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### Systems of Sharing and Patterns of Ownership

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#### Abstract

Sharing systems and patterns of ownership of several common small-scale gears are analyzed and compared with those of the small and medium trawlers operating in San Miguel Bay, Philippines. Significant differences between these two groups were found in concentration of ownership, presence of non-economic social relationships between owners and crewmen, and flexibility of sharing arrangements. These differences are discussed in terms of existing legal definitions of "municipal" and "commercial" fisheries.

#### Introduction

The small-scale fishermen who live in municipalities surrounding San Miguel Bay (Cabusao, Calabanga, Mercedes, Sipocot, Siruma and Tinambac) use a wide variety of boats and gear, each of which represents different levels of investment. It is not surprising that there are different systems of sharing between owners and non-owners for various types of fishing boats and gear. The essence of a sharing system is the meshing of capital and labor in a hopefully efficient and equitable manner, one which encourages maximum utilization of existing productive assets and provides all concerned with an adequate return to their respective contributions. Systems of sharing and patterns of ownership reflect the relative values placed on labor and invested capital and provide insights regarding broader socioeconomic relationships.

### Owners and Non-owners

Owners of boats and gear may be divided into two categories, those who take part in fishing and those who do not. Among the 641 respondents of the Project's socioeconomic survey, 58% were classified as owner-operators (Table 1). A further 26% of respondent fishermen owned neither boats nor gear and worked as crewmen on boats owned by others, while 16% of respondents were part-owners and worked with others to establish a complete fishing unit.

Table 1. Category of fishermen by age in the socioeconomic survey, San Miguel Bay (N = 641).

Age	Total No.	Full owner		Part-owner		Crewman	
		No.	%	No.	%	No.	%
20 and below	22	10	45.4	3	13.6	9	40.9
21-25	84	31	37.0	6	7.4	47	56.0
26-30	124	61	49.2	25	20.1	38	30.6
31-35	85	48	56.5	12	14.1	25	29.4
36-40	92	54	58.7	17	18.5	21	22.8
41-45	67	50	74.6	7	10.4	10	15.0
46-50	66	49	74.2	10	15.2	7	10.6
51-55	44	36	81.8	2	4.5	6	13.6
56-60	29	23	79.3	2	6.9	4	13.8
61-65	13	11	84.6	1	7.7	1	7.7
66-70	12	11	91.7	—	—	1	9.1
above 70	3	3	—	—	—	—	—
Totals	641	387	60.4	85	13.3	169	26.4

Note: Sampling was based on fishermen who are household heads. These figures thus underestimate the total number of younger fishermen engaged in the fishery (see final paper, this report).

Depending on the labor requirements of the particular type of gear used and the available manpower of each household, owner-operators may or may not need to recruit additional crew members. Due to seasonal variations requiring a diversity of gear types to enable year-round fishing (Esporlas, this report), it is reasonable to assume that during certain seasons some of these owner-operators also work as crewmen or share-operators.

Owners of boats and gear who do not take an active part in fishing operations were underrepresented by our sampling frame, which focused primarily upon active fishermen. Observations in the field indicated that many such owners were ex-fishermen who for a variety of reasons (health, age, involvement in other economic activities) preferred to let others go to sea and were content to earn the return to capital represented by the owner's share.

Those fishermen who owned neither boats nor gear tended to be younger fishermen just entering the fishery. Their primary constraint was lack of capital to invest in such productive assets. In other cases non-owning fishermen may have invested in activities other than fishing. Employment as a crewman was not limited to those with no investments in boats and gear. In some cases fishermen who owned boats and gear appropriate for one particular season, worked as crewmen with other fishermen during other seasons. It is likely that the figures presented in Table 1 underestimate the number of fishermen who at any given time work as non-owning crewmen. Similarly, the figures on numbers of fishermen who were part-owners of boats and gear represented only their reported status, which may vary from season to season. It is not likely, however, that our figures underestimate the numbers of owner-operators since recorded ownership of boats and gear defined this category.

The distribution of gear types used by fishermen in San Miguel Bay is presented in Esporlas (this report). The most common gear types used by small-scale fishermen in the Bay are various gill-nets, followed by the simple scissor net and the hook and line. Though few, the small and medium trawlers popularly known as "baby" trawlers are highly significant in terms of production, accounting for nearly half of the total landings from San Miguel Bay (Pauly and Mines 1982). In addition to the above there are various types of stationary gear, including fish corrals, filter nets, and stationary liftnets.

### Costs of Investment for Fishing Gear

Table 2 shows the approximate investment cost (1981/82) of the different types of fishing gear used by small-scale fishermen within San Miguel Bay. It is clear from Table 2 that the level of investment required to become an "owner" varies tremendously. For example, a small trawler (displacing just under 3 GT and typically powered by a 135-hp diesel engine) costs ₱55,000. The slightly larger (over 3 GT) and more powerful (engines up to 210 hp) medium trawlers cost ₱70,000.

Municipal governments are responsible for licensing all fishing boats displacing less than 3 GT. By definition, small trawlers are classified as "municipal" or small-scale fishing units, though the level of investment required to build and equip even a small trawler (much less a medium trawler) is well beyond the means of small-scale fishermen. At the other end of the investment spectrum are fishermen using scissor nets or hook and line and non-motorized boats, who need to invest only ₱200-500 to become full owners. Other combinations of boats and gear, for example, a motorized boat and gill-net, require significantly greater investment (₱13,000).

Table 2. Investment costs (1981/82) in pesos of important gears used in San Miguel Bay.

Type of gear	Investment cost per unit (₱)
Small trawler	55,000
Medium trawler	70,000
Mini trawler	9,200
Motorized gill-net	13,000
Non-motorized gill-net	3,500
Liftnet	12,200
Fish corral	9,100
Scissor net	250
Non-motorized hook and line	500

Source: Smith and Mines (1982). US\$1.00 = ₱8.00 (1981).

### Number of Fishing Units Owned

Very few respondents owned more than one fishing unit (Table 3). Thus, it was readily apparent that although not all fishermen owned the means of their production, there was no substantial concentration of fishing assets among fishermen-respondents.

An important exception to this image of widespread ownership was found in Sabang, Calabanga, where most of the small and medium trawlers are based. As may be seen in Table 4, there was considerable concentration of trawler ownership. Of the 88 small and medium trawlers based in Sabang, one family owned 24 of these relatively expensive fishing units, representing over 27% of the total fleet. Two other families each owned six trawlers. Information on trawler ownership was based on interviews and data provided by members of the Project's stock assessment team who lived in Sabang for a full year.

