

MARKET FOR FRESH OR FROZEN

WHOLE FISH ON GUAM

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Chapter I

INTRODUCTION

In order to manage the Pacific Island fisheries as required under the Magnuson Fishery Conservation and Management Act of 1976, it is necessary to develop a data base of biologic as well as social and economic information. Furthermore, the National Aquaculture Act of 1980 declares aquaculture to be in the national interest and encourages its development in the United States. Adequate planning of both fisheries and aquaculture development requires the formation of an accurate and accessible data base. Toward this end recent efforts in Guam have been directed toward the collection of fishery catch and effort statistics as well as aquaculture harvest and production information. As these activities begin to bear fruit it is also necessary to undertake complementary efforts with respect to the collection of marketing and trade data.

This study represents an effort to develop baseline data on the marketing structure of whole (fresh or frozen) fish on Guam. Estimates of the species, quantity, and value of imported fish have been made. An enumeration of major import, wholesale, and retail firms is presented, along with a brief description of marketing channels. Subjects which deserve further study are noted, and finally, recommendations are made regarding procedures for continued data collection and monitoring of the whole fish market.

The research presented in this paper begins with an in-depth effort to determine what quantity and variety of whole fish is being imported to Guam. Whole (unprocessed) fish imports are chosen as a starting point because Guam's population

is primarily Pacific or Asian in cultural heritage and the consumption of whole unprocessed seafood represents the major portion of household seafood purchases (Callaghan, 1977). It can be further assumed that these imports reflect the tastes and preferences of the buying public. Analysis of these imports by species and value will allow conclusions as to the potential for import substitution by local producers of fish and aquaculture products. In addition, the combined value of imports and local harvests will provide insight into the current and potential economic value of fisheries and aquaculture activities.

Chapter II

IMPORTS OF WHOLE FISH

By law Guam customs inspectors provide copies of all import invoices to the Division of Economic Research, Guam Department of Commerce. These invoices are then categorized and tallied by dollar value according to standard U.S. Customs import categories - 0311 fish, fresh, chilled, frozen; 0312 fish salted, smoked, dried; 0313 shellfish, fresh or frozen; 0320 fish prepared in air-tight containers.

The most recent compilation of these figures appears in Table 2-1. It can be readily seen from this table that over 66 percent by value of the fresh, chilled and frozen fish (category 0311) are imported from the Philippines and Micronesia. Almost all shipments from these two areas arrive by way of air cargo.

Shipments from the United States, Japan, Hong Kong, Taiwan, and Australia (Table 2-1) arrive primarily as frozen containerized ocean freight which is composed almost entirely of processed and packaged sea food products. These products, with the exception of crustaceans (category 0313), do not in most cases provide close substitutes for products harvested commercially in Guam's waters. Therefore, they are excluded from the compilation of the whole fish data in this study.

At the inception of this project it was assumed that an in-depth review of all invoices in category 0311, which includes all fresh, chilled and frozen fish, would provide an accurate base year breakdown of whole fish imports by species, weight, value and source. It was further envisioned that the composition of category 0311 would probably change little from year to year; this being the case, expansion

TABLE 2-1

Value Of Fish Product Imports To Guam,
By Country of Origin: January through December, 1980

Country	Category 0311 Fish Fresh, Chilled and Forzen		Category 0312 Fish Salted, Smoked and Dried		Category 0313 Shell Fish Fresh & Frozen		Category 0314 Fish in Air Tight Containers		Total Imports	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
United States	\$ 128,848	6.4 %	\$ 50,762	20.2 %	\$ 610,300	31.3 %	\$ 768,100	60.1 %	\$ 1,558,010	28.3 %
Japan	269,938	13.3	118,630	47.0	77,048	4.0	421,906	33.0	887,522	16.1
Hong Kong	134,476	6.7	10,872	4.3	12,454	.6	12,596	1.0	170,398	3.1
Taiwan	52,386	2.6	-0-	.0	45,184	2.3	9,924	.8	107,494	2.0
Philippines	1,246,462	61.6	70,706	28.0	1,091,836	56.0	58,550	4.6	2,467,554	44.9
Australia	58,678	2.9	1,262	0.5	97,016	5.0	-0-	.0	156,956	2.8
Micronesia	103,124	5.1	-0-	.0	14,332	.8	-0-	.0	117,456	2.1
Other Countries	29,014	1.4	-0-	.0	-0-	.0	6,832	.5	35,846	.7
Total	\$ 2,022,926	36.8	\$ 252,232	4.6	\$1,948,170	35.4	\$ 1,277,908	23.2	\$ 5,501,236	100.0

Source: Department of Commerce, Government of Guam.

factors developed for this baseline study could be used in subsequent years to construct estimated breakdowns of the 0311 aggregate data.

Unfortunately, this goal proved quite illusive. Aside from the obvious linguistic and taxonomic difficulties associated with grouping Micronesian, Philippine and scientific fish nomenclature several other unforeseen problems surfaced as research progressed. First, there were missing invoices. Airline records had to be utilized to establish the extent of missing invoices for each month. Based on a comparison of airway bills with existing invoices, an adjustment factor was developed for each month of the data set. A detailed description of procedures used to adjust for missing invoices is described in Appendix A.

A second problem surfaced when it was discovered that for certain merchants the existing invoices were inaccurate. A sampling technique involving visual inspection and estimation of shipment weights at the airport was initiated. This sampling technique allowed development of adjustment factors for inaccurate invoices. A description of procedures used to adjust for inaccurate invoices is described in Appendix A.

Table 2-2 provides a summary of 1981 Philippine imports by species groups after making all adjustments discussed above. A complete unabridged breakdown including field notes and remarks can be found in Appendix B. Table 2-2 also provides an estimated retail price range for each species group. These prices were derived from samples taken at five major retail outlets during the course of this study. A detailed description of procedures used to arrive at these price ranges can be found in Appendix A.

TABLE 2-2

Estimated Composition Of Fresh, Iced, Whole Fish
Imported To Guam From The Philippines During 1981,
By Weight And Retail Price Range*

Family or Species Group	Imports (mt)	Percent of Total	Retail Price Range \$ Per kg
Clupeoids ("baitfish," sardines, anchovies, etc.)	14.0	4.0	4.62--5.10
<u>Anadostoma</u> (gizzard chad)	1.9	0.6	5.04--5.10
Chanidae (Milkfish)	62.7	20.4	4.60--6.14
Other "cultured" fishes	10.0	3.3	4.55--6.69
<u>(Plotosus canius</u> (Catfish) & Channidae (Mudfish) 3.9)			
<u>(Cyprinodontidae</u> (Carp) 0.6)			
<u>(Tilapia)</u> 5.4)			
Ariidae (Sea Catfish)	0.5	0.2	4.47--6.14
Serranidae (Groupers)	16.8	5.5	5.13--6.14
Carangidae (lg. species: Jacks & Trevallys)	16.4	5.3	5.04--5.28
"Macherels," including:	44.3	14.4	4.62--5.48
(Carangidae-sm. spp. 30.5)			
(Scombridae-sm. spp. 9.9)			
(Unspecified 3.9)			
<u>Scombridae-Scomberomorus</u> spp. (Spanish Mackerel)	7.8	2.6	5.19--7.70
<u>Scombridae-Thunnus</u> spp. (Tunas)	3.8	1.2	5.04--5.54
Formionidae (Pomfrets)	1.4	0.4	5.04--5.10
Trichiuridae (Cuttlas fishes)	5.5	1.8	4.62--5.10
Menidae (Moonfish)	4.6	1.5	5.04--5.10
Leiognathidae (Slipmouths)	12.4	4.0	4.69--5.10
Gerreidae (Mojarras)	3.5	1.1	4.69--5.10
Lutjanidae (Snappers)	13.5	4.4	4.82--5.37
Caesionidae (Fusiliers)	11.2	3.7	4.62--5.10
Lethrinidae (Emperors)	3.1	1.0	4.95--5.10
Nemipteridae (Threadfins)	12.9	4.2	5.04--5.10
Haemulidae & Sciaenidae (Grunts & Croakers)	2.2	0.7	5.04--5.41
Teraponidae (Tiger Perches)	3.8	1.2	4.36--5.17
<u>Kuhlia marginata</u> (perchlets)	1.6	0.5	5.04--5.10
Mullidae (Goatfishes)	2.2	0.7	5.04--5.10
Sillaginidae (Whitings)	2.9	0.9	5.04--5.10
Kyphosidae (Rudderfishes)	2.2	0.7	5.04--5.10
Scatophagidae (Scats)	3.1	1.0	5.04--5.72
Mugilidae (Mulletts)	7.6	2.5	4.69--5.10
Scaridae (Parrotfishes)	2.9	1.0	4.29--5.10

TABLE 2-2 Continued

Family or Species Group	Imports (mt)	Percent of Total	Retail Price Range \$ Per kg
Gobidae (Gobies)	2.7	0.9	4.29--5.10
Acanthuridae	2.9	0.9	5.04--5.10
(Acanthurus ssp. (Surgeon Fish) 1.6)			
(Naso ssp. (Unicornfishes) 1.4)			
Siganidae (Rabbitfishes)	14.7	4.8	4.47--5.24
Pleuronectidae; Bothidae (Flatfishes)	1.9	0.6	5.04--5.10
Misc. & unid.	10.0	3.3	4.74--5.58
Total Estimated Imports	307.0	100.0	

NOTE: * These figures are adjusted for missing and incorrect invoices. A detailed description of procedures used can be found in Appendix A. See Appendix B for a more detailed breakdown of species, field notes, and comments.

