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OVERVIEW OF TUNA MARKETS AND ECONOMIC CONDITION OF THE FISHERIES

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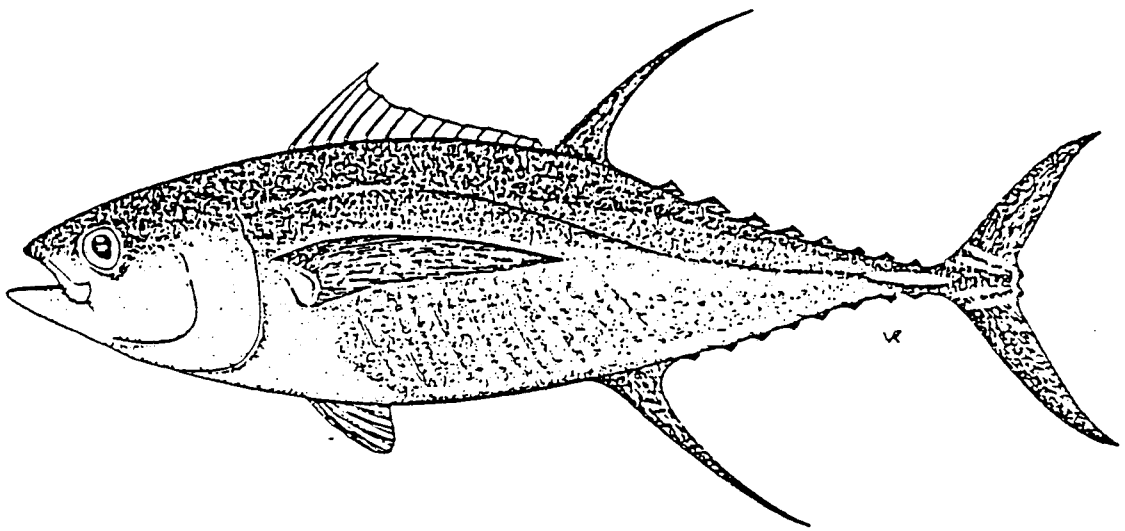

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OVERVIEW OF TUNA MARKETS AND ECONOMIC CONDITION OF THE FISHERIES

Prepared by Forum Fisheries Agency, Honiara, Solomon Islands

INTRODUCTION

1. The Western Pacific tuna purse-seine fishery is the largest single producer in the world with estimated catches in the order of one million tonnes annually with a market value of some $US 2 billion.

2. In addition to the purse-seine fishery which is relatively recent the region has a history of tuna longliners and pole-and-line vessels which have targeted tuna, mainly for the Japanese sashimi markets.

3. The purse-seine fishery is dominant in terms of absolute tonnage taken but the sashimi markets' higher prices and the number of longliners operating are such that the value of that sector of the fishery cannot be ignored.

4. Actual catches could be even higher as a result of the relatively poor reporting procedures of some of the foreign fleets. There have been estimates that in the case of some fleets the under-reporting factor could be as high as 75 percent.

5. It is generally conceded that notwithstanding its productivity the economic situation facing the industry over recent years has been less favourable than in the earlier stages of the fishery's development.

6. This downturn is not seen as deriving from any single cause but essentially a range of causes which have resulted in lower prices for tuna and increased costs of production.

TUNA PRICES

7. Table 1 shows the American Tuna Sellers' Association prices since January 1984 and several points are indicated by the series.

8. The first is that there is no discernible trend over time, that is, even though a line of best fit will show an overall upward movement in prices the correlation is so weak that there is no possibility of using it as a predictor model.

9. It is believed that the stagnation in tuna prices (a fall in real terms) is largely a result of the oversupply on the world market. As noted earlier the Western Pacific produces 50-60 percent of the world's canning tuna and the continued production of the large tonnages cannot be expected to see any real increase in prices received. Further, it is anticipated that, other things being equal, production will

continue to increase[1].