Table 3. Various fishing assets of respondents in the socioeconomic survey, San Miguel Bay, by number of units owned.

		1	2	3	>3	Total
Motorized boat	No. %	169 (8.3)	0.2 (1.2)	1.0 (0.6)	NIL -	172 (100.0)
Engine	No. %	188 (100.0)	NIL	NIL	NIL	188 (100.0)
Non-motorized boat	No. %	238 (100.0)	NIL -	NIL -	NIL -	238 (100.0)
Gill-net	No. %	382 (97.7)	9.0 (2.3)	NIL -	NIL -	391 (100.0)
Stationary liftnet	No. %	18 (90.0)	2.0 (10.0)	NIL -	NIL -	20 (100.0)
Mini trawl	No. %	17 (89.5)	2 (10.5)	NIL -	NIL -	19 (100.0)
Other types of gear	No. %	212 (83.3)	28 (11.1)	13 (5.1)	NIL -	253 (100.0)
Total	No. %	1,224 (95.6)	43 (3.4)	14 (1.1)	NIL -	1,281 (100.0)

Note: Engines include those used in column for motorized boats. Note that respondents owned more engines than motorized boats.

Table 4. Distribution of ownership of small and medium trawlers at Sabang, San Miguel Bay, as reported by this Project's stock assessment team.

Number of baby trawlers owned	Number of owners	Total number of trawlers	Percentage
24	1	24	27.3
6	2	12	13.6
4	2	8	9.1
3	4	12	13.6
2	5	10	11.4
1	22	22	25.0
Total	38	88	100.0

### Manner of Acquiring Boats and Gear

The majority of fishermen-respondents acquired their fishing boats and gear through personal savings and investment (Table 5). Ownership of such productive assets typically occurred after a fisherman had worked a number of years as a crewman on boats owned by others.

Boats, engines, and particularly nets deteriorate and depreciate value. Because of this, there appeared to be little interest in acquiring second-hand fishing assets despite their lower cost. Old nets require more mending, old engines more repairs, and the marine plywood siding of old boats may not be capable of withstanding the pounding of waves at sea. Thus, there is a limited market for used boats, engines and gear, and fishermen interested in becoming owners are likely to invest in new equipment. New boats and gear, however, are becoming increasingly expensive as the prices of marine plywood, lumber, and nylon netting have increased in recent years.

Table 5. Fishing assets of respondents in the socioeconomic survey, San Miguel Bay, by manner of acquisition.

Type of asset		Own finances	Owned	Given	Made	Leased	Total
Motorized boat	%	75.6	21.5	1.2	1.2	0.6	100.0
Engine	%	56.4	38.3	3.2	—	2.1	100.0
Non-motorized boat	%	88.5	5.7	3.3	—	2.5	100.0
Gill-net	%	90.8	8.2	1.0	—	—	100.0
Mini trawl	%	84.2	15.8	—	—	—	100.0
Stationary liftnet	%	85.0	15.0	—	—	—	100.0
Other types of gear	%	86.9	9.1	1.0	1.0	2.0	100.0
Total	%	82.6	14.1	2.0	0.4	1.3	100.0

Over the years, the Philippine government has adopted a number of programs designed to facilitate acquisition of boats and gear by small-scale fishermen. These programs are reviewed in Smith et al. (1980). Of particular interest for the San Miguel Bay area are the programs of the Development Bank of the Philippines (DBP), suspended due to a nationwide 94% non-repayment rate, and the current *Biyayang Dagat* ("Bounty of the Sea") program with loans from local rural banks and technical supervision provided by the Bureau of Fisheries and Aquatic Resources (BFAR). A substantial number (approximately 100) of former DBP loan recipients operate out of Sabang, Calabanga. Most of them no longer own their nets but instead use gill-nets provided by a shrimp buyer.

The *Biyayang Dagat* program has been slow in implementation due to the reluctance of local rural banks to provide small-scale fishermen with unsecured loans, even though the government is underwriting 80% of their exposure. As of April 1981, a total of P1.8 million had been released to 119 recipients in the San Miguel Bay area.<sup>2</sup> Many of these loans, though unsecured by collateral, were counter-signed by guarantors. Most of the loans appear to have been granted for the construction

<sup>2</sup>Information supplied through the courtesy of BFAR, Region V, Naga City.

of small trawlers. In Cabusao, for example, 26 out of 31 loans have been given to fishermen organized into groups and for the construction of small trawlers; the remaining five loans were for gill-nets and pumpboats. In Camaligan, all six loans granted were for small trawlers. *Biyayang Dagat* loans are limited to ₱15,000 per recipient. By grouping five or six fishermen together, sufficient funds are available for the construction and outfitting of one small trawler. From interviews, however, there was a clear indication that the guarantors of such loans would be the effective owners, not the people in whose names the loan was issued.

In addition to the 119 recipients of *Biyayang Dagat* loans (as of April 1981), a further 169 applications were in file. Because the funds are used for trawlers, it is likely that in the San Miguel Bay area this program will, despite the relatively small number of recipients, significantly increase the level of fishing effort exerted on the fisheries.

Both the DBP loans and the *Biyayang Dagat* program were designed in response to the perceived need of freeing small-scale fishermen from the constraints imposed by inadequate investment capital and the consequent need to borrow money for investment purposes from fish buyers. Since relatively few fishermen are likely to be accommodated by government loan programs, it is unclear to what extent this goal will be achieved.

Local fish buyers offer a more personal and less formal source of funds to small-scale fishermen. Often buyer and fishermen reside in the same community and are involved with each other in a wider range of social interactions than the marketing of fish and shrimp. Particularly in many of the smaller and more isolated communities, ties of kinship are of importance. Familial relationships do not dictate economic relationships, but certain minimal rights and obligations governing fair dealing and assistance in time of need do apply. Even when the buyer is from a different community, long-standing ties often lead to trust and friendship. Fishermen who sell their catch on a regular basis to one particular buyer are able to call on that buyer not only for loans for boats and gear but also for family emergencies.