Table 2-3 provides a summary of 1981 imports from Micronesia. Although extensive cross checking was not undertaken, there appeared to be no evidence of missing or incorrect invoices among Micronesian shipments; therefore, the amounts in Table 2-3 are summations of actual invoiced weights and values. Retail prices for fish from Micronesia can be expected to be similar to the price ranges for Philippine fish presented in Table 2-2.

By combining the totals from Tables 2-2 and 2-3, it is estimated that imports of fresh and frozen whole fish from the Philippines and Micronesia during 1981 were 319.3 mt, with a retail value ranging between \$1.5 to \$1.8 million. Although there are some whole fish imports from Japan and other locations, the Philippine/Micronesian imports represent the vast majority. In order to develop some feeling for quantity and composition of Japanese imports, air freight invoices were reviewed for the month of January 1981. During that month some 292 kg of fresh and frozen fish, primarily tuna, were imported. On an annual basis this would amount to 3.5 mt. These Japanese imports were notably higher priced than all other fishery products entering Guam. Invoiced prices averaged \$14.41/kg. These imports are probably destined for the hotel or restaurant market to cover lapses in locally available tuna and other species.

In addition to officially recorded imports of whole fish, there is a substantial volume of fresh and frozen fish arriving in Guam via air from Micronesia as personal baggage. Families often send fish in the care of travelers as a gift or payment to relatives on Guam. Although personal baggage is subject to customs inspection for contraband, data on legal contents is not regularly collected; thus, no official figures are available regarding quantities of fisheries products arriving

TABLE 2-3

Fresh And Frozen Whole Fish Imported To Guam
From Micronesia During 1981, By Species, Weight And Invoiced Value*

Source	Scientific (Palauan Name)	Imports (kg)	Invoiced Value (Dollars)
Palau	Holocentridae		
	<u>Adioryx spinifer</u> (Desachel)		
	<u>Adioryz</u> spp. (Desachel)		
	<u>Myripristis</u> spp. (Bsukl)	343.8	568.75
Palau	Serranidae		
	<u>Epinephelus microdon</u> (Temekai)		
	<u>Epinephelus</u> spp. (Temekai)	68.0	94.50
	<u>Plectropomus</u> spp. (Tiyau, tiau)	44.9	74.15
Palau	Lutjanidae		
	<u>Lutjanus bohar</u> & L.		
	<u>argentimaculatus</u> (Kedesau)	45.4	63.00
	<u>L. gibbus</u> (Keremal, Kerem)	250.3	404.35
	<u>L. spp.</u>		
Palau	Lethrinidae		
	<u>Unid</u> spp. (Mechur)	46.3	76.50
	<u>Lethrinus semicinctus</u> (Udech)	289.7	412.79
	<u>L. harak</u> (White snapper)		
	<u>Lethrinus miniatus</u> (Mlangmud)	63.5	118.75
	<u>Lethrinus lentjan</u> , J. spp. (?)		
	<u>Monotaxis grandoculis</u> (Besecham1)		
Palau	Gerreidae		
	<u>Gerres macrosoma</u> (Chedochd)		
	<u>G. abbreviatus</u> (Chedochd)		
Palau	Mullidae		
	<u>Mulloidichthys Flavolineatus</u> (Dech)	63.5	105.00
	<u>Parupeneus barberinus</u> (bang)	41.3	67.50
Palau	Kyphosidae		
	<u>Kyphosus</u> spp. (Komud)	21.3	39.95
Palau	Mulgillidae		
	<u>Liza vaiigiensis</u> (Uluu)	4.5	8.50
Palau	Scaridae		
	<u>Bolbometopon muricatus</u> (Kemeduk1)	646.0	1,130.99
	<u>Cetoscarus bicolor</u> (bead1, ngesngiz)		
	<u>Hipposcarus longiceps</u> (Ngyaoch, bergism)	76.2	126.00
	<u>Scarus rubroviolaceus</u> (mesekelatlelebt)		
	<u>Scarus</u> spp.		
Palau	Acanthuridae		
	<u>Acanthurus nigricaudus</u> (mesekuuk1bad)		
	<u>A. olivaceus</u> (nerebas, kalelaumi)		
	<u>A. xanthopterus</u> (Meskuule, mesekuuk)	40.1	68.25
	<u>Naso tuberosus</u> (Chorgchut1)		
	<u>N. lituratus</u> (Erang1, cherang1)	392.2	763.68
	<u>N. unicornis</u> (Um, Chum)	3,124.3	5,586.70
Palau	Siganidae		
	<u>Siganus lineatus</u> (Klels)	125.9	233.73
	<u>Siganus</u> sp. (Klsebuul)	36.7	75.65
	<u>S. guttatus</u> (Beball)	34.9	57.78
	<u>S. puellus</u> (reked)		
	<u>S. canaliculatus</u> (Meyas)	382.8	608.60
	<u>S. argenteus</u> (beduut)		
	Unspecified Siganids	63.5	105.10
Palau	Scombridae		
	<u>Thunnus albacares</u> (tekuu, manguro)	96.6	225.50
	Unid. fishes (Mellemau)	270.3	385.00
	(Keb1)	20.4	38.25

TABLE 2-3 Continued

Source	Scientific (Palauan Name)	Imports (kg)	Invoiced Value (Dollars)
Palau	Non-Marine: Anguillidae <u>Anguilla</u> spp. ("Eel")	137.4	375.00
Palau	Assorted Reef Fish	1,953.2	3,493.13
Truk	Scaridae	78.6	205.50
	Assort. Reef Fishes	3,056.2	6,110.10
Yap	<u>Anguilla</u>	11.3	25.00
Other	Scaridae	120.2	203.75
	Assort. Reef Fishes	43.1	66.50
	Assort. Frozen Fishes	274.8	676.50
Total Recorded Imports From Micronesia		12,267.2	\$ 22,594.45

NOTE: *These figures are as reported on invoices provided by Guam Department of Commerce for the entire year 1981 and are not adjusted for potential sampling or reporting error. Many of the families and species represented in imports from Palau were also imported from Truk and possible other islands, but were identified only as "assorted reef fishes" on the invoices.

as baggage. If we assume two coolers per flight from Micronesia, each containing 20 kg of fish (a very conservative estimate), at present levels of one flight per day, the annual volume of unofficial imports would amount to 14.6 mt. Even this conservative estimate is higher than the entire estimated annual inshore harvest on Guam during 1981 (13.1 mt); it is also higher than the officially recorded volume of Micronesia Imports (12.3 mt).

Chapter III

LOCAL FISHERY LANDINGS AND AQUACULTURE

The Division of Aquatic and Wildlife Resources, Guam Department of Agriculture, conducts a random sample creel census at various locations on Guam throughout the year. Extrapolations based on this survey are the best existing estimates of local fish landings. Based on this creel census, FY-1981 (October 1980 through September 1981) annual local landings from both offshore and inshore activities are estimated at 136.6 mt. This figure may be somewhat low since revised sampling techniques used in FY-1982 yield 144.8 mt for offshore landings alone, a 17% increase over those of FY-81 (Division of Aquatic and Wildlife Resources Annual Report FY-82). Expanding by a weighed average of prices from Table 2-2 results in an estimated annual retail value for these landings of between \$647,000 and \$755,000.

The question is often raised as to the potential of Guam's fishery to replace imports. A partial answer is provided in Tables 3-1 and 3-2. Total Philippine imports for 1981 are estimated at 307 mt. Of this amount, some 140.8 mt (45.9 percent) is comprised of species which are similar to those currently harvested frequently around Guam. Over 48 percent of the Philippine imports are harvested by methods currently known and used in Guam. Over 80 mt of fish presently imported from the Philippines could be grown on Guam using various types of aquaculture, provided that the fry of the cultured species are available (e.g., through an on-island hatchery).

