for the purpose of effectively pursuing second and third field surveys, and this survey comprised the following items covering the main fishing villages and the main cities. At the same time, discussions were held with the local counterpart concerning the types and points to be covered, and methods of the questionnaires that would be implemented in the second survey.

Item	Survey results
Term of survey	March 7, 1987 to April 15, 1987 (40 days)
Survey region	The 11 main fishing villages along the northern Pacific coast, and San Jose and Puntarenas
Items covered	<ul style="list-style-type: none"> <li>- Fishing village environment: roads, communication, electrification, education, medical facilities, etc.</li> <li>- State of fisheries operations: fishing boats, fishermen (organization), management of fishing operations, etc.</li> <li>- Facilities associated with fishing: catch unloading facilities, boatbuilding yards, ice plants, etc.</li> <li>- Catch distribution: selling and purchasing of catches (fishermen, middlemen, retailers), processing plant facilities, etc.</li> <li>- Information gathering</li> </ul>
Survey method	Interviews conducted in the 11 main fishing villages, and the cities of San Jose and Puntarenas.

B. Second field survey

Based upon the knowledge and information obtained from the results of the first survey, and following the procedures described below, the second survey was implemented as a full-scale survey in order to gain a comprehensive understanding of the state of the fisheries.

- i From November 11 to 13, six field survey instructors who had been recommended by the local counterpart were given an orientation session in San Jose, based on the survey guide book on how to fill out the ten kinds of questionnaire sheets.
- ii In preparation for the survey in the 12 fishing villages of Guanacaste Province, sixteen survey personnel who had been recommended by the local counterparts were given an orientation session on November 16 to 17 in Liberia on how to fill out the seven kinds of questionnaire sheets for the state of the fisheries, the finances of fishing families, intentions of fishing family members, fishermen's cooperatives, middlemen, and the main fishing villages.
- iii In conjunction with i and ii above, explanations of the survey's objectives, as well as requests for the cooperation of the persons concerned, were published in the 3 principal Costa Rican newspapers, *La Nacion*, *La Republica*, and *Prensa Libre*, as well as broadcast

over Guanacaste Province's 3 radio stations, Radio Guanacaste, Radio Chorotega, and Radio Nicoya.

iv Survey personnel, and survey dates and term

F i s h i n g v i l l a g e s  C i t i e s	Survey region	Number of instructors	Number of survey personnel	Dates and term
	Puerto Soley, Cuajiniquil, El Jobo	1	4	11/16/87 to 12/11/87; 26 days
	Playas del Coco	1	5	"
	San Juanillo, Brasilito, Tamarindo, Lagarto	1	3	11/16/87 to 12/3/87; 18 days
	Nosara, Garza, Samara, Carrillo	1	4	"
	Puntarenas	1	3	12/26/87 to 1/14/88; 20 days
	San Jose, San Ramon	3	6	"
Total		8	25	
Mail questionnaire survey directed toward persons knowledgeable about fisheries; gathering of information and data				12/14/87 to 1/22/88; 40 days



C. Third survey

This survey was conducted in the manner shown below as a supplementary survey covering the problems arising from the results of the second field survey, as well as gathering many kinds of data and information on fisheries.

Item	Survey results
Survey term	6/18/88 to 9/17/88; 92 days
Survey region	Main fishing villages along northern Pacific coast, the cities of San Jose and Puntarenas, and other affected cities, towns, and villages
Principal items covered by survey	<ul style="list-style-type: none"> <li>- Survey on organization of fishermen</li> <li>- Survey on improvement of distribution systems</li> <li>- Survey of Cuajiniquil Fishing Terminal</li> <li>- Follow-up surveys on fishermen who want to expand the scale of their operations</li> <li>- Other associated surveys</li> <li>- Gathering of data and information</li> </ul>
Survey method	Principally interviews

### 3-2-2 Survey of Main Fishing Villages

#### (1) Survey objectives

To elucidate the state of the main fishing villages along the northern Pacific coast.

#### (2) Survey method

In addition to surveys of the 12 main fishing villages in Guanacaste Province and Puntarenas, interviews were conducted with persons intimately familiar with fisheries, as well as with joint operation and employee households (760 households). The number of samples corresponds to roughly 75% of fishing households.

#### (3) Survey results

Of the 12 main fishing villages located in Guanacaste Province, that considered most important by the MAG's Fisheries Department is Playas del Coco. The second most important is Cuajiniquil, and in third place are Carrillo and Samará. These villages are located in the north, central, and south parts of the province, respectively.

Table 24 presents a general description of the 12 fishing villages surveyed.

Table 24 General Conditions in Surveyed Fishing Villages

Village name	Puerto Soley	El Jobo	Cuajinil	Playas del Cocco	Brasilito	Tamarindo	Lagarto	San Juanillo	Nosara & Garza	Nosara	Carillo
No. of fishermen	18	72	297	434	25	20	100	40	50	75	20
No. of boats/launches	18/-	72/-	222/75	234/200	25/-	20/-	100/-	40/-	50/-	75/-	20/-
Total no. of vessels	6	25	89	118	10	8	25	10	20	25	6
No. of boats/launches	6/-	24/-	74/15	78/40	10/-	8/-	25/-	10/-	20/-	25/-	6/-
Fishing coops	-	-	0	0	-	-	0	-	0	-	0
No. of coop members	-	-	34	15	-	-	16	-	22	-	Fishing 20 *
No. of catch sale/purchase centers	1	3	6	6	2	1	1	1	3	3	1
No. of local middlemen	1	3	Fish. coop, 1 fisherman, 1 other, 4	6	2	Fisherman, 1 other, 2	Fish. coop, 1	...	1	Fish. coop, 1 other, 2	Fish. coop, 1
Port wharf or pier	-	-	0	-	-	-	-	-	-	-	-
Fishing vessel builder	-	-	0	0	-	0	-	-	-	-	-
Cold storage	-	-	0	0	-	-	-	-	-	-	0
Ice plant	-	-	0	0	-	-	-	-	-	-	-
Fueling station	-	-	0	0	-	-	-	-	-	-	0
Electricity/telephone	-/-	0/0	0/0	0/0	0/0	0/0	0/-	.../...	0/0	0/0	0/0
Water supply	well	well	plumbing	plumbing	plumbing	well	well	...	well	plumbing	plumbing
Clinic	-	0	0	0	0	0	0	...	0	0	0
Primary school	-	-	-	0	0	0	0	...	0	0	0
Hotel	-	0	0	0	0	0	-	...	0	0	0
Branch police station	-	0	0	0	0	0	0	...	0	0	0
distance to Liberia (km)	64	71	51	35	69	89	88	111	132	116	124
Distance to San Jose (km)	281	288	268	252	286	306	305	328	347	331	339
Distance to main highway (km)	6	13	12	15	25	32	38	61	51	35	43
Conditions of road	Gravel	Gravel, bridge washed out in one place	Paved	Paved	Paved, 21km gravel, 4km gravel	Paved, 29km road, 3km gravel	Gravel road, bridge washed out in 2 places	Gravel	Gravel road, bridge washed out in 3 places	Gravel	Gravel

0: Present    -: Not present    ....: Presence unknown    \*: There are 28 other members of the Afforestation Coop

① Fishing village environment

A. Local infrastructure

a Roads

All these fishing villages are comparatively far from main highways such as the Pan-American Highway; the closest is 6 km, and the farthest is 61 km, for an average of 30.1 km. In addition, only the roads leading from a main highways to the fishing villages of Playas del Coco and Cuajiniquil are paved. The others change to gravel roads between the main highways and the villages, thus connecting the villages to main highways with roads of uneven surface.

Besides, there are many places in which the paved roads become impassable during the rainy season due to falling rocks or the crumbling of steep overhead banks. There are also many locations in which bridges damaged by floods still remain unrepaired, and places in which one cannot cross rivers in ordinary passenger cars during the rainy season.

b Supply of electric power

Two of the 12 fishing villages in Guanacaste Province are without electricity.

c Telephone lines

Only 2 of the 12 fishing villages are without telephone service, a quite a number of lines can be found in villages with nearby tourist facilities. However, many villages have only one public telephone.

d Fuel supply

Of the 12 fishing villages, only Cuajiniquil has a fuel supply facility, and at present this facility is closed.

e Ice supply

Of the 12 fishing villages, only Cuajiniquil, Playas del Coco, and Carrillo have ice plants, but the productive capacities of all three plants are far less than the demand. Thus middlemen bring ice from the interior and supply it to those engaged in fishing.

Since even many of the small outboard motor-powered vessels are capable of preserving catches, there is a substantial demand for ice. However, since only the aforementioned 3 fishing villages have ice plants, the insufficiency is made up for by ice supplied from Liberia, and even from San Jose, which is located 200 to 300 km away from the villages. One of the ice plants surveyed, that in Playa del Coco, is planning to expand facilities.

#### f. Fishing ports

Cuajiniquil is the only one of the 12 fishing villages with permanent facilities as a fishing port. Cuajiniquil has a wharf for fishing vessels, a catching weighing station, a processing plant, an ice factory, an ice storage facility, a cold storage facility, and fuel- and water-supply facilities, but they are all closed except for the ice factory and the ice storage facility. This port also has simple berthing and mooring facilities, and here is where the boats are supplied with fishing equipment, supplies, fuel, food, and fresh water, as well as where the catches are unloaded.

The other 11 fishing villages have no such facilities whatsoever. Vessels with outboard motors are beached, and those with inboard motors are moored offshore where the water is 1 to 3 meters deep at low tide, with small FRP boats that run between the fishing vessels and shore being used to supply fishing equipment, supplies, fuel, food, and fresh water, as well as to unload the catches.