Buyers, on the other hand, are intimately familiar with potential debtors and their willingness and ability to repay loans. Moreover, since buyers are in a position to know on a day by day basis the value of catch landed by fishermen to whom they have extended loans, they are also in a position to collect on their debts. If the catch is poor, no deduction is made from the proceeds to repay the principal of the loan, since the fisherman must have enough to meet operational expenses for the next day's fishing. During a prolonged period of poor fishing, loans may be extended by the buyer even for these expenses. Only when the catch is good will deductions be made for repayment of the outstanding principal. Fish buyers who operate in this fashion operate in both small isolated communities, where they dominate the marketing of fish, and at larger landings, where they deal with a specialized and high-value commodity, such as shrimp.

It is clear from the above that buyers often provide a number of useful services otherwise unavailable to small-scale fishermen. The other side of the coin is that these buyers exert monopsonistic control over the price paid to fishermen. These prices are from five to ten percent lower than the prevailing market price obtained by fishermen who are not tied to a particular buyer. Such a price differential may be considered as "interest" on the loan. It is an open question beyond the intent of this paper whether such marketing relationships are exploitative. The fact remains that fish buyers provide many important services to small-scale fishermen, not the least of which is the financing of investment in fishing assets.

### Sharing Systems

Sharing systems determine the distribution of proceeds from the catch to labor and capital. Sharing systems among small-scale fishermen in the Philippines have attracted the attention of a number of authors, including Jocano and Veloro (1976), Herrin et al. (1978), Baum and Maynard (1976) and Nimmo (1972).

For all types of gear, the most common system of sharing calls for an equal division of the proceeds of the catch between owner and crew, after operational expenses have been deducted. These operational costs vary from gear to gear (Smith and Mines 1982), as do the particular demands of the work involved. For some types of gear, specialized skills and responsibilities involve an extra share to certain crew members, modifying the basic 50-50 division of shares. In other cases less formal variations in the sharing system exist, especially when the parties involved are closely related. The diversity in sharing systems found in the San Miguel Bay area is indicated in Tables 6 and 7.

#### SHARING SYSTEM OF THE GILL-NET

The most common type of gear used by small-scale fishermen of San Miguel Bay is the gill-net, comprising 23% of the total number of fishing units (Esporlas, this report). Two or three men are required to operate a gill-net. Often, the owner of the boat and net will take an active part in fishing, in which case he earns both the owner's share and his share as crewman. In some cases this owner-operator will be accompanied by a member of his household, usually an unmarried son, in which case the question of "sharing" is not relevant, since all of the proceeds from the catch accrue to the family.

The basic sharing system for gill-nets calls for an equal division between labor and capital, after subtracting operational costs, as is illustrated in Fig. 1.

Table 6. Owner's share (%) of net revenue from fishing, San Miguel Bay 1980, after deducting operating expenses, by type of fishing unit.

Owner's share		Total	Drift net	Liftnet	Mini trawl	Other types of gear
Total	No. %	764 (100.0)	239 (100.0)	40 (100.0)	44 (100.0)	108 (100.0)
10%	No. %	3 (0.4)	1 (0.4)	—	—	—
20%	No. %	17 (2.2)	4 (1.7)	1 (2.5)	—	5 (4.6)
30%	No. %	23 (3.0)	7 (2.9)	1 (2.5)	—	4 (3.7)
40%	No. %	115 (15.0)	46 (19.2)	3 (7.5)	1 (2.0)	17 (15.7)
50%	No. %	564 (73.8)	161 (67.4)	35 (87.5)	43 (98.0)	81 (75.0)
60%	No. %	12 (1.6)	5 (2.1)	—	—	1 (1.0)
70%	No. %	28 (3.7)	14 (5.9)	—	—	—
80%	No. %	2 (0.3)	1 (0.4)	—	—	—
90%	No. %	—	—	—	—	—
100%	No. %	—	—	—	—	—

Table 7. Crew's share (%) of net revenue from fishing, San Miguel Bay 1980, after deducting operating expenses, by type of fishing unit.

Crew's share		Total	Drift net	Liftnet	Mini trawl	Other types of gear
Total	No. %	788 (100.0)	254 (100.0)	41 (100.0)	46 (100.0)	87 (100.0)
10%	No. %	—	—	—	—	—
20%	No. %	—	—	—	—	—
30%	No. %	4 (0.5)	1 (0.4)	—	—	—
40%	No. %	40 (5.1)	18 (7.1)	—	—	4 (4.6)
50%	No. %	518 (65.7)	160 (63.0)	35 (85.4)	43 (93.5)	45 (51.8)
60%	No. %	81 (10.3)	41 (16.1)	3 (7.4)	—	6 (6.9)
70%	No. %	62 (7.9)	14 (5.5)	1 (2.4)	1 (2.2)	13 (14.9)
80%	No. %	28 (3.6)	6 (2.4)	1 (2.4)	—	8 (9.2)
90%	No. %	—	—	—	—	—
100%	No. %	55 (6.9)	14 (5.5)	1 (2.4)	2 (4.3)	11 (12.6)

In Fig. 1 and the figures which follow, the peso value of the catch, operating expenses, net revenue, and income for both owner and crew represent average income per month during the 1980-1981 season for each respective gear. Though the catch varies from month to month, these figures provide some indication of earnings from the various gears. They are presented here, however, primarily for illustrative purposes. More detailed information on income and seasonal variation is found in Smith and Mines (1982) upon which these figures are based.

The owner of a boat and gill-net who actively participates in fishing receives 75% of the net proceeds of the catch. In such cases, it may be assumed that the owner acts as "captain" and assumes primary responsibility for each day's fishing. Whether the owner or someone else operates the boat, no additional share is assigned to the "captain". Fishing with a gill-net is sufficiently simple that there is no rigid specialization of tasks among the two or three men who comprise the crew, and each takes an active part both in operations at sea and in mending nets on land.

