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THE JAPANESE MARKET FOR U.S. TUNA PRODUCTS

Sunee C. Sonu

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Region

NOAA Technical Memorandum NMFS

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EXECUTIVE SUMMARY

For many years the Japanese tuna fishery has led the world in production, but recently other countries have captured increasing shares of world tuna landings. In particular, the Republic of Korea, Indonesia, Spain, the Philippines, France, and Mexico have nearly doubled their total catches between 1986 and 1991. Of the total world catch of 3 million metric tons (mt) in 1991, these countries contributed 1.25 million mt. Japan remained the leader, however, providing 24 percent of the total catch of major species of tuna (skipjack, yellowfin, bigeye, albacore, and bluefin tuna).

The tuna fishery is the most important fishery in Japan in terms of value. In 1992, Japan's tuna landings were valued at nearly 3 billion dollars, approximately 20 percent of Japan's total value of marine fishery landings for that year.

Japan's tuna fishery faces a number of difficult challenges. The most important of these are: (1) competition from the Republic of Korea, Taiwan, and Indonesia as suppliers of high-valued tuna, (2) growing international regulations and catch quotas for tuna in international waters, (3) lack of experienced labor for distant-water tuna vessel operations, (4) high cost of production, (5) increasing influence of imports on pricing of tuna in domestic markets, and (6) the lack of growth in catches by its own fleet.

Given these challenges, Japan, the world's largest importer and consumer of tuna, has the most important market potential for U.S. tuna. Japan's imports of tuna in 1993 were approximately 362 thousand mt valued at about 1.8 billion dollars. Imports have been growing at a rapid rate, at an average 14 percent for a 5-year period through 1993.

Uniquely, Japan is the only major market for raw consumption of tuna. In 1992, about 480,000 mt of tuna was used for raw consumption and as much as about 49 percent of the domestic raw consumption of tuna was supplied from imports. The annual Japanese consumption of tuna was a record 916,000 mt in 1993, an increase of 64,000 mt (8 percent) compared with 1992. Tuna species used for raw consumption in Japan are: northern bluefin (Thunnus thynnus), southern bluefin (Thunnus maccoyii), bigeye (Thunnus obesus), yellowfin (Thunnus albacares), and skipjack (Katsuwonus pelamis). Bluefin is the most-prized and hence the highest-priced tuna species in the Japanese market, followed by bigeye, yellowfin, and skipjack.

As Japan and the United States are signatories to the General Agreement on Tariffs and Trade (GATT), lower tariffs apply to U.S. exports of tuna products: 5 percent on fresh or frozen products, 15 percent on prepared or preserved products including products in airtight containers, and 15 percent on salted, smoked or dried products, based on CIF (cost, insurance, freight) prices.

While the United States has secured a niche in the Japanese tuna market, the niche is primarily in fresh bluefin, bigeye, and yellowfin tuna. However, this niche is relatively small in value in proportion to the total potential market that could be exploited. Based on the analysis in this study, marketing strategies that could exploit this potential include:

Farming of Bluefin Tuna. By focusing on improving the meat quality rather than the fish size, small bluefin tuna can be fattened for approximately six months to become a product which is marketable as high-priced tuna in Japan. Southern California seems to offer favorable environmental conditions to warrant a pilot feasibility study.

Value-added Products. Evidence suggests that value-added products, which cater to the shifting preference of Japanese consumers, are keys to successful future promotion of tuna and tuna products in Japan.

Direct Sale of Fresh Tuna to the Tokyo Central Wholesale Market. Fresh tuna can be sold directly at the Tokyo Central Wholesale Market on consignment through authorized auction houses.

Sale to Other Wholesale Markets. Prices at the Tokyo Central Wholesale Market are not necessarily higher than those at other markets, and they may also occasionally fall below the average prices of other wholesale markets. Price differentials for the same commodities in different wholesale markets can often be large and are worthy of special note when exporting tuna to Japan.

Direct Sales to Supermarket Chains. Major supermarket chains support a large retail business for tuna products in Japan, particularly those value-added products which appeal to the emerging consumer preference for convenience, quality, and healthful products. Since these retailers are powerful enough to use their own independent suppliers, they represent additional potential buyers other than wholesale markets.

INTRODUCTION

In the face of rising fuel costs, high cost of domestic labor, and mounting international competition, Japan's tuna fleet has been continuously adapting to changing times over the past two decades. In order to modernize its fleet into one that is lean and productive, the industry decommissioned as many as 449 vessels between 1981 and 1987, while enhancing both the tonnage and equipment for its fleet (Suisan Sha 1989).

Japan's tuna fishery, which faces a number of difficult challenges today, is said to be at a crossroads due mainly to the following new developments:

1. Competition from the Republic of Korea, Taiwan, and Indonesia has intensified considerably as these countries have increased efficiency while shifting their focus to high-quality tuna for export to Japan. The Republic of Korea has embarked on an ambitious expansion program for its tuna fleet and has even begun hiring experienced Japanese tuna skippers to learn Japanese technology (Suisan Keizai Shinbun Sha, December 19, 1988; July 25, 1990; and July 25, 1994).

2. Japan's distant-water tuna fishery has suffered relatively little from worldwide proliferation of 200-mile exclusive economic zones, since the fishery for tuna generally operates in international waters. However, international regulations on catch quotas for tuna are on the rise, as the idea of controlling tuna resources in international waters is rapidly becoming a dominant trend. Already, strict catch limitations are in place for the scarce bluefin in the western Atlantic Ocean. The perception that tuna resources are being exploited to their limit could further limit in catches, making it increasingly difficult for Japan's distant-water tuna fishermen to secure tuna fishing privileges in international waters (Suisan Keizai Shinbun Sha, July 25, 1990; January 16 and July 26, 1991; July 25, 1994; and Hokkai Keizai Shinbun Sha December 16, 1993).

3. Lack of experienced labor for distant-water operations is already adversely affecting Japan's tuna fishery. Existing labor is aging, with no prospect for replacement through domestic recruitment. Japan has already begun hiring foreign labor to operate their tuna boats (Suisan Keizai Shinbun Sha, July 28, 1989; July 23, 1991; and July 25, 1994).

4. Cost of production is high. A tuna boat takes about 50 days to cover the distance from Las Palmas, Canary Islands, to Japan, costing nearly $8,000 a day or as much as $800,000 for round trip (Suisan Keizai Shinbun Sha, July 25, 1990).

5. A sharp increase in imports has led to increased influence of imports on the price of tuna in domestic markets. From 1981 through 1993, Japan's imports of tuna increased more

than three times in volume and five times in value. Imports account for as much as 49 percent of domestic consumption of raw tuna, the most important segment of the Japanese market. The proportion on imports is expected to rise in the future as landings by Japan stabilize. With the objective of keeping unexpected fluctuations in the domestic tuna market to a minimum, an organization named the "Tuna Supply and Demand Research Council" was inaugurated in April, 1989. The Council issues quarterly forecasts of supply and demand for tuna in Japan (Suisan Keizai Shinbun Sha, January 30, 1991; Shokuryo Shinbun Sha, January 7, 1989 and March 31, 1990; and January 1, 1994; Minato Shinbun Sha, March 31, 1990; and Suisan Tsushin Sha, April 27, 1991).

The Japanese tuna market deserves attention because it is large, with annual imports valued at close to two billion dollars. Just as important, it has been growing at a rapid rate. The underlying reason for the steady quest for tuna imports to Japan is the sharp rise in expendable per capita income by the consumers of this affluent nation. During the 1980's, consumer preference for food shifted to those which offered such virtues as convenience (fast-food and packaged foods), a gourmet image, and healthy, wholesome food (Tokyo Univ. of Fisheries, 1989; Suisan Keizai Shinbun Sha, January 30, 1990; July 29, 1991; and July 25, 1994).

The Japanese tuna market thus offers both challenges and opportunities for the U.S. tuna industry. While the United States has secured a niche in this market, it is mainly through the export of fresh bluefin tuna, which remains relatively small in value in proportion to the total potential market that can be exploited. The purpose of this report is to present a detailed examination of the Japanese tuna fishery and market, to identify potential opportunities for export of U.S. products, and to identify strategies which may help increase such efforts.

WORLD TUNA FISHERIES

From 1985 to 1991, total world catches of major tuna species (skipjack, yellowfin, bigeye, albacore and bluefin) increased by 42 percent, from 2.1 million metric tons (mt) to 3.0 million mt (Table 1). Eight countries had annual landings of more than 100,000 mt of tuna since 1986. In 1991, these countries were, in order of landing volume, Japan (24 percent of the world total), the Republic of Korea (9 percent), Spain (9 percent), Indonesia (7 percent), the Philippines (7 percent), the United States (6 percent), France (6 percent), and Mexico (4 percent).

Table 1. World tuna catch* by major countries, 1985-1991 (1,000 metric tons)

Country	1985	1986	1987	1988	1989	1990	1991
Japan	686	781	691	753	670	654	722
Korea, Rep	92	110	131	148	141	233	267
Spain	178	186	197	234	250	263	266
Indonesia	121	125	144	147	159	203	221
Philippines	125	137	126	116	127	181	198
U.S.A.	233	252	283	276	245	233	175
France	102	113	125	153	142	153	169
Mexico	92	103	112	124	136	126	129
Venezuela	65	63	76	76	79	76	78
Maldive	49	50	49	65	64	67	67
Solomon Isl.	31	41	31	45	41	40	53
Ecuador	35	41	36	36	42	58	51
Ghana	34	35	36	33	33	38	39
Sri Lanka	19	22	20	20	21	19	27
Brazil	28	15	14	20	26	23	23
Panama	26	30	34	14	22	27	18
Portugal	8	12	13	16	13	13	15
Fiji	6	4	12	14	9	6	8
Australia	15	13	11	11	6	8	5
Other	187	229	225	211	381	490	487
Total	2,132	2,362	2,369	2,512	2,607	2,910	3,018

* Tuna catch includes albacore, yellowfin, bigeye, bluefin and skipjack.

Sources: FAO 1990, 1991, 1993a

During 1985-1991, Japan's tuna production averaged about 700,000 mt annually. During this period, the catch was essentially level. The percentage of Japan's catches relative to the global total has been substantial, but has steadily declined from about 32 percent in 1985 to 24 percent in 1991. The U.S. landings of tuna during this period averaged 242,000 mt annually. The percentage of U.S. catches relative to the global total has declined from about 11 percent in 1985 to about 6 percent in 1991. The United States, historically the world's second largest producer of tuna, dropped to sixth in 1991 (Table 1).

The global increase in tuna landings during recent years was due to increased catches by countries other than Japan and the United States. Countries with substantial increases in tuna landings during this period are the Republic of Korea, Indonesia, Spain, the Philippines, France, and Mexico. Combined tuna landings by these six countries rose from 710,000 mt in 1985 to 1,250,000 mt in 1991, respectively about 33 percent and 42 percent of the world total, a 76 percent increase over this period (Table 1).

Skipjack and yellowfin are the two most abundant species landed. Between 1985 and 1991 skipjack accounted for 43 to 52 percent of total landings of major tuna species, and yellowfin, 34 to 37 percent. Landings of other species were small, only 7 to 11 percent for bigeye, 6 to 9 percent for albacore, and 1 to 3 percent for northern bluefin and southern bluefin combined (Table 2).

Table 2. World tuna catch by major species, 1985-1991 (1,000 metric tons)

Species	1985	1986	1987	1988	1989	1990	1991
Skipjack	908	1,067	1,017	1,242	1,180	1,302	1,557
Yellowfin	731	794	879	863	906	1,058	1,012
Bigeye	243	253	247	187	229	272	238
Albacore	177	186	169	171	243	232	169
Bluefin	73	62	57	49	49	46	42
Total	2,132	2,362	2,369	2,512	2,607	2,910	3,018

Sources: FAO 1990, 1991, 1993a

There has been a sharp increase in landings of skipjack and yellowfin since 1985, while landings for bigeye and albacore remained stable and those for bluefin declined. Forty-two percent of the increase since 1985 was the result of increases in landings of skipjack and yellowfin. Skipjack landings rose from 908,000 mt in 1985 to 1,557,000 mt in 1991, an increase of about 71 percent, which accounted for about 73 percent of the increase for all major species during the same period. Yellowfin landings rose 38 percent from 731,000 mt in 1985 to 1,012,000 mt in 1991, accounting for about 32 percent of the increase for all major species during the same period. Approximately 55 to 67 percent of the skipjack were caught in the western Pacific during the 1985-1991 period (FAO 1993a).

JAPANESE TUNA FISHERY

The tuna fishery is the most valuable fishery in Japan, although it ranks second behind sardine in volume (Table 3). In 1992, Japan's tuna landings were valued at nearly three billion dollars, approximately 20 percent of the total value of their marine fishery landings for the year.