#### B. Key industries

In 11 of the 12 surveyed fishing villages fishing is the main industry, and as such fishing is the key industry. Collateral industries are livestock farming and agriculture, and many fishing villages practice these in conjunction with fishing. One of the villages practices agriculture as its main industry, with fishing being

collateral.

C. Medical facilities

There are medical facilities in 11 out of the 13 fishing villages and Puntarenas. The other 10 villages have only health stations which are not equipped to accept inpatients (5 health stations have doctors, 8 do not). Those admitted to a hospital must use the general hospital in Liberia, where the emergency medical system is fairly well developed. The level of the health and medical facilities in the fishing villages is very high.

D. Educational facilities

All the fishing villages combined have 19 elementary and middle schools, but 8 of the nine higher educational facilities (universities and vocational schools) are concentrated in Puntarenas. All villages have facilities for compulsory education, but most of them practice combined classes.

#### E. Recreational facilities

All except one of the villages have recreational facilities (athletic fields), but the fishing village of Puntarenas has all the facilities with parks and gymnasiums.

#### F. Drinking water facilities

Eighty-nine point four percent of households have plumbing that supplies potable water, and including the households that use public facilities, this means that over 90% of all homes have access to drinking water facilities. However, except for the city of Puntarenas, the proportion of households in Guanacaste Province using potable water plumbing and public facilities is slightly over 60%, with about 40% using well water and other drinking water. In particular, the region in the northern part of the province depends entirely upon well water.

### ② State of fisheries operations

#### A. Numbers of fishermen and fishing vessels

The number of fishermen in the 12 villages totals 1,151, and 76.1% of them are engaged in boat fishing (roofless vessels which are unpowered or have outboard motors); 23.9% engage in launch fishing (vessels with some kind of roof and inboard motors). About 25% of the fishermen are the owners of their vessels, with the other approximately 75% being employee fishermen.



There are 341 vessels, which the boats holding the overwhelmingly large proportion of 83.9%, and outboard motor-equipped vessels being most common. The proportion for launches is 16.1% (55 vessels), and these are all found in the two villages of Cuajiniquil and Playas del Coco.

Table 25  
Number of Fishermen and Fishing  
Vessels in Major 12 Villages

Item	No. of fishermen		No. of fishing vessels	
	Number	Proportion	Number	Proportion
Boats	876	76.1%	286	83.9%
Launches	275	23.9	55	16.1
Total	1,151	100.0	341	100.0

(Source: MAG Liberia Office)

B. State of fisheries operations

Fisheries in Guanacaste Province are operated mainly by small-scale fishermen with outboard motor-equipped vessels (the panga-boat class). As the methods of fishing and equipment are entirely traditional and dependent upon human power, productive capacity is very low.

Most pangas and boats are 3 to 8 meters in length, with 2 or 3 persons aboard. Usually they return home at night. Launches are usually between 7 and 10-odd meters in length, and have 4 or 5 people aboard (more people are aboard when line fishing). They are equipped with compasses and radiotelephones, carry ice for the storage of their catches, and are usually out 5 to 10 days at a time.

There are some differences in types of fishing among the villages, but the most common forms are gill netting (Pargo, Cabrilla, Posta Bolilla, Macarela, etc.), long lining (Cabrilla, Pargo, Posta Bolilla, Dorado, etc.), handlining (Pargo, Cabrilla, Dorado), and diving (lobster, octopus). In addition to these, a few fishermen practice basket fishing and collecting shellfish.

Prices of lobster, Pargo (especially Pargo), Cabrilla (especially Cabrilla), and octopus are high, and many people have the opinion that the amounts of these kinds taken would significantly affect one's fishing revenues.

Over 80% of the fishermen spend more than 200 days per year engaged in fishing, with most fishermen engaging in fishing an average of 20 days per month.

### ③ Surveyed households

Numbers and proportions of household members according to age are 1,793 persons (59%) being 15 years or older, and 1,266 persons (41%) being under 15 years of age. Of the

total persons 15 years or older, 1,160 (65%) of them are working. 19.6% of the total households have members working in some industry other than fishing, with the major occupations for these households being agriculture, day labor, and livestock farming.

Table 26  
Number of Households Surveyed and  
Number of Household Members

Type of household item	Total	Self-supporting	Joint operation	Employee
No. of households	760	164	34	562
Household members	3,059	877	133	2,049
Av. per household	4.0	5.3	3.9	3.6
Members of household in fishing	919	243	43	633
Average per-household members in fishing	1.2	1.5	1.3	1.1

In addition, 739 (97%) of these households derive the greater portion of their revenues from fishing, a far greater number than the 21 households which a greater proportion of their earnings from occupations other than fishing.

Table 27 shows the households according to their annual revenues, with about 74% of the self-supporting households having revenues of 300,000 colons or more; the figures for joint operation households are employee households, respectively, are 27% and 11%. There is thus a considerable revenues difference according to the type of work.

Table 27  
Household Proportions According to Annual Income

Annual income	Type of household	Self-supporting	Joint operation	Employee
Less than 30,000 colons		-	-	1.6
30,000 to 50,000		0.6	3.0	4.0
50,000 to 100,000		4.9	27.3	37.8
100,000 to 300,000		20.9	42.4	45.7
300,000 to 500,000		23.9	6.1	8.6
500,000 to 1,000,000		26.4	21.2	2.3
More than 1,000,000		23.3	-	-
Total		100.0	100.0	100.0

Note: The buying exchange rate for the colon and the US\$ as of January 19, 1988 was 72.95 colon/US\$1, and when colons are converted into Japanese yen the rate is about 1 colon/¥1.71.

④ Working household members

The working members of households number 1,160 (an average of 1.5 persons per household), and of this number 919 are engaged in fishing (representing 79% of the total working). Those working in occupations other than fishing engage in agriculture, livestock farming, commerce, day labor, and others, thus indicating that this region is highly dependent upon fishing. In 1986, 199 persons took up fishing as an occupation, and there were 21 persons who for a time quit fishing to work at other occupations, but returned to fishing during the 1986 season when their other occupations did not go well.

⑤ Persons receiving instruction on fishing

There were 279 persons who had received some kind of education or instruction (including private, individualized instruction), with the largest percentage of 33% being made up of net repair and net making. After this came fishing vessel and engine operation with 28%. Many persons had received instruction on the management of fishermen's cooperatives.

A total of 2,638 persons hope to receive instruction in the future. The greatest percentage of 39% want instruction in fishing vessel and engine operation, and 15% want instruction in net making and repair. The most significant facts were that the fishermen are very enthusiastic about receiving instruction, and that many people want instruction in the management of fishermen's cooperatives.

Most such instruction is conducted by a government institute (INA; see note below), where fisheries technical experts sent from Taiwan give instruction in fishing equipment, fishing methods, maintenance and care of engines, and the processing of catches. In addition, a small amount of such instruction is conducted by foreign organizations and corporations (Table 28).

Note: Instruction at INA (*Instituto Nacional de Aprendizaje*) is free of charge.

Table 28

Persons Who Have Received, or Wish to Receive Instruction

Type of instruction	Have received	Wish to receive
Vessel construction	23	287
Net making	42	207
Net repair	49	198
Shrimp pot making	2	110
Engine operation and repair	41	501
Vessel navigation/operation	38	533
Seafood processing	18	202
Operation of cooperatives	20	145
Accounting/clerical work	8	202
Education for cooperative Managers	13	106
Other	25	147
Total	279	2,638

⑥ General state of the fishing industry

A. Types of fishing

- i A look at the types of fishing according to fishing villages shows that whereas the fishermen in all villages conduct bottom gill netting, bottom long lining, handlining, and diving, most surface gill netting and surface long lining is carried on in just a few villages and in the Puntarenas area. Many fishermen in the northern area conduct mostly bottom gill netting, and all fishing villages carry on handlining, but in the southern area there are many fishermen who practice mainly handlining. There are

many fishermen in the northern and central areas who practice mainly diving. In addition, there is a recent trend toward more surface long lining (refer to Table 29).

Table 29  
Types of Fishing According to Fishing Villages

Village/type	Gill netting	Drift gill netting	Long lining	Float long lining	Hand lining	Diving	Shell-fish
Puerto Soley	xx				x	x	
El Jobo	xx		x		x	x	
Cuajiniquil	xx		x		x	xx	
Playas del Coco	xx		x	x	x	xx	
Brasilito	x		x		x	xx	
Tamarindo	x				x	xx	
Lagarto			x		x	xx	
San Juanillo	x		x		x	xx	
Nosara	x		x		xx		
Garza					xx	x	
Carrillo	x		xx		x	x	
Puntarenas	x	xx*1	xx	x	x	x	xx*2

Notes: (1) "xx" denotes primary types of fishing, and "x" denotes secondary types.

(2) "1" denotes fishing by launch, and "2" denotes fishing by boat.

- ii Only a very few fishing vessels use only one kind of fishing equipment, and most of them use several kinds of equipment in parallel, but since the catch efficiency of gill netting equipment is low in relation to its price, there is an increase in vessels which combine long lining and handlining (Table 30).