There are a number of variations in the sharing system for gill-nets. For example, when both boat and net are new, owners sometimes obtain 60% of the net revenue, leaving only 40% for the crew's share. This is done so that the owner may more quickly recover some part of the investment costs. Since new boats have fewer mechanical problems and new nets are more efficient in capturing fish and shrimp than older nets, there are advantages for the crew to balance against this reduced



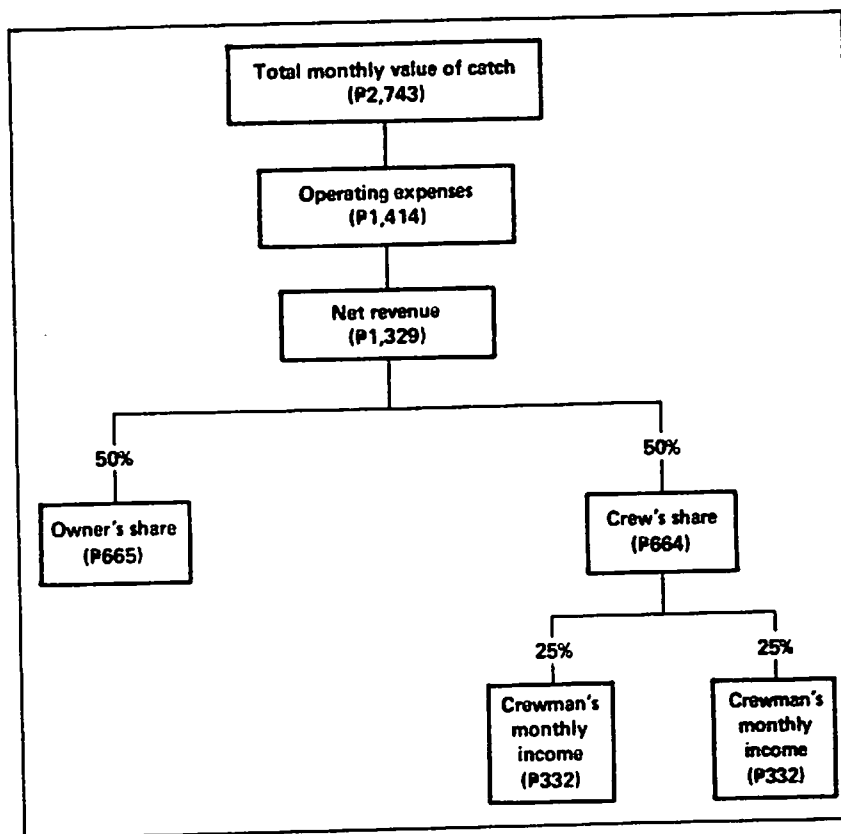


Fig. 1. Sharing system of a gill-netter with two crewmen in San Miguel Bay (1980-1981). Total monthly value of catch is from Yater (1982), but calculations here are different from Yater's because hypothetical crew size is three in Yater and two here. Crewman's monthly income in the above calculation is therefore 50% higher than in Yater's presentation.

share. Usually after three or four months, the more standard equal division of net revenues between the owner and crew is adopted as the inevitable process of wear and tear on the net reduces efficiently to a point where the owner's extra share is no longer justified.

There are also cases where the crewmen receive 60% of the net proceeds. This variation is most common in Sabang, Calabanga and appears to be directly related to competition for crewmen between trawlers and gill-netters or other small-scale gear. Crewmen who work on small or medium trawlers stand to earn higher incomes (compare Tables 8 and 9), though they work longer hours and spend on average three nights a week at sea. Gill-netters, on the other hand, leave early in the morning and return by mid-afternoon each day. For crewmen on trawlers, the balance between regular separation from their families and opportunity to earn higher incomes appears to be attractive, which makes it difficult for gill-netters to man their boats. Thus, a higher share is offered by gill-net operators in Sabang than in other communities around San Miguel Bay.

In addition to these two variations, a wide range of informal sharing arrangements may be found between gill-net owners and crew, especially when they share ties of kinship. A father or grandfather may allow his son or grandson to use boat and gear for a smaller than standard share or even for free. In other cases, the share may be a variable amount, as when an owner-operator gives a larger than agreed upon share to his brother or close friend when fishing is poor and subsistence needs are threatened.

Table 8. Hypothetical monthly income in pesos for small-trawler owners, *maestros* and crewmen based on 1980-1981 net revenues and on different sharing systems prevailing in San Miguel Bay, 1960-1981.

Period	Owner's monthly income <sup>2</sup>	Captain's monthly income	Crewman's monthly income
1960-75	4,403	1,139	759
1975-81	5,487	843	562
1981	5,768	938	469

<sup>1</sup>Based on data from Figs. 4, 5 and 6.  
<sup>2</sup>Before deducting fixed costs.

Table 9. Comparison of monthly incomes in pesos for owners, captains and crewmen of three common small-scale gears, San Miguel Bay, 1980-81.<sup>1</sup>

Gear	Owner's monthly income <sup>2</sup>	Captain's monthly income	Crewman's monthly income
Gill-net	665	n.a.	332
Mini trawl	665	385	350
Liftnet	589	228	163

<sup>1</sup>Based on data from Figs. 1, 2 and 3. There is no special share for captain of a gill-netter.  
<sup>2</sup>Before deducting fixed costs.

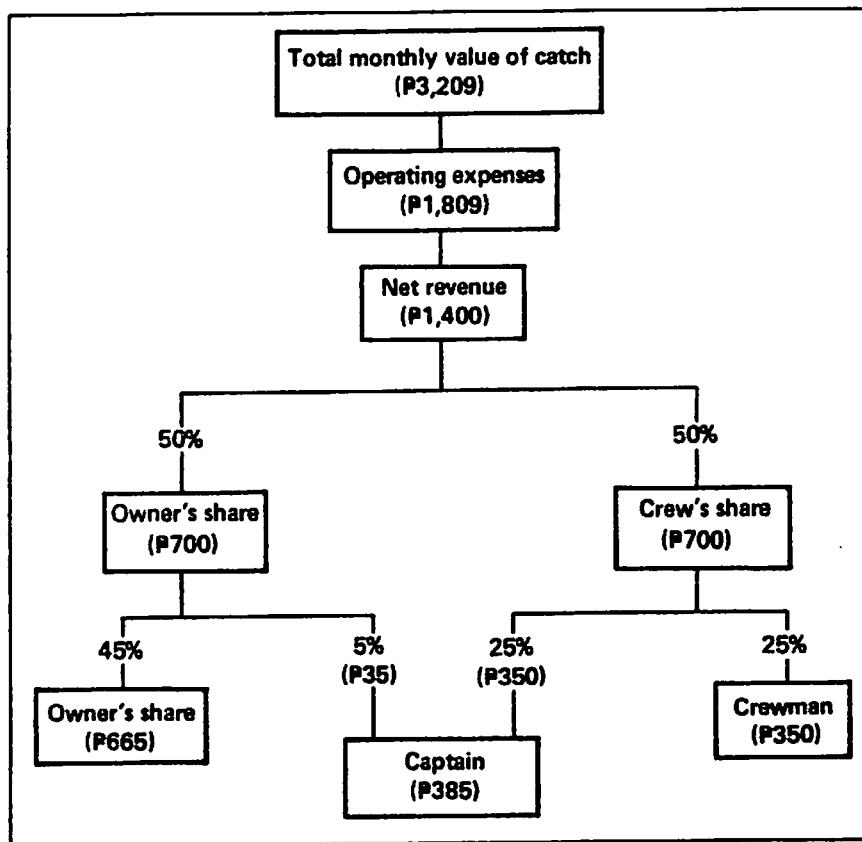


Fig. 2. Sharing system of mini trawlers in San Miguel Bay (1980-1981), based on Tulay and Smith (1982). Monthly incomes may differ slightly due to differences in the share that the owner gives to the captain.