TABLE 3-1

Fresh Whole Fish From The Philippines Imported To Guam During 1981,
Categorized By Potential Availability In Local Guam Fishery*

Code*	Percent Total Imports	Weight mt
1. Families comprised entirely or nearly entirely of species not available in local waters.	14.9	46.0
2. Families comprised of some species occurring on Guam in small or unknown quantities but generally not exploited locally.	27.6	85.0
3. Families comprised of some species occurring on Guam, but not significantly exploited locally.	8.2	25.2
4. Families comprised of species rarely imported but exploited locally on a regular basis.	Unknown, but significant	
5. Families comprised of identical or equivalent species as those currently exploited regularly on Guam.	45.9	140.8
6. Unknown species.	<u>3.3</u>	<u>10.0</u>
	100.0	307.0

NOTE: * This table indicates the imports which are available in local waters. It is not in any way intended to imply that local stocks are capable of sustaining such yields. Detailed comments and code breakdowns are given in Appendix B.

TABLE 3-2

Fresh Whole Fish Imported To Guam From The Philippines
During 1981, By Potential Local Harvesting Method*

Code*	Percent Total Imports	Weight mt
1. Troll caught - species potentially available in Guam waters at least on a seasonal basis.	3.8	11.6
2. Bottomfish - species or their market equivalent potentially available in Guam waters.	16.9	52.0
3. Bottomfish - species probably not available in Guam waters.	6.2	18.9
4. Aquaculture - species potentially capable of culture on Guam.	26.1	80.2
5. Reef Fishery - species harvested by spear, net, spin casting.	13.7	42.2
6. Atulai and other so-called "Mackerel" harvestable locally in a variety of ways.	14.4	44.3
7. Caesionids: mid water fishes not fully exploited by any method locally.	3.6	11.2
8. Baitfish - like species harvestable by small mesh nets.	5.2	15.9
9. Other	<u>10.0</u>	<u>30.7</u>
	100.0	307.0

NOTE: *This table indicates the imports which are presently or potentially harvested locally. It is not in any way intended to imply that local stocks are capable of sustaining such yields. Detailed comments and code breakdowns are given in Appendix A.

Investigation into the prospects of commercial aquaculture on Guam was initiated in 1973 with the government's experimental demonstration ponds located in Talofofo. The species examined included the Malaysian giant prawn (Macrobrachium rosenbergii), freshwater eel, (Anguilla japonica), Chinese and common carp (Hypophthalmichthys molitrix, Aristichthys nobilis, Ctenopharyngodon idella, and Cyprinus carpio), milkfish (Chanos chanos), hybrid tilapia (Sarotheradon niloticus x S. mossambicus), the mangrove crab (Scylla serrata), the Asian catfish (Pangasius sutchi) and the Pacific oyster (Crassostrea gigas). Other species have been cultured on a smaller scale by local farmers. These include the soft-shell turtle (Trionyx sinensis), shrimp (Penaeus merguensis and P. monodon), catfish (Clarias batrachus) and the eel (Anguilla rostrata). Since that initial work, great interest has been generated in the potential of aquaculture to aid the island in its quest for economic self-sufficiency (FitzGerald, 1982).

The area of constructed ponds on Guam amounts to approximately 60 acres. Of this total, approximately twelve acres are for tilapia and carp, forty-five acres for prawns and marine shrimp and three acres for catfish. Of this 60 acre area only about 50 percent is actually being utilized. The major reason for this underutilization is an inconsistent and inadequate supply of postlarvae and fry. Full production of existing and potential farms has been hampered by the lack of an on-island hatchery. Aquaculture farmers must rely on the importation of fry and postlarvae. Some farms have been taken completely out of production due to the lack of a consistent, reliable, and cost effective source of fry and postlarvae.

All aquaculture products produced during 1981 on Guam were marketed on Guam with the exception of some 60 mt of eels which were exported. There were 16.7 mt of

locally produced and marketed aquaculture products during 1981. Of this total 14.4 mt consisted of whole fish, and 2.3 mt consisted of prawns (see Table 3-3). This level of fish production represents less than 5 percent of the total Philippine Imports and less than 18 percent of the imports capable of being cultured on Guam. Thus, there remains a substantial domestic market volume to be filled by the local production. Imported product prices will tend to create a ceiling on the local aquaculture product prices and profit margins. It remains to be seen whether local aquaculture will be capable of generating profit margins sufficient to overcome the opportunity cost of capital and compete with low cost foreign land and labor in the export market. Significant government aid will be needed during the initial development stages in order to generate the economies of scale necessary for competitive unsubsidized aquaculture to flourish on Guam.

With respect to both aquaculture and fisheries it should be pointed out that despite significant annual consumer demand, seasonal fluctuations in local supply may not necessarily correspond to seasonal patterns of demand. Proper storage of fish is at best very costly and technically difficult. Imports will always be necessary to smooth fluctuations in local production. Although the exact extent of Guam's fish resources is unknown, it must be remembered that local harvests of certain non-migratory species could reach a level well beyond their sustaining capability, particularly in the waters immediately surrounding Guam. Guam's fishing fleet will have to expand its area of operations to include currently unexploited distant offshore banks. At least for the foreseeable future, prices received by local producers will bear a close relationship to the price of imported substitutes. Unless export markets for local products can be developed the profits of small scale local fishermen will be caught between the rising cost of harvesting a shrinking resource

TABLE 3-3

Aquaculture Production On Guam
During 1981, By Species, Weight And Value

Species	Production Weight (kg)	Wholesale Value (Dollars)	Fish Marketed Locally (kg)	Retail Value (Dollars)
<u>Macrobrachium</u> <u>rosenbergii</u> (Prawn)	2,272	35,000		
<u>Anguilla japonica</u> (Eel)	60,000	356,400	3,000*	16,500-23,100
<u>Sarotheradon</u> <u>mossambicus</u> /Tilapia <u>S. niloticus</u>	11,364	43,750	11,364	50,000-62,500
TOTAL	73,636	435,150	14,363	66,500-85,600

Note: Ninety-five (95%) of eel production is exported to Japan.

Source: Department of Commerce, Government of Guam.

and low import controlled ex-vessel prices. Without trade restrictions it is highly unlikely that local fisheries and aquaculture will ever replace imports entirely; however, there remains ample room for a significant degree of import substitution.

Chapter IV

VALUE AND DISTRIBUTION OF WHOLE FISH

Table 4-1 presents a summary of whole fish entering Guam's economy by source, weight, and estimated value during 1981. When Philippine, Micronesian, and Japanese imports are combined with local landings and aquaculture, it can be seen that 1981 consumption of whole fresh and frozen fish on Guam exceeded 488.4 mt with a retail value of between \$2.3 and \$2.7 million. This total can be considered a conservative estimate, since it does not include imports from Philippine travelers' personal baggage, and it does not include landings into the local economy of incidental catch by tuna vessels calling at the Guam Commercial Port. The reader should also keep in mind that in addition to whole fresh and frozen fish there are many millions of dollars worth of processed fish products entering Guam each year. For example, Appendix C provides a summary of dried, salted, smoked and boned fish imported from the Philippines during 1981.

On a per capita basis the totals from Table 4-1 represent 4.65 kg (10.23 lbs.) per person per year, or an average expenditure of over \$22 percapita. Assuming a total of 18,000 families on Guam, the average family consumes 27.13 kg (59.69 lbs.) of whole fish per year. Since such consumption is undoubtedly not spread equally over all ethnic groups, it can be seen that for some families the consumption of whole fish represents a major dietary and budget item.

Figure 4-1 provides a rough picture of the distribution channels for whole fresh and frozen fish in Guam. The sources of fish are as outlined in Table 4-1. The ultimate users of fish products are local households, government institutions,