Table 3. Catch and value of Japan's major marine fisheries, 1991-1992

	1991			1992		
Species	10^3 tons	¥10^9	10^6	10^3 tons	¥10^9	10^6
Tuna	703	355	2,630	670	374	2,945
Squid	530	205	1,519	626	194	1,528
Sardine	3,557	140	1,037	2,649	113	890
Salmon	215	87	644	180	104	819
Pollock	541	77	570	499	59	465
Mackerel:						
Jack	315	69	511	285	64	504
Chub	255	44	326	269	35	276
Other	2,395	931	6,896	2,593	884	6,961
Total	8,511	1,908	14,133	7,771	1,827	14,386

Conversion rate: 135 yen = US$1 for 1991, 127 yen = US$1 for 1992

Sources: Japan Marine Products Importers Association 1993, 1994
Suisan Tsushin Sha June 1, 1993; June 2, 1994
Shokuryo Shinbun Sha June 11, 1994
Ministry of Agriculture, Forestry & Fisheries 1994

Japan's skipjack landings fluctuated between about 46 and 58 percent and averaged 51 percent of the total tuna landings between 1977 and 1993 (Table 4). This is more than double the landings of the next most important species, bigeye, which averaged approximately 19 percent, and more than triple those of the third-ranking yellowfin which averaged 17 percent. The average landings during the same period for albacore was 8 percent, and those for bluefin 5 percent.

Table 4. Japan's tuna catch by major species, 1977-1993 (1,000 metric tons)

Species	1977	1978	1979	1980	1981	1982
Skipjack	309	370	330	354	289	303
Bigeye	128	128	130	123	111	132
Yellowfin	83	98	100	119	110	114
Albacore	54	88	67	70	64	70
Bluefin	52	47	44	50	58	44
Total	626	731	671	716	632	663

Species	1983	1984	1985	1986	1987	1988
Skipjack	353	446	315	412	331	434
Bigeye	139	131	149	170	161	144
Yellowfin	112	115	134	125	122	111
Albacore	52	64	58	50	50	45
Bluefin	37	36	30	24	27	19
Total	693	792	686	781	691	753

Species	1989	1990	1991	1992	1993
Skipjack	338	299	397	323	345
Bigeye	113	93	125	144	136
Yellowfin	149	114	108	123	122
Albacore	48	44	38	49	63
Bluefin	22	13	16	17	17
Total	670	563	684	656	683

Sources: Ministry of Agriculture, Forestry & Fisheries 1994
Suisan Tsushin Sha June 2, 1994

Nearly all of Japan's skipjack catch (97 - 100 percent) takes place in the Pacific Ocean (Table 5 and Figure 1), where annual catches have fluctuated between 298,000 and 429,000 mt, with an average of 366,000 mt, from 1986 through 1991.

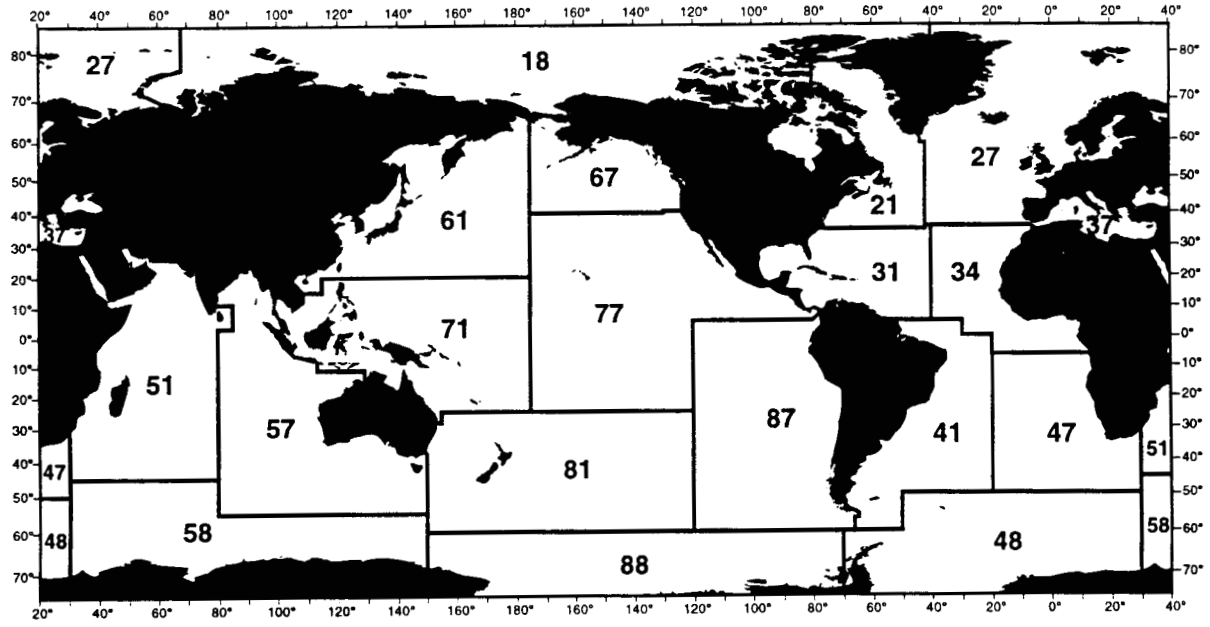
Table 5. Distribution of Japan's skipjack catch by major FAO fishing area, 1986-1991

	Catch (metric tons)					
Area*	1986	1987	1988	1989	1990	1991
Pacific Ocean						
71	222,225	194,121	254,701	209,594	179,599	222,949
61	166,964	118,491	158,709	109,646	105,945	150,092
77	22,367	15,672	12,461	13,868	10,529	12,841
81	18	179	124	1,017	2,112	5,973
67	176	45	3,083	660	287	281
87	10	4	47	1	15	5
Total	411,760	328,512	429,125	334,786	298,487	392,141
Atlantic Ocean						
34	--**	1,329	3,174	2,542	2,657	3,860
Total	--	1,329	3,174	2,542	2,657	3,860
Indian Ocean						
51	378	762	1,936	798	1,849	6,713
57	3	315	156	25	2	580
Total	381	1,077	2,092	823	1,851	7,293
Grand total	412,141	330,918	434,391	338,151	302,995	403,294

* Numbers refer to FAO fishing areas (see Figure 1).

** -- - Less than 0.5 metric tons.

Sources: FAO 1991, 1993a



Note: Numbers refer to FAO fishing areas.

Figure 1. Major FAO fishing areas

The majority of Japan's catches of bigeye tuna, between 69 and 78 percent from 1986 through 1991, occurred in the Pacific Ocean, followed by the Atlantic Ocean (12 to 22 percent), and the Indian Ocean (5 to 10 percent). Although the Atlantic Ocean has not been a major bigeye producing region, considerable growth in regional landings has occurred for this species in the past few years. The landings in the region increased by 30 percent from 23,000 mt in 1986 to 31,000 mt in 1991 (Table 6 and Figure 1). The decrease in bigeye landings during 1986 through 1991 was the result of decreases in both the Pacific and Indian Oceans.

Table 6. Distribution of Japan's bigeye tuna catch by major FAO fishing area, 1986-1991

Area*	Catch (metric tons) 1986	1987	1988	1989	1990	1991
Pacific Ocean						
77	83,014	78,218	63,886	65,175	70,963	72,528
71	22,548	25,937	14,551	22,927	31,166	19,622
87	12,969	10,026	5,924	8,445	17,651	11,714
61	9,489	10,198	13,575	12,799	9,789	11,292
81	1,369	1,395	1,186	834	1,658	855
67	1	42	68	56	--**	--
Total	129,390	125,816	99,190	110,236	131,227	116,011
Atlantic Ocean						
47	11,402	8,186	13,013	12,184	14,288	12,489
34	6,271	6,223	12,618	11,965	11,838	7,614
41	2,429	2,392	4,257	4,556	6,261	6,988
21	2,786	1,908	1,610	853	1,904	1,914
27	71	231	206	225	238	825
31	521	398	546	1,708	1,165	704
Total	23,480	19,338	32,250	31,491	35,694	30,534
Indian Ocean						
51	11,780	10,587	9,181	5,415	5,416	4,713
57	5,112	4,836	3,251	1,629	2,689	3,077
Total	16,892	15,423	12,432	7,044	8,105	7,790
Grand total	169,762	160,577	143,872	148,771	175,026	154,335

* Numbers refer to FAO fishing areas (see Figure 1).
** -- - Less than 0.5 metric tons.

Sources: FAO 1991, 1993a

The majority of Japan's yellowfin catches, 84 to 89 percent during 1986 through 1991, occurred in the Pacific Ocean, while less than 10 percent occurred in the Atlantic and Indian Oceans (Table 7 and Figure 1). The recent decline in Japan's yellowfin catch resulted from reduced catches in the regions surrounding the equatorial Pacific, though small increases occurred in the Atlantic Ocean during the same period.

Table 7. Distribution of Japan's yellowfin tuna catch by major FAO fishing area, 1986-1991

	Catch (metric tons)					
Area*	1986	1987	1988	1989	1990	1991
Pacific Ocean						
71	72,234	74,503	53,669	62,818	53,593	62,195
77	20,345	15,100	13,213	15,607	23,523	20,296
61	12,130	14,326	20,180	16,085	14,272	15,628
87	1,917	1,538	3,466	3,613	7,033	2,741
81	1,091	1,687	2,337	1,377	1,848	1,322
67	1	4	40	12	--**	--
Total	107,718	107,158	92,905	99,512	100,629	102,182
Atlantic Ocean						
34	2,801	3,567	4,684	4,476	4,216	1,941
47	714	1,276	1,877	1,878	2,322	1,828
41	1,168	738	1,633	1,697	1,048	1,271
21	490	605	650	301	403	852
31	393	244	417	970	783	415
27	18	20	42	18	27	63
Total	5,584	6,450	9,303	9,312	8,799	6,370
Indian Ocean						
51	8,424	5,263	6,413	2,506	3,660	5,466
57	2,917	2,870	2,487	1,234	2,118	1,239
Total	11,341	8,133	8,900	3,740	5,778	6,705
Grand total	124,643	121,741	111,108	112,592	115,206	115,257

* Numbers refer to FAO fishing areas (see Figure 1).
** -- - Less than 0.5 metric tons.

Sources: FAO 1991, 1993a

Between 92 and 95 percent of Japan's albacore catches during 1986 through 1991 occurred in the Pacific Ocean, particularly in the northwest, western central and eastern central Pacific Ocean in FAO fishing areas 61, 71, and 77 (Table 8 and Figure 1). The Atlantic and Indian Oceans accounted for less than 5 percent each. Much of the recent decline in Japan's albacore catches was associated with reduced catches in the western central Pacific (area 71), and, to a lesser extent, in the Indian Ocean.

Table 8. Distribution of Japan's albacore tuna catch by major FAO fishing area, 1986-1991

	Catch (metric tons)					
Area*	1986	1987	1988	1989	1990	1991
Pacific Ocean						
61	25,897	26,912	22,954	25,171	25,188	21,381
77	5,821	6,168	9,201	5,506	5,274	7,621
71	9,772	9,289	4,824	6,609	7,021	4,386
81	2,219	2,886	3,128	6,059	4,974	2,252
87	369	634	588	308	646	864
67	1,633	1,060	1,963	1,802	515	561
Total	45,711	46,949	42,658	45,455	43,618	37,065
Indian Ocean						
51	1,162	872	682	381	291	489
57	1,173	1,034	489	623	658	437
Total	2,335	1,906	1,171	1,004	949	926
Atlantic Ocean						
21	416	402	632	218	438	519
41	499	235	272	428	283	405
47	905	747	407	485	488	394
31	17	50	25	202	215	133
27	9	25	40	82	55	116
34	35	19	38	88	59	47
Total	1,881	1,478	1,414	1,503	1,538	1,614
Grand total	49,927	50,333	45,243	47,962	46,105	39,605

* Numbers refer to FAO fishing areas (see Figure 1).