### SHARING SYSTEM OF OTHER SMALL-SCALE GEARS

The sharing systems used for other small-scale gear in the San Miguel Bay area are quite similar to that of the gill-net. The most important difference is the payment by the owner from his own share of an extra share as bonus to the captain of the crew.

Fig. 2 illustrates the sharing system used for mini trawlers. Mini trawlers are rigged to capture *balao*, a small sergestid shrimp. Mini trawlers operate longer hours than gill-netters, returning late in the afternoon. Part of the operational expenses of the mini trawler is the midday meal for the crew. The captain (or more accurately a female member of his household) takes responsibility for cooking this meal. The job of a mini trawler captain is more strenuous than that of the gill-netter captain. After arriving at the fishing grounds and casting their net, captain and crew operating gill-nets have little to do but wait until it is time to pull in the net, which is done several times during the day. The captain of a mini trawler, however, must man the tiller for as many as ten hours a day while his assistant is able to relax. Very little effort is needed to sort a catch of *balao* since the slow trawling speed precludes capture of other than a few stray fish, sea snakes or crabs. The bonus paid by the owner to the captain of a mini trawler reflects the greater demands of this job compared to that of an ordinary crewman.

The sharing system for the stationary liftnet (*bukatot*), shown in Fig. 3, is similar to that of the mini trawler except that the fishermen's share is divided between four (or sometimes more) fishermen and the captain receives a bonus of 10% of the owner's share, double that of the mini trawler captain. The higher captain's share is due to his responsibility in coordinating the efforts of the crew and giving the critical command to lift the net once a sufficient concentration of fish has been attracted to the net by the powerful lights used in this night-time operation. The *bukatot* is used during the southwest monsoon season when the sea is relatively calm and only during moonless nights, when the lights most effectively attract such pelagic fishes as anchovies. Captain and crew all work together in hauling the net, sorting the fish, and maintaining the nets and other equipment.

As in the case of gill-netters, an important criterion governing crew composition of mini trawlers, stationary liftnetters, and other small-scale gear is kinship or other close personal relationships. Owners must be concerned with earning sufficient income to cover depreciation and replacement costs as well as a reasonable return to their capital investment. Economic relationships between owners and crewmen, however, are frequently modified by non-economic factors and in practice formal sharing systems exhibit considerable flexibility. Owners of small-scale boats and gear may provide small loans to their crewmen or give them a larger share of the proceeds from the catch during lean seasons or other times of need. In return they may expect and receive assistance in any number of small matters (e.g., house repair) or support in local community politics. In most cases owners and non-owners live in the same community in the same type of house, eat similar foods and wear the same style of clothing. If there is a major distinction to be drawn between them it is that of age, since younger fishermen often have not yet had the opportunity to amass sufficient savings to join the ranks of owner-operators.

### SHARING SYSTEM OF SMALL AND MEDIUM TRAWLERS

Small and medium trawlers are sufficiently different from other types of gear which operate within San Miguel Bay to require separate discussion. As noted previously, investment costs for these trawlers are significantly greater than those of other types of gear and ownership is concentrated in the hands of relatively few families.

These trawlers also may be differentiated from other gear types by a more complex division of labor between owners and crew and among the crew itself.

The owner assumes direction of shore-based activities, including selling the catch and supervising the men who specialize in repairing trawl nets. When the catch of a trawler is landed, the owner or his agent acts as broker, taking whispered bids and collecting the money from the various buyers.

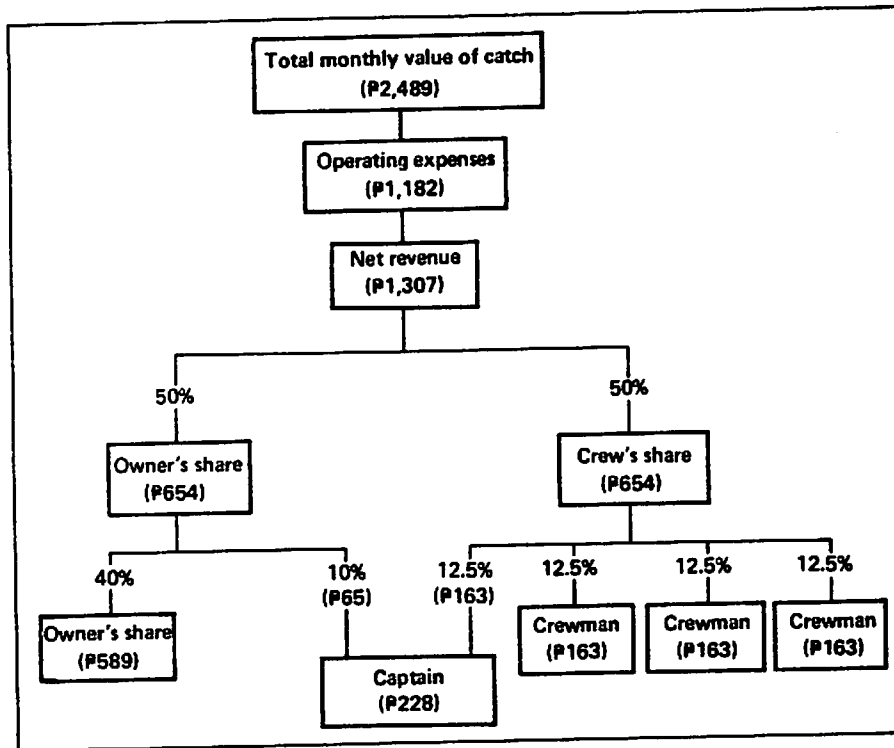


Fig. 3. Sharing system of stationary liftnet in San Miguel Bay (1980-1981), based on Supanga and Smith (1982). This gear operated for only four months during 1980-1981 due to rough seas early in the season. Incomes would probably be higher in a more "normal" year.