TABLE 4-1

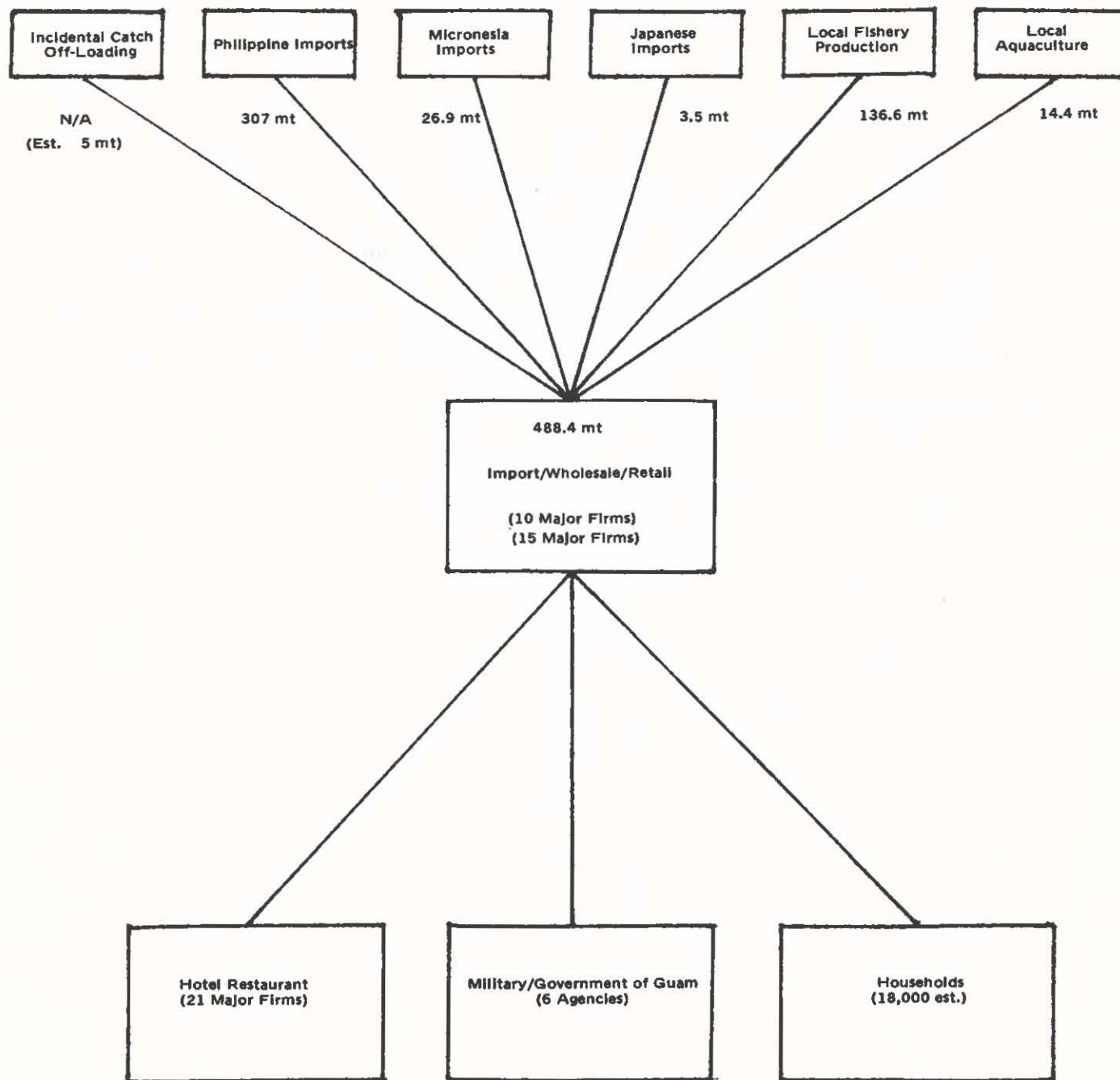
Summary Of Fresh Or Frozen Whole Fish Entering
Guam's Commercial And Subsistence Economy
During 1981, By Source, Weight And Value

Source	Estimated Weight (mt)	Percent of Available Total	Estimated Retail Value** (Dollars, 1,000)
Philippines: commercial	307.0	62.9	1,455-1,698
Philippines: personal baggage	(NA)		
Micronesia: commercial	12.3	2.5	58-68
Micronesia: personal baggage	14.6	3.0	69-81
Japan: commercial	3.5	0.7	50
*Local: Islandwide offshore	123.5	25.3	585-682
*Local: Islandwide inshore	13.1	2.7	62-72
Local: Aquaculture	14.4	2.9	66-86
Incidental Catch Off-loading	(NA)		
Total	488.4	100.0	2,345-2,737

Note: * Includes commercial and subsistence for FY-1981 (October 1, 1980 to October 1, 1981).
**Based on a weighted average of prices from Table 2-2.

Figure 4-1

Distribution Cannels For Fresh And Frozen Whole Fish Entering Guam's Commercial And Subsistence Economy During 1981



and visitors. Many households consume whole fish by eating at local restaurants or through federal (school lunch) programs or through public agencies and military exchanges. Exports of whole fish are omitted from Figure 4-1 for the sake of simplicity and because the volume during 1981 amounted to less than one metric ton. A list of firms involved in the distribution of whole fish on Guam is presented in Appendix D.

The channels of distribution for whole fish in Guam are fairly simple. Two or three large vertically integrated importers along with the Guam Fishermen's Coop account for a major portion of the volume. However, there appears to be a sufficient number of small import/wholesale/retail firms to create a considerable degree of price competition. Sources of supply, foreign transactions, and markups by importers are closely guarded proprietary information.

Chapter V

CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

A conservative estimate of the total consumption of fresh and frozen whole fish on Guam during 1981 appears to be 488.4 mt with a retail value in the neighborhood of \$2.6 million (Table 4-1). Local fishery landings appear to supply at least 136.6 mt. Aquaculture produces approximately 14.4 mt that is domestically marketed. Local landings and aquaculture account for only 31 percent of the estimated total local consumption. Imports account for over two-thirds of the total annual consumption. Therefore, at current retail prices, there seems to be more than sufficient annual consumer demand to warrant expanded import substitution by locally based fishing and aquaculture activities.

Because some 46 percent of imports consist of species presently harvested in Guam's marine waters (see Table 3-1), the composition of local annual demand is such that it presents no barrier to the growth of local fisheries. In fact, local consumption patterns appear to offer many possibilities for import substitution. However, demand and local supply may not always be compatible on a seasonal basis. Such imbalance will result in price fluctuations injurious to small scale local production. Increased storage facilities and expanded export markets will be necessary to balance demand and local supply throughout the year.

It is also unclear whether stocks of fish in Guam's waters are adequate to allow significant expansion of local fisheries. Expansion may not be economically feasible in the long run without significant increases in the scale of operation (larger vessels). Increases in scale may, in turn, place severe pressure on the

non-pelagic resource base. As resources become depleted operating costs of local fishermen will rise, resulting in demand for subsidies or protection from lower priced imports. Protective policies may have to be initiated. In addition, it may be necessary to formulate local policy guidelines regarding rights to the existing limited resources. The problem of commercial vs. recreational/subsistence rights to the resource will ultimately have to be faced.

Because some 26 percent of imports consist of species potentially capable of culture on Guam (see Table 3-2) it appears that aquaculture can also play a major role in fish import substitution. In addition, aquaculture has a potential to replace 99 mt of imported prawns/shrimp per year (FitzGerald, 1981). Other imported shellfish products can also be replaced through local aquaculture production.

Just as with local small scale fisheries, the composition of local annual whole fish demand is such that it presents no major barrier to the growth of aquaculture. However, the ultimate driving force of private enterprise is profit. Profits in local aquaculture must be high enough to attract the necessary capital for expansion of scale and improvements in intensive technology. It remains to be seen whether local profit margins will remain high enough to generate growth in the face of low cost competitive imports. In any case significant Government aid will be needed during the initial development stages in order to generate the economies of scale necessary for competitive unsubsidized aquaculture to flourish on Guam.

In order to properly monitor the fishery as well as formulate intelligent policy actions regarding management and development of aquaculture and fisheries the following recommendations are made:

1. Continue and improve the existing creel census carried out by the Aquatic and Wildlife Resources Division, Guam Department of Agriculture. Such interview sampling procedures represent the best method of acquiring information in island societies where English may not be a working language, telephones are a luxury, and licensing is socially unacceptable. The statistical validity of the census should be improved, and the content should be expanded to focus on economic and social information.

2. Improve the procedures currently used by the Guam Department of Commerce to verify, record and tally category 0311 import data in order to ensure accurate compliance with the law. This can be accomplished by making periodic checks of airway bills in order to assure that invoices are not missing and that net weights listed on invoices correspond to a reasonable proportion of gross weights appearing on airway bills. Periodic random sampling (three or four times a year) of shipments by weight and species at the airport customs office should be sufficient to monitor adjustment factors.

3. Initiate random census of fresh or whole fish entering Guam as personal baggage from flights arriving from the Philippines and Micronesia. This should be done in a manner that does not hinder current customs inspection procedures; however, random visual

inspection rather than by voluntary declaration would be in order.

4. Proceed with socio-economic analysis of local fisheries - both subsistence, recreational and commercial. Gather and analyze all existing socio-economic information related to the harvest and distribution of Guam's subsistence fisheries. If existing data proves inadequate, an independent study should be initiated to obtain at least baseline data.

5. Monitor aquaculture production. Accurate records of stocking rates, growth rates and cost of pond operation for the various species is required.

LITERATURE CITED

- Amesbury, S. S., and P. Callaghan 1981. Territory of Guam Fisheries development and management plan. Guam Marine Fisheries Advisory Council. v + 99 p.
- Callaghan, P. 1978. Some factors affecting household consumption of seafood and seafood and fish products on Guam. Guam Bureau of Planning, Economic Planning Division Report 77-3. 45 p.
- FitzGerald, W. J., Jr. 1981. The potential market for aquaculture products produced on Guam. Guam Department of Commerce, Quarterly Economic Review. 3(4): pages
- FitzGerald, W. J., Jr. 1982. Aquaculture development plan For The Territory of Guam. Guam Department of Commerce. xvii + 182 p.
- Kock, R.L. 1982. Offshore creel census. Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, Annual Report FY 1981: pages.