Sources: FAO 1991, 1993a

The recent decline in Japan's total bluefin landings has resulted almost entirely from reduced catches of southern bluefin in the Indian Ocean and northern bluefin in the northwest Pacific Ocean in FAO fishing area 61 (Tables 9 and 10). In 1991, the major fishing regions for southern bluefin were the southeast Atlantic Ocean (accounting for 38 percent of the catch), the Indian Ocean (34 percent), and the southwest Pacific Ocean (28 percent). In the same year, the major fishing grounds for northern bluefin were the northwest Pacific Ocean (55 percent) and the northeast Atlantic Ocean (23 percent). Catches of northern bluefin tuna rose sharply in the northeast Atlantic Ocean (area 27) in 1991, but the increase was not enough to offset the general decline which has occurred in area 61 for northern bluefin since 1987 and in area 57 for southern bluefin since 1989

Table 9. Distribution of Japan's southern bluefin tuna catch by major FAO fishing area, 1986-1991

	Catch (metric tons)					
Area*	1986	1987	1988	1989	1990	1991
Indian Ocean						
57	7,182	6,422	5,011	6,280	4,850	2,195
51	1,986	1,992	3,244	2,634	488	330
Total	9,168	8,414	8,255	8,914	5,338	2,525
Atlantic Ocean						
47	2,535	3,696	2,342	2,630	2,248	2,803
41	20	4	2	1	8	3
Total	2,555	3,700	2,344	2,631	2,256	2,806
Pacific Ocean						
81	1,754	1,890	1,120	1,924	2,516	2,041
71	--**	--	--	1	--	--
87	--	--	3	1	--	--
Total	1,754	1,890	1,123	1,926	2,516	2,041
Grand total	13,477	14,004	11,722	13,471	10,110	7,372

* Numbers refer to FAO fishing areas (see Figure 1).
** -- - Less than 0.5 metric tons.

Sources: FAO 1991, 1993a

Table 10. Distribution of Japan's northern bluefin tuna catch by major FAO fishing area, 1986-1991

Area*	Catch (metric tons) 1986	1987	1988	1989	1990	1991
Pacific Ocean						
61	8,925	10,258	4,996	5,188	3,602	4,367
71	23	28	3	1,909	184	30
81	33	29	27	45	26	19
77	3	12	10	20	7	19
Total	8,984	10,327	5,036	7,162	3,819	4,435
Atlantic Ocean						
27	369	234	606	459	890	1,808
21	699	985	1,270	338	855	1,106
34	322	770	555	302	389	412
37	341	310	236	108	203	92
31	9	13	25	17	9	54
47	-- **	--	--	--	2	1
Total	1,740	2,312	2,692	1,224	2,348	3,473
Indian Ocean						
57	--	--	--	2	3	4
Total	--	--	--	2	3	4
Grand total	10,724	12,639	7,728	8,388	6,170	7,912

* Numbers refer to FAO fishing areas (see Figure 1).
** -- - Less than 0.5 metric tons.

Sources: FAO 1991, 1993a

WORLD TUNA IMPORTS

Tuna is an important commodity in the international market. Tuna imports by major countries in 1991 are listed in Table 11 for volume and in Table 12 for value. The global total was 2 million metric tons (mt), 66 percent of world total tuna landings, with a value of 4.3 billion dollars in value.

Thailand led the world in import volume for all types of products combined (Table 11), but Japan was the leading importer in value (Table 12). In 1991, Thailand imported 25 percent in volume and 21 percent in value. In the same year, Japan imported 16 percent in volume and 28 percent in value. This contrast is due mainly to the fact that Japan's imports were concentrated on high-valued products for raw consumption.

Ivory Coast led the world in volume of imports of fresh products. It accounted for about 35 percent in volume and 9 percent in value. Whereas Japan's imports of fresh products in value was as much as 65 percent of the world total, its share in volume was only 29 percent. This was because Japan's imports of fresh tuna included high-valued bluefin tuna air-shipped from various parts of the world.

Thailand led in imports of frozen products in both volume and value with about 38 percent in both volume and value of the world total. Thailand's imports consisted largely of less expensive materials with which to manufacture canned tuna products. Other major importers of frozen products were Japan (19 percent in volume and 30 percent in value), Spain (11 percent in volume and 7 percent in value), and the United States (11 percent in volume and 8 percent in value).

The United States led the rest of the world in imports of prepared products (canned tuna) both in volume and value by a wide margin. It accounted for 33 percent in volume and 29 percent in value in this category.

Table 11. Volume of tuna imported by major countries in 1991 (metric tons)

Country	Fresh	Frozen	Prepared	Total
Thailand	2,599	493,658	--*	496,257
Japan	57,685	244,199	15,335	317,219
U.S.A.	13,657	141,271	161,335	316,263
Spain	2,873	150,746	3,662	157,281
Italy	2,172	114,059	21,361	137,592
France	3,005	15,947	63,245	82,197
U.K.	266	387	71,588	72,241
Ivory Coast	69,972	--	--	69,972
Singapore	--	48,036	575	48,611
Senegal	34,000	--	--	34,000
Malaysia	8,564	3,661	880	13,105
Other	2,875	102,324	147,036	252,235
Total, world	197,668	1,314,288	485,017	1,996,973

* -- - Less than 0.5 metric tons.

Source: FAO 1993b

Table 12. Value of imports of tuna by major countries in 1991 (U.S. $1,000)

Country	Fresh	Frozen	Prepared	Total
Japan	422,085	702,516	48,253	1,172,854
Thailand	1,380	886,387	3	887,770
U.S.A.	87,968	181,103	379,898	648,969
Italy	15,304	147,332	96,371	259,007
U.K.	1,485	1,162	192,174	194,821
Spain	11,630	165,818	10,132	187,580
France	12,042	19,690	151,310	183,042
Singapore	--*	80,226	1,757	81,983
Ivory Coast	56,577	--	--	56,577
Senegal	26,800	--	--	26,800
Malaysia	3,246	5,136	1,948	10,330
Other	10,909	116,531	415,185	542,625
Total, world	649,426	2,305,901	1,297,031	4,252,358

* -- - Less than 500 dollars.

Source: FAO 1993b

JAPANESE TUNA IMPORTS

Japan's tuna import regulations were first liberalized in 1961. Tuna imports to Japan have steadily increased since 1961 and the trend has been accentuated in recent years. From 1981 through 1993, imports of tuna into Japan increased more than three times in volume and five times in value. The number of countries supplying tuna to Japan also increased from 26 in 1981 to 75 in 1993 (Japan Marine Products Importers Association 1962 - 1994). Factors which influenced the recent rise in tuna imports to Japan are: leveling catches by Japan's own fishing fleet, increasing demand for gourmet food, and shift in currency exchange rates, i.e., high yen relative to the dollar. Therefore, it is likely that Japan's dependency on imports will intensify in the years ahead.

Japan is the world's largest importer of tuna. In 1993, Japan's imports of fresh, frozen and prepared tuna were approximately 362,000 metric tons (mt) valued at about 1.8 billion dollars. Frozen products dominated and represented as much as 76 percent in volume and 64 percent in value. Fresh tuna accounted for 17 percent in volume and 32 percent in value, followed by dried and canned products with about 4 percent in volume and 2 percent in value (Table 13).

In 1993, Japan imported about 337,000 mt of fresh and frozen tuna valued at close to 1.7 billion dollars (Tables 14 and 15). Yellowfin and bigeye were the two dominant species, together accounting for as much as 80 percent in volume and 84 percent in value of total imports. Bluefin was a distant third with 3 percent in volume and 12 percent in value. Imports of albacore and skipjack were minor with a combined share of about 17 percent in volume and 3 percent in value.

Imports of Fresh Tuna

Yellowfin tuna is the dominant species of tuna imported into Japan, both in fresh and frozen categories. A sharp increase in imports of fresh tuna into Japan has been particularly pronounced since 1985. Imports of fresh yellowfin nearly tripled during this time (Table 16) and the rate of increase has been accelerating, indicating the presence of a strong market for this product in Japan. This is due partly to a recent phenomenon called "fresh food rush" in Japan, the escalation of consumer preference for fresh gourmet food, and partly to the fact that catches of tuna in domestic waters off Japan have leveled off (Suisan Keizai Shinbun Sha July 25, 1991 and July 26, 1991). In general, the supply of highly prized tuna meat called "toro" which typically comes from bluefin tuna, has dwindled sharply, whereas the supply of so-called "akami" (meaning "red meat") fish, typically lean loins of yellowfin and bigeye, has become the dominant portion of the supply. Although "fresh food rush" has affected all three species, sales of yellowfin have shown the greatest increases.

Table 13. Japan's imports of tuna by product form, 1992-1993

Product form	Volume (tons) 1992	Volume (tons) 1993	Value (US $1,000) 1992	Value (US $1,000) 1993
Fresh, round:				
Yellowfin	35,066	37,161	232,891	278,030
Bigeye	15,445	19,309	123,515	165,071
Bluefin	3,009	5,172	67,158	110,544
Albacore	140	304	845	2,014
Skipjack	9	22	12	35
Tuna*	1,485	2	10,914	24
Fresh, fillets:				
Bluefin	0	64	0	2,111
Total, fresh	55,154	62,034	435,335	557,829
Frozen, round:				
Bigeye	83,126	73,064	440,978	504,826
Yellowfin	98,621	138,774	283,899	453,321
Skipjack	29,262	54,165	26,294	51,262
Bluefin	1,923	2,661	26,249	45,009
Albacore	9,257	2,134	15,373	4,229
Tuna*	1,021	22	10,971	161
Frozen, fillets:				
Bluefin	81	1,565	1,880	34,702
Tuna**	0	2,559	0	22,110
Total, frozen	223,291	274,944	805,644	1,115,620
Canned:	18,827	23,392	53,049	64,732
Dried:	1,152	1,338	4,787	6,778
Grand total	298,424	361,708	1,298,815	1,744,959

* Tuna - Identification not recorded.
** Tuna - excluding bluefin tuna.

Source: Japan Marine Products Importers Association 1993-1994

Table 14. Japan's imports of fresh and frozen tuna by volume, 1984-1993, (metric tons)

Species	1984	1985	1986	1987	1988
Yellowfin	48,770	75,396	66,781	98,106	120,099
Bigeye	46,651	52,159	57,778	74,672	77,413
Skipjack	799	6,144	2,879	3,854	3,420
Bluefin	4,226	4,838	5,246	5,101	5,838
Albacore	3,575	2,583	2,433	2,992	3,135
Tuna*	36	156	42	746	38
Total	104,057	141,276	135,159	185,471	209,943

Species	1989	1990	1991	1992	1993
Yellowfin	110,201	134,360	114,964	133,687	175,935
Bigeye	83,313	88,715	109,925	98,571	92,373
Skipjack	3,218	25,633	29,662	29,271	54,187
Bluefin	6,918	6,956	6,761	5,013	9,462
Albacore	2,867	1,808	4,375	9,397	2,438
Tuna*	69	49	13	2,506	2,583
Total	206,586	257,521	265,700	278,445	336,978

Table 15. Japan's imports of fresh and frozen tuna by value, 1984-1993, (US$1,000)

Species	1984	1985	1986	1987	1988
Yellowfin	137,558	150,956	180,106	248,365	341,997
Bigeye	159,172	133,169	188,150	271,438	359,895
Bluefin	29,517	26,252	44,874	47,845	86,296
Skipjack	439	4,438	2,260	3,335	3,577
Albacore	5,271	3,523	3,338	4,044	5,594
Tuna*	44	120	182	4,527	199
Total	332,001	318,458	418,910	579,554	795,558

Species	1989	1990	1991	1992	1993
Yellowfin	349,143	395,419	369,127	516,790	731,351
Bigeye	472,558	436,199	500,515	564,493	669,897
Bluefin	92,158	97,948	104,817	95,287	192,366
Skipjack	2,740	23,853	29,285	26,306	51,297
Albacore	5,787	3,345	6,339	16,218	6,243
Tuna*	140	188	97	21,888	22,295
Total	922,526	956,952	1,010,180	1,240,982	1,673,449

*Tuna - Identification not recorded.

Source: Japan Marine Products Importers Association 1985-1994

Table 16. Japan's imports of fresh yellowfin tuna by major countries, by volume, 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Taiwan	9,994	9,712	10,346	11,599	10,214
Indonesia	20	48	76	644	1,601
Malaysia	---	---	---	45	442
Philippines	2,621	2,877	3,415	3,712	3,919
Guam	---*	---	23	357	332
Palau	---	---	---	---	---
Singapore	---	---	16	208	1,018
Australia	79	128	388	304	144
U.S.A.	2	1	186	332	1,037
New Caledonia	---	---	---	3	24
Other	2	192	8	56	622
Total	12,718	12,958	14,458	17,260	19,353

Country	1989	1990	1991	1992	1993
Taiwan	10,247	10,982	11,537	11,000	12,284
Indonesia	4,040	5,415	12,655	13,068	11,685
Malaysia	1,042	1,741	3,672	4,313	3,035
Philippines	3,914	3,757	1,428	1,089	2,102
Guam	674	1,968	1,161	1,570	1,837
Palau	50	1,273	1,466	1,959	1,612
Singapore	1,448	736	570	635	1,388
Australia	313	242	207	185	180
U.S.A.	321	326	145	110	179
New Caledonia	54	108	63	32	51
Other	77	110	198	1,105	2,808
Total	22,180	26,658	33,102	35,066	37,161

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994

More than 51 countries have supplied fresh tuna to Japan in recent years. Taiwan was the leading supplier of fresh yellowfin in 1993 (Tables 16). Taiwan, whose supply of fresh yellowfin to Japan has leveled off at slightly above 10,000 mt per year for the past decade, is expected to continue to be the major supplier to Japan for some time. Supplies of fresh bigeye from Taiwan to Japan, however, have declined since 1988, while shipments of this product from Indonesia, Malaysia, Micronesia, Palau, and Guam have increased sharply (Table 17). Indonesia has replaced Taiwan as the leading supplier of fresh bigeye to Japan since 1992. Imports of fresh yellowfin and bigeye from the United States have generally been small, 179 mt in 1993 for yellowfin (Table 16) and 933 mt for bigeye (Table 17).