Table 30

## Fishing Equipment According to Type of Vessel

Equipment used	Panqas/boats		Launches		Total	
	Vessels	%	Vessels	%	Vessels	%
Gill n., long line, hand line, diving	70	20.6	17	21.0	87	20.7
Gill n., long line, hand line	37	10.9	26	32.1	63	15.0
Gill n., long line	1	0.3	-	-	1	0.2
Gill n., hand line	20	5.9	3	3.7	23	5.5
Gill n., hand line, diving equipment	63	18.6	3	3.7	66	15.7
Gill n., diving equipment	4	1.2	-	-	4	1.0
Gill net	6	1.8	-	-	6	1.4
Long line, hand line, div. eq.	36	10.6	6	7.4	42	10.0
Long l., hand l.	15	4.4	14	17.3	29	6.9
Long l., div. eq.	-	-	-	-	-	-
Long line	1	0.3	2	0.5	3	0.7
Hand l., div. eq.	51	15.0	1	1.2	52	12.4
Hand line	19	5.6	4	4.9	23	5.5
Diving equipment	7	2.1	-	-	7	1.7
Unclear (*)	9	2.7	5	6.4	14	3.3
Total	339	100	81	100	420	100

Source: This is a summary of the "Table of Results for the Survey of Fishing Vessels, Fishing Equipment, and Crews" which was conducted in July and August of 1987 by the Ministry of Agriculture's Marine Products Bureau, Liberia Office in the Chorotega Region.

Note: As this survey was conducted in the Chorotega Region (Guanacaste Province and the Pacific Coast of the Nicoya Peninsula), the number of vessels differs from that of Table 25 (12 fishing villages).



B. Number of days engaged in fishing

Over 80% of the households spend more than 200 days annually fishing, with particularly high figures shown by joint operation households. Forty-eight point one percent of the self-supporting households, 54.5% of the joint operation households, and a somewhat lower 41.2% of the employee households spend over 250 days per year fishing. It is possible to say that most households spend an average of 20 days per month fishing (Table 31).

Table 31  
Proportion of Days Worked by Type of Household

Days \ Household	Self-supporting	Joint operation	Employee
<100	11.3	-	2.0
100-150	0.6	6.1	1.8
150-200	8.1	9.1	15.6
200-250	31.9	30.3	39.0
250-300	33.8	45.4	36.0
>300	14.3	9.1	5.2

C. Number of persons on board

The total number of persons working in pangas and boats is 525, for an average of 2.7 persons per vessel. The number for launches is 260 persons, for an average of 4.5 persons per vessel.

(4) Characteristics and problems of main fishing villages

① Infrastructure deficiencies

There are localized differences in the living environments of the fishing villages surveyed with regard to facilities for transportation, health and medical care, sanitation, education, and recreation.

It is necessary to secure transportation routes from the fishing villages to the places where fish are consumed and to provide for the distribution of marine products, but in the surveyed northern Pacific coast region roads and bridges are destroyed and temporarily impassable during the rainy season, thereby preventing distribution without impediments. In addition, most of the villages have no cold storage or other facilities for the preservation of catches, thereby engendering lower quality.

Along the northern Pacific coast the fishing villages have no port facilities whatsoever, except for Cuajiniquil, and this adversely affects fisheries production activities.

② The Cuajiniquil fishing terminal

A fishing terminal was established in Cuajiniquil with FAO financing, and it began operations in November of 1983. The objective of this terminal is to build local infrastructure to aid in the fostering of fishermen's cooperatives for the organization of small-scale fishermen, and it was hoped that the completion of this facility would

result in the further escalation of the movement to organize the cooperatives in this area. However, this terminal has even to this day not performed as initially planned.

This report is meant to formulate a master plan for the development of the fishing industry in Costa Rica, but having examined the survey results concerning this terminal, it is considered desirable to reflect the problems of this terminal in the master plan.

#### A Cuajiniquil as a fisheries base

Cuajiniquil is located 268 km from San Jose and 51 km from Liberia. There are 297 fishermen, 74 pangas and boats, and 15 launches. There is also a fishermen's cooperative with 34 members. Cuajiniquil has 6 catch purchase centers, as well as fisheries and social infrastructure.

On the seaward side of the road passing through the village of Cuajiniquil there is an inlet where vessels can be moored, and the terminal is located 1.5 km from the village.

#### B A general description of the facility

- i Wharf: total length, 61 m
- ii Ice plant: daily production capacity, 15 tons
- iii Cold storage facility: 150 cubic meters (75 x 2)

iv Unloading area: 245 square meters

### C Facility utilization

Most of the vessels here do not use the terminal, coming to the wharf only when they are short on ice; thus use is limited to obtaining ice from the ice plant. The wharf is used only by coast guard vessels, trawlers from Puntarenas, and launches which occasionally draw up for a crew rest. What is more, the terminal's ice machine often suffers breakdowns, and there are frequent power outages. The machine is not therefore operating sufficiently.

### D Reasons for the lack of effective facility use

The following reasons can be given for the lack of effective facility use by the fishermen

- i As the facility was not originally built for the local fishermen, it does not reflect their needs.
- ii Due to the great differences in water level between high and low tide, small vessels find it difficult to load and unload.
- iii No gasoline is supplied for the pangas and boats which compose the majority of local fishing vessels.
- iv The catches are sold to middlemen at the shipping center.
- v Since the inlet is affected little by waves, and vessels can easily be moored, there is no need to go to the trouble of mooring at the wharf.

- vi From November through March, strong northeast winds blow continuously in the fishing grounds of this area, and thus the pangas and boats often do not put out to sea.
- vii Influential launch owners are also middlemen, and they send catches directly to San Jose, selling them either at the market or to exporters.

### ③ Education and training

While 279 persons have received some kind of education or instruction, there are many people - 2,638 - who wish to receive instruction. This indicates that although the fishermen have a strong will to improve, the education and training system is far from sufficient.

### ④ Kinds of fishing

Major types of fishing in the survey region are the traditional types of gill netting, long lining, and diving. Many fishermen use these in combination, but all these methods are meant for taking demersal fish, with few people going after pelagic fish. However, since the price of Dorado for export has risen sharply, there has been a rapid increase in surface long lining operations since April, 1988.

⑤ Sale of catches

In villages with fishermen's cooperatives the catches are sold to middlemen through the cooperatives, but in villages without cooperatives most fish are sold directly to middlemen.

3-2-3 Fishing Family Economy Survey

(1) Survey objective

To elucidate the state of fishing family economies.

(2) Survey methods

This survey was implemented by conducting interviews with self-supporting fishing families living in the main fishing villages of Guanacasté Province, and in Puntarenas.

Table 32  
Survey Scale and Characteristics

Item		Units	Outboard	Inboard	Total
Households surveyed		Homes	110	47	157
Household members		Persons	572	285	857
Members engaged in fishing	Family	"	144	85	229
	Hired	"	268	187	457
	Total	"	412	274	686
Average members per household		"	5.2	6.1	5.5
Average members per household in fishing		"	3.7	5.8	4.4
Number of fishing vessels owned		Vessels	141	59	200

### (3) Survey results

#### ① Management

The 110 households using outboard motor-equipped vessels have 141 vessels, for an average of 1.3 vessels per family. The average number of persons per family engaged in fishing is 3.7 persons (1.3 family members, 2.4 hired fishermen), and 75% of them put out to sea over 200 days annually. A look at the average annual catch per family shows that 80% of fishing families catch less than 10 tons per year, 20% catch between 11 and 30 tons, and a mere 1% catch between 31 and 50 tons annually.

The 47 families with inboard motor-equipped vessels use a total of 59 vessels, for an average of 1.3 vessels per family. The average number of persons per family engaged in fishing is 5.8 persons (1.8 family members, 4.0 hired fishermen), and 85% of them put out to sea over 200 days annually. A look at the average annual catch per family shows that 49% of fishing families catch less than 10 tons per year, 38% catch between 11 and 30 tons, 11% catch between 31 and 50 tons, and 2% catch 51 tons or more annually.



## ② Economy of fisheries

### A. Fishing revenues

Fishing revenues for the outboard motor-equipped fishermen are 563,000 colons annually, with 94% of this coming from the sale of their catches. Inboard motor-equipped fishermen have annual revenues of 1,553,000 colons, with 92.9% of these derived from the sale of their catches. In both cases most revenues are derived from the sale of catches. The revenues of inboard motor-equipped fishermen are about 2.8 times higher than those of outboard motor-equipped fishermen (Table 33).

### B. Fishing expenditures

Fishing expenditures for outboard motor-equipped fishermen are 371,000 colons annually, and 972,000 colons for inboard motor-equipped fishermen; the latter is about 2.6 times higher than that of the former.

Expenditures according to items purchased for the two classes are as follows. For outboard motor-equipped fishermen, wage payments to hired fishermen amount to 43.1%, accounting for the highest percentage. Next come fuel expenses (27.3%), fishing equipment (10.6%), and vessel expenses (7.5%) in decreasing order. These four categories alone account for 88.5% of the total.

Figures for inboard motor-equipped fishermen are 48.9% for wage payments to hired fishermen, for the highest percentage, followed in decreasing order by fuel expenses (16.9%), and vessel expenses (14.0%). These three categories alone account for 79.8% of the total. The expenses for vessels and ice (8.6%) of the inboard motor-equipped fishermen are higher than those for the outboard motor-equipped fishermen.

#### C. Net fishing income

Fishing income, obtained by subtracting expenditures from revenues were 192,000 colons annually for outboard motor-equipped fishermen, and 581,000 colons annually for inboard motor-equipped fishermen, with the latter being 3 times that of the former. Dividing fishing income by fishing revenues yields a fishing net income ratio of 34.1% for outboard motor-equipped fishermen, and 37.4% for inboard motor-equipped fishermen, with the latter being 3.3% higher (Table 33).