APPENDIX A

DETAILED SURVEY METHODOLOGY AND ADJUSTMENT

FACTORS USED IN THIS STUDY

I. Correction factor for missing invoices

Airway bills for every Pan Am flight arriving from Manila during 1981 were examined at Pan Am's cargo office. Based on these documents a calendar was set up showing the gross weight by merchant (if known) of each and every shipment containing foodstuffs.

A similar calendar was set up based entirely on invoices provided by the Department of Commerce. This was done solely for the purpose of matching merchant firms with shipment dates. Comparison of the two calendars indicated that some invoices were missing.

Direct observation was consistent with Pan Am records and indicated that virtually every shipment labelled "foodstuffs" contained fresh, iced fin-fish and/or shellfish. Based on a comparison of the two calendars it was possible to calculate the number of missing sets of invoices for a given merchant in a given month. Exceptions developed where merchants frequently combined orders. However, in many cases the actual date of a missing invoice could be determined. It was thus possible for the ratio

of the actual number of shipments over the number of sets of invoices to be determined for a given merchant in a given month. This correction factor was used to adjust monthly net weights of chilled fish by merchant to account for missing data (invoices). The correction factors are listed as follows:

<u>Month</u>	<u>Merchant</u>	<u>Multiply by</u>
Feb.	A	1.154
	B	1.154
	C	2.333
May	A	1.059
Sept.	A	1.133
	B	1.267
	C	1.214
Nov.	A	1.308
	B	1.125
	C	1.875
Dec.	A	1.308

It was impossible to match a given invoice with a given airway bill for merchants other than those shown above; however, a comparison of the total numbers of invoices with airway bills revealed that correction factors for those firms are probably unnecessary.

Invoices covering only months of the year were available from the Department of Commerce.

To obtain an annual value, the final totals after all correction factors were applied was multiplied by 12/8 or 1.5, in order to adjust for the missing months.

II. Correction factor for under-reporting net weights on invoices based on observations during Pan American Cargo Release

In order to detect discrepancies between quantities of fresh iced fish reported, and those actually arriving, it was necessary to match observed and tallied shipments with their appropriate invoice copies provided by the Department of Commerce. Only the contents portion of each invoice and its data were provided. The merchants identities were not revealed even by an anonymous coding system. Considerable detective work had to be done in order to properly identify shipments. By the end of the study period, all local firms and the invoice types used by their suppliers were known. At least four (coded A, B, C and G) exporters of Philippine fishes each dealt exclusively with a single Guam customer. Since their identities were known during customs inspection, it was usually very easy to match a particular observed shipment with its correct invoice. A few other exporters conducted business with more than one Guam customer. Sometimes orders were combined. For these, it was not always possible to correctly match observed shipments with their correct invoices, but a number of matches were possible on days when only a few shipments arrived.

During customs inspection, an attempt was made to tally the total net quantities of fresh iced fish for as many shipments as possible on any given day.

This was done by counting the number of coolers (standard size 57 x 42 x 39 cm outside dimension) of fresh iced fish. A "full" cooler was judged to be one containing only fish and ice. Coolers that contained other seafood such as shellfish, octopus and squid, dried or processed fish, or non-seafood items, were tallied according to the proportion of fresh fish they contained, in the form of a fraction, eg. 1/2, 1/3, 1/4, etc., as appropriate. Although none were actually weighed, direct observation indicated that each full cooler should have contained anywhere from 30 to 40 kg. net weight of fresh chilled fish. Only shipments in which contents of all coolers were seen, and their correct invoices matched, were considered. The total net weight of chilled fish stated on each invoice was divided by the number of coolers tallied for that shipment to obtain a net weight per cooler for each shipment. Average net weights per shipment were then compared between the local merchants, and with the observed estimate of 30 to 40 kg/cooler.

These results indicated that only one local firm, doing business exclusively with exporter "A," consistently under-reported the quantities of fresh chilled fish that it received. The mean net weight per cooler (n=17 shipments) based on quantities reported was 13.0 kg for exporter "A" compared with a mean of 36.2 kg/cooler (n=47 shipments) for three other major exporters. No evidence of under-reporting by any other merchants was found.

Thus all quantities of fresh chilled fish reported on invoice type "A" were multiplied by a factor of 2.784 to obtain a realistic estimate of what was actually imported.

III. Alternative determination of the quantity of fresh iced fish arriving during 1981 based on observations during Pan American Cargo Release

Accurate counts of quantities of fresh iced fish passing through customs inspection were made on numerous occasions, in the manner explained in Part II of Appendix A. Only those days in which the contents of all coolers arriving were observed and tallied are considered here. Since shipment size differed according to the particular weekday and was consistent within a given weekday, the mean number of coolers of fresh fish arriving per week could be obtained.

Results are tabulated below:

Day	n	Average No. Coolers per Day
M	5	23.42
T	3	52.23
F	2	61.85
S	5	39.58
TOTAL	15	177.08
MEAN	15	44.27

With a few exceptions, there were four shipment days per week during 1981 in which fresh seafood arrived.

Thus: 177.08 coolers/week
 x 52.14 weeks/year
 9,232.5 coolers/year

This, multiplied by the calculated mean net weight of 36.2 kg* of fresh fish per cooler yields 334,232.8 kg/year. Reasonable upper and lower annual net weight limits for 9,232.5 coolers per year are: 276,988.5 kg/yr. @ 30 kg/cooler and 369,318.0 kg/yr. @ 40 kg/cooler.

* The mean net weight per cooler for the three reliable merchants, C, D, and G for which sufficient data was available as explained in Part II of Appendix A.

IV. Estimates of Retail Prices

In order to estimate retail price ranges for whole fish during September 1981 five of the largest Philippine fish importers were given a list of fish names and asked to assign their normal retail price to each fish listed. These listings shown to the merchants were actual invoices with prices, volumes, and firm names deleted. The price ranges presented in Table 2-2 represent the highest and lowest prices quoted by merchants during this survey.

V. Comparison of Results

Over the eight months of 1981 in which invoices were analyzed, 149.8 metric tons of fresh iced fish were reported. Multiplying by (12 mo./8 mo.) yields 224.7 mt per year, which is the equivalent of 29.8 coolers/shipment day.* Clearly, this figure is considerably lower than the observed mean of 44.27 coolers/shipment.

By correcting for missing invoices through consulting Pan Am cargo records, and constructing a calendar of shipment days a figure of 228.0 metric tons annually and 30.2 coolers per shipment is obtained. Obviously this does little to account for the disparity.

By correcting for under-reported net weights as well as missing invoices, a figure of 307.1 mt per year, or 40.7 coolers per shipment is obtained. Although somewhat lower than the 334.4 mt/yr. and 44.27 coolers/shipment based on observations alone, these figures are reasonably close. Since under-reporting was detected for only one of several merchants, it is possible that some undetected, minor under-reporting practiced by one or more additional merchants could account for this discrepancy (8.8% of the higher figure). It is also possible that variability in the ratio of ice to fresh fish could account for this as well, if some merchants use more ice than others.

* Based on 36.2 kg/cooler and 4 shipment days per week.

VI. Comparison with Gross Shipment Weights Shown on Pan Am Records for the Month of December - Further Check

For the month of December, a total of 71,763 kg gross weight of shipments containing "foodstuffs" was recorded on Pan Am ledgers for flights arriving from Manila; 5,865 kg of this was shipments of frozen shrimp, live shrimp, dried fish, or frozen seafoods (presumed not to be fresh iced fish). The remaining 65,898 kg consisted of shipments containing fresh iced fish that were investigated by me during customs inspection. Invoices provided by Department of

Commerce showed only 14,404 kg net wt. of fresh iced fish arriving during the month. Adjustments for missing invoices (i.e., for shipments known to have arrived, but with no invoice available) and under-reporting increased this to 22,791 kg net weight. The remaining 65.4% presumably consists of fresh iced shellfish, octopus and squid; ice; dried, smoked, salted or processed fish; live crab; non-seafood foodstuffs including baked goods; magazines and other manufactured goods; and packaging materials, all of which were observed during almost any given customs inspection. The figure of 34.6% for the portion of the gross weight all shipments that consists of fresh iced fish is consistent with observations and seems quite reasonable.