10. In practical terms, however, "other things" will not be equal and two issues are of importance in this context:

    a. The tuna stocks of the Western Pacific are finite; it is not possible to increase production *ad infinitum*. This paper does not intend to address the stock conservation issue except to note that it is the view of some scientists that, especially in the case of yellowfin tuna, levels of effort and catch recorded over the past 3-4 years may not be sustainable. It was believed that catches in order of 200,000-230,000 tonnes annually were sustainable but recent estimates suggest that actual catches over the past 2-3 years may be approaching double that. This consideration becomes even more significant if, as appears likely, fishing masters can target selectively the larger (and more valuable) yellowfin tuna and reduce the percentage of skipjack in their catches.

    b. A secondary consideration is that the member countries of the Forum Fisheries Committee (FFC), and particulary the Parties to the Nauru Agreement[2], are considering the implementation of management arrangements for the purse-seine fishery. Details have not been finalised but can be expected to involve a "lid" on the number of vessels permitted to operate and to make provision for reducing the number in the future. This will have the effect of reducing catches though given the apparent overcapitalisation in the industry it is unlikely that the catch reduction will be as great as the effort reduction.

11. A reduced catch on the world market could be expected to apply some pressure to increase the price but, as has been noted earlier, it is unlikely that the effect would be significant.

12. Prices, however, are quite clearly not related only to supply; demand for canned tuna will continue to have a significant influence. Factors affecting the demand include the disposable incomes in the major markets and comparative prices of substitutes. The continued promotion of fish as a food for the health-conscious can be expected to remain in the major markets (North America and Western Europe).

13. A third consideration is that with the rapid development of the Asian canning sector, in particular Thailand with its lower production cost structure, other canners cannot meet price increases and remain viable.

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1 Medley (1991) has estimated that it would require a catch reduction of some 6 percent to bring about a price increase of 1 percent; clearly a 1 percent price rise will not "save" the industry economically.

2 Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu.

14. Similarly, in the main sashimi markets there is no discernible trend over the period from 1976 to the present though the upward movement has been somewhat more marked than in the canning sector.

COSTS OF PRODUCTION

15. It is difficult to obtain details on the costs of production incurred by a purse-seiner. Waugh (1985) estimated that the costs for operating a United States purse-seiner (1,100 GRT) were $US 2.7 million. These included:

a.	fuel	700,000
b.	provisions	77,000
c.	wages	675,000
d.	repairs and maintenance	210,000
e.	insurance	320,000.

16. Capital costs (interest and depreciation) were estimated at $US 460,000.

17. On the basis of a (very conservative) 5 percent allowance for inflation those costs would compound to $US 3.8 million in 1992. Though it has been noted earlier that the price series is of little use as an estimate it can be noted that the average Pago Pago price for yellowfin over 9 kg (20 lb) was $US 1053 per metric tonne. Thus to cover costs a purse-seiner would require 3,600 tonnes of the larger yellowfin. Given the mixture of species and sizes in the "average" catch then it appears likely that a vessel would require some 4,500 tonnes of catch per annum to break even[3]. It appears that many of the vessels have been able to achieve catches of this magnitude. This has been facilitated by the increasing use of transhipment operations which permit the catcher vessels to spend larger proportions of their trip times "productively" on the fishing grounds. This capability will be impaired with the requirement by the FFA member countries that transhipments be restricted to being conducted in designated ports and areas. This requirement will apply from June 1993. Clearly this will not eliminate transhipments, nor is it intended to, but it can be expected to have some cost increase associated with it.

18. It is difficult to envisage any significant change in the overall cost structures facing the purse-seine fleets and, as stated earlier, there seems little prospect of any short to medium term improvement in real terms.

WESTERN PACIFIC PURSE-SEINE MANAGEMENT

19. Thus although there are limitations to the degree to which the economic situation of the fishery can recover if left to its own devices it is possible that the management arrangements being considered by FFC and in particular PNA will

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3 This figure is comparable with the estimate of 4,000 tonnes by the American Tunaboat Association in 1991.

result in a change in the economic conditions facing the vessels remaining in the fishery.

20. At the outset it should be noted that the stock conservation objective is and should remain a paramount consideration in any fisheries management. At the same time, however, it is not the only consideration. There are legitimate grounds for management of a fishery on economic or sociological grounds, subject, as stated, to the conservation objective.

21. Management on economic grounds involves the use of various techniques aimed at increasing the economic rent (the "gap" between total costs and total returns) of the fishery. Under open access arrangements this rent will tend to be dissipated as more vessels, attracted by the high returns of the initial operators, enter the fishery. Fisheries are finite and after a point vessels are competing among themselves for the catch. The increase in effort is not reflected in a proportional increased catch.

22. It should also be stated that while there may be good reason for Governments to attempt to ensure that returns to its national fleets are adequate they are not concerned with increasing the profitabilities of foreign fleets *per se*. They do see advantages, however, in making it possible for the foreign fleets to gain higher profits as that would enable the extraction of greater levels of access fee from the vessels which continue operating.