Table 33

## Income from Fisheries Annual Income per Household

	Item	Total		Household having outboard motors		House having inboard motors		B/A
		Actual number	%	Actual Number A	%	Actual Number B	%	
Income	Sales of Catches	808,018	94.0	536,837	95.4	1,422,694	92.9	2.69
	Income from fisheries other than catches	51,361	6.0	26,103	4.6	100,477	7.1	4.23
	Total	859,379	100.0	562,940	100.0	1,553,171	100.0	2.76
Expenditure	Costs of fishing boats	60,462	11.0	28,041	7.5	136,340	14.0	4.86
	Costs of fishing gear	45,618	8.3	39,513	10.6	59,907	6.2	1.52
	Fuel expenses	119,995	21.8	101,157	27.3	164,086	16.9	1.62
	Costs of food	19,440	3.5	15,055	4.1	29,701	3.0	1.97
	Expenses of preserving ice	38,137	6.9	18,835	5.1	83,312	8.6	4.42
	Wages for employees	254,282	46.2	159,826	43.1	475,348	48.9	2.97
	Rental cost	1,273	0.2	1,635	0.4	426	0.0	0.26
	Other expenses	11,769	2.1	6,976	1.9	22,987	2.4	3.30
	Total	550,976	100.0	371,038	100.0	972,107	100.0	2.62
	Depreciation amount for fisheries	14,569		10,340		24,468		2.37
	Net income from fisheries	308,403		191,902		581,064		3.03

### ③ Capital borrowing

Twenty-seven households (24.5% of the surveyed households) of the outboard motor-equipped fishermen have borrowed capital. Nineteen of the households borrowed from public financial institutions (average amount borrowed per family: 190,000 colons; outstanding balance: 114,000 colons), 6 households borrowed from private institutions (borrowed: 144,000; outstanding balance: 102,000), and 2 households borrowed from other sources (borrowed: 80,000; outstanding balance: 40,000). The average amount borrowed for all 27 families is 172,000 colons, and the average outstanding balance is 106,000 colons.

Thirty households of the inboard motor-equipped fishermen (63.8% of total surveyed households) have borrowed capital. Twenty of the households borrowed from public financial institutions (average amount borrowed per family: 493,000 colons; outstanding balance: 373,000 colons), 7 households borrowed from private institutions (borrowed: 110,000; outstanding balance: 34,000), and 3 households borrowed from other sources (borrowed: 131,000; outstanding balance: 100,000). The average amount borrowed for all 30 families is 368,000 colons, and the average outstanding balance is 267,000 colons.

The proportion of inboard motor-equipped households having borrowed money is about 39.3% higher than that of inboard motor-equipped families, thus hinting at the large amount of capital needed for the larger vessels.

Table 34

## Debt and Outstanding Balance per Household

(1,000 colons)

Item		Household having outboard motors	Household having inboard motors
Debt	Public creditors	190.1	493.3
	Private creditors	144.3	110.3
	Other sources	80.0	131.0
Out- standing balance	Public creditors	113.6	373.0
	Private creditors	102.0	33.5
	Other sources	40.0	100.0

Thirty-eight to 41% of both outboard- and inboard motor-equipped fishermen borrow money at the high interest rate of 20% p. a. For both groups, most people repay their loans in monthly installments, with lesser numbers of fishermen making payments on their loans every 3 or 6 months.

Most fishermen in both groups repay their loans over a 3- to 5-year period, with the next most common repayment term being 5 to 10 years.

Deferred payment periods are usually 3 or more years for outboard motor-equipped fishermen, and 1 to 3 years for inboard motor-equipped fishermen, but for both groups over 50% have terms of less than 3 years.

Fifty to 60% of both groups offer the property for which the loan is being made, or some other property, as security

for their loans.

Note: The main public finance organizations are as follows:

*Instituto de Foment Cooperativa (INFOCOOP)*

*Fundacion Inter Americana (FIA)*

*Banco Popular y de Desarrollo Comunal (BPDC)*

*Catholic Relief Service (CRS)*

*Banco Anglo Costaricense (BAC)*

Table 35  
Repayment Conditions (%)

Item		Household having outboard motors	Household having inboard motors
Interest per annum	Under 10 %	9.5	10.3
	10 to 12	4.8	10.3
	12 to 15	19.0	27.7
	15 to 18	14.4	6.9
	18 to 20	14.3	3.4
	Over 20 %	38.1	41.4
Repayment conditions	Monthly	88.0	73.3
	Every 3-month	4.0	16.7
	Every 6-month	-	6.7
	Yearly	4.0	-
	Others	4.0	3.3
Period of repayment	Under 3 years	14.3	26.0
	3 to 5	57.1	37.0
	5 to 10	28.6	33.3
	Over 10 years	-	3.7
Moratorium	Under 1 year	28.6	-
	1 to 3	28.6	57.1
	Over 3 years	42.8	42.9
Mortgage		57.7	55.2

④ Fishing family economies

A. Fishing family income

A look at the income of fishing families, including both fishing income and non-fishing income shows that outboard motor-equipped fishermen have an annual income of 251,000 colons (net fishing income: 192,000 colons; other income: 59,000 colons), with 76.4% of their income derived from fishing.

On the other hand, inboard motor-equipped fishermen have an annual income of 667,000 colons (net fishing income: 581,000 colons; other income: 86,000 colons), with 87.1% of their income derived from fishing. This is 10.7% higher than outboard motor-equipped fishermen, with a high proportion of income for fishing families derived from fishing (Table 36).

Table 36  
Average General Income and  
Expenditure per Fisheries Household

Item		Household having out-board motors	Household having in-board motors (Colon)
Income from fisheries	859,379	562,940	1,553,171
Expenditures relating to fisheries	550,976	371,038	972,107
Net income from fisheries (A)	308,403	191,902	581,064
Income from others	74,608	68,537	88,818
Other expenditures (excluding taxes and charges)	7,319	9,195	2,927
Net income from others	67,289	59,342	85,891
Income of fisheries households (C)	375,692	251,244	666,955
Household expen- ditures (B)	181,330	169,638	208,694
Dependency on fisheries A/C x 100	82.1	76.4	87.1
Household sufficiency A/B x 100	170.1	113.1	278.4



## B. Household expenses

Annual household expenses for outboard motor-equipped families are 170,000 colons, and 209,000 colons for inboard motor-equipped families. A look at the main items of household expenses for outboard motor-equipped families, they are food and beverages (49.1%), clothing (12.2%), furniture/household implements, and transportation/communications (both 6.6%). After these come education, lighting, heating, and water, all at 5% or slightly higher, with other items all being less than 5%.

On the other hand, the main expenditures for inboard motor-equipped families are food and beverages, the greatest expense (55.0%), after which come clothing (12.3%), and transportation/communications (10.8%). Other expenditures differ little from those of outboard motor-equipped families.

A comparison of the above results with the per capita average household expenses for the ordinary household (an average of 4.6 persons) as obtained in the city survey shows that total household expenses in the villages are 55%, for a low level of consumption. Housing expenses are 10.9%, and this is thought to be due to the differing conditions in locating. The reason that expenses for health, medical care, education, and amusement are much lower than in the cities is because these facilities are not available in the fishing villages (Table 37).

Table 37

Annual Household Expenditures per Capita  
(Colons)

Item	City A	Fishing village B	B/A x 100
Total household expenditures	59,937	32,969	55.0
Food expenses	24,583	16,858	68.6
Residence expenses	9,673	1,055	10.9
Utilities expenses	2,865	1,816	63.3
Clothing expense	4,235	4,039	95.4
Health and medical expenses	3,507	1,330	37.9
Expenses for transportation and communications	3,156	2,647	83.9
Education expense	2,133	1,613	75.6
Recreation expenses	2,721	1,344	50.2

C. Fishing family income and household expenses

Fishing revenues are almost the same for households which only fish, and those which have non fish marketing income, but revenues for those which fish and act as middlemen are 3.4 times higher than the other two. Thus revenues for "fishing only" households are 234,000 colons, those for "fishing and other" households are 287,000 colons, and those for "fishing and middleman" households are 1,351,000 colons, far higher than the other two. However, there is little difference among their household expenses, with "fishing only" households being 163,000 colons, "fishing and other" households being 206,000 colons, and "fishing and middleman" households being 248,000 colons (Table 38).

Table 38

## Income from Fisheries and Net Income of Fisheries Households

Item	Income from Fisheries	Expenditures relating to fisheries	Net income from fisheries (A)	Other income	Net income of fisheries (C)	Household expenditure (B)	Dependency on fisheries A/C	Household sufficiency A/B
Total	859,379	550,976	308,403	67,289	375,692	181,330	82.1	170.1
Degree of involvement	769,538	535,057	234,481	47,229	281,710	163,104	83.2	143.8
only in fisheries								
Fisheries and middlemen	2,594,000	1,243,211	1,350,789	15,500	1,366,289	248,393	98.9	543.8
Fisheries and other job	759,918	472,981	286,937	113,961	400,898	205,834	71.6	139.4
Operation days								
Under 60 days	131,350	170,841	39,491 (Minus)	117,714	78,223	131,310	-	-
60 to 100	212,163	120,864	91,299	197,428	288,727	199,789	31.6	45.7
100 to 150	340,000	153,548	186,452	25,200	211,652	107,200	88.1	173.9
150 to 200	1,029,473	597,304	432,169	31,038	463,207	186,639	93.3	231.6
Over 200 days	914,553	592,897	321,656	64,356	386,012	183,661	83.3	175.1
Number of persons engaged in fisheries								
Under 3	305,124	292,246	81,878	28,678	110,556	136,878	74.1	59.8
3 to 5	637,415	387,541	249,874	29,670	279,544	159,492	89.4	156.7
5 to 7	966,355	629,170	337,185	99,081	436,266	233,611	77.3	150.8
Over 7	2,008,784	1,307,969	700,815	183,738	884,553	245,018	79.2	286.0

(4) Characteristics and problems of fishing family economies

① Characteristics of fishing household economies

- A. Seventy-five percent of outboard motor-equipped fishermen, and 85% of inboard motor-equipped fishermen who engage only in fishing put out to sea more than 200 days per year, but 80% of their operations are very small in scale, with average yearly catches being less than 10 tons. Income derived from fishing is 76.4% for outboard motor-equipped fishermen, and 87.1% for inboard motor-equipped fishermen, both showing high percentages.
- B. Fishing revenues differ according to the type of vessel used, but fishermen maintain constant revenues. In particular, the fishing income of inboard motor-equipped fishermen is 3 times greater than that of outboard motor-equipped fishermen, thus showing the superiority of larger vessels.
- C. The standard of living for fishermen as reflected in their household expenses is much lower than that of the ordinary urban household.
- D. Capital borrowing can be found in 24.5% of the outboard motor-equipped group, and 63.8% of the inboard motor-equipped group. In particular, the reason that small amounts are borrowed by the outboard motor-equipped group, which constitutes the majority, is thought to be due to the "rigorous loan conditions" described below.