The catch from most trawlers is sold by the owner/broker so that the usual 5% commission could be considered as additional income for the owner. When owners hire brokers they keep for themselves 2% and give a commission of 3% to the hired broker. The owner or an assistant keeps the accounts of operating expenses and proceeds from the sale of fish and distributes shares to the crewmen once a week, usually on Sunday. (Weekly sharing on Sunday is also the common arrangement with other gear types).

The *maestro* or captain of a small or medium trawler plays a vital role in fishing operations. Both the owner and the crew depend on this man, whose luck and skill determine whether operations will be profitable and harmonious. The captain is primarily responsible for hiring the crew and assuring their efficient interaction. It is he who pilots the boat to productive fishing grounds and avoids obstructions which could snag and damage the net.

The *maestro* is also the owner's representative on board. It is relatively easy (and not uncommon) for trawler crews to sell part of their catch to other buyers since trawlers operate over most of the Bay and can land at a number of ports. If this happens, the owners stand to lose their share from the sale. Owners are aware of this problem and seek to discourage such sales by giving special incentives to their captains in the form of sizeable extra shares. It takes years of experience and an intimate familiarity with local fishing grounds to become a good *maestro*. Owners seek to retain the services of those trawler captains whose operations return a regular profit, another reason for providing the captain with an extra share.

Both small and medium trawlers also have a machinist who is responsible for maintaining the engine in good running condition. A machinist may or may not take part in the hauling of the nets or the sorting of fish, depending on the size of the crew and the amount of work to be done. His main responsibility is the engine and he receives a small bonus, usually from the *maestro* but sometimes from the owner.

In addition to the *maestro* and the machinist, each trawler has a complement of three or four ordinary crewmen whose task is to set and haul the net and sort the catch by size and species. During those nights when these trawlers are moored off Sabang, it is common practice for one crewman, chosen on a rotational basis, to remain on board. This is necessary due to the danger of theft of fishing gear at night and to guard against accidental swamping in rough seas.

In addition to this relatively complex division of labor, small and medium trawlers may be distinguished from the small-scale gear types found in San Miguel Bay by their owners' active discouragement of hiring relatives as crew. Trawlers are operated as commercial enterprises and owners feel that hiring kinsmen may lead either to inefficiency in operation or tensions among the crew due to favoritism. Relatives may also ask for extra shares or loans from the owner. If an ordinary crewman is related to the owner he may shirk some of his responsibilities and it would be difficult for the *maestro* to maintain control over him.

The sharing system applied to small and medium trawlers has changed over the years. Prior to 1960, crewmen working on trawlers received a fixed share of the gross income from the catch. No deduction of operating expenses was made in calculating the crew share. In that year, however, a more complex sharing arrangement was introduced. This sharing system, which was in force during the period 1960-1975, is illustrated in Fig. 4.

The sharing system used for trawlers underwent small changes during these years. In 1975, a major change took place when trawler owners began to deduct 10% from the gross income for maintenance and replacement costs of the engine. The effect of this new sharing system is illustrated in Fig. 5. Previously, there had been no separate share for the engine. Regular engine maintenance

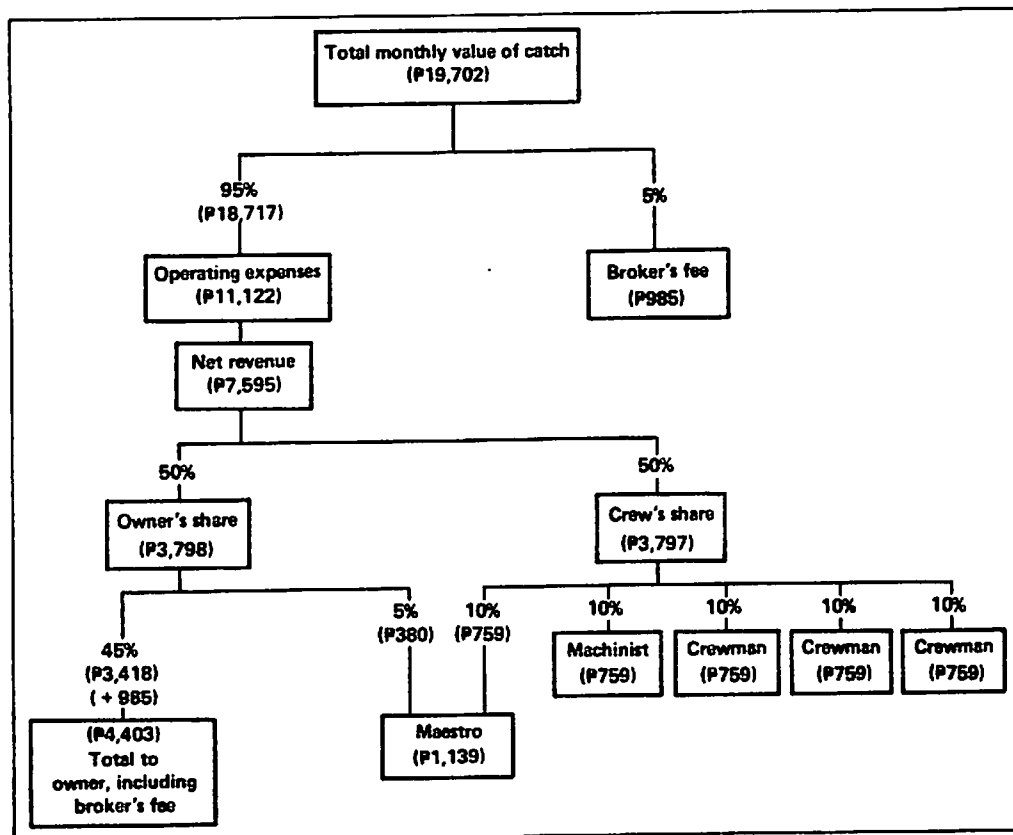


Fig. 4. Sharing system for small trawlers in San Miguel Bay (circa 1960-1975). The figures used here are based on the value of catch and operating expenses recorded for small trawlers during 1980-1981 by Navarluna and Tuley (1982). They are used here for illustrative purposes and to facilitate comparability with more recent variations of the sharing system for small and medium trawlers. The total owner share assumes that the owner acts as his own broker.