23. At the time of writing the member Governments of the PNA are considering a draft Management Plan which will, if accepted by those Governments, establish a framework to:

    a. set a maximum number of purse-seine vessels permitted to operate in the member countries' Exclusive Economic Zones (EEZs); and,

    b. provide a mechanism whereby that number can be regulated as biological, economic or other factors warrant it.

24. It is expected that the implementation of such management arrangements will establish an environment in which the vessels which are permitted to operate will do so more profitably. The anticipated effect on prices, however, is relatively insignificant as:

    a. it is unlikely that even with a reduced fleet size the total production will be reduced significantly; and,

    b. as noted above, the most recent estimate available suggests that it would require a catch reduction in the order of 6 percent to bring about a 1 percent increase in prices.

OUTLOOK

25. It is considered unlikely that there will be any significant improvement in the economics of the industry under current circumstances. The factors contributing to the decline in profitabilities will continue to operate:

a. increasing total catch with its associated dampening effect on prices;
b. increasing costs of production;
c. increased output by the Asian canneries.

26. In light of those considerations there seems to be little prospect of any self-adjustment. The fact that some vessels are reportedly operating at losses does not suggest that they will necessarily leave the industry thus permitting the remainder to increase their average catches. A purse-seiner is, clearly, a purpose-built piece of equipment and is not adaptable to other uses. A vessel owner is economically justified in continuing to operate as long as the vessel's operating costs are being covered.

27. Given the need for purse-seiners to operate in the South West Pacific region as tuna taken in the Eastern Pacific is unacceptable on the Western European and North American markets (because of the dolphin association issue) there is virtually no prospect that interest in the region will diminish.

Table 1

ATSA PRICES (US$/short ton) OF PURSE SEINE CATCH FOR PREMIUM GRADE TUNA DELIVERED AT CANNERIES IN AMERICAN SAMOA BY END OF MONTH, SPECIES AND SIZES.

		YELLOWFIN		SKIPJACK	BOTH YELLOWFIN & SKIPJACK		
		>20 lb	7.5-20 lb	>7.5 lb	4-7.5 lb	3-4 lb	<3 lb
Year/Month							
1984	Jan	1,085	925	825	725	575	375
	Feb	975	840	750	650	420	250
	Mar	975	840	750	650	420	250
	Apr	975	840	750	650	420	250
	May	975	840	750	650	420	250
	Jun	975	840	750	650	420	n/a
	Jul	975	840	750	650	420	n/a
	Aug	975	840	750	650	420	n/a
	Sep	845	760	660	560	340	n/a
	Oct	845	760	660	560	340	n/a
	Nov	845	760	660	560	340	n/a
	Dec	805	710	650	550	340	n/a
1985	Jan	805	710	650	550	340	n/a
	Feb	805	710	650	550	340	n/a
	Mar	815	715	700	630	500	n/a
	Apr	815	715	700	630	500	n/a
	May	815	715	700	630	500	300
	Jun	815	715	700	630	500	300
	Jul	815	715	700	630	500	300
	Aug	825	725	700	630	500	300
	Sep	825	725	700	630	500	300
	Oct	825	725	700	630	500	300
	Nov	825	725	700	630	500	300
	Dec	825	725	700	630	500	300
1986	Jan	825	725	700	630	500	300
	Feb	825	725	700	630	500	300
	Mar	825	725	700	630	500	300
	Apr	825	725	700	630	500	300
	May	825	725	700	630	500	300
	Jun	780	700	685	615	485	285
	Jul	780	700	685	615	485	285
	Aug	780	700	685	615	485	285
	Sep	780	700	685	615	485	285
	Oct	780	700	700	630	500	300
	Nov	780	700	700	630	500	300
	Dec	780	700	700	630	500	300
1987	Jan	765	685	685	615	485	285
	Feb	780	675	665	626	485	285
	Mar	780	675	665	626	485	285
	Apr	850	750	740	685	550	300
	May	850	750	740	685	550	300
	Jun	850	750	740	685	550	300
	Jul	1,080	982	972	917	725	450
	Aug	1,080	982	972	917	725	450
	Sep	1,080	982	972	917	725	450
	Oct	1,080	982	972	917	725	450
	Nov	1,080	982	972	917	725	450
	Dec	1,080	982	972	917	725	450
1988	Jan	1,200	1,060	050	1,000	800	525
	Feb	1,200	1,060	050	1,000	800	525
	Mar	1,200	1,060	050	1,000	800	525
	Apr	1,200	1,060	050	1,000	800	525
	May	1,200	1,060	050	1,000	800	525
	Jun	1,150	1,010	985	935	735	450
	Jul	1,150	1,010	985	935	735	450
	Aug	1,150	1,010	985	935	735	450
	Sep	1,065	920	875	815	615	450
	Oct	1,065	920	875	815	615	450
	Nov	1,065	920	875	815	615	450
	Dec	1,045	865	835	760	565	325
1989	Jan	1,045	865	835	760	565	325
	Feb	1,045	865	835	760	565	325
	Mar	1,065	895	870	790	595	335
	Apr	1,065	895	870	790	595	335
	May	975	775	750	670	460	250
	Jun	975	775	750	670	460	250