② Loan conditions

When applying for a loan from a commercial or state-managed bank there are no problems if one has many years of transactions with that bank, or sufficient bank balance, but when it is the first transaction and one has no money in the bank it is said that the bank will demand security equal to 5 times the amount of the loan. The petty fishermen living in the provinces of Costa Rica do not even have bank branch offices in their areas, and it is a rare fisherman who has money in the bank. Also, in more than one-third of all instances the interest rate is 20% or more, meaning that not only is borrowing difficult, but that paying back a loan is also a formidable task.

Since under these circumstances it is impossible for a petty fisherman to get a loan, it is understandable why fishermen must borrow money from middlemen (or middlemen) on the condition that they will pay it back by fishing. It is necessary for the future to build a system under which financial institutions can lend money to fishermen through cooperatives with confidence, and to do this by developing fishermen's cooperative into a stable organization operating credit businesses.

### 3-2-4 Survey of Fishermen's Intentions

#### (1) Survey objectives

To determine what kind of perceptions the fishermen themselves have with respect to modernization of the fishing industry, and whether or not the conditions are right for the acceptance of modernization.

#### (2) Survey method

This survey consisted of interview conducted with self-supporting families of fishermen who live in the main fishing villages of Guanacaste Province and in the city of Puntarenas.

(3) Results of second survey

① Intentions of fishing families

A. Intentions of fishing families

This survey covered 165 fishing families (71% using outboard motors; 29% using inboard motors). Of this total, 110 (66.7%) of the families wish to expand the scale of their operations, 47 families (28.5%) wish to remain as they are, 2 families (1.2%) wish to reduce the scale of their operations, and 6 families (3.6%) want to quit fishing.

Table 39  
Number of Households by Desire

(No. of households)

Item	Total	Households having outboard motors	Households having inboard motors
Number of the households of survey	165	117	48
Households wish for the enlargement of the operation scale	110	78	32
Households wish for the maintenance	47	34	13
Households wish for the reduction	2	1	1
Households wish for the termination	6	4	2

B. Intentions of fishing families according to region

The following is a summary of the intentions of fishing families according to region.

- i In region A the largest percentage of fishing families, 63.4%, wish to remain as they are. Following are those who want to expand, at 31.7%, and those who want to quit, at only 4.9%.
- ii In region B the largest percentage of fishing families, 84.9%, wish to expand their operations, followed by families who wish to remain as they are at 10.6%.
- iii In region C 81.2% wish to expand, 16.7% wish to stay the same, and only 2.1% wish to quit.
- iv In region D the largest percentage, 60%, wish to stay the same. They are followed by families who wish to expand or reduce operations, both at 20%. There are marked numbers of families in regions B and C that want to expand operations (Table 40).

Table 40

Desires of Fisheries Households by Area

(No. of fisheries households)

Item	A	B	C	D
To wish enlargement	13	56	39	2
To wish maintenance	26	7	8	6
To wish reduction	-	-	-	2
To wish termination	2	3	1	-
Total	41	66	48	10



② Fishermen's impression on the State of fisheries resources

With respect to the state of fisheries resources, 11.5% of all fishermen believe they are "increasing," while 77% believe they are "decreasing." Those who said resources are "stable" or "no idea" total 11.5%. Of the fishermen who want to expand operations, 9.0% think that resources are "increasing," while 80% think they are "decreasing" (Table 41).

Table 41

Evaluation of Fisheries Resources by Household

Item	Total	Enlargement	Status quo	Reduction, termination
Increase	19	10	8	1
Decrease	127	86	35	6
No charge	18	13	4	1
Difficult to evaluate	1	1	-	-
Total	165	110	47	8

③ Memberships of fishermen's cooperatives

A mere 13 (7.9%) of the 165 fishing families surveyed are members of fishermen's cooperatives. About 50% of the non-member families wish to join. The non-member families gave reasons such as the following for not joining: There are no advantages to joining, do not want to be restrained by membership, do not like the way the cooperatives are run.

④ Intentions of fishing families who wish to expand the scale of their operations

A. Reasons for wanting to expand

The results of a survey of reasons for wanting to expand the scale of operations, as divided into 7 categories, indicate that although there are differences in the "reasons" between the outboard and inboard motor groups, the highest percentages on the whole were "income is stable" and "I have fishing skills" (Table 42).

Table 42

Reason of Enlargement

(Plural answers: %)

Item	Household having outboard motors	Household having inboard motors
Stable income	42.3	46.9
Affluent fisheries resources	16.7	28.1
Available fisheries technology	39.7	34.4
Available fund	19.2	21.9
Existing inheritors	38.4	15.6
Young age	53.8	15.6
No other jobs available	25.6	15.6
Others	2.6	-

The reason most often given by outboard motor-equipped fishermen is that "I am still young" (53.8%), followed in descending order by "fishing income is stable," and "I have fishing skills." Also, 25.6% said that "there are no other appropriate jobs." For inboard motor-equipped fishermen, on the other hand, the most often given reason was that "income is stable" (46.9%), followed in descending order by "fishing skills," "fisheries stocks," and "capital."

B. Methods of expansion

An interview survey was conducted concerning the expansion of operations, and fishermen were asked about the expansion of both means of production, fishing vessels and operations.

Table 43  
Means of Enlargement (by Fishing Boats)

(Plural answers: %)

Item	Household having outboard motors	Household having inboard motors
Enlargement of fishing boat size	59.0	59.4
Increase in number of fishing boats	48.7	43.8
Installation of more powerful engine	60.3	50.0
Building new fishing boat	37.1	34.4
Consolidation of fish hold	67.9	43.8
Others	12.8	3.1

i Fishing vessels

The most frequent answer among outboard motor-equipped fishermen was "a hold for the catch" (67.9%), followed in descending order by "a bigger engine" and "a bigger vessel."

The most frequent answer among inboard motor-equipped fishermen, however, was "a bigger vessel" (59.4%), followed in descending order by "a bigger engine," "more vessels," and "a hold for the catch." This shows that inboard motor-equipped fishermen consider improvements in catch efficiency to be most important than do outboard motor-equipped fishermen.

ii Operations

Little difference was discerned between the outboard- and inboard motor-equipped fishermen with respect to fishing operations. The most frequent replies were "more hands on board" and "enlargement of fishing grounds" (Table 44).

Table 44  
Means of Enlargement (by operation)

(Plural answers: %)

Item	Household having outboard motors	Household having inboard motors
Increase in number of crew members	84.6	71.9
Increase in operation days	73.2	65.6
Introduce new fishing method	44.9	28.1
Increase of fishing gears	62.8	71.9
Widening of fishing grounds	79.5	71.9
Others	9.0	3.1

C. Reasons for reducing scale or quitting

The most frequently given reasons for wanting to reduce the scale of operations or giving up fishing were "unstable income," "decreasing stocks," and "insufficient funds and skills."

⑤ Hopes for government action

A. Fishing families wishing to expand operations

Over 80% of fishermen hope that government will help them with business management and capital (grants-in-aid, long-term repayment schedules), as well as with expanding consumption of marine products, and providing infrastructure for the fishing villages. The provision of infrastructure, including the roads within Guanacaste Province, is an condition essential to the future development of the fishing industry. In conjunction with this, there are emphatic hopes for relaxations on loans, which would contribute to the stable management of operations. In addition, over 70% of the fishermen said they would like to see a fishing permission system and relaxations on fishing restrictions (Table 45).

Table 45  
Requests to Administrative Authorities

(Plural answers:%)

Item	Enlargement	Status quo
Improvement of fishing license system	76.4	31.9
Relaxation of fisheries regulations	71.8	42.6
Improvement of tax system	51.8	17.0
Enlargement of public loans and subsidies	68.2	55.3
Interest on subsidy	80.0	70.2
Long-term repayment	80.9	76.6
Public management of purchase market on producing area	70.0	38.3
Establishment of joint marketing by fisherman	68.2	31.9
Encouragement of marine products consumption	80.9	31.9
Improvement of storing facilities (ex. cold storage)	69.1	42.6
Forming and growing fishermen's cooperatives	66.4	31.9
Organizing courses for fisheries education	78.2	38.3
Improvement of roads through payment	74.5	34.0
Improvement of living environment of fishing villages	81.0	34.0
Others	10.9	4.3

B. Fishing families wanting to remain unchanged

The most frequently heard wish concerned capital for management, and in this respect there is little difference with the aforementioned groups.

⑥ Hopes expressed toward fishermen's cooperatives

Overall, the most frequently heard wish was for the maintenance of catch quality, in which connection the fishermen strongly requested the construction of ice plants and cold storage facilities, as well as the establishment of marine product storage facilities. The next most frequent wish was for education and instruction on fishing, as well as village infrastructure. Many fishermen also want expansion of cooperative business (joint shipping of catches and more self-supporting fishing). (Table 46.)