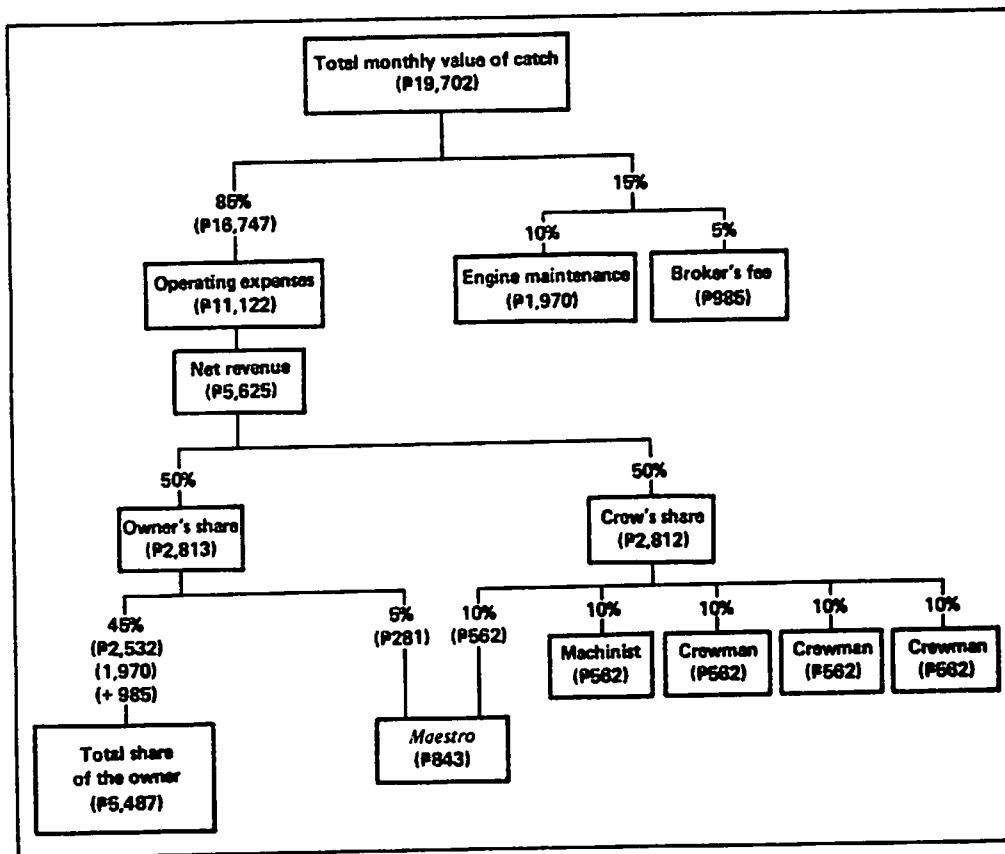


Fig. 5. Sharing system for small trawlers in San Miguel Bay (1975-1981). The figures used here are based on the value of catch and operating expenses recorded for small trawlers during 1980-1981 by Navaluna and Tulay (1982). They are used here for illustrative purposes and to facilitate comparability with more recent variations of the sharing system for small and medium trawlers. The total owner share assumes that the owner acts as his own broker.

was considered part of normal operating expense. Depreciation and replacement costs had been shouldered exclusively by the owners. In 1975, however, this cost began to be charged "off the top", substantially increasing the owner's total income. Since this 10% deduction is to cover the costs of engine maintenance, these expenses are no longer included under operating costs. However, based on interviews with owners, it seems that this 10% of gross income more than covers maintenance and replacement costs for the engine and that this new arrangement has resulted in a larger effective share for owners.

A further modification in sharing was introduced in January 1980 by the largest owner of trawlers in Sabang. In this modified sharing system (Fig. 6), the *maestro* gets a double share. Instead of the total crew share being divided into five shares, one for each man including the *maestro*, the new system divides their total share into six parts, two of which are for the *maestro*. Under this arrangement, the *maestro's* extra share is paid out of the crew share instead of the owner's share. As of the middle of 1981, this system had not yet been adopted by the other trawler operators.

For medium trawlers, which require a crew of six, the standard sharing is slightly different, as illustrated in Fig. 7. The larger boat and crew increase the responsibility of the *maestro* and result in a larger share for him. Each of the six-man crew receives 16% of the total crew share. The remaining 4% is a bonus to the *maestro* who also receives 10% of the owner's share. Incomes for medium trawlers were lower than small trawler incomes due to the former's higher operating expenses.

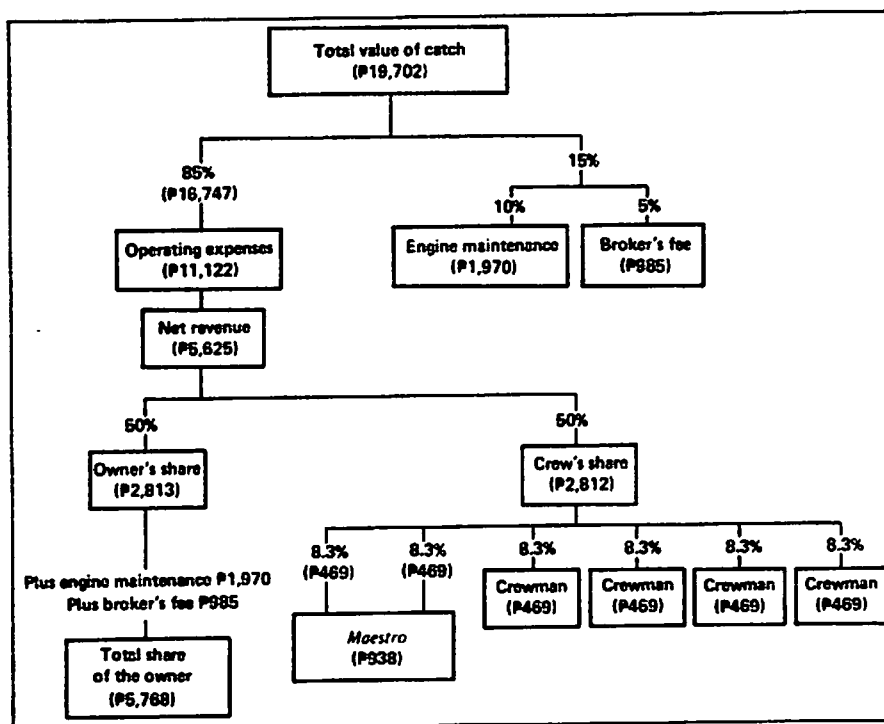


Fig. 6. A modified sharing system for small trawlers in San Miguel Bay (1980-1981). The figures used here are based on the value of catch and operating expenses recorded for small trawlers during 1980-1981 by Navaluna and Tulay (1982). They are used here for illustrative purposes and to facilitate comparability with other variations of the sharing system for small and medium trawlers. The total owner share assumes that the owner acts as his own broker.