		YELLOWFIN		SKIPJACK	BOTH YELLOWFIN & SKIPJACK		
		>20 lb	7.5-20 lb	>7.5 lb	4-7.5 lb	3-4 lb	<3 lb
Year/Month							
1989	Jul	975	775	750	670	460	250
	Aug	975	775	750	670	460	250
	Sep	1,090	900	875	790	585	365
	Oct	1,090	900	875	790	585	365
	Nov	1,115	925	900	815	610	390
	Dec	1,115	925	900	815	610	390
1990	Jan	1,075	885	860	775	570	350
	Feb	1,075	885	860	775	570	350
	Mar	1,075	885	860	775	570	350
	Apr	1,075	885	860	775	570	350
	May	885	785	765	685	475	280
	Jun	885	785	765	685	475	280
	Jul	910	810	785	700	495	300
	Aug	1,010	910	895	820	620	420
	Sep	1,010	910	895	820	620	420
	Oct	1,010	910	895	820	620	420
	Nov	985	910	895	820	620	420
	Dec	985	910	895	820	620	420
1991	Jan	985	910	895	820	620	420
	Feb	985	910	895	820	620	420
	Mar	985	930	920	855	660	460
	Apr	945	890	880	815	620	420
	May	870	815	805	740	545	345
	Jun	835	780	770	705	510	310
	Jul	775	720	710	645	450	250
	Aug	880	825	815	750	555	355
	Sep	922.5	867.5	857.5	792.5	597.5	397.5
	Oct	820	745	735	670	475	275
	Nov	805	730	720	655	460	260
	Dec	810	720	710	645	450	250
1992	Jan	810	720	710	645	450	250
	Feb	835	750	740	680	480	280
	Mar	860	795	795	735	540	340
	Apr	905	840	835	780	585	385

Table 2

MONTHLY AVERAGE MARKET PRICE (YEN/KG) OF TUNA AT YAIZU FISH MARKET (PROCESSED AND FROZEN FISH)[4]