Table 46  
Requests to Fishermen's Cooperatives by Desire of Households

Item	(Plural answers:%)	
	Enlargement	Status quo
Development of self-supporting fishing by fishermen's cooperative	45.5	25.5
Marketing and selling of catches directly by fishermen's cooperative	49.1	31.9
Increases of allotment to cooperative members	45.5	21.3
Improvement of marine products storing facilities	53.6	42.6
Construction of cold storage	51.8	38.3
Construction of ice plant	57.3	51.1
Enlargement of financial aids and loans	35.5	25.5
Development of fisheries education	49.1	14.9
Improvement of living environment	46.4	19.1
Others	9.1	2.1

(4) Follow-up survey on fishermen who want to expand the scale of their operations

① Background and objectives of follow-up survey

According to the results of the "Survey of Fishing Family Intentions" conducted in 12 fishing villages in Guanacaste Province as part of the second field survey, and as shown in Table 47, 69.7% of all fishermen in the 12 villages wish to expand the scale of their operations. By contrast, 83.9% of those in Playas del Coco wish to do so, a percentage far higher than the villages.

Table 47  
Fishing Family Intentions with Regard to  
Operation of Their Enterprises

Type	12-village total		Playas del Coco	
	Homes	Proportion	Homes	Proportion
Homes surveyed	155	100	62	100
Want larger operation	108	69.7	52	83.9
No change	41	26.4	7	11.3
Want smaller operation				
Want to quit	6	3.9	3	4.8

The reasons are that the area off Playas del Coco is an excellent fishing ground, that the infrastructure is more developed here than in other villages, that the village has a good living environment, and that since there are tourist



facilities in the vicinity, there is a local demand for the consumption of marine products. For these reasons, 22 fishermen in Playas del Coco who wish to expand their operations were interviewed to ascertain specifically what they wanted (Table 48).

Table 48

Operating Scale of Surveyed Fishermen

Type	Vessels owned	Number of surveyed fishermen
Outboard motor (panga/boat) owner	1	7 (31.8%)
"	2	1 (4.55%)
Inboard motor (launch) owner	1	8 (36.40%)
"	2	5 (22.70%)
Outboard/inboard motor owner	1 each	1 (4.55%)
Total		22 (100.0%)

② Comparison of present state and fishermen's wishes

A. Fishing vessel size

All the owners of outboard motor-equipped vessels want to switch to inboard motor-equipped vessels. Due to the great increase in pangas and boats during the last 2 or 3 years, coastal stocks have decreased, and because of laws to protect stocks, the following catch limits have been instituted (Agriculture and Livestock Ministry Order #17,019: smallest gill net mesh size is 114.3 mm), it

appears that the fishermen have no choice but to make the switch from coastal to offshore fishing.

Table 49

Comparison of Present Vessel Size with that Desired

Vessel type	Vessel length	Present number	Desired number of vessels
Out-board motor equipped	5.5 - 6.0m	2 (6.9%)	none
	6.1 - 6.5m	7 (24.1%)	"
	6.6 - 8.0m	1 (3.5%)	"
	Subtotal	10 (34.5%)	
Average 6.3 m			
in-board motor equipped	6.0 - 7.0m	3 (10.3%)	1 (3.85%)
	7.1 - 8.0m	5 (17.2%)	
	8.1 - 9.0m	5 (17.2%)	1 (3.85%)
	9.1 - 10.0m	2 (6.9%)	4 (15.4%)
	10.1 - 12.0m		9 (34.6%)
	12.1 - 13.0m	1 (3.5%)	4 (15.4%)
	13.1 - 14.0m	2 (6.9%)	5
	>14.1m	1 (3.5%)	(7.7%)
Subtotal	19 (65.5%)	26 (100%)	
Average 8.8 m			Average 11.6m
Total		29 (100%)	26 (100%)

All owners of inboard motor-equipped vessels want to use even larger vessels.

B. Engine horsepower

Most of the fishermen surveyed want engines with greater horsepower. Three fishermen wanted engines in the same class as their present marine engines, or engines with about 10% greater horsepower. By contrast, 14 fishermen wanted substantial horsepower increases, and 4 of these wanted to purchase used automobile engines. When these 4 persons were asked their reasons they all mentioned the low purchase price, and none had considered the difficulty of purchasing spare parts, or the increased fuel consumption.

Table 50

Comparison of Present Engine with that Desired

Vessel type	Horsepower	Present number	Desired number of vessels
Out-board motor equipped	20 - 25ps	7 (24.1%)	none
	26 - 30ps	2 (6.9%)	"
	31 - 35ps	1 (3.5%)	"
	Subtotal	10 (34.5%)	
	Average 26ps		
In-board motor equipped	<20ps	6 (20.6%)	1 (3.5%)
	21- 40ps	1 (3.5%)	5 (19.3%)
	41- 60ps	4 (13.7%)	4 (15.4%)
	61- 80ps	3 (10.2%)	6 (23.1%)
	81- 100ps	1 (3.5%)	1 (3.5%)
	101 -120ps	1 (3.5%)	4 (15.4%)
	121 -140ps	1 (3.5%)	4 (15.4%)
	141 -160ps	1 (3.5%)	-
	161 -180ps	-	-
	181 -200ps	1 (3.5%)	1 (3.5%)
	Subtotal	19 (65.5%)	26 (100%)
	Average 66ps		
Total		29 (100%)	26 (100%)

C. Number of persons on board

In accordance with the wish to have larger vessels and greater horsepower, fishermen also want to increase the number of persons working aboard each vessel. Except for one presently used fishing vessel, none of the vessels is outfitted with any kind of mechanical fishing apparatus. Since all operations are carried out by human power, it is only natural that the fishermen want more hands.

Table 51

Comparison of Present Crew Size with that Desired

Vessel type	Crew per vessel	Present		Desired	
		No. of vessels	Total crew	No. of vessels	Total crew
Out-board motor equipped	3	3	9	-	-
	4	6	24	-	-
	5	1	5	-	-
	Subtotal	10	38	-	-
		Average 3.8 persons/vessel			
In-board motor equipped	4	6	24	1	4
	5	5	25	6	30
	6	5	30	8	48
	7	-	-	2	14
	8	1	8	7	56
	9	2	18	2	18
	Subtotal	19	105	26	170
	Average 5.5 persons/vessel		Average 6.5 persons/vessel		

D. Fishing equipment on vessel

A comparison of the second and third field surveys reveals a substantial increase in the equipment used for taking pelagic fish. The reason for this is the considerable increase in the export price of Dorado, a pelagic fish (second survey price: average 84 colons; third survey price: average 280 colons).

Table 52  
Types of Fishing Gear per Vessel in Third Survey

Equipment on board	Number of vessels	Proportion (%)
Bottom gill net, bottom long line, float long line, hand line, diving gear	2	6.9
Bottom gill net, bottom long line, float long line, hand line	7	24.1
Bottom gill net, float long line, hand line, diving gear	1	3.4
Bottom gill net, bottom long line, float long line, hand line	1	3.4
Bottom gill net, hand line, diving gear	2	6.9
Bottom gill net, hand line	1	3.4
Bottom gill net, float long line	2	6.9
Bottom long line, float long line, hand line, diving gear	5	17.3
Bottom long line, float long line, hand line, shrimp pots	1	3.4
Bottom long line, float long line, hand line	2	6.9
Float long line, hand line	4	13.9
Diving gear	1	3.4
Total	29	100

E. Days per voyage and area of operations

Outboard motor-equipped vessels return home at night, but inboard motor-equipped vessels stay at sea for 4 to 10 days at a time. There are considerable differences among vessels, but the average is about 6 days. Most of the fishermen, however, wished to stay at sea over 10 days.

Table 53

Present and Desired Days per Voyage

Days per voyage	Present (%)	Desired (%)
4	3 (15.8)	-
5	7 (36.8)	1 ( 3.9)
6	3 (15.8)	3 (11.5)
7	2 (10.5)	2 ( 7.7)
8	3 (15.8)	2 ( 7.7)
9	-	2 ( 7.7)
10	1 (5.3)	16 (61.5)
Total	19 (100)	26 (100)

Table 54

Survey of Preferences for Distance from  
Base to Fishing Grounds

Distance from base to grounds	No. of vessels expressing preference (%)
30 to 50 nm	10 (38.5)
51 to 75 nm	3 (11.5)
76 to 100 nm	7 (27.0)
101 nm or more	3 (11.5)
No reply	3 (11.5)
Total	26 (100)

F. Nautical instruments

Outboard motor-equipped vessels have no nautical instruments whatsoever, but 19 of the inboard motor-equipped vessels have the instruments shown in Table 55. Also, the surveyed fishermen were asked about the function of radar, and only one understood, while the others did not.

Table 55  
Results of Nautical Instruments Survey

Nautical instruments	Presently equipped		Desired	
	No. of vessels	Proportion equipped	No. of vessels	Proportion equipped
Compass	15	78.9%	26	100%
Radiotelephone (VHF)	11	59.7	26	100
" (SSB)	1	5.3	2	7.7
Fish detector	12	63.2	26	100
Radar	1	5.3	1	3.8
Satellite navigation device	2	10.5	8	30.8
Autopilot	2	10.5	3	11.5
Total	19	-	26	-

G. Mechanical fishing equipment

Only one of the 19 launches had mechanical fishing equipment, and consisting of a hydraulic roller for gill nets and a hydraulic roller for long lining. However, these are at present in storage on shore.

H. Financial state of operations

Outboard motor-equipped vessel owners experience financial difficulties and would thus like to switch to larger vessels. Owners of inboard motor-equipped vessels, however, are either turning a profit or are improving their balance of revenues and expenditures. Thus there is a clear distinction between the two groups with respect to their financial conditions.