An important recent trend is the increase in supply of fresh tuna air-shipped into Japan from overseas sources. Prompted partly by the rise in consumer preference for fresh food, and partly by the fact that the domestic supply of fresh tuna has leveled off, imports of fresh tuna have expanded steadily over the last several years. In spite of the fact that air-shipment adds to the costs, Japanese experts predict continued rise in imports of fresh overseas tuna in years ahead, to such an extent that it may even impact the pricing of frozen tuna in the domestic market (Suisan Keizai Shinbun Sha July 25, 1990). Japan's imports of fresh bluefin tuna have been particularly pronounced since 1985 (Table 18). In 1993, imports of fresh bluefin tuna into Japan reached nearly 5,300 mt, more than five times the 1985 imports.

The United States had been the leading supplier of fresh bluefin tuna to Japan until 1992, with annual shipments of about 800 to 900 mt for the past several years. The so-called "jumbo bluefin" caught off New England is the most prized of all tuna products in Japan. Bluefin tuna caught off Los Angeles made a debut in Japan in 1988, and was considered to be as good in quality as those caught in Japanese domestic waters. However, this new fishing ground has yet to establish itself as a steady source of supply. Other fishing grounds have also emerged near Australia, Tunisia, Italy, Indonesia, Turkey, and Greece. Supplies from Spain include pen-held bluefin, which can be shipped throughout the year. Since the supply from the United States has essentially leveled off, the recent rise in imports of fresh bluefin into Japan was entirely the result of increased shipments from these other sources. Consequently, the U.S. share as the supplier of this prized product to Japan has diminished steadily (in volume) from 57 percent in 1985, to 16 percent in 1993.

Table 17. Japan's imports of fresh bigeye tuna by major countries, by volume, 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Indonesia	7	41	52	518	1,282
Taiwan	1,513	1,875	2,887	6,467	4,921
Micronesia	---	---	---	---	---
Palau	---	---	---	---	---
Guam	---	---	8	152	367
U.S.A.	147	164	335	447	671
Malaysia	---*	---	---	37	280
Philippines	173	155	147	236	152
Singapore	---	---	25	256	1,116
Ecuador	---	---	---	2	2
Other	3	15	20	131	548
Total	1,843	2,250	3,474	8,246	9,339

Country	1989	1990	1991	1992	1993
Indonesia	3,432	2,378	2,097	4,799	5,743
Taiwan	3,571	2,486	3,237	3,520	3,407
Micronesia	7	27	116	1,253	3,186
Palau	106	1,221	1,190	2,042	2,217
Guam	1,156	1,895	826	1,490	1,554
U.S.A.	830	684	938	777	933
Malaysia	1,169	1,963	954	741	910
Philippines	302	291	361	334	346
Singapore	1,482	620	290	181	132
Ecuador	71	114	17	6	4
Other	120	139	241	302	877
Total	12,246	11,818	10,267	15,445	19,304

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994.

Table 18. Japan's imports of fresh bluefin tuna by major countries, by volume, 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Australia	8	5	263	72	458
U.S.A.	531	549	589	939	856
Spain	54	145	104	171	389
Tunisia	---*	---	---	---	95
Italy	---	---	---	---	14
Canada	164	78	25	43	303
Indonesia	---	---	---	1	5
Taiwan	170	54	78	80	52
Greece	---	6	71	54	56
Turkey	1	99	669	243	104
Malta	---	---	---	---	---
France	---	---	1	6	---
Korea, Rep.	4	1	344	89	33
New Zealand	21	24	2	---	---
Morocco	---	---	---	21	59
Other	4	1	4	4	4
Total	957	962	2,150	1,723	2,428

Country	1989	1990	1991	1992	1993
Australia	325	345	700	47	1,644
U.S.A.	889	815	719	956	857
Spain	250	356	323	291	648
Tunisia	225	357	406	465	406
Italy	8	19	21	42	330
Canada	454	310	381	331	307
Indonesia	51	45	129	36	247
Taiwan	66	112	232	162	195
Greece	72	84	67	50	182
Turkey	156	140	121	211	118
Malta	3	3	37	47	117
France	4	31	7	6	101
Korea, Rep.	71	132	265	288	40
New Zealand	---	6	---	1	14
Morocco	170	209	22	51	---
Other	15	35	72	25	29
Total	2,759	2,999	3,502	3,009	5,235

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994

Imports of Frozen Tuna

The rise in imports of frozen tuna into Japan has been phenomenal in recent years. The trend has been led by yellowfin and bigeye which together supplied the co-called "akami" used in "sashimi" (Japanese name for various kinds of raw seafood, sliced thin and accompanied by condiments) and "sushi" (Japanese name for various Japanese dishes made with a rice base topped with various ingredients such as raw or cooked seafood). Imports of frozen yellowfin rose from about 36,000 mt in 1984 to about 139,000 mt in 1993 (Table 19). During the same period, imports of frozen bigeye rose from about 45,000 mt to about 73,000 mt (Table 20). Frozen yellowfin and bigeye together represented about 79 percent in volume and about 68 percent in value of the combined fresh and frozen yellowfin and bigeye imported in 1993 (Table 13).

Taiwan has become the leading supplier of frozen yellowfin and bigeye to Japan in recent years, passing the Republic of Korea which had been the leader (Tables 19 and 20). Imports of frozen yellowfin into Japan from Taiwan rose sharply in 1993.

The Republic of Korea and Taiwan together have long been the dominant suppliers of frozen yellowfin and bigeye to Japan. These two nations supplied Japan with as much as 83 percent of all frozen bigeye in 1984 but the share declined to about 68 percent in 1993 due to increased imports from Panama, Indonesia, Honduras, Singapore and St. Vincent. A total of 25 nations supplied frozen bigeye tuna to Japan in 1984, but the number has increased to 41 in 1993. The Republic of Korea and Taiwan together also accounted for 80 percent of frozen yellowfin imports into Japan in 1993.

Japanese imports of frozen yellowfin from the United States were 502 mt in 1993, approximately 0.4 percent of the total Japanese imports of this product. The highest amount ever achieved by the U.S. frozen yellowfin product was 9,720 mt, occurring in 1985. Japanese imports of frozen U.S. bigeye have been insignificant, totaling only eight mt in 1993. The historical high for U.S. frozen bigeye product was 267 mt, again occurring in 1985.

Japanese imports of frozen bluefin have been essentially stable, generally remaining within a narrow range between 2,000 and 4,000 mt since 1984 (Table 21). This contrasts with the sharp rise in imports of highly prized fresh bluefin in recent years. Major suppliers in 1993 were Taiwan, Panama, Spain, the Republic of Korea and Portugal. Supply of frozen bluefin from the United States is insignificant, and zero in 1993. The historical high of frozen U.S. bluefin imports into Japan was 263 mt achieved in 1984.

In 1993, Japan's imports of frozen skipjack tuna recorded a historical high of 54,165 mt, 68 times the total for 1984. Sharply increased imports in 1993 came from Indonesia, Singapore, the Philippines, Taiwan, Solomon Islands, and Maldives (Table 22). Japanese imports of frozen skipjack from the United States has been insignificant.

Table 19. Japan's imports of frozen yellowfin tuna by major countries, by volume, 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Taiwan	4,600	7,729	10,557	20,687	22,705
Korea, Rep.	17,250	18,119	24,143	30,161	28,535
Singapore	320	281	352	1,297	3,004
Indonesia	2,619	3,606	3,280	7,252	8,179
Panama	1,653	2,922	7,222	5,147	3,431
Honduras	406	526	956	1,297	2,324
Solomon Islands	4,262	5,381	1,826	2,110	1,948
U.S.A.	55	9,720	1,605	3,115	2,904
Guam	521	1,050	16	---	482
Mexico	15	---*	141	5,070	21,227
Other	4,350	13,104	2,225	4,710	6,008
Total	36,051	62,438	52,323	80,846	100,747

Country	1989	1990	1991	1992	1993
Taiwan	20,994	37,250	31,677	57,742	93,701
Korea, Rep.	21,343	25,998	19,300	20,484	17,619
Singapore	1,711	1,860	2,806	1,785	6,522
Indonesia	10,120	10,738	6,606	4,833	5,505
Panama	2,496	4,149	3,519	3,594	3,134
Honduras	2,635	3,938	4,240	3,768	2,555
Solomon Islands	1,619	3,175	443	896	1,321
U.S.A.	259	3,100	1,155	86	502
Guam	892	1,921	2,880	1,327	414
Mexico	18,000	5,632	3,372	854	279
Other	7,952	9,941	5,864	3,252	7,222
Total	88,021	107,702	81,862	98,621	138,774

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994

Table 20. Japan's imports of frozen bigeye tuna by major countries, by volume, 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Taiwan	11,364	11,725	14,154	16,118	17,586
Korea, Rep.	25,985	28,008	31,811	35,865	33,950
Panama	3,165	4,461	5,133	5,616	3,847
Indonesia	1,672	2,736	2,535	3,602	3,406
Honduras	369	354	757	1,406	2,155
Singapore	589	373	496	664	1,859
St. Vincent	307	---	186	---	27
Trinidad	---	---	---	---	---
Ecuador	24	---*	361	169	477
Portugal	44	---	---	3	---
Other	1,289	2,252	1,871	2,983	4,767
Total	44,808	49,909	57,304	66,426	68,074

Country	1989	1990	1991	1992	1993
Taiwan	18,977	23,990	38,042	30,170	27,482
Korea, Rep.	31,447	29,333	33,078	28,840	21,994
Panama	3,159	5,258	6,320	7,494	5,998
Indonesia	4,935	4,609	4,930	3,106	4,452
Honduras	4,326	5,674	8,787	5,911	4,143
Singapore	1,180	1,210	1,515	1,013	1,775
St. Vincent	92	87	992	1,394	1,529
Trinidad	---	---	146	751	1,525
Ecuador	859	1,587	1,348	1,516	850
Portugal	9	668	789	899	822
Other	6,083	4,481	3,712	2,032	2,494
Total	71,067	76,897	99,659	83,126	73,064

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994.

Table 21. Japan's imports of frozen bluefin tuna by major countries, by volume, 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Taiwan	211	100	61	146	243
Panama	---	---	---	66	57
Spain	97	54	50	95	773
Korea, Rep.	16	63	134	1	11
Portugal	---*	---	---	---	---
Honduras	---	---	10	98	323
Australia	2,420	3,352	2,497	2,798	1,703
France	17	167	---	---	---
Malta	---	---	---	---	---
New Zealand	92	85	74	53	84
Morocco	---	--	---	6	161
Other	416	119	270	115	55
Total	3,269	3,877	3,096	3,378	3,410

Country	1989	1990	1991	1992	1993
Taiwan	889	715	1,157	218	793
Panama	---	12	287	484	690
Spain	378	338	225	310	266
Korea, Rep.	39	17	197	87	220
Portugal	---	75	240	221	205
Honduras	282	18	85	144	169
Australia	2,085	2,444	473	---	165
France	---	---	4	188	73
Malta	---	---	---	48	55
New Zealand	122	249	37	8	27
Morocco	7	7	29	24	20
Other	284	82	525	272	17
Total	4,086	3,957	3,259	2,004	2,700

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994

Table 22. Japan's imports of frozen skipjack tuna by major countries, by volume 1984-1993 (metric tons)

Country	1984	1985	1986	1987	1988
Indonesia	179	712	976	2,301	1,850
Singapore	17	---	---	---	---
Philippines	---	926	---	48	---
Taiwan	17	33	33	148	477
Solomon Islands	78	113	515	43	23
Maldives	---*	3,084	1,179	1,079	951
Madagascar	---	---	---	---	---
Malaysia	---	---	---	---	---
Mauritius	---	---	---	---	---
Korea, Rep.	81	246	78	89	32
Other	425	1,030	78	115	46
Total	797	6,144	2,859	3,823	3,379

Country	1989	1990	1991	1992	1993
Indonesia	2,518	14,269	19,155	18,214	25,885
Singapore	240	1,742	2,446	3,520	9,704
Philippines	---	729	---	2	8,043
Taiwan	47	3,552	818	2,398	5,645
Solomon Islands	119	1,116	608	1,187	1,091
Maldives	76	3,068	3,922	1,852	983
Madagascar	---	---	---	---	701
Malaysia	35	---	---	---	641
Mauritius	---	---	---	---	462
Korea, Rep.	164	443	24	117	448
Other	47	710	2,679	1,972	562
Total	3,211	25,629	29,652	29,262	54,165

* --- - Less than 0.5 metric tons.