Year/Mon	BF	SBF	Alb	BE	YF/OT	YF/PS	BBL	StM	BlM	SF	SKJ/OT	SKJ/PS	Others	BuM
1976 Jan	779	1,436	342	694	436		488	788	647	320	210		257	567
1976 Feb	913	1,425	360	740	497		516	794	663	308	225		278	566
1976 Mar	747	1,500	375	810	492		610	835	511	280	213		273	599
1976 Apr	848	1,805	388	798	505		595	800	549	322	212		248	712
1976 May	1,225	1,704	390	764	552		577	878	620	318	219		286	760
1976 Jun	1,204	1,888	385	807	541		599	708	546	341	215		326	756
1976 Jul	1,399	1,562	395	545	531		636	857	720	539	210		257	783
1976 Aug	1,398	1,621	402	706	601		649	887	745	373	214		302	767
1976 Sep	1,325	1,932	410	763	609		654	1,069	659	383	229		292	702
1976 Oct	729	2,003	467	815	583		704	998	611	345	224		263	680
1976 Nov	942	1,730	452	849	642		562	786	750	347	218		238	684
1976 Dec	1,075	1,561	419	857	545		581	856	729	297	217		239	600
1977 Jan	1,233	1,649	414	873	537		609	907	771	278	226		261	584
1977 Feb	1,853	1,905	412	880	564		636	925	593	294	230		258	614
1977 Mar	1,280	1,848	405	884	581		603	780	537	376	244		223	566
1977 Apr	-	1,839	451	889	624		715	670	681	341	318		260	687
1977 May	-	1,766	441	876	644		716	965	741	413	371		266	691
1977 Jun	1,500	1,639	577	753	607		770	1,015	714	443	342		324	681
1977 Jul	2,500	1,933	606	811	537		825	737	606	452	316		286	682
1977 Aug	1,825	1,710	513	786	522		755	952	608	460	284		266	673
1977 Sep	-	1,764	487	799	546		760	902	686	408	266		265	647
1977 Oct	-	1,536	478	885	571		794	854	686	405	244		261	639
1977 Nov	-	1,389	386	752	505		701	770	589	369	233		255	536
1977 Dec	936	1,376	344	718	534		659	884	707	344	231		203	549
1978 Jan	1,247	1,531	371	782	408		688	930	710	325	229		240	531
1978 Feb	-	1,523	409	714	394		691	657	524	334	226		224	615
1978 Mar	699	1,292	358	695	394		682	764	529	313	209		194	618
1978 Apr	1,000	1,832	318	658	410		709	652	513	335	202		198	637
1978 May	1,546	1,368	347	523	425		611	664	450	294	195		143	530
1978 Jun	992	1,672	384	431	366		549	568	490	334	144		176	460
1978 Jul	870	1,261	277	630	437		591	963	498	318	142		183	417
1978 Aug	909	1,581	256	576	411		631	561	350	304	169		250	410
1978 Sep	947	2,145	254	812	441		601	707	403	259	173		203	384
1978 Oct	1,150	2,069	247	919	522		585	599	397	274	156		231	443
1978 Nov	1,149	2,076	210	779	490		581	781	422	280	145		178	407
1978 Dec	1,495	2,386	213	871	468		569	571	423	279	150		195	448
1979 Jan	-	2,448	265	906	437		544	897	599	311	154		272	412
1979 Feb	1,108	2,258	251	838	318		566	853	444	273	153		197	413
1979 Mar	-	2,603	273	923	477		581	699	409	286	166		232	549
1979 Apr	-	3,129	363	856	525		556	456	410	288	218		170	637
1979 May	2,000	2,862	360	903	590		553	521	420	322	234		194	632
1979 Jun	-	2,757	413	810	731		578	615	518	323	219		210	570
1979 Jul	-	-	391	742	624		586	1,020	447	314	226		257	617
1979 Aug	1,763	2,935	368	862	473		660	1,038	475	313	225		231	531
1979 Sep	1,776	2,443	362	1,035	494		686	1,034	542	378	222		240	540
1979 Oct	-	2,639	410	1,097	587		613	766	490	395	249		257	517
1979 Nov	1,673	2,878	434	1,059	702		735	1,086	532	397	284		275	550
1979 Dec	2,000	2,890	455	962	708		739	958	798	382	360		280	578

[4] In the table the following abbreviations have been used:

BF	bluefin tuna
SBF	southern bluefin tuna
Alb	albacore
BE	bigeye tuna
YF/OT	yellowfin taken by methods other than purse-seine
YF/PS	yellowfin taken by purse-seine
BBL	broadbill swordfish
StM	striped marlin
BlM	black marlin
SF	sailfish
SKJ/OT	skipjack taken by methods other than purse-seine
SKJ/PS	skipjack taken by purse-seine
BuM	blue marlin

Table 2

MONTHLY AVERAGE MARKET PRICE (YEN/KG) OF TUNA AT YAIZU FISH MARKET (PROCESSED AND FROZEN FISH)