Table 56

Results of Survey on Fishing Operations (Single Answer)

Vessel type	Answer	Persons	Proportion
Outboard motor-equipped	Diminished stocks make operation difficult, so want larger vessel	3	30%
	Catches taper off due to closing of season, so want larger vessel	2	20
	Ordinary	2	20
	No reply	3	30
	Total	10	100
Inboard motor-equipped	Making somewhat of a profit	5	38.4%
	Make a profit every year	1	7.7
	Operation is stable	1	7.7
	Ordinary	2	15.4
	Revenues improving due to higher prices of pelagic fish	2	15.4
	No reply	2	15.4
Total	13	100	



## I. Capital for investment in equipment

There is no system in Costa Rica for loans to unorganized fishermen for the development of fisheries. Accordingly, when fishermen want to purchase vessels they have no choice but to ask an ordinary commercial bank for a loan. However, these banks make loans only for engines and nautical instruments; none of the banks makes loans for purchasing fishing vessels.

Although the situation is better for fishermen who have been dealing with a bank for many years, but when having dealt with a bank for only a short time, fishermen are asked for annual interest of 35 or 36%, as well as to produce real estate security worth 5 times the amount of the loan. Thus, fishermen with insufficient funds of their own, and no real estate to put up as security, have no choice but to obtain loans from the middlemen.

Table 57  
Breakdown of Capital for Equipment

Breakdown	No. answering
Entirely self-owned	8
Self-owned with some borrowed from financial institution	6
Self-owned with some borrowed from middleman	5
No reply	3
Total	22

In addition, conditions for borrowing from a financial institution are a repayment term of 5 years, with annual interest rates being 12% for one person, 15% for 2 persons, 24% for 2 persons, and 27% for one person. All six of these persons had offered the lending financial institutions real estate security worth 5 times the amount of the loan.

J. The wish to introduce new fishing equipment and fishing methods

All 22 of the fishermen covered in this survey wanted very much to improve upon the fishing equipment they now use, and to bring in new fishing equipment and methods.

(5) Characteristics and problems in fishing family intentions

① The will to run their own operations

Of the 165 households surveyed, 66.7% of them want to expand the scale of their operations, leading to the judgement that they have a strong desire to run their fishing businesses. In particular, according to the results of a follow-up survey covering fishing villages in which over 80% of the fishermen want to expand, it was discerned that fishermen wanted not only larger vessels, but also higher performance and new fishing methods, thus showing advanced thinking with regard to running their operations.

## ② Diminishing stocks

Even according to the results of the Fisheries Resources Survey (Work I), fisheries stocks along the northern Pacific coast of Costa Rica show a decline in the number of some species. According to the opinion of fishermen, fisheries stocks, 11.5% say they are "increasing," and 77% say they are "diminishing" (The major problem with the Costa Rican fisheries is the effective utilization of stocks).

## ③ Fishermen's cooperatives

It could not be said that many of the fishermen want the fishermen's cooperatives to expand the scope of their work. It would seem that the reason for this is the short history of the cooperatives, due to which they have as yet few accomplishments. Presumably, if the cooperatives developed and fishermen came to understand their effectiveness, their replies would also change. Fifty percent of the fishermen want "the construction of storage facilities for marine products," "the construction of cold storage facilities," and "the construction of ice plants."

## ④ Financing

As stated in the previous section, it is difficult for fishermen, especially those with small-scale operations, to obtain financing from public institutions. For this reason, 68.2% of those surveyed, with respect to their

demands for government action, wanted "expanded public financing and subsidies," 80.0% wanted "expanded grants-in-aid," and 80.9% wanted "longer terms for repayment of loans." It is clear that the fishermen have hopes for improvements in financing.

⑤ Boatbuilding technology

Most (69%) of the hulls for fishing vessels are now made of wood, and FRP vessels accounting for 27.6%. In consideration of the maintenance, repair, and durability of fishing vessels, it is desirable to make FRP vessels. A survey of boatbuilding yards revealed that they have the technology for making FRP vessels.

### 3-2-5 Distribution survey

#### (1) Survey objectives

To perform a survey of the way in which purchases and sales of marine products at all levels are conducted, as well as the relationship between middlemen and fishermen.

#### (2) Survey methods

This survey involved a field survey and interviews with 29 middlemen living in the main fishing villages of the Guanacaste region and San Jose, as well as 30 retailers located in San Jose.

#### (3) Survey results

##### ① Unloading and purchasing of catches

In most instances, the greater portion of the catches (all fish) are cleaned on board as soon as raised into fishing vessels, and then their freshness preserved by packing in ice, or some other method. All the main fishing villages have places where the fish are purchased, and the catches are purchased by local middlemen, or others from such places as San Jose or Puntarenas. The purchased fish are generally weighed according to species, and then packed in ice in insulated storage containers.

The producers' selling price (i. e., the middlemen's buying price) does not change from day to day in accordance

with supply and demand; the prices are merely adjusted several times a year. There were also purchase sites at which catches were not auctioned, but sold at an official rate with prices indicated.

② Middlemen

A. How middlemen operate their businesses

Out of 29 persons (23 in the area of the fishing villages and 6 in San Jose) only 2 worked only as middlemen, and the others worked at the additional occupations of fishing, retail sales of marine products, or processing marine products.

According to organizational structure we see that individual proprietorships are most common at 15 (51.7%), followed by 10 private corporations (34.5%), 3 limited liability companies (10.3%), and one other company.

Three of the middlemen began operating in the 1970s, and all the rest began in the 1980s.

B. Number of employees and principal facilities

A total of 89 persons are in the employ of the middlemen; 70 of them (78.7%) are involved in the actual work of buying and selling, while 19 (21.3%) are involved in clerical work. This means that for each business entity there are 2.4 persons involved in actual buying and selling, and 0.7 persons involved in clerical work. This makes for a total of 3.1 persons per entity, showing that the middlemen are small in scale. The entity with the most employees had 8, and about 50% of these entities have 1 or 2.

The principal facilities possessed are storage containers, with a total of 56, making for 1.9 per containers per business entity. The average capacity of the containers is 1.74 cubic meters. There are 6 ice machines, with the average ice-producing capability of each machine being 1,400 kg/day. There are 11 ice storage containers, each with an average capacity of 5.8 cubic meters. There are 44 trucks with a total loading capacity of 95.4 tons, and each truck having an average capacity of 2.2 tons. The entity with the greatest number of trucks has 4; 2 entities have 3 trucks, and the others have 1 or 2.

C. Offer of benefits to fishing families

All the middlemen offer the fishermen some kind of benefits. These usually consist in providing fishing supplies and household goods, after which comes help with financing (Table 58).

Table 58

Offer of Benefits to Fishing Families

(No. of middlemen)

Capital lending		Securing supplies		Other
Vessel/ equipment	Operation	Fishing equipment	Household goods	
8	14	24	14	12



A look at financing shows that 8 middlemen (27.6% of the total) offer loans for the purchase of fishing vessels and fishing equipment, and 14 (48.3%) offer operational capital, meaning that almost 80% of the middlemen offer some kind of financial assistance. Twenty-four (82.8%) of the middlemen provide fishing supplies, and 14 (48.3%) provide household goods. Thus we can see that they are strengthening their ties with the fishing families through the offer of such benefits.

D. Payment of purchase price

Purchase settlements are made once a week by 48.4% of the middlemen, once a month by 41.9%, and twice a month by 3 middlemen. Two out of 29 middlemen use 2 of these methods, and the other 27 use only one payment method.

E. Amount of a single shipment

Seventeen of the middlemen (58.7%) ship less than 300 kg for the average amount of a single shipment, making this the largest group. Five middlemen ship 301 to 500 kg, 3 ship 501 to 700 kg, and 4 ship 701 kg or more. There are far more middlemen who ship small lots (Table 59).

Table 59  
Quantity per Shipment

Item	<300 kg	300 to 500	500 to 700	700 to 1,000	1,000 to 1,500	1,500 to 2,000	2,000 to 4,000	Total
No. of middlemen	17	5	3	2	1	-	1	29
Proportion (%)	58.7	17.2	10.4	6.9	3.4	-	3.4	100.0

F. Principal locations for receiving and selling shipments

Most of the middlemen, or 16 of them, ship to San Jose and the vicinity. Ten middlemen export, and the other 3 ship small amounts to places other than San Jose (Table 60).

Table 60

Principal Receivers and Numbers of Purchasing Middlemen  
(Persons)

Sold to \ Shipped to	Shipped to San Jose vicinity	Shipped for export	Other	Total
Retailer	8	1	1	10
Hotels, restaurants, etc.	-	-	1	1
Processor	3	-	-	3
For export	5	9	1	15
Total	16	10	3	29

The greatest number of the middlemen, 15, sell for export, followed by 10 who sell to retailers.

G. Prices

In most instances the selling price is 30 to 50% greater than the purchase price, but in general the difference for high-priced species of fish is less than 30%. It is a very common commercial practice to sell by giving inexpensive fish species a wide spread, and expensive, quality fish a small price spread (Table 61).