Source: Japan Marine Products Importers Association 1985-1994

Tariffs

Imports of tuna products into Japan are subject to tariffs (Table 23). As Japan and the United States are signatories to the General Agreement on Tariffs and Trade (GATT), lower tariffs apply to U.S. exports of tuna products: 5 percent for fresh or frozen products, and 15 percent for salted, smoked, dried, prepared or preserved products (including products in airtight containers). Tariff rates are calculated as a percentage of CIF (cost, insurance, freight) value.

Table 23. Japanese tariff structure for tuna, 1994 (percent of cost, insurance, and freight)

	Fresh/chilled frozen	Salted/dried smoked	Prepared/ preserved
GATT	5.0	15.0	15.0
General	10.0	15.0	20.0

Source: Japan Marine Products Importers Association 1994

COLD STORAGE HOLDINGS

Table 24 shows Japan's year-end inventory of frozen tuna (cold storage holdings) between 1985 and 1993. The amount of inventory has ranged from 56,000 metric tons (mt) to 83,000 mt during this period, with an average of 69,700 mt. The year-end inventories constituted about 6 to 8 percent of the total supply of tuna in the domestic market during the following year. Since the amounts of inventory remained relatively stable, and low in relation to total supplies, they were not a major factor influencing yearly fluctuations in supply and prices.

Table 24. Japan's year-end cold storage holdings of frozen tuna, 1985-1993 (1,000 metric tons)

Species	1985	1986	1987	1988	1989	1990	1991	1992	1993
Skipjack	15	22	20	29	17	29	32	28	28
Yellowfin	17	11	11	13	10	20	14	13	19
Bigeye	16	14	15	12	13	15	20	11	15
Bluefin	8	7	9	6	7	8	9	9	10
Albacore	7	7	9	6	9	11	7	11	8
Total	63	61	64	66	56	83	82	72	80

Sources: U.S. Department of Commerce 1986-1991
Suisan Tsushin Sha 1992-1994

Table 25 shows monthly changes in inventory for 1993 which are typical of recent years. The general inventory trend is one of steady growth throughout the year to a maximum level at the end of December.

Table 25. Japan's monthly cold storage holdings of frozen tuna, 1993 (1,000 metric tons)

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Skipjack	22	19	20	21	22	26	21	24	28	25	26	28
Yellowfin	11	13	13	14	15	16	17	15	14	15	17	19
Bigeye	9	11	13	16	15	15	18	18	16	14	14	15
Bluefin	8	7	7	6	6	5	5	8	9	10	11	10
Albacore	10	9	10	10	8	8	11	12	11	10	9	8
Total	60	59	63	67	66	70	72	77	78	74	77	80

Source: Suisan Tsushin Sha 1993-1994

SUPPLY

The Japanese supply of tuna for any given year is comprised of the cold-storage inventory on January 1, total catches, and imports. Annual supplies ranged between a high of about 1,088,000 metric tons (mt) and a low of 877,000 mt between 1988 and 1993 (Table 26). During this period, the January inventory averaged 71,000 mt (about 7 percent of the total supply), the catch 668,000 mt (about 67 percent), and the imports 258,000 mt (about 26 percent). The catches fluctuated between a high of 753,000 mt and a low of 563,000 mt, but the mitigating effects of imports helped keep the annual supplies relatively stable.

Annual supplies of skipjack ranged from 342,000 mt to 457,000 mt between 1988 and 1993. In 1993, increased imports of skipjack helped avert a potential decline in annual supply due to a drop in inventory. Annual supplies of albacore ranged between 65,000 and 53,000 mt during the same period. Annual supplies of bigeye ranged between 263,000 and 216,000 mt, and those of yellowfin between 341,000 and 236,000 mt. Annual supplies of bluefin during the same period ranged between 27,000 and 35,000 mt.

Table 26. Japanese supply and apparent consumption of tuna, 1988-1993 (1,000 metric tons)

	1988	1989	1990	1991	1992	1993
Inventory, Jan. 1:						
Skipjack	20	29	17	29	32	28
Albacore	9	6	9	11	7	11
Bigeye	15	12	13	15	20	11
Yellowfin	11	13	10	20	14	13
Bluefin	9	6	7	8	9	9
Total	64	66	56	83	82	72
Catch:						
Skipjack	434	338	299	397	323	345
Albacore	45	48	44	38	49	63
Bigeye	144	149	114	125	144	136
Yellowfin	111	113	93	108	123	122
Bluefin	19	22	13	16	17	17
Total	753	670	563	684	656	683
Imports:						
Skipjack	3	3	26	30	29	54
Albacore	3	3	2	4	9	2
Bigeye	77	83	89	110	99	92
Yellowfin	120	110	134	115	134	176
Bluefin	6	7	7	7	5	9
Total	209	206	258	266	276	333
SUPPLY	**1,026**	**942**	**877**	**1,033**	**1,014**	**1,088**
Exports:						
Skipjack	111	49	36	85	54	57
Albacore	11	19	11	10	22	22
Yellowfin	6	4	4	6	14	13
Total	128	72	51	101	90	92
Inventory, Dec. 31:						
Skipjack	29	17	29	32	28	28
Albacore	6	9	11	7	11	8
Bigeye	12	13	15	20	11	15
Yellowfin	13	10	20	14	13	19
Bluefin	6	7	8	9	9	10
Total	66	56	83	82	72	80
APPARENT CONSUMPTION	**832**	**814**	**743**	**850**	**852**	**916**

Sources: Japan Marine Products Importer Association 1989-1994
Ministry of Agriculture, Forestry & Fisheries 1990-1994
Suisan Tsushin Sha 1991-1994
Suisan Keizai Shinbun Sha 1991-1994
U.S. Department of Commerce 1988-1991

CONSUMPTION

Tuna has remained the leading fresh and frozen seafood consumed in Japan in value and second in volume (Table 27). While demand for tuna is sensitive to price, it is still the most popular of all fresh and frozen seafood products in Japan. In 1993, the average Japanese family spent 11,745 yen (117 dollars) on fresh and frozen tuna. In terms of volume, annual per household consumption of fresh and frozen tuna in 1993 was 4.8 kilograms or 10.6 pounds. The number of persons represented in a household varies annually, but is about 3.48-3.55 persons (Suisan Tsushin Sha August 23, 1993 and August 22, 1994). From 1991 to 1993, the average per household consumption of fresh and frozen tuna rose 7 percent in value and 10 percent in volume due mainly to a drop in price in the aftermath of a sharply increased imports of skipjack and yellowfin tuna in 1993. The annual Japanese apparant consumption of tuna (supply minus exports and the cold storage holdings on December 31) was a record 916,000 metric tons (mt) in 1993, an increase of 64,000 mt (8 percent) compared with 1992 (Table 26). Between 1988 and 1993, annual consumption of tuna ranged from a high of 916,000 mt to a low of 743,000 mt.

Japan is the only major market for raw consumption of tuna, accounting for about 480,000 mt in 1992. About 49 percent of the domestic raw consumption of tuna was supplied from imports in 1992 (Shokuryo Shinbun Sha January 1, 1994).

Tuna is prepared in various ways for the table by the Japanese. The most popular dish is "sashimi", which typically consists of thin slices of raw seafood, served with soy sauce and condiments. Tuna species used for raw consumption in Japan are: northern bluefin, southern bluefin, bigeye, yellowfin, and skipjack. Bluefin is the most-prized and hence the highest-priced tuna in Japan, followed by bigeye, yellowfin and skipjack. Depending upon the species as well as the quality of the meat and the season, prices of tuna range widely, from a high of about 10,000 yen/kg to a low of 100 yen/kg.

Northern bluefin, the largest of all tunas, grows to over 300 cm (folk length) and weigh as much as 400 kg. The "toro" (fatty meat) portion of the bluefin tuna meat is rated among the best gourmet food, particularly suited for raw consumption. Bluefin is generally sold to high-class Japanese-style and specialty "sushi" restaurants. The Japanese name for bluefin "Hon Maguro" (meaning "genuine tuna") is indicative of the status this species enjoys in the Japanese market. Southern bluefin has also secured its niche in the Japanese market. By virtue of the quality of its meat which closely resembles that of northern bluefin, southern bluefin enjoys high demand from restaurants and sushi outlets (Tokyo University of Fisheries 1989; Collette and Nauen 1983).

Bigeye, generally weighing around 45 kg, is the only species other than bluefin that provides "toro", and the quality of its meat is rated second only to that of bluefin (Tokyo University of Fisheries, 1989). In Japan, the fish is landed in the second largest quantity of all the major tuna species, and hence is popular as a year-round substitute for bluefin. The principal distribution outlets of bigeye are specialty sushi restaurants, supermarket chains and fish retailers.

Yellowfin is smaller than bigeye. In contrast to bluefin and bigeye, yellowfin does not contain "toro" in its meat, which is somewhat less reddish, somewhat blander, and therefore cheaper. The fish is the third-largest landed species of tuna next to bigeye, and is available year-round. These characteristics make yellowfin popular for home consumption. The fish is also used for canned products.

Albacore is smaller than yellowfin. The fish is almost exclusively used for canned products, but is also sold in small quantities in the form of loins at supermarkets for home consumption as steak and "teriyaki" (Japanese dish made with fish, shellfish, or meat that has been marinated in soy sauce and other flavorings, then grilled or broiled).

Table 27. Japanese annual per household consumption of fresh and frozen fish and shellfish by major species or groups, 1991-1993

Species	Expenditure (yen)			Quantity (kilogram)		
	1991	1992	1993	1991	1992	1993
Tuna	11,021	11,848	11,745	4.4	4.6	4.8
Shrimp	8,128	8,204	7,812	3.3	3.5	3.6
Squid	6,037	5,914	5,149	5.4	5.7	5.3
Yellowtail	4,524	4,738	4,168	2.1	2.2	1.9
Salmon	2,798	3,159	3,599	1.8	1.9	2.3
Mackerel	532	607	709	0.8	0.9	1.1

Source: Suisan Keizai Shinbun Sha 1992-1994

PRICE TRENDS

Exvessel Prices

Annual average exvessel prices of both fresh and frozen bluefin tuna at 51 landing ports are shown in Table 28, together with annual landing volumes. The exvessel prices at landing ports were generally dominated by the landed volume: the greater the landings, the lower the prices. As shown in Table 28, the

lowest price of fresh bluefin, 887 yen/kg, was realized in 1981 when landings were at a high of 20,989 metric tons (mt). Likewise, with respect to frozen bluefin, the two lowest prices of 2,058 and 2,259 yen/kg, occurring respectively in 1980 and 1981, corresponded to peak landings of 27,086 and 28,162 mt for these years.

The similar trend of inverse relationships between exvessel price and landing volume at the landing ports occurred for other species used for raw consumption such as yellowfin (Table 29), bigeye (Table 30), and skipjack (Table 31), but not with albacore (Table 32) which is used almost exclusively for canned products in Japan. Occasional exceptions to this trend occurred with respect to yellowfin and bigeye, the two species which supply "akami". For instance, in 1990, the wholesale prices of frozen yellowfin fell 26 percent from 1989, from 771 to 572 yen/kg, which in turn triggered a drop in prices for bigeye by 6 percent, from 1,228 in 1989 to 1,149 yen/kg in 1990, even though the landings of bigeye remained essentially unchanged for these years.