Year/Mon	BF	SBF	Alb	BE	YF/OT	YF/PS	BBL	StM	BlM	SF	SKJ/OT	SKJ/PS	Others	BuM
1980 Jan	1,645	2,564	488	1,047	467		670	803	526	388	351		260	495
1980 Feb	-	2,387	488	1,023	494		667	655	428	405	351		264	531
1980 Mar	-	2,097	449	1,008	459		697	584	459	383	351		299	492
1980 Apr	1,000	1,743	534	771	470		711	779	426	418	372		280	497
1980 May	1,311	1,776	447	589	513		659	510	428	356	346		261	460
1980 Jun	1,219	2,064	388	666	416		680	646	451	432	264		210	477
1980 Jul	611	2,088	382	667	538		801	649	462	400	280		249	522
1980 Aug	1,361	-	345	688	378		826	636	405	400	288		230	490
1980 Sep	1,362	1,844	420	617	427		863	816	479	424	282		318	487
1980 Oct	-	1,851	493	552	427		875	729	449	413	272		280	518
1980 Nov	1,021	1,873	511	551	355		904	759	482	402	254		195	562
1980 Dec	-	1,878	500	605	414		577	739	497	433	287		273	573
1981 Jan	1,850	1,935	527	515	534		758	928	749	427	313		197	540
1981 Feb	1,746	2,108	552	839	550		668	706	490	405	292		265	521
1981 Mar	2,718	2,781	523	951	660		697	795	571	410	284		284	629
1981 Apr	2,347	2,922	528	864	638		689	596	479	432	326		242	565
1981 May	500	2,692	503	580	585		653	659	445	419	297		266	533
1981 Jun	298	2,458	561	683	614		632	578	481	396	304		321	583
1981 Jul	1,277	2,419	595	564	659		671	738	495	438	280		319	580
1981 Aug	744	2,127	539	608	708		697	664	506	425	282		300	543
1981 Sep	1,359	1,935	514	820	784		695	761	515	405	284		283	492
1981 Oct	600	2,513	539	1,051	933		736	631	453	403	291		470	523
1981 Nov	1,496	2,367	543	1,172	861		732	1,265	492	411	283		237	485
1981 Dec	1,783	2,470	551	1,132	812		698	646	497	425	279		308	502
1982 Jan	2,950	2,678	559	1,136	838	279	736	904	576	461	283	213	427	547
1982 Feb	2,409	2,597	549	999	784	267	892	941	605	428	284	189	285	562
1982 Mar	608	2,644	506	913	620	272	791	789	625	447	284	218	271	571
1982 Apr	2,000	3,225	540	895	719	293	770	661	495	460	300	252	298	577
1982 May	-	3,529	500	617	552	299	729	685	469	424	287	221	247	538
1982 Jun	2,560	2,846	445	724	651	303	737	769	553	470	252	210	297	548
1982 Jul	2,461	3,625	448	545	573	295	997	708	565	441	244	211	313	551
1982 Aug	1,288	3,204	402	544	585	279	975	1,100	656	466	232	190	314	559
1982 Sep	2,782	3,267	395	797	663	290	894	923	545	436	225	183	298	586
1982 Oct	-	3,292	374	551	520	298	879	500	527	402	249	185	285	604
1982 Nov	1,023	3,347	377	752	583	299	916	771	638	454	237	183	289	562
1982 Dec	2,000	3,689	361	820	516	316	812	852	482	404	239	192	199	534
1983 Jan	-	3,644	404	737	596	319	842	1,175	748	413	240	195	182	563
1983 Feb	2,000	3,411	396	758	582	335	827	860	543	418	260	203	207	501
1983 Mar	-	3,534	337	779	548	350	834	833	517	437	253	188	212	512
1983 Apr	-	3,492	393	752	507	338	804	723	483	334	233	186	233	515
1983 May	609	3,833	380	622	484	322	818	787	460	338	211	164	220	504
1983 Jun	555	3,939	360	615	508	321	725	653	438	343	227	168	204	527
1983 Jul	-	3,091	375	476	444	312	814	664	433	320	221	174	196	548
1983 Aug	1,000	3,487	397	662	527	304	815	867	447	318	201	155	214	501
1983 Sep	1,018	3,264	386	752	475	310	729	1,104	489	267	219	154	182	418
1983 Oct	-	3,360	405	855	516	292	752	634	470	276	208	158	178	483
1983 Nov	2,614	3,656	397	844	512	258	761	972	491	310	188	149	166	365
1983 Dec	-	3,595	386	1,022	620	241	707	895	507	276	189	148	218	455
1984 Jan	1,500	2,958	384	814	570	253	696	1,156	481	277	161	139	292	407
1984 Feb	1,946	3,303	380	742	546	236	635	761	420	253	208	153	199	380
1984 Mar	-	3,078	368	903	500	219	720	810	369	268	187	127	139	416
1984 Apr	-	3,436	412	995	528	217	832	1,057	413	267	174	134	188	373
1984 May	3,668	2,560	436	791	514	209	836	1,138	427	260	165	126	206	333
1984 Jun	461	4,101	393	842	880	250	943	880	480	281	170	150	256	431
1984 Jul	836	3,590	396	826	818	254	1,060	1,026	540	309	144	148	230	458
1984 Aug	2,210	3,417	435	911	855	288	1,041	1,167	500	313	155	144	289	441
1984 Sep	1,500	3,410	416	786	814	282	1,075	1,574	519	344	172	141	286	412
1984 Oct	-	2,911	470	1,131	907	292	1,178	1,470	655	429	185	140	368	519
1984 Nov	400	3,525	430	1,095	947	257	1,024	1,178	488	438	179	136	260	452
1984 Dec	1,500	3,729	414	1,244	898	249	951	1,145	433	352	201	144	300	456
1985 Jan	1,500	3,505	438	1,030	796	243	929	988	496	472	236	152	300	480
1985 Feb	2,004	2,824	465	937	814	309	903	1,153	453	453	274	202	237	411
1985 Mar	-	2,919	431	745	520	308	825	780	383	403	339	229	193	446
1985 Apr	2,000	3,224	457	792	592	294	844	766	429	341	355	176	240	423
1985 May	-	2,663	403	579	392	262	885	727	399	409	318	172	185	428
1985 Jun	2,000	3,403	404	481	548	243	918	756	477	496	261	180	223	450
1985 Jul	911	3,406	402	646	571	235	954	706	428	464	255	208	216	469
1985 Aug	1,500	3,369	389	576	512	249	963	732	416	476	226	187	228	451
1985 Sep	500	3,662	418	699	519	222	932	1,028	469	452	223	178	212	488
1985 Oct	-	2,406	335	629	479	209	762	682	434	376	218	162	211	495
1985 Nov	600	2,876	356	610	420	209	714	694	425	355	209	172	191	433
1985 Dec	1,000	3,333	337	708	383	196	726	1,012	468	445	227	172	207	485