VII. Summary of Results

1. Non-adjusted invoice total from invoices provided by the Guam Department of Commerce:

224.7 metric tons/yr.

or, 35.9 coolers/day at 30 kg/cooler

29.8 coolers/day at 36.2 kg/cooler

26.9 coolers/day at 40 kg/cooler

2. Invoice totals adjusted to account for missing invoices:

228.0 metric tons/yr.

or, 36.4 coolers/day at 30 kg/cooler

30.2 coolers/day at 36.2 kg/cooler

27.3 coolers/day at 40 kg/cooler

3. Invoice totals adjusted for both missing invoices and under-reporting:

307.1 metric tons/yr.

or, 49.0 coolers/day at 30 kg/cooler

40.7 coolers/day at 36.2 kg/cooler

36.8 coolers/day at 40 kg/cooler

4. Estimates based on direct observation during cargo release:

44.27 coolers/shipment day

177.1 coolers/wk, or 9,233.0 coolers/yr.

277.0 metric tons/yr. at 30 kg/cooler

334.2 metric tons/yr. at 36.2 kg/cooler

369.3 metric tons/yr. at 40 kg/cooler

5. Comparison with Pan Am Records for the month of December, 1981

indicate that:

34.6% (22,791 kg net wt. fresh iced fish out of a gross wt. of 65,898 kg for shipments containing fresh fish) of the gross shipment weights consists of fresh iced fish. An additional 5,865 kg of seafood shipments, mostly frozen shrimp, did not contain fresh iced fish.

APPENDIX B

ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

APPENDIX B

Estimated Amount And Composition of Fresh, Iced, Whole Fish Imported To Guam From The Philippines During 1981, With Remarks On Their Availability

Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
9	1	Orectolobidae (Nurse Sharks) <u>*Segostoma varium</u> (Zebra Shark)	-	-	Observed once, not found on invoices.	This species not available. Other sharks and rays are rarely available commercially. At the present time, sharks generally are discarded when caught.
9	2	(Unid. sting ray)	-	-	Observed once, not found on invoices.	
8	3	Herrings, Sardines, Anchovies and Silversides: Dussumieridae (Round herrings)Lapad deep-bodied herring <u>Spratelloides</u> sp. Clupeidae (Herrings, Sardines)Tam ban, Lapad, Tunsoy, Turay, Fembretid, Tawilis Salinyasa <u>*Sardinella melanura</u> Tuakang <u>*Herklotsichthys</u> spp. <u>*Pellona</u> sp. Engraulidae (Anchoives) Alamang <u>Stolephorus indicus</u> (Indian Anchoivy) Dilis, Tam ban Atherinidae	4.5	14.0	Numerous forms of small, fishes ranging in size from 4 to 20 CMS were observed in moderate quantities on nearly every shipment day. Additionally, this group comprises the greatest relative proportion of dried fishes entering Guam.	At least six species within this group occur at Guam, but their abundance is poorly known. Currently, none are sold commercially.
8	1	*Dorosomatidae (Gizzard Chads) Kabasi <u>Anadostoma selangkat</u>	0.6	1.9	Frequently observed in low quantities.	Not available.
9	1	*Chirocentridae (Wolf Herring) Parang, Parang <u>Chirocentrus dorab</u>	-	-	Observed once.	Not available.

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ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

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Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
9	2	Albulidae (Bonefishes)...Bid bid <u>Albula vulpes</u>			Observed once	Available in extremely low quantities; seldom exploited.
9	2	Megalopidae (Tarapan, Lady Fish)Buan-buan <u>Megalops cyprinoides</u>			Observed once	Available in extremely low quantities; seldom exploited.
4	2	Chanidae (Milkfish)....Bangos <u>Chanos chanos</u> Paksiwan	20.4	62.7	The single most import species imported from the Philippines, where it is the most important pond-cultured fish. Forms a significant portion of virtually every shipment. Available in a variety of sizes above 15 cm FL.	Available in extremely low quantities; never observed in fishermens catches, and not currently cultivated in ponds.
9	4	Muraenidae (Moray Eels)..Palos, sea eel <u>Thyrsoidea macrurus</u>			Rarely observed	Unknown. Other species are occasionally taken in low quantities by commercial spear fishermen.
9	1	*Muraenesocidae (Pike-head Eels)Palos, sea eel <u>Muraenesox cinereus</u>			Rarely observed	Not available.
4	1	Catfishes and Snakeheads Clariidae (Walking Catfishes)Hito <u>Clarius</u> sp.	1.3	3.9	<u>Clarius</u> was rarely observed; <u>Plotosus</u> and <u>Ophiocephalus</u> occur in most shipments and are generally combined in both the shipments and on the invoices.	<u>Clarius</u> - available in small quantities from pond harvests. All others not available
		*Plotosidae (Catfish).....Hito, Catfish ² <u>Plotosus canius</u>				
		*Channidae (Snakeheads)..Dalang, Mudfish <u>Ophiocephalus striatus</u>				

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ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

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Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
4	1	Cyprinidae (Carp) Karpa, Carffish <u>Cyprinus carpio</u>	0.2	0.6	Occasionally observed, primarily from Nov. to Feb.	Not available.
4	5	Cichlidae (Tilapia) Archer, Tilapia <u>Tilapia mossambica</u>	1.8	5.4	Occurs in nearly every shipment in moderate quantities	Availability low and sporadic; currently raised in ponds.
9	1	*Ariidae Kadule, Sea Catfish <u>Arius sp.</u>	0.2	0.5	Observed irregularly in small quantities. Demand appears to exceed supply.	Not available.
9	2	Synodontidae (Lizardfishes) Kalaso <u>*Saurida undosquamis</u>			Rarely observed	This species not available, other species of smaller size common, but unexploited.
9	3	Hemirhamphidae (Halfbeaks) <u>*Hemiramphus far</u>			Occasionally observed	This species not available; other species exploited in low quantities.
3	1	*Centropomidae Matang-pusa <u>Centropomus waigiensis</u> <u>Lates calcarifer</u>			Observed in small quantities on most shipment days	Not available.
2	5	Serranidae (Groupers, Sea Basses) Lapu-lapu (also Tiger Groupers, Ulpot) <u>Cephalopholis aurantius</u> <u>*C. cyanostigmus</u> <u>*C. miniatus</u>Senora <u>*C. pachycentron</u> <u>*C. sonnerati</u> <u>*Centrogenys waigiensis</u> <u>*Cromileptes altivelas</u> <u>*Epinephelus areolatus</u> <u>*E. bleekeri</u>	5.5	16.8	Observed in moderately large quantities in nearly every shipment. These fishes generally sell for a higher price than most others. <u>Variola louti</u> and <u>Plectropomus</u> spp. form the bulk of the groupers in most shipments.	Most species or their market place equivalents occur in Guam's waters, where they form a significant portion of the local commercial bottomfish harvest. <u>Variola louti</u> appears to be the most important species, followed closely by <u>Epinephelus fasciatus</u> , while <u>Plectropomus</u> spp. are rarely landed. At current levels, Guam's catch cannot possibly meet annual demand. It appears un-

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ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

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Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
		<u>E. fasciatus</u> <u>E. fuscoquattatus</u> <u>E. maculatus</u>				likely that Guam's catch can be increased to the point of meeting current demand, unless currently unaccessible banks are harvested.
		* <u>E. megachir</u> (Honeycomb Groupers) Liglig				
		* <u>E. sexfasciatus</u>				
		* <u>E. tauvina</u>				
		* <u>E. summana</u> <u>Plectropomus leopardus</u> Red Lapu				
		<u>P. maculatus</u> Black Grouper Aswang				
		<u>P. melanoleucus</u> (Saddleback Grouper)				
		* <u>P. oligacanthus</u> Red Lapu				
		* <u>P. truncatus</u> <u>Variola louti</u> (Painted coral trout) Senorita, Yellow-margined grouper				
5	5	Kuhliidae (Flagtails) * <u>Kuhlia marginata</u>Perchlets	0.5	1.6	Occurs in nearly every day's shipments in low quantities	This species not available; others exploited in low quantities.
9	2	Echeneidae (Remoras).....Tursillo <u>Phtheirichthys lineatus</u>			Observed once	Present in low quantities; currently not exploited.
9	1	Lactariidae (False Trevally, Whitefish).....Talikitok <u>Lactarius lactarius</u>			Rarely observed	Not available

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ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