Table 28. Annual landings and average exvessel prices of bluefin tuna at 51 landing ports in Japan, 1979-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1979	13,235	1,127	21,489	2,641
1980	7,482	1,285	27,086	2,058
1981	20,989	887	28,162	2,259
1982	19,539	1,063	17,794	2,958
1983	11,657	1,287	16,375	3,251
1984	2,306	1,906	18,536	3,226
1985	2,535	1,250	18,747	3,059
1986	2,647	1,664	12,814	4,342
1987	3,861	1,234	12,820	3,649
1988	2,571	1,593	9,613	4,326
1989	5,075	1,743	8,574	5,101
1990	1,807	2,848	9,430	4,849
1991	2,760	2,062	11,345	4,082
1992	3,282	2,139	11,532	3,879
1993	3,645	1,875	11,937	3,814

Source: Suisan Tsushin Sha 1980-1994

Table 29. Annual landings and average exvessel prices of yellowfin tuna at 51 landing ports in Japan, 1979-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1979	25,328	677	34,035	640
1980	26,369	696	44,203	519
1981	19,032	750	51,324	541
1982	13,984	845	64,355	474
1983	18,186	730	59,394	436
1984	19,688	770	39,900	668
1985	25,718	674	34,953	628
1986	13,602	681	32,338	526
1987	15,320	591	29,440	511
1988	14,456	659	27,184	532
1989	15,158	793	24,977	771
1990	14,687	746	32,248	572
1991	11,586	733	25,894	485
1992	13,992	714	22,563	623
1993	12,554	834	24,852	658

Source: Suisan Tsushin Sha 1980-1994

Table 30. Annual landings and average exvessel prices of bigeye tuna at 51 landing ports in Japan, 1979-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1979	12,015	1,336	79,071	975
1980	11,243	1,257	71,766	831
1981	9,836	1,426	66,129	975
1982	9,777	1,435	75,981	933
1983	9,927	1,473	89,174	847
1984	13,048	1,361	69,954	1,145
1985	12,372	1,380	86,610	917
1986	9,776	1,472	92,563	872
1987	9,059	1,191	89,981	838
1988	6,688	1,629	76,320	1,025
1989	8,167	1,748	73,799	1,228
1990	8,211	1,722	73,178	1,149
1991	10,218	1,686	74,344	1,032
1992	10,616	1,617	69,104	1,136
1993	10,141	1,702	68,788	1,190

Source: Suisan Tsushin Sha 1980-1994

Table 31. Annual landings and average exvessel prices of skipjack tuna at 51 landing ports in Japan, 1979-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1979	75,978	284	136,334	232
1980	91,744	319	162,037	305
1981	51,094	379	152,302	283
1982	66,318	330	169,473	235
1983	70,282	250	221,606	191
1984	117,925	180	231,134	156
1985	48,082	330	181,881	216
1986	76,256	176	241,471	135
1987	61,953	234	195,522	163
1988	91,602	154	261,908	133
1989	47,612	285	207,974	153
1990	39,784	350	199,138	203
1991	77,723	190	217,311	143
1992	51,285	276	198,212	172
1993	98,530	165	152,132	182

Source: Suisan Tsushin Sha 1980-1994

Table 32. Annual landings and average exvessel prices of albacore tuna at 51 landing ports in Japan, 1979-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1979	19,471	395	44,655	387
1980	26,338	445	39,601	396
1981	19,264	542	36,003	515
1982	26,613	480	35,086	401
1983	14,888	432	27,563	338
1984	19,364	414	38,866	363
1985	15,775	434	34,840	346
1986	16,142	358	27,140	248
1987	19,177	325	28,060	259
1988	17,099	358	24,262	243
1989	18,357	410	25,789	265
1990	20,040	383	23,270	279
1991	16,423	316	16,925	258
1992	24,417	382	22,883	320
1993	19,438	343	22,458	267

Source: Suisan Tsushin Sha 1980-1994

Wholesale Prices

Tables 33 through 37 show annual average wholesale prices at six major central wholesale markets in Japan between 1983 and 1993, in comparison with volume. The highest price for any species during this period was for fresh bluefin at 4,937 yen/kg in 1990. The prices for fresh bluefin rose from 2,200 yen/kg in 1983 to 3,406 yen/kg in 1993. The price for frozen bluefin rose from 3,240 to 3,967 yen/kg over the same period, an increase of about 22 percent.

Between 1983 and 1993, annual average wholesale prices for fresh bluefin averaged 3,434 yen/kg, with a high of 4,937 and a low of 2,200. Frozen bluefin averaged 3,715 yen/kg (range: 2,998 - 4,752 yen/kg). The annual average wholesale prices for fresh bigeye, the second highest priced species, averaged 2,060 yen/kg (range: 1,803 -2,359 yen/kg). In comparison, the prices for frozen bigeye averaged 1,171 yen/kg (range: 987 - 1,337 yen/kg). The average annual wholesale prices for fresh yellowfin averaged 1,125 yen/kg, about half of fresh bigeye (range: 1,065 - 1,201 yen/kg). In comparison, those for frozen yellowfin averaged 781 yen/kg (range: 650-967 yen/kg). Fluctuation in prices for yellowfin was slightly less than that for bigeye. The average annual wholesale prices of fresh skipjack averaged 521 yen/kg (range: 367 - 714 yen/kg). The average annual albacore wholesale prices for the frozen product averaged 384 yen/kg (range: 258 - 640 yen/kg).

Annual average wholesale prices fluctuated for all species and the fluctuations were influenced mainly by volume of supply (domestic catch and imports) and, to a lesser extent, by the amount of cold-storage inventory. As a general rule, the greater the volume of supply, the lower the prices.

Table 33. Supply and average wholesale prices of bluefin tuna at six major central wholesale markets in Japan, 1983-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1983	7,750	2,200	16,025	3,240
1984	3,696	3,051	18,144	3,079
1985	3,565	2,827	18,632	2,998
1986	3,373	3,467	15,204	3,655
1987	3,686	2,975	15,246	3,450
1988	3,798	3,473	15,486	3,749
1989	4,665	3,680	11,103	4,754
1990	3,222	4,937	12,841	4,293
1991	3,765	4,107	13,862	3,961
1992	4,615	3,654	14,517	3,724
1993	5,914	3,406	12,902	3,967

Source: Suisan Tsushin Sha 1984-1994

Table 34. Supply and average wholesale prices of yellowfin tuna at six major central wholesale markets in Japan, 1983-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1983	12,328	1,169	26,173	782
1984	14,689	1,201	23,747	967
1985	16,963	1,097	24,181	830
1986	14,692	1,136	29,062	666
1987	13,569	1,100	31,520	657
1988	16,023	1,065	31,379	650
1989	19,265	1,108	23,795	947
1990	21,412	1,156	26,280	732
1991	24,233	1,126	25,955	677
1992	26,546	1,093	21,481	827
1993	26,557	1,129	20,982	857

Source: Suisan Tsushin Sha 1984-1994

Table 35. Supply and average wholesale prices of bigeye tuna at six major central wholesale markets in Japan, 1983-1993

Year	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
1983	3,838	2,057	55,737	1,070
1984	4,445	1,989	47,800	1,308
1985	4,680	1,881	54,784	1,113
1986	4,320	2,124	67,214	998
1987	5,893	1,803	69,327	987
1988	6,606	1,866	63,692	1,116
1989	6,473	2,162	60,765	1,324
1990	7,007	2,227	58,675	1,337
1991	5,949	2,359	60,857	1,102
1992	7,061	2,189	57,339	1,225
1993	7,886	2,005	52,721	1,306

Source: Suisan Tsushin Sha 1984-1994

Table 36. Supply and average wholesale prices of fresh skipjack tuna at six major wholesale markets in Japan, 1983-1993

Year	Fresh	
	Metric tons	Yen/kg
1983	18,822	497
1984	16,828	552
1985	25,236	367
1986	23,931	386
1987	18,773	521
1988	20,906	440
1989	18,341	549
1990	15,197	714
1991	19,786	564
1992	18,129	682
1993	27,478	462

Source: Suisan Tsushin Sha 1984-1994

Table 37. Supply and average wholesale prices of frozen albacore tuna at six major central wholesale markets in Japan, 1983-1993

Year	Frozen	
	Metric tons	Yen/kg
1983	3,224	392
1984	4,685	434
1985	5,134	449
1986	4,476	258
1987	3,223	297
1988	3,041	336
1989	1,542	360
1990	1,885	324
1991	1,224	283
1992	657	450
1993	175	640

Source: Suisan Tsushin Sha 1984-1994

EXPORT STRATEGIES

Opportunities exist for expanding sales of some species of tuna from the United States to Japan. Strategies to increase exports may include the following considerations:

Farming of Bluefin Tuna

Bluefin tuna grows to an extremely large size, over three meters in length and weighing as much as 400 kilograms. It is difficult to raise fish to the three meter size group in artificial enclosures. However, by modifying the objective from "growing the fish in size" to "improving the meat quality," bluefin farming could be made technically and economically feasible

In an experimental project launched with Japanese technical assistance at Port Lincoln in south Australia in 1989, southern bluefin were caught in local waters when they were approximately 10 kg (22.05 lbs), and were fattened in two pens which held about 850 fish. Southern bluefin of this size would normally be appropriate only for canned products but the fish raised in this project have turned into a relatively high valued product marketable for raw consumption in Japan. Twelve of the fish, raised for approximately 6 months in the pens to an average weight of only 13.5 kg (29.70 lbs), were offered for auction at the wholesale markets in Tokyo and Kyoto, in August, 1991. Eight fish offered at the Tokyo Central Wholesale Market were sold at favorable prices, ranging from 2,800 yen/kg ($9.43/lb) to 4,000 yen/kg ($13.47/lb), with an average of 3,530 yen/kg ($11.89/lb). Prices paid for four fish sold at the Kyoto Central Wholesale Market were also favorable, ranging from 2,500 yen/kg ($8.42/lb) to 2,600 yen/kg ($8.75/lb), with an average of 2,530 yen/kg ($8.52/lb) (Suisan Tsushin, August 27, 1991). The selling price for the pen raised fish was substantially higher than the price they normally would have sold for in the canned products market, which is generally less than 50¢/lb (148/yen/kg). However, the selling price of the pen raised fish was not as high as the 1991 average price for fresh bluefin at six Japanese wholesale markets which was 4,107 yen/kg ($13.83/lb) (Table 33).

In a refereed tasting held in Tokyo in August, 1991, farm-grown southern bluefin from the same Australian project, weighing only about 10 kg, received a "superior rating" compared to wild frozen southern bluefin and bigeye (Suisan Tsushin, September 2, 1991). Australia, encouraged by these results, is reported to be planning to ship as many as 650 fish from the pens during the high-demand period for bluefin in Japan from October through December. Additionally, they plan to keep 200 fish to rear to a size of 30-35 kg (66-77 lbs).

The success of the Australian bluefin farming project provides encouragement for U.S. tuna fisheries which have access to small bluefin tuna in domestic waters. Southern California is particularly advantageous for this type of activity by virtue of the good air shipment connections to Japan, the relatively stable and mild sea water temperatures, existence of bluefin in adjacent waters, a fishing community with proven entrepreneurial record, and its past experience with the Japanese bluefin market. American entrepreneurs interested in rearing tuna may benefit from Japanese technical experts in developing initial feasibility studies. Initial feasibility studies to apply tuna rearing technology to U.S. waters should probably include design of fish pens, transportation of captured small bluefin tuna, control of temperature in the pen, feed, feeding methods with respect to impact on the environment, disposal of waste, and protection of fish pens against natural forces (physical and biological). Environmental regulations are also an important part of projects such as this and should be an integral aspect of any feasibility study.

Value-added Products

An ever expanding list of value-added merchandise using tuna as a base has contributed to increased sales and consumption of tuna in Japan in recent years. One of the notable success stories involved a new product called "negi-toro" introduced in 1990 (Shokuryo Shinbun Sha, August 4, 1990 and Suisan Keizai Shinbun Sha, January 30, 1990). Literally meaning "green-onion toro", the product quickly mushroomed with sales of 4 billion dollars in about four years (Shokuryo Shinbun Sha August 19, 1994). "Negi-toro" is essentially a packaged food containing diced meat of bigeye, yellowfin, or even skipjack which has been treated to taste like "toro". Negi-toro is produced from meat cuttings left after preparing the loins. The product is said to have become popular because it was reasonably priced, while offering a high-class image resulting from the name "toro" which is a high-priced item. The product was also popular because it could be consumed without additional preparation, convenience being in high demand in Japan today. Numerous value-added products claiming similar virtues are being introduced by food processors and supermarket chains in Japan (Suisan Keizai Shinbun Sha, January 30, 1991; July 29, 1991 and Shokuryo Shinbun Sha August 19, 1994).

Direct Sales to Supermarket Chains

Numerous supermarkets under immense national chains have become significant factors in the Japanese economy. Many of these supermarkets maintain independent supply systems dealing directly with producers, including those located overseas. For this reason, they represent additional buyers of tuna other than the existing wholesale buyers. A large diversity of value-added products using tuna have made an appearance in supermarkets in recent years. "Negi-toro", already discussed, is one of such

products. Another example is "mochi-kaeri (take-out) sushi", which contains pieces of tuna and other seafood products which have been prepared for immediate consumption as sushi, and offered in packages catering to various numbers of individuals ranging from a single consumer to a large gathering (Suisan Keizai Shinbun Sha, July 26 and July 29, 1991).

To reduce costs, U.S. producers may consider providing dual products: tuna loins and negi-toro. Negi-toro could be sold directly to supermarkets for immediate retail, while the loins may be sold to suppliers of "mochi-kaeri sushi" and other similar products, under contract with supermarkets. A list of major Japanese supermarket chain stores is provided in Appendix 1.

Targeting Other Wholesale Markets

While the Tokyo Central Wholesale Market is the largest consumer wholesale market in Japan, commodities handled by other wholesale markets are substantial, and prices for the same commodities may vary considerably from market to market. For instance, prices at the Tokyo Central Wholesale Market may not necessarily be higher than those at other markets, and may even fall below the prices of other wholesale markets.