Table 2

MONTHLY AVERAGE MARKET PRICE (YEN/KG) OF TUNA AT YAIZU FISH MARKET (PROCESSED AND FROZEN FISH)

Year/Mon	BF	SBF	Alb	BE	YF/OT	YF/PS	BBL	StM	BlM	SF	SKJ/OT	SKJ/PS	Others	BuM
1986 Jan	2,750	3,366	296	606	388	191	671	602	503	395	229	162	179	447
1986 Feb	2,500	3,915	285	776	404	185	753	602	425	361	228	143	181	448
1986 Mar	2,000	3,628	258	693	383	194	756	729	431	344	186	130	155	475
1986 Apr	-	4,180	264	730	456	189	777	728	433	370	147	110	234	466
1986 May	441	4,367	277	483	380	190	697	534	393	324	138	95	209	403
1986 Jun	3,502	4,714	321	560	419	186	758	548	350	307	149	115	171	351
1986 Jul	702	-	341	498	450	185	942	603	440	338	130	104	258	362
1986 Aug	594	5,081	318	568	465	187	958	899	416	324	112	99	235	344
1986 Sep	1,200	5,217	250	679	445	185	863	960	391	383	137	108	217	306
1986 Oct	1,500	4,640	239	684	448	190	918	1,164	341	288	157	107	181	342
1986 Nov	-	4,769	347	850	464	198	782	973	397	280	164	99	175	346
1986 Dec	2,227	4,521	278	819	437	179	828	873	460	264	166	104	149	314
1987 Jan	2,087	3,985	220	696	494	205	816	672	352	306	170	118	207	335
1987 Feb	1,500	4,109	212	638	410	199	869	827	312	284	211	134	190	315
1987 Mar	-	4,403	245	706	369	193	823	837	441	283	190	140	181	354
1987 Apr	2,300	4,495	252	770	443	194	915	812	300	242	158	135	155	332
1987 May	341	4,143	269	581	428	193	891	734	265	247	139	118	125	299
1987 Jun	236	3,708	256	403	416	194	894	619	298	225	175	142	111	305
1987 Jul	1,200	4,115	278	562	466	195	833	570	335	266	193	150	161	289
1987 Aug	-	3,721	308	530	390	210	814	537	330	201	175	149	168	236
1987 Sep	-	3,981	300	758	376	217	918	1,095	380	246	168	148	209	201
1987 Oct	-	3,501	297	818	517	217	947	1,108	393	213	184	154	184	277
1987 Nov	500	3,524	295	806	448	207	840	600	802	230	237	162	174	267
1987 Dec	5,000	3,807	283	852	408	209	755	456	752	214	221	143	176	230
1988 Jan	1,976	4,171	239	797	443	209	694	463	193	208	206	115	117	212
1988 Feb	3,000	4,094	267	888	452	217	793	718	219	213	216	123	111	225
1988 Mar	3,641	4,321	276	918	455	220	737	516	207	209	214	119	112	195
1988 Apr	4,917	4,676	283	727	447	221	674	370	287	244	197	126	93	240
1988 May	-	4,847	319	762	439	227	719	429	247	289	169	121	70	205
1988 Jun	3,998	4,980	305	551	376	221	685	404	186	198	133	109	92	195
1988 Jul	1,962	5,154	316	645	449	212	716	804	215	197	116	99	103	217
1988 Aug	3,718	5,351	295	700	447	210	712	400	189	200	136	97	159	209
1988 Sep	1,030	4,633	328	836	484	204	791	858	584	202	137	95	159	183
1988 Oct	2,000	4,937	342	689	478	179	721	367	198	195	194	108	89	210
1988 Nov	977	4,545	362	1,231	565	175	710	962	248	198	165	97	137	211