Table 61  
Quantities Purchased and Prices  
Paid by Middlemen, and Sale Prices  
(quantity: tons; price: colons/kg)

Item	purchase quantity	purchase price			sale price			(2) / (1)
		highest	lowest	usual (1)	highest	lowest	usual (2)	
*Pargo seda large	166	117	71	101	152	108	1371	1.36
*Pargo seda medium	213	156	85	125	190	115	158	1.26
*Pargo seda small	122	98	60	82	125	79	107	1.30
Pargo colorado	47	74	40		91	50		
*Pargo manchado	95	153	81		200	96		
*Cabrilla large	211	149	88	121	204	128	169	1.40
*Cabrilla medium	53	103	68		135	97		
Cabrilla small	33	73	47	60	145	108	134	2.23
Macarela	62	43	35		66	56		
*Congrio	64	86	65	76	129	103	114	1.50
Atun	5	33	26		45	38		
*Corvina	36	129	120	120	192	168	176	1.47
*Dorado	364	121	46		150	70		
Mero	1	46	46	46	65	65	65	1/41
Robaro	8	60	60	60	76	76	76	1.27
Chatarra	186	21	16		33	27		
*Langosta large	44	834	665	780	1,010	788	937	1.20
*Langosta medium	22	562	473		709	616		
*Langosta small	3	263	250		343	305		
Pulpo	50	138	83		189	128		
Otros	124	72	51		120	80		

The above species of fish marked with \* are high grade fish and are almost all allocated for export. Lower grade fish are sold on the domestic market. Accordingly, we may view the highest priced symbol-marked fish as being for export.

### ③ Retailers

#### A. Survey of retailers

The marine product retailers in San Jose can be classified into 3 types: retail stores in the central market, retail stores outside the central market, and supermarkets. Retail stores display fresh fish in a semidressed state, and will at customer request cut off the heads, slice, or cut the fish crosswise. Shrimp are sold by weight, with or without heads. However, perhaps because the quality fish from the Guanacaste region are sold for export, the survey found few of them in retail stores.

In the supermarkets fresh fish are sold as fillets, shrimp with or without heads, and lobsters without heads, all displayed in a packaged state. Also sold were canned tuna and sardines, as well as smoked rainbow trout and Macarela.

There were many customers at the marine product retail stores, but at the supermarkets there were far fewer customers buying marine products than those buying meat.

#### B. Store floor area and number of employees

The average selling area floor space for retailers is 33.7 square meters for stores inside the market, 92.0 square meters for stores outside the market, and 72.3 square meters for supermarkets. Retail stores outside the

market are the largest, with floor space about 2.7 times that of stores inside the market, and 1.3 times that of the supermarkets.

Retail stores inside the market have an average 2.8 employees, those outside the market have 3.6, and supermarkets have 6.7, with retail stores inside the market having the fewest (Table 62).

Table 62  
General Description of Retail Stores

Item	Retail stores in central market	Retail stores outside central market	Supermarkets
No. of stores	19	8	3
Average floor space per store (m <sup>2</sup> )	33.7	92.0	72.3
Average employees per store (persons)	2.8	3.6	6.7

C. Business days per year

The average number of days that stores are open each year is 319 days for stores within the market, 311 for stores outside the market, 357 days for supermarkets. All stores are open for business more than 300 days per year, with the supermarkets being open the greatest number of days.

D. Purchases

All the retailers purchase most of their merchandise from the middlemen. It would seem that the retail stores outside the market and the supermarkets make their additional purchases from importers or other special purchase channels (Table 63).

Table 63  
Major Suppliers

Item	(Store)		
	Retail stores in central market	Retail stores outside central market	Super- markets
Middlemen	15	5	2
Processors	4	-	-
Other	-	3	1

E. Average number of customers per day

Retail stores within the market have an average of 48.5 customers per day, stores outside the market have 82.4, and supermarkets have 31.7, with retail stores outside the market having the most.

F. Average sales volume per week

The average sales volume per week for the retail stores is approximately 1,000 kg, and that for the supermarkets is 1,500 kg, or about 1.5 times that of the retail stores.

All the stores sell mostly to the general consumer, and the supermarkets in particular sell completely to the general consumer.

The proportion of retail store sales to the general consumer is about 75%, with about 10 to 15% sold to businesses such as hotels and restaurants (Table 64).

Table 64  
Sales Volume per Store per Week

Item	(kg)		
	Retail stores in central market	Retail stores outside central market	Super- markets
General consumer	811	752	1,513
Hotels, restaurants, and other businesses	167	94	-
Others with large demands	79	86	-
Other	26	38	-
Total	1,083	970	1,518

G. Types of merchandise

Most of the merchandise is fresh, there being few frozen items. The greater portion of the fresh merchandise is semidressed or filleted.

The retail stores outside the market have few kinds of merchandise, with stores inside the market and the supermarkets having more (Table 65).

Table 65  
Form in Which Fish Are Sold  
(No. of stores)

Item	Retail stores in central market	Retail stores outside central market	Super- markets
Fresh/unprocessed	-	1	1
Fresh/semidressed	19	7	2
Fresh/dressed	2	-	-
Fresh/filet	19	8	3
Frozen/semidressed	1	-	-
Frozen/filet	1	-	1
Cooked/semiprocessed	3	-	1
Smoked	-	-	1
Salted/dried	3	-	-
Canned	1	1	1



H. Retail store purchase volumes

Weekly purchase volumes of retailers according to the type of fish are shown in Table 66.

Table 66  
Quantities Purchased by Stores According to  
Species, and Numbers of Stores

Item	Quantities purchased in 1 week, and no. of stores					
	<200kg	200- 400	400- 600	600- 800	800- 1,000	1000 kg or more
Pargo seda (large)	1					
Pargo seda (medium)	3					
Pargo seda (small)	6	1	1			
Pargo colorado (small)	9	1				
Pargo manchado (small)	9	2	1			
Cabrilla (large)	3					
Cabrilla (medium)	3					
Cabrilla (small)	5					
Macarela	14	2	1			1
Congrio	3		1			
Atun	2					
Corvina	9	8	1	1	1	4
Dorado	11	4	2			3
Mero	1					
Robaro	1		1			
Various small fish (Chatarra)	15	9	2			1
Langosta (large)	1					
Langosta (medium)	2					
Langosta (small)	1					
Pulpo	9					
Jurei	2					
various small fish (small) (<2 kg)	3	2				
various small fish (large) (2 kg or more)	2	1				
Camaron fidel	1					
Posta bolilla	1	3		1		
Venta para rest	1					

Except for certain species of fish, in most instances less than 200 kg are purchased per week, but stores appear to purchase more fish such as Corvina, Dorado, and others, which are widely consumed.

#### I. Prices

A look at selling prices in comparison with purchase prices shows that the differences more varied than at the brokerage stage, thus making it difficult to discern any particular trend. The reason for this is thought to be that the selling price of fish at the retail stage is considerably affected by quality and how well the fish sell. In addition, a look at the differences between the highest and lowest prices with respect to the purchase and selling prices for each kind of fish reveals a trend toward slightly lower selling prices (Table 67).

Table 67  
Purchase and Selling Prices

(colons/kg)

Item	purchase price			selling price			(2) / (1)
	highest	lowest	usual (1)	highest	lowest	usual (2)	
Pargo seda (large)	90	75		115	95		
Pargo seda (medium)	130	107	112	160	133	143	1.28
Pargo seda (small)	123	95		180	143		
Pargo colorado	142	112	123	191	157	181	1.47
Pargo manchado	128	100		191	157		
Cabrilla (large)	110	69	164	119			
Cabrilla (medium)	123	84		238	185		
Cabrilla (small)	127	104	114	270	233	248	2.18
Macarela	81	66	74	111	95	109	1.47
Congrio	112	98	103	275	253	260	2.52
Atun	73	65	73	175	113	133	1.82
Corvina	150	121	138	275	250	275	1.98
Dorado	110	69		222	162		
Mero	85	70	78	230	230	230	2.95
Robaro	100	80	80	140	100	115	1.44
Chatarra	53	33	40	74	55	66	1.65
Langosta (large)	1,280	850	1,200	1,850	1,300	1,850	1.54
Langosta (medium)	838	750		1,075	1,025		
Langosta (small)	961	8843	900	1,125	1,000	1,050	1.17
Pulpo	285	199	237	374	224	327	1.38
Jurei	50	31		77	73		
various small fish (Chatarra)	135	107	121	245	240	253	2.09
various small fish (large)	188	137		308	250		
Camaron fidel	320	240	280				
Posta bolilla	108	75		197	177		
Venta para rest	250	100	150	340	130	220	1.47

(4) Characteristics and problems of distribution

① Scale of businesses

There are large-scale middlemen who work out of the major consuming areas such as San Jose, and middlemen who work out of the fishing villages, but except for the large-scale middlemen, most are small-scale businesses with 1 or two small trucks. Most of the retail stores also are small in scale like the middlemen.

② Middlemen in control of transactions

As many of the middlemen offer the fishermen benefits such as financing and the procurement of supplies, they use this advantageous position to purchase fish from the fishermen at low prices, and deduct loan repayments from the purchase price of the fish.

③ Brokerage margin

Assuming the middleman purchase price from the fishermen to be 100, the sale price for each species of fish is in the range of 120 to 220, and is generally about 140. The difference in price is comparatively small, and the reason is thought to be that the middlemen are fairly well established in Costa Rica. Also, in a survey of retail stores it was found that, if the retail store purchase price is assumed to be 100, the sale price is in the range of 120 to 300, with large price differences depending upon

the species. This could possibly be one reason why the general consumer is given the impression that fish are expensive.

④ The handling of fish and shellfish

Insofar as the catches are dealt with by the fishermen (on board their vessels), fair consideration is given to maintaining freshness. However, since transaction with middlemen involve the time-consuming sorting and weighing under the hot sun, and since the middlemen's storage containers are hot and unsanitary, there is a considerable drop in quality.

⑤ Preference for fresh fish

The retail stores handle mostly fresh fish (81.6%), with processed items and frozen foods being very few at 14.5% and 3.9%, respectively. Major reasons for this are traditional Costa Rican culinary customs, and an incomplete cold chain.