For example, Tables 38 through 41 show annual average wholesale prices at ten major central wholesale markets in Japan in 1993 for bluefin, bigeye, yellowfin, and skipjack. Highest prices were achieved at the Tokyo Central Wholesale Market only for fresh bigeye and fresh skipjack. Highest prices for the prized bluefin occurred at Kyoto for fresh fish, and prices for frozen bluefin at Nagoya, Osaka and Hiroshima surpassed those at Tokyo by a wide margin. In fact, the price for frozen bluefin at Tokyo even fell below the average of ten major wholesale markets. In 1993, highest prices were achieved at widely scattered wholesale markets, namely at Kyoto for fresh bluefin, at Kobe for frozen bluefin, at Tokyo for fresh bigeye, at Sapporo for frozen bigeye, at Kyoto for fresh yellowfin, at Sapporo for frozen yellowfin, and at Tokyo for fresh skipjack.

In 1993, the Tokyo Central Wholesale Market handled between 70 and 74 percent of frozen bluefin and bigeye sold at ten major central wholesale markets in Japan, but only between 39 and 43 percent of fresh bluefin, bigeye, and skipjack, and as little as about 10 percent of fresh and frozen yellowfin. The largest volume of yellowfin was handled at Nagoya for fresh fish (43 percent) and for frozen fish (34 percent). Combining all major species (bluefin, bigeye, yellowfin, and skipjack), Tokyo handled the largest amounts of fresh products (30 percent), but substantial amounts were also handled at Nagoya (20 percent), Sendai (15 percent), and Osaka (13 percent). Wholesale markets which handled large amounts of frozen products of three species (bluefin, bigeye, and yellowfin) in 1993 were Tokyo (58 percent), Osaka (17 percent) and Nagoya (10 percent). Major Japanese importers of seafood products are listed in Appendix 2.

Table 38. Supply and average wholesale prices of bluefin tuna by major central wholesale markets in Japan, 1993

Wholesale market	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
Tokyo	3,250	3,766	9,566	3,640
Yokohama	571	2,790	266	4,066
Nagoya	665	2,357	984	5,053
Kyoto	661	4,099	--*	--
Osaka	754	2,653	1,586	5,330
Kobe	13	2,827	501	3,707
Sapporo	741	3,033	498	3,010
Sendai	533	2,424	169	2,574
Hiroshima	150	2,201	13	5,199
Fukuoka	165	2,051	143	2,058

* -- - Less than 0.5.

Source: Ministry of Agriculture, Forestry & Fisheries 1994

Table 39. Supply and average wholesale prices of bigeye tuna by major central wholesale markets in Japan, 1993

Wholesale market	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
Tokyo	5,142	2,120	39,792	1,351
Yokohama	1,360	2,053	6,124	1,308
Nagoya	--*	--	104	1,489
Kyoto	959	1,653	--	--
Osaka	394	1,270	6,532	1,038
Kobe	31	1,113	168	1,180
Sapporo	1,029	1,307	489	1,539
Sendai	3,889	1,337	446	1,235
Hiroshima	65	1,359	0	1,446
Fukuoka	--	--	325	1,099

* -- - Less than 0.5.

Source: Ministry of Agriculture, Forestry & Fisheries 1994

Table 40. Supply and average wholesale prices of yellowfin tuna by major central wholesale markets in Japan, 1993

Wholesale market	Fresh		Frozen	
	Metric tons	Yen/kg	Metric tons	Yen/kg
Tokyo	2,996	1,052	3,001	755
Yokohama	668	968	1,290	951
Nagoya	12,316	1,084	7,467	959
Kyoto	2,233	1,347	--*	--
Osaka	6,426	1,213	7,243	760
Kobe	1,920	1,051	1,981	922
Sapporo	61	802	847	1,202
Sendai	1,987	932	150	1,090
Hiroshima	59	978	--	--
Fukuoka	---	--	12	749

* -- - Less than 0.5.

Source: Ministry of Agriculture, Forestry & Fisheries 1994

Table 41. Supply and average wholesale prices of fresh skipjack by major central wholesale markets in Japan, 1993

Wholesale market	Fresh	
	Metric tons	Yen/kg
Tokyo	14,100	487
Yokohama	4,178	426
Nagoya	4,863	432
Kyoto	522	423
Osaka	3,083	452
Kobe	731	456
Sapporo	381	329
Sendai	6,764	307
Hiroshima	373	304
Fukuoka	1,100	351

* -- - Less than 0.5.

Source: Ministry of Agriculture, Forestry & Fisheries 1994

Direct Sales to the Tokyo Central Wholesale Market

According to information provided by Tomohiro Asakawa[1], U.S. exporters of fresh tuna can participate directly in fish and seafood auctions at the Tokyo Central Wholesale Market (TCWM) by exporting on a consignment basis. Auction houses at TCWM are authorized by the Japanese Fisheries Agency to handle fish sales within the market. Auction houses in Tokyo importing fish on consignment for auction remit payments to exporters in about one week, minus 5.5 percent commission, import duties, trucking charges, etc.

Auction houses do not usually receive frozen fish directly from overseas but exporters can negotiate with auction houses. Because imports of frozen fish involve advance financial commitment by importers, i.e., letters of credit, cold storage fees, etc., auction houses normally use import agents to do administrative work for them. The agent's fee is about 2 percent of the invoice (CAF: cost and freight or CIF: cost, insurance and freight) value. CAF or CIF prices are determined by agreement between exporter and importer, generally corresponding with the Japanese market price. Consignment exports of frozen fish for sale by auction is not recommended because payments may not be received for long periods.

Specific recommendations to facilitate export activities provided by Tomohiro Asakawa[1] include the following:

(1) Ship only high quality tuna:
If a company has been selling fresh tuna in the U.S. domestic market, it may be able to sell a selection of top quality tuna at TCWM on consignment. It is important that an exporter be able to sell his lower quality tuna in the United States. Sending tuna of low fat content or dull meat color, which is unacceptable in the highly competitive Japanese market, may result in huge losses to the exporter.

(2) Check shipping arrangements:
Use local freight forwarders who are well experienced with overseas shipment of fresh seafood. Investigate with them the best packing materials and methods for refrigerated shipment in compliance with U.S. and international air cargo regulations. Draw up an airline schedule requiring minimum handling over the shortest shipping time to Tokyo International Airport in Narita. Find out air cargo charges by weight for flights from several different airports. A special lower rate for food is applied to shipment from certain airports. Freight forwarders can assist with all this and also provide support services for preparing

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[1]Personal Communications: Asakawa, T., Commercial Specialist, Fisheries Industry, Foreign Commercial Service, U.S. Embassy, Tokyo, 1-10-5 Akasaka, Minato-ku, Tokyo 107, Japan. June 1991.

export documents, such as commercial invoices, packing lists, airway bills, etc.

(3) Contact auction houses:

Once a company feels that it can deliver high-quality fresh tuna to the Tokyo International Airport shortly after the fish are caught, the next step is to get in touch with auction houses at the Tokyo Central Wholesale Market (Appendix 3).

U.S. companies can write to auction houses to obtain contract forms written in English. In the same letter the company should provide information about itself, its fishing grounds, fishing methods, and plans for the airline shipping route and approximate total shipping time, including layovers at each transfer point, so the auction company will have a better idea of the company's planning and fish quality. Conditions of contracts usually include a 5.5 percent sales commission for the auction company, deductions from gross sales for import duty, trucking charge, miscellaneous expenses, and the terms of payment. The company should also let the auction house know the name and address of its bank and the account number for receiving payments. A good auction house usually sends information about each tuna sold by price per kg, and will provide information to help improve quality. If there is a communication problem with the auctioneer, the company should consider an agent in Japan who may typically oversee the customs clearance, trucking, payments, etc., and provide better communication with the auction house. An agent would charge a commission of 3-6 percent of gross auction sales.

(4) Getting started:

After a contract is signed with one of the auction houses, the company should plan a shipment schedule with its fishermen to fix delivery date and approximate quantity. Check with the freight forwarder for cargo booking conditions, and make an advance booking, if necessary.

(5) Select high-quality tuna:

Select the best-quality tuna from landings for export. Important check points are 1) freshness, 2) meat with a bright red color, not dull or dark, and 3) high fat content. Meat color and fat content are normally checked with a cut near the tail. Chill the selected high-quality fish well without freezing. Pack ice around the body as well as inside the head, and the body cavity after gills and guts are removed.

(6) Send advance notice of shipment to the auction house:

Send preliminary shipping information by fax or telex to the auction house including the flight number, and quantity and weight of tuna being sent. After completion of the shipment, obtain a copy of the commercial invoice, packing list, and the airway bill number from the freight forwarder. The information should be provided to the auction house by facsimile as soon as possible, so that the auction house can arrange customs

clearance, trucking, etc. in Japan.

(7) Auction result and payment:

Auction results are available in about 24 to 36 hours, and payments should reach the company's bank account in a week or two. The auction results are reported to the company by the auction house directly or through its agent. Reports will include information on the price for each fish, market conditions on the day, total tuna quantity sold, weather conditions, etc., and recommendations for improvement.

(8) Recommendation for quality improvement:

High-quality fish result in good prices. Therefore, if the first shipment brought a disappointing result, the company should be patient and follow recommendations for improvement. A company that encounters significant problems may be well served by asking the auction company to send a technician for a limited period to teach its staff and fishermen proper procedures. The higher auction prices brought by a top quality product are well worth the effort to ensure appropriate handling and shipment procedures are used.

(9) Japanese calendar:

The Tokyo Central Wholesale Market closes on Sundays, certain Wednesdays and Saturdays, all national holidays, and specific customary holidays such as the first three days in January. A company should be attentive to the arrival schedule of its fish at the Narita International Airport in Chiba prefecture. Japanese calendars are usually available from auction houses and helpful in identifying various holidays. Avoid flights that arrive in Japan on Saturday afternoon or the day before holidays. Shippers should be aware that flights from the United States to Japan usually arrive in the afternoon, while the auctions are held early in the morning.

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Appendix 1. Major Japanese supermarket chain stores

COMPANY: **Chujitsuya Co., Ltd.**
ADDRESS: 2-1-11, Kabuki-cho, Shinjuku-ku, Tokyo 160
PHONE: (03) 3208-9900

COMPANY: **The Daiei, Inc.**
ADDRESS: Hamamatsucho Office Center, 2-4-1, Shibakoen, Minato-ku, Tokyo 105
PHONE: (03) 3433-9154

COMPANY: **Family-Mart, Inc.**
ADDRESS: 4-26-10, Higashi Ikebukuro, Toshima-ku, Tokyo 170
PHONE: (03) 3989-6600

COMPANY: **Frex Inc.**
ADDRESS: 185-1, Ookuchi-cho, Matsuzaka-shi, Mie-ken 515
PHONE: (0598) 51-3125

COMPANY: **Ito-Yokoado Co., Ltd.**
ADDRESS: 4-1-4, Shibakoen, Minato-ku, Tokyo 105
PHONE: (03) 3459-3304

COMPANY: **Izumiya Co., Ltd.**
ADDRESS: 1-4-4, Hanazono-minami, Nishinari-ku, Osaka 557
PHONE: (06) 657-3455

COMPANY: **Jusco Co., Ltd.**
ADDRESS: 1-1 Kanda Nishikicho Chiyoda-ku, Tokyo 101
PHONE: (03) 3296-7871

COMPANY: **Nagasakiya Co., Ltd.**
ADDRESS: 3-7-14 Higashi Nihonbashi, Chuo-ku, Tokyo 103
PHONE: (03) 3661-3810

COMPANY: **Nichi-i Co., Ltd.**
ADDRESS: 2-2-9 Awaji-Cho, Chuo-ku, Osaka 541
PHONE: (06) 203-5075

COMPANY: **The Seiyu, Ltd.**
ADDRESS: 3-1-1, Higashi Ikebukuro, Toshima-ku,
Tokyo 170
PHONE: (03) 3989-5111

COMPANY: **Seven-Eleven Japan, Inc.**
ADDRESS: 4-1-4, Shiba Koen, Minato-ku,
Tokyo 105
PHONE: (03) 3459-3711

COMPANY: **Uny Co., Ltd.**
ADDRESS: 1, Gotanda-cho, Tenchi, Inazawa-shi 492
PHONE: (0587) 24-8111

Source: Nihon Shokuryo Shinbun Sha 1994

Appendix 2. Major Japanese seafood importers

COMPANY: **Aburai Kabo Co., Ltd.**
ADDRESS: 12-13, 3-chome Shinhama, Shiogama, Miyagi 985
PHONE: (022) 364-3733
FAX: (022) 364-3755
PRODUCTS: Butter fish, cod, pollock, rock sole, rock fish, salmon, surimi, king crab.