1988 Dec	2,500	5,143	338	1,122	520	191	675	842	723	213	152	97	172	286
1989 Jan	-	5,645	259	1,235	583	201	677	1,143	282	192	157	90	93	177
1989 Feb	3,145	5,101	334	1,050	640	229	657	686	298	198	157	94	177	280
1989 Mar	-	5,793	292	982	710	219	634	1,097	335	220	140	100	158	324
1989 Apr	3,601	6,177	298	1,266	767	223	699	853	293	206	140	106	140	290
1989 May	-	-	385	867	745	233	699	1,408	301	225	135	95	123	250
1989 Jun	5,511	1,545	388	556	662	232	627	844	348	313	167	96	204	297
1989 Jul	-	6,890	373	623	771	238	600	1,226	426	316	170	110	165	357
1989 Aug	-	6,905	359	530	707	204	560	713	368	309	223	150	184	289
1989 Sep	3,527	6,357	325	748	742	192	555	1,343	373	250	218	207	186	263
1989 Oct	4,120	4,564	277	732	584	191	535	1,054	381	221	241	135	96	213
1989 Nov	-	5,417	284	1,165	686	184	547	1,012	373	258	241	155	199	376
1989 Dec	-	5,187	359	1,097	608	166	510	1,124	919	329	312	182	163	361
1990 Jan	-	5,782	311	993	679	163	487	857	362	230	294	144	186	277
1990 Feb	-	5,083	358	1,146	711	183	502	794	424	302	343	179	176	349
1990 Mar	-	6,170	339	705	578	216	533	550	396	244	407	180	119	273
1990 Apr	-	5,755	227	721	519	219	479	633	323	247	408	180	99	268
1990 May	-	6,230	334	525	520	223	507	699	386	318	298	163	67	262
1990 Jun	-	6,202	347	694	519	222	484	572	269	236	276	156	148	274
1990 Jul	-	3,506	332	605	493	199	537	600	430	326	240	127	185	350
1990 Aug	-	-	330	692	479	193	484	591	331	234	369	114	142	282
1990 Sep	-	5,016	359	719	452	216	553	736	369	255	361	133	195	295
1990 Oct	1,184	4,633	300	1,012	541	214	702	1,166	645	259	406	127	261	326
1990 Nov	-	4,698	335	836	378	172	892	515	373	149	230	113	110	276
1990 Dec	2,000	4,429	257	1,080	348	170	547	746	355	246	212	101	120	330
1991 Jan	1,500	3,929	210	802	359	181	543	769	286	199	217	113	146	273
1991 Feb	-	4,538	200	527	357	167	503	632	300	189	186	116	65	208
1991 Mar	-	6,008	220	734	397	185	631	899	386	251	186	113	109	323
1991 Apr	2,000	3,405	190	945	380	191	697	726	381	241	175	113	138	276
1991 May	-	4,761	166	644	289	176	607	1,162	392	224	180	99	111	268
1991 Jun	4,595	4,558	213	721	349	172	636	621	524	348	185	120	135	347
1991 Jul	4,368	5,088	257	786	356	150	810	601	462	306	156	102	151	320
1991 Aug	809	4,467	324	531	370	146	675	343	280	216	163	100	112	280
1991 Sep	413	4,692	347	733	401	166	715	1,226	232	211	189	137	165	290
1991 Oct	372	3,670	365	925	541	174	802	1,195	490	228	167	123	196	305
1991 Nov	n/a	4,159	308	839	380	165	710	1,235	299	195	156	105	150	264
1991 Dec	n/a	4,595	322	846	557	162	697	1,034	457	200	181	110	191	357
1992 Jan	n/a	4,282	222	705	447	149	725	689	275	288	259	117	141	271