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Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
2	5	<p>Carangidae:</p> <p>Jacks, Trevallys & Crevalles:</p> <p><u>Alectis ciliaris</u>.....Talikitok, Cavalla</p> <p>*<u>Carangoides armatus</u></p> <p>*<u>C. caeruleopinnatus</u></p> <p><u>C. chrysophrys</u></p> <p><u>C. ferdau</u></p> <p><u>C. malabaricus</u> (Malabar Trevally)</p> <p><u>C. orthogrammus</u></p> <p>*<u>C. oblongus</u></p> <p>*<u>C. plagiotaenia</u></p> <p><u>C. spp.</u></p> <p><u>Caranx ignobilis</u> (Giant Trevally)</p> <p><u>C. melampygus</u> (Blue fin Trevally)</p> <p><u>C. sexfasciatus</u> (Big eye Trevally)</p> <p>*<u>C. tille</u></p> <p>*<u>C. cheilio</u></p> <p><u>Gnathanodon speciosus</u> (Golden Trevally)</p> <p>*<u>Ulua mentalis</u></p> <p><u>Uraspis sp.</u> (fur-tongue)</p> <p><u>Trachinotus blochii</u></p>	5.3	16.4	Observed in moderately large quantities in nearly every shipment. A large variety of species and sizes ranging from 15 to 40 cm FL are usually available.	A large percentage of the species or their marketplace equivalents occur in Guam's waters where they form a significant portion of the commercial bottomfish, and a smaller portion of the commercial trolling harvests. The most important species is <u>Caranx lugubris</u> , which is not imported from the Philippines, and is a potential ciguatera hazard.
1	6	<u>Elagatis bipinnulatus</u> (Rainbow runner)			Rarely observed	Available in moderate quantities irregularly throughout much of the year.
6	5	<p>Mackerel-like carangids:</p> <p>*<u>Atule mate</u> (Finlet Scad) Salay-salay</p> <p><u>Atule spp.</u></p> <p>*<u>Selar boops</u></p> <p><u>S. crumenophthalmus</u> (Big eye scad, Atulia) Matangbaka</p> <p>*<u>Selaroides leptolepis</u> Sulay-Guinto</p> <p><u>Decapterus macarellus</u> (Mackerel scad) Galongong,</p> <p><u>D. spp.</u> (Mackerel scads) GG, round mackerel, burat</p>	9.9	30.5	Collectively known as "Mackerel" these small carangids and scombrids formed a significant portion of nearly every observed shipment. Additionally, they are frequently imported dried, smoked or salted. "Mackerel" from the families carangidae and scombridae collectively comprise 14.4% of annual Philippine fresh fish imports accounting for a weight of 44.3 m.t.	The atulai or Mackerel, <u>Selar cumenophthalmus</u> is occasionally available in sporadic, but sometimes large quantities from the months of August to November. It appears unlikely that local supply could meet demand given present harvesting methods. Potential yields are unknown.

APPENDIX B

ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

APPENDIX

Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
6	2	Scombridae (Mackerels and Tunas) "Mackerels" <u>Auxis thazard</u> (Frigate tuna) * <u>Rastrelliger kanagurta</u> (Bullet tuna) * <u>Rastrelliger</u> sp. (Bullet tuna) Alumahan, stripped mackerel, Tulingan	3.2	9.9		
6	5	Unspecified "Mackerels" * <u>Scomberomorus commerson</u> (Spanish Mackerel) Tanigue	1.3 2.6	3.9 7.8	Refer to "Mackerel-like carangids" Observed in moderate quantities in virtually every shipment.	Not available, however the superficially similar wahoo, <u>Acanthocybium selandri</u> is currently harvested in moderate quantities irregularly throughout the year.
1	5	Tunas <u>Euthynnus affinis</u> (kawa kawa) <u>Thunnus albacares</u> (Yellowfin) * <u>T. tongol</u>	1.2	3.8	Observed in small quantities on most shipment dates.	Available in moderate to large quantities throughout the year, but primarily during the summer half. Currently, Guam's supply greatly exceeds quantities imported from the Philippines, and prospects appear good for local supply to increase significantly.
9	1	*Formionidae (pomfret) Pompet, black pompet, pompano <u>Formio niger</u>	0.4	1.4	Occurs on most shipment days in moderate quantities.	Not available.
9	1	*Trichiuridae (Cutlass fish) Swordfish <u>Trichiurus haumela</u> Espade	1.8	5.5	Occurs on most shipment days in moderate quantities	Some species present, but not currently exploited. Abundance is unknown.
9	1	*Menidae (Moonfish) Hiras, <u>Mene maculata</u> Bilong-bilong	1.5	4.6	Observed frequently in small to moderate quantities	Not available.

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5	2	Leiognathidae (Slip mouths, Ponyfish) Sapsap Gaza minuta (toothed ponyfish) *Leiognathus, brevirostris L. equulus (common ponyfish) Sapsap, Pangatin *L. bindus *L. splendens (splendid ponyfish) Taksay big slipmouth *Secutor insidiator Banded slipmouth	4.0	12.4	Numerous species observed in moderate quantities on nearly every shipment date.	A few species locally available, but not harvested commercially; stocks are unknown, but appear to be small.
5	5	Gerreidae (Mojarras) Malakapas *Gerres abbreviatus (deep bodied) *G. filamentosus (whipfish mojarra) G. macrosoma G. spp.	1.1	3.5	Numerous species observed in small quantities on nearly every shipment date.	At least one species harvested in low quantities throughout the year but generally not available commercially.
2	4	Lutjanidae (Snappers) Deepwater species: Aphareus rutilans (silvermouth) Pristipomoides flavipinnis P. seiboldi P. sp. "roseus"			Observed infrequently in small quantities.	Available irregularly in moderately large quantities throughout the year, but primarily during the summer. These and other deep water snappers form the bulk of Guam's commercial bottom fishery with local supply greatly exceeding Philippine imports, but not always meeting demand.

APPENDIX B

ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

APPENDIX

Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
2	5	Shallow water species: <u>Lutjanus argentimaculatus</u> <u>L. bohar</u> (red snapper) Bambangin, Isso-fish <u>L. fulvus</u> <u>L. gibbus</u> Dapak <u>L. kasmira</u> <u>L. lutjanus</u> Burara * <u>L. malabaricus</u> Maya-maya <u>L. monostigma</u> Burara * <u>L. sebae</u> Maya-maya * <u>L. russelli</u> <u>L. lineolatus</u> * <u>L. vitta</u> <u>L. spp.</u> * <u>Pinajalo</u> sp. Maya-maya	4.4	13.5	Observed in moderate quantities on virtually every shipment date. The distinction between these and the closely related Lethrinids and Nemipterids was not always clear, and it is likely that portions of some shipments were allotted to the wrong family. Large specimens of <u>L. argentimaculatus</u> , <u>L. sebae</u> , and <u>L. malabaricus</u> form a large portion of many shipments.	Many of the species or their market place equivalents are harvested in small quantities, and available sporadically at the market place. Only <u>L. bohar</u> attains the size of <u>L. argentimaculatus</u> , which is rare locally. Unfortunately <u>L. bohar</u> is frequently ciguatoxic, and often banned from sale at the Fisherman's Coop. It appears unlikely that the local harvest can be significantly increased or displace Philippine imports.
7	3	Caesionidae (Fusiliers) * <u>Caesio erythrogaster</u> Dalagang-bukid <u>C. caeruleaureus</u> D. bukidlapad <u>Pterocaesio chrysozonus</u> D. bukid bilong, * <u>P. pisang</u> <u>P. tile</u>	3.7	11.2	Observed in moderate quantities on nearly every shipment day. The large <u>C. erythrogaster</u> forms a large portion of most shipments.	Most species or their market place equivalents occur locally, but probably not in large quantities. They are virtually unavailable commercially.
2	5	Lethrinidae (Emperors) <u>Lethrinus</u> harak <u>L. lentjan</u> (red-spot emperor) Sapingan, Maputi <u>L. mahsena</u> * <u>L. nebulosus</u> (spangled emperor) Bitilia * <u>L. ornatus</u>	1.0	3.1	Observed in moderate quantities on most shipment days.	Most species, or their market place equivalents occur locally. The relatively small <u>L. rubrioperculatus</u> forms a significant portion of the local bottom fishery and is available irregularly in moderate quantities throughout the year. The larger species are infrequently available.

APPENDIX B

ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

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Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
3	1	Nemipteridae (threadfish or monocle breams) Bisugo, Bilooan * <u>Scolopsis dubiosus</u> * <u>S. personatus</u>	-	-	<u>Scolopsis</u> spp. were observed occasionally; but were probably lumped with Lujanids or Lethinids on invoices.	A different, smaller species of <u>Scolopsis</u> is available, but disliked by most fishermen.
3	1	* <u>Nemipterus bathybius</u> * <u>N. hexadon</u> * <u>N. marginatus</u> * <u>N. mesoprion</u> * <u>N. metopias</u> * <u>N. tolu</u>	4.2	12.9	<u>Nemipterus</u> spp. occur in nearly every shipment in considerable quantities.	<u>Nemipterus</u> spp. are not available.
3	1	Haemulidae (Grunts) * <u>Pomadasyus hasta</u> Bacoco, Bakoko, sekoy	0.7	2.2	Observed frequently in small quantities.	Not available.
3	1	*Sciaenidae (Drums, Croakers) Alakaak, Plain croaker <u>Pennahbia macrophthalmus</u> White snapper	-	-	Observed occasionally	Not available.
3	1	*Sparidae (Porgy) Bitilya Unid. sp.			Rarely observed	Not available.
3	1	*Teraponidae (Tigerfishes) <u>Terapon jarbua</u> (crescent perch) Bagaong <u>T. sp.</u> Ayungin	1.2	3.8	Observed on most shipment days in small quantities.	Not available