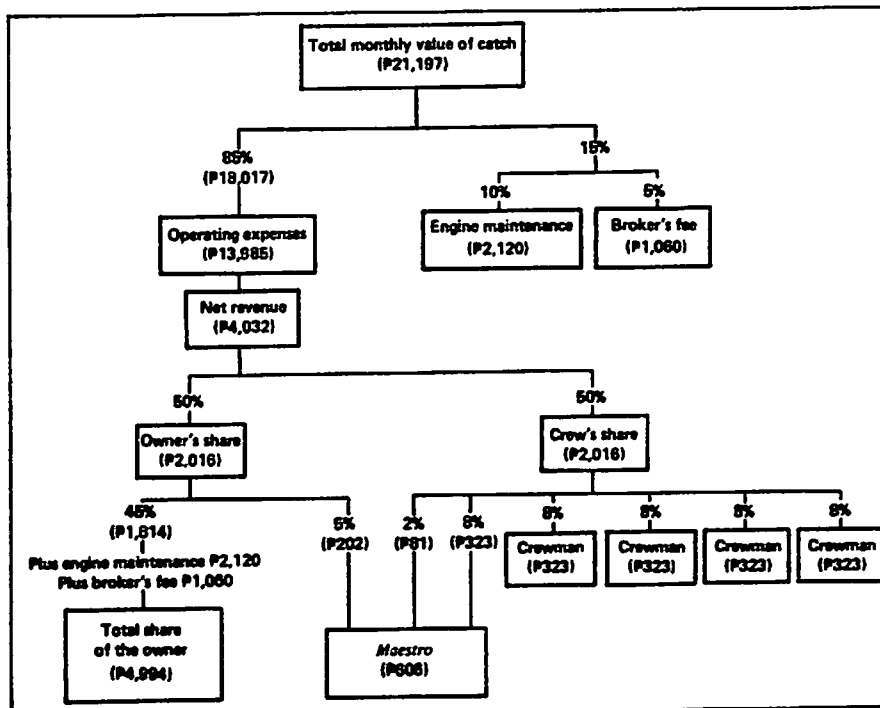


Fig. 7. Sharing system for medium trawlers, San Miguel Bay (1981). The figures used here are based on the value of catch and operating expenses recorded for small trawlers during 1980-1981 by Navaluna and Tulay (1982). They are used here for illustrative purposes and to facilitate comparability with other variations of the sharing system for small and medium trawlers. The total owner share assumes that the owner acts as his own broker.

Comparing the sharing systems applied to small trawlers illustrated in Figs. 4-6, there is a trend towards increasing total income accruing to owners at the expense of their crewmen (Table 8). The actual peso values are inexact for the years prior to 1980, since the data are based on real values (e.g., prices for fish and shrimp, operational expenses, and volume of landing) for the period 1980-1981. Nonetheless, it is clear from Table 8 that owners have modified the sharing system in a manner which provides them with an increased proportion of the total proceeds. By comparing Tables 8 and 9, it can be seen that crewmen on small trawlers still earn higher incomes than crewmen on gill-netters, mini trawlers and liftnets.

### Discussion

This analysis of ownership patterns reveals a major difference between small-scale fishermen, where ownership of boats and gear is relatively widespread, and the operators of small and medium trawlers, where ownership is more highly concentrated. Levels of investment per unit differ widely, as do the roles played by owners. Trawler owners do not go to sea, remaining on land and concentrating their efforts on marketing and management of their fishing enterprises. In the small-scale sector, owners commonly take part in fishing operations. Their incomes are necessarily larger than those of crewmen due to costs of maintenance and depreciation plus the necessity of earning a return to their investment. Inequalities of income in the small-scale sector exist, but they are not as great as between owners of small and medium trawlers and their crewmen.

Differences in ownership patterns in turn are reflected in sharing systems. The various sharing systems used for small and medium trawlers are, on the whole, much less flexible than are those of the small-scale sector. In the latter case, owners and crewmen are of the same socioeconomic class and their economic relationships are tempered by kinship and other factors. In contrast, the incomes and standards of living among trawler owners are so different from those of their crewmen that these two groups may be regarded as separate socioeconomic strata. Trawler owners may on occasion grant loans or give support in time of need to a regular crewman, but they strive to restrict such requests by dealing with individual crewmen through their respective *maestros* and maintaining a careful distance in social affairs.

This distance between owners and crewmen is illustrated by the weekly distribution of shares from the proceeds of the catch. Among gill-netters and users of other small-scale gear, owners and crewmen are in direct contact, often making the calculations together. The calculation of gross and net income and the respective shares of the owners and crewmen for baby trawlers usually are managed by the owner or his bookkeeper, either in the presence of the *maestro* or not. *Maestro* and crew alike have the right to check the computations. It is the *maestro*, however, who collects the crew share from the owner and distributes it among the crew. Regular interaction between owner and crew is in this manner limited. Owners prefer to follow a "chain of command" which places an intermediary, the *maestro*, between them and their crew.

The relative ease by which small-scale fishermen can become owner-operators also affects sharing systems. Small-scale gears require relatively small investment compared to small and medium trawlers and most fishermen can reasonably aspire to become owners if they choose. This limits the ability of owners to impose unilateral changes in the sharing system. The cost of small and medium trawlers, however, is prohibitively high for all but a few. Owners exert greater power in determining the sharing system and over time have increased their proportion of the gross receipts.

The comparison of ownership patterns and sharing systems between small-scale fishermen and operators of small and medium trawlers has indicated major differences in the form and content of relationships which govern production and the distribution of income. This suggests that even though small trawlers (which outnumber medium trawlers 75 to 20) are legally and administratively categorized as part of the municipal or small-scale sector, they are in essence part of the large-scale or commercial sector, which includes the medium trawlers. This division of gear types into two sectors—



small-scale and trawler—more accurately reflects social and economic reality in the San Miguel Bay area than the existing arbitrary division based on vessel displacement. The division based on social and economic relationships of production coincides with the viewpoint of fishery biologists working the field of stock assessment, including those in the San Miguel Bay Project. In Pauly and Mines (1982), it was found that considerable competition exists between these two sectors, which exploit many of the same species. This competition raises serious questions of resource allocation which need to be addressed by national policymakers.

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