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2	5	Mullidae (Goatfish) Sarmulyete <u>Mulloidichthys vanicolensis</u> <u>Parupeneus barberinus</u> * <u>P. barberinoides</u> * <u>P. chrysonemus</u> * <u>P. cyclostomus</u> * <u>P. indicus</u> * <u>P. pleurospilos</u> * <u>Upeneus moluccensis</u> * <u>U. vittatus</u>	0.7	2.2	Observed in most shipment days in small quantities. One, <u>U. moluccensis</u> is often included in batches of <u>Nemipterus</u> spp.	Most species or their marketplace equivalents are relatively common on Guam. They form a relatively small portion of the local bottom fishery but are more important in the reef flat subsistence fishery. <u>M. flavolineatus</u> is particularly important, both as newly settled fry and as adults.
9	1	*Sillaginidae (Whittings) Asohos <u>Sillago sihama</u>	0.9	2.9	Observed in most shipment days in small quantities.	Not available
5	5	Kyphosidae (Rudderfish) Ilak, Grayfish <u>Kyphosus vaigiensis</u> <u>K. cinerascens</u> Lupak	0.7	2.2	Observed occasionally in small quantities.	Kyphosids form an important portion of the net and spear fisheries, but are available infrequently at the marketplace.
9	1	*Scatophagiade (Scats) Spadefish, Kitang <u>Scatophagus argus</u> (spotted scat) Speckled Drepane	1.0	3.1	Observed on nearly every shipment day in small to moderate quantities.	Not available
4	5	Mugiloididae (Multets) Banak, Kapak, Alugasin, <u>Crenimugil crenilabis</u> * <u>Liza</u> sp.....Kapak, * <u>Mugil cephalus</u> * <u>Valamugil seheli</u>	2.5	7.6	Observed in moderate quantities on nearly every shipment day.	<u>Crenimugil crenilabis</u> occurs locally, but 3 more local species could be considered marketplace equivalents of those imported. Local mullet are virtually unavailable at the marketplace, but form a significant portion of the subsistence fishery where much of the catch consists of juveniles.

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Local Harvest Code**	Local Availability Code**	SPECIES: (English Common Name) Philippine Trade Name, if different from English	Percent of Total Weight	Weight (m.t.)	Notes From Field Import Survey	Remarks on Availability In Local Guam Fishery
9	5	Sphyraenidae (Barracuda) Turcillo <u>Sphyraena</u> sp. (under 45 cm. FL)			Observed once	A number of small species of barracuda occur locally and are occasionally, available in the marketplace. <u>Sphyraena barracuda</u> which is not imported from the Philippines, forms a substantial portion of the troll fishery and is generally available throughout the year.
5	5	Scaridae (Parrotfishes) Loro <u>Cetoscarus bicolor</u> <u>Hipposcarus longiceps</u> * <u>Scarus bleekeri</u> * <u>S. bowersi</u> <u>S. dimidiatus</u> * <u>S. fasciatus</u> <u>S. fraenatus</u> * <u>S. flavipectoralis</u> <u>S. ghobban</u> <u>S. gibbus</u> * <u>S. lunula</u> * <u>S. niger</u> <u>S. oviceps</u> * <u>S. prasiognathos</u> <u>S. psittacus</u> * <u>S. quoyi</u> <u>S. rubroviolaceus</u> <u>S. tricolor</u>	1.0	2.9	Observed in moderate quantities on most shipment days. Generally most shipments consist entirely of the large, relatively colorful terminal male stages.	Many of these species or their marketplace equivalents occur locally where they form a substantial portion of the commercial spearfishing catch as well as the subsistence spear and net fisheries. They are available at the marketplace sporadically throughout the year. It appears doubtful that local stocks could be exploited to a much greater degree.
9	1	Gobiidae (Gobies) Biya (large), * <u>Ophiocara pororcephala</u> (Pore-headed Gudgeon) Talimusak (small) Dulong	0.9	2.7	Observed in small quantities on nearly every shipment day.	Not available.

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ESTIMATED AMOUNT AND COMPOSITION OF FRESH, ICED, WHOLE FISH IMPORTED TO GUAM FROM
THE PHILIPPINES DURING 1981, WITH REMARKS ON THEIR AVAILABILITY

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5	5	Acanthuridae (Surgeonfishes) * <u>Acanthurus bariene</u> , * <u>A. bleekeri</u> Labahita	0.5	1.6	Observed in small quantities on most shipment days.	Marketplace equivalents are harvested in moderate quantities, and are available at the marketplace sporadically.
5	5	* <u>Naso herrei</u> <u>Naso unicornis</u>Cowfish, hornfish, Tataga	0.4	1.4	Observed infrequently in moderate quantities.	<u>N. unicornis</u> , and numerous other species form a substantial portion of the subsistence and recreational fishery. They are sporadically available at the marketplace throughout the year.
5	5	Siganidae (Rabbitfishes) * <u>Siganus canaliculatus</u>Tambal, light siganid * <u>Siganus guttatus</u> * <u>S. javus</u> <u>S. vermiculatus</u>Samaral, St. John	4.8	14.7	Observed in moderately large quantities in nearly every shipment. Two groups are distinguished: the elongate <u>S. canaliculatus</u> and the three larger, deep-bodied species.	<u>Siganus spinus</u> , which is substantially smaller and superficially dissimilar to the species imported, forms the bulk of many of the traditional net fisheries, both as newly settled fry and as adults. <u>S. argenteus</u> which is similarly sized and shaped as <u>S. canaliculatus</u> , is harvested in relatively small quantities whereas <u>S. punctatus</u> , a large, deep-bodied species is rarely harvested. It appears unlikely that local stocks of these marketplace equivalents could possibly meet demand.
5	5	*Flatfishes: (Flounders) Dapa, speckled sole, smooth-seated brill, *Pleuronectidae <u>Psettodes erumei</u> Bothidae Unid. sp.	0.6	1.9	Observed rarely, in small quantities.	Pleuronectidae: not available. Bothidae: available in small quantities; rarely exploited commercially.
9	6	Other Unknown fishes	3.3	10.0		

NOTE: *Species not occurring on Guam.

APPENDIX C

DRIED, SALTED, SMOKED AND BONED FISH IMPORTED TO
GUAM FROM THE PHILIPPINES DURING 1981

Group	Weight (kg) ¹	Container Type ²	Invoiced Amount (Dollars) ⁴	Percent of Total Invoiced Value
Clupeoid	3,287	1,140 pks 2,997 pcs 30 cs	\$ 7,291	23.9
Milkfish	7,262	82 pks 166 pcs 4 cs	\$16,509	54.1
Other	2,507	12,496 pcs 1,124 pks	\$ 6,098	22.0
Total	13,056		\$30,498	100.0

NOTE: ¹ Adjusted for incorrect and missing invoices using adjustment procedures identical to those used for fish iced fish.
² pks = packages; pcs = pieces; cs = cases; weights unknown.
³ These values represent invoiced amounts. Retail prices were not surveyed.
⁴ Includes the following families: Dussmieridae, Clupeidae, Engraulidae and Atherinidae.

APPENDIX D

FIRMS MARKETING WHOLE FISH OR FROZEN FISH ON GUAM

* FISH MARKETS

Fishermens Coop
Donalds Mart
Bayside Mart
Zenys
Carlos Store
Agana Liquor Store
Maharlika Mart
M.P. Enterprise
Thrifty
Olympia Mart
Oriental Food
Helen's Mart
Rosa's Store

* RESTAURANTS

Sakura Noodle House/Restaurant
Red Carpet Restaurant
Joinus Restaurant
Chucks Steak House
Istimewa
Kings Restaurant
Hale kai
Shanghai
Maharlika
The Brig
Chucks Cellar
Cuisine of China
Furusato
Yakitori

* WHOLESALERS

Kwek Enterprise
Tenbata Guam, Inc.
Pedro's
RPH Servicing Wholesale

* HOTELS

Guam Hilton (Genji, Islander
Terrace, Galleon Grill)
Fujita
Guam Dai-Ichi (Kuramaya)
Okura Hotel
Cocos Resort Hotel
Reef Hotel
Pacific Islands Hotel/Club

* GOVERNMENT

Department of Corrections
Guam Memorial Hospital
Food Services Administration
Government House

* MILITARY

Food Service Airforce/Mess
Halls/Dining Facilities
Anderson Commissary
Naval Station
Naval Supply Depot

* SUPERMARKETS

J & G Payless Supermarket
Wholesale
Gibson Shop & Save
Ben Franklin Supermarket
J & G Payless Supermarket
Wholesale
Gibson Shop & Save
Ben Franklin Supermarket
Mangiona's Mart
Pedro's Supermarket