COMPANY: **Active Foods K.K.**
ADDRESS: 9F Kanayararu Bldg., 8-4, 4-chome Kumochi-cho Chuo-ku, Kobe 651
PHONE: (078) 231-2700
FAX: (078) 231-1022
TELEX: 5622072 ACTIVE J
PRODUCTS: Cuttlefish, shrimp, pomfret, crab.

COMPANY: **Alpha Seafoods Co., Ltd.**
ADDRESS: 1-1, 3-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3542-5522
FAX: (03) 3542-5737
PRODUCTS: Herring roe, salmon roe, other fish roe.

COMPANY: **Anyo Fisheries Co., Ltd.**
ADDRESS: 31-7, 4-chome Shinbashi, Minato-ku, Tokyo 105
PHONE: (03) 3432-0799
FAX: (03) 3432-2550
PRODUCTS: Atka-mackerel, cod, salmon, sea bream, sole other fishes, salmon roes, king crab, snow crab, lobster, sablefish.

COMPANY: **Bokusui Corporation**
Overseas Department
ADDRESS: 1-1-16, Kanda Izumicho, Chiyoda-ku, Tokyo 100
PHONE: (03) 5821-1958
FAX: (03) 5821-1984
TELEX: 222-2392
PRODUCTS: Shrimp.

COMPANY: **C.I. Seafoods Ltd.**
ADDRESS: 7-3, 4-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3542-2383
FAX: (03) 3542-2539
TELEX: 252-2749 CISEA J
PRODUCTS: Shrimp, lobster, arctic shrimp.

COMPANY: **Ebino Daimaru Co., Ltd.**
ADDRESS: 21-7, 6-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3541-7281
FAX: (03) 3541-4959
TELEX: 252-3826 EBIDAI
PRODUCTS: Shrimp, lobster.

COMPANY: **Hanshin Teion Co., Ltd.**
ADDRESS: 4F Nakashige Bldg., 12-11, 3-chome Tsukiji, Chuo-ku,
Tokyo 104
PHONE: (03) 3541-7541
FAX: (03) 3541-7547
PRODUCTS: Salmon, shrimp, cuttlefish.

COMPANY: **Hanwa Co., Ltd. Tokyo**
ADDRESS: 13-10, 1-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3544-2341
FAX: (03) 3544-2050
TELEX: 2522358 HANWA J 2522342 HANWA J
PRODUCTS: Shrimp, lobster, salmon, herring, capelin, red shrimp, sablefish, herring roe, cuttlefish, red fish.

COMPANY: **Happy World Inc.**
ADDRESS: Shibuya Happy Bldg., 19-14, 6-chome Jinguumae Shibuya-ku, Tokyo 105
PHONE: (03) 5466-4080
FAX: (03) 5466-4108
TELEX: 2424093 HAPPIN J
PRODUCTS: Salmon, shrimp, horse mackerel.

COMPANY: **Hohsui Corporation**
ADDRESS: 7-3, 3-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 5565-8946
FAX: (03) 3542-6808
TELEX: 252-2258
PRODUCTS: Fish meal, surimi, pollock roe, barracuda, tanner crab, herring, herring roe, horse mackerel, red fish, butterfish, shrimp, salmon, salmon roe, sablefish, squid, mongo ika, barracuda, baby clam.

COMPANY: **Hokkai Seafoods Co., Ltd.**
ADDRESS: 13-5, 7-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3546-1261
FAX: (03) 3546-1260
TELEX: 02522571 SEAFOD J
PRODUCTS: Salmon, herring, capelin, squid, salmon roe, herring roe, capelin roe, herring roe on kelp, mullet roe.

COMPANY: **Hoko Fishing Co., Ltd.**
ADDRESS: 2-4, 1-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3542-5644
FAX: (03) 3545-2167
TELEX: 2522933
PRODUCTS: Octopus, cuttlefish, squid, merluza, sea bream, horse mackerel, shrimp, lobster, snapper, butterfish, capelin, red fish, mackerel, flatfish, salmon, herring, salmon roe, herring roe, crab, pollock roe, bluefin tuna, sablefish.

COMPANY: **Icicle Seafoods (Japan) Ltd.**
ADDRESS: Kinsen Bldg., 14-8, 2-chome Tsukiji, Chuo-ku 104
PHONE: (03) 3545-4751
FAX: (03) 3545-4767
PRODUCTS: Salmon, herring, sablefish, halibut, salmon roe, herring roe, king crab, tanner crab.

COMPANY: **Itochu Corporation**
Marine Products Department
ADDRESS: 5-1, 2-chome Kitaaoyama, Minato-ku, Tokyo 107-77
PHONE: (03) 3497-6185
FAX: (03) 3497-6186
TELEX: J 22295/7
PRODUCTS: Butter fish, capelin, halibut, herring, mackerel-pike, marlin, red fish, saith, salmon, skipjack, smelt, tuna, yellowfin, capelin roe, herring roe, salmon roe, snow crab, cuttlefish, squid, octopus, canned tuna, canned mackerel, canned sardine, sablefish.

COMPANY: **Ito-Yokado Co., Ltd.**
ADDRESS: 1-4, 4-chome Shibakouen, Minato-ku, Tokyo 105
PHONE: (03) 3459-2558
FAX: (03) 3459-6892
TELEX: J 23841
PRODUCTS: Whole seafood.

COMPANY: **Kaioh Suisan Co., Ltd.**
ADDRESS: 6-7, 2-chome, Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3543-6066
FAX: (03) 3545-1689
TELEX: 2524626 KAIOH J
PRODUCTS: Cod, horse mackerel, mackerel, pollock, plaice, rockfish, salmon, sole, tuna, surimi, cod roe, salmon roe, crab, cuttlefish, octopus.

COMPANY: **Kanekyo-Sanyu Reizo Co., Ltd.**
ADDRESS: Kachidoki Shuhan Bldg, 10-10, 7-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3543-5318
FAX: (03) 3545-6071
TELEX: J 2523969 KANEKY J
PRODUCTS: All fishery products.

COMPANY: **Kanematsu Corporation**
ADDRESS: 2-1, 1-chome Shibaura, Minato-ku, Tokyo 105
PHONE: (03) 5440-9530
FAX: (03) 5440-6554
TELEX: J 22333/4
PRODUCTS: Eel, shrimp, lobster, octopus, cuttlefish, squid, salmon, crab, snapper and other fish.

COMPANY: **Kasho Co., Ltd. Tokyo**
ADDRESS: 14-9, 2-chome Nihonbashi, Chuo-ku, Tokyo 103
PHONE: (03) 3276-7630/5
FAX: (03) 3278-8280
TELEX: 222-2393
PRODUCTS: Shrimp, cuttlefish, kisu, salmon, crab, lobster, squid, mongo ika, abalone, clam, loco, fish roe.

COMPANY: **Kawasho Corporation**
ADDRESS: World Trade Center Bldg, 4-1, 2-chome, Hamamatsucho Minato-ku, Tokyo 105
PHONE: (03) 3578-5645
FAX: (03) 3578-5927
TELEX: J 24277, J22511
PRODUCTS: Salmon, salmon roe, shrimp, red fish, flatfish, squid, herring roe.

COMPANY: **Kinsho-Mataichi Corporation**
ADDRESS: 2 Shuwa Shinkawa Bldg, 24-1, 1-chome Shinkawa, Chuo-ku, Tokyo 104
PHONE: (03) 3297-7270
FAX: (03) 3297-7398
TELEX: J 22356
PRODUCTS: Cuttlefish, shrimp, mackerel, sole, cod.

COMPANY: **K.K. Ryosui**
(Diamond Seafoods Co., Ltd.)
ADDRESS: 1-17, 4-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3543-2535
FAX: (03) 3546-1789
TELEX: 252-3931
PRODUCTS: Capelin, herring, king clip, merluza, red snapper, salmon, trout, capelin roe, herring roe, salmon roe, trout roe, shrimp, Arctic shrimp, lobster, crab, cuttlefish, squid, octopus.

COMPANY: **Koki Gyorui Co., Ltd.**
ADDRESS: Daiki Bldg, 7-5, 7-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3543-1091
FAX: (03) 3546-1005
TELEX: 2522011 KOKIGY J
PRODUCTS: Salmon, salmon roe, herring, herring roe, sablefish, ocean perch, squid, butterfish.

COMPANY: **Kosei Trading Ltd.**
ADDRESS: Hirawada Bldg., No. 2, 2-5, 3-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 5565-5661
FAX: (03) 5565-5660
PRODUCTS: Bottomfish, herring, salmon, fish roe.

COMPANY: **Kyokuyo Co., Ltd.**
ADDRESS: 1-2, 2-chome Marunouchi, Chiyoda-ku, Tokyo 100
PHONE: (03) 3211-0154
FAX: (03) 3211-0196
TELEX: 222-2493 KYOKUA
PRODUCTS: Octopus, red fish, squid, mongo ika, capelin, butterfish, salmon, salmon roe, herring, herring roe, sablefish, tanner crab, shrimp, lobster.

COMPANY: **Marubeni Corporation**
ADDRESS: 4-2, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 3282-4701
FAX: (03) 3282-9654
TELEX: 2224441
PRODUCTS: Tuna, shrimp, cuttlefish, squid, red fish, salmon, herring, crab, surimi.

COMPANY: **Muruha Corporation**
ADDRESS: 1-2, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 3216-0212
FAX: (03) 3216-0316
PRODUCTS: Capelin, bottomfish, cod, sablefish, flounder, hake, herring, horse mackerel, pollock, salmon, skipjack, snapper, tuna, shrimp, lobster, crab, cuttlefish, squid, octopus, abalone, butterfish.

COMPANY: **Marubeni Reizo Co., Ltd.**
ADDRESS: 8F MS Shibaura Bldg, 13-23, 4-chome Shibaura, Minato-ku, Tokyo 108
PHONE: (03) 3769-0035
FAX: (03) 3769-0043
TELEX: 3242-4602
PRODUCTS: Capelin, capelin roe, snow crab, swimming crab, saury, rockfish, mackerel, abalone, lobster, herring, herring roe, salmon, salmon roe, herring roe on kelp, cod roe, octopus, cuttlefish, squid, cod, butterfish, sole, Greenland halibut, horse mackerel, flounder, red snapper, ocean perch, bottomfish, sablefish.

COMPANY: **Marudai Sato Suisan Corp.**
ADDRESS: 3-20, 6-chome 3-Jo, Nijuyonken, Nishi-ku, Sapporo, Hokkaido 063.
PHONE: (011) 621-6111
FAX: (011) 642-9274
TELEX: 932-288 MSATOJ
PRODUCTS: Salmon, crab, sea urchin

COMPANY: **Marukyo Cooperative Ltd.**
ADDRESS: 2-8-2, Sakanamachi, Ishinomaki, Miyagi 986
PHONE: (0225) 93-2311
FAX: (0225) 96-2158
PRODUCTS: Bottomfish, salmon, fish eggs.

COMPANY: **Matsuoka Co., Ltd.**
ADDRESS: 10-12, 1-chome Higashiyamatomachi, Shimonoseki City, Yamaguchi Pref. 750
PHONE: (0832) 67-5566
FAX: (0832) 67-5286
TELEX: 6823-66 MATSU J
PRODUCTS: Dried squid, seaweeds, seasoned fish, eel, salmon, herring, sablefish, pollock roe, salmon roe, herring roe, red fish, octopus, cuttlefish, squid, sea bream, tuna, shrimp.

COMPANY: **Meiwa Trading Co., Ltd.**
ADDRESS: 3-1, 3-chome Marunouchi, Chiyoda-ku, Tokyo 100
PHONE: (03) 3240-9388
FAX: (03) 3240-9560
TELEX: J 2236,
PRODUCTS: Jellyfish, cuttlefish, squid, flyingfish eggs, herring roe, salmon roe, sea urchin, top shell, short neck clam, hard clam, eel, horse mackerel, spanish mackerel, skipjack & other bonito, albacore, tuna, swordfish, salmon, hairtails, croakers, sea bream, shark, shark fin, capelin, shrimp, lobster, crab, octopus.

COMPANY: **Mikasa Trading Co., Ltd.**
ADDRESS: 6F Sano Bldg., 19-9, 1-chome Motoasakusa, Taito-ku, Tokyo 111
PHONE: (03) 3845-7511
FAX: (03) 3845-7520
TELEX: J 25282
PRODUCTS: Tuna, surimi, pollock roes.

COMPANY: **Mitsubishi Corporation**
ADDRESS: 3-1, 2-chome Marunouchi, Chiyoda-ku, Tokyo 100-86
PHONE: (03) 3210-6705
FAX: (03) 3210-6726
TELEX: J 22222/5
PRODUCTS: Tuna, skipjack, marlin, shrimp, lobster, salmon, salmon roe, herring, herring roe, cod, cod roe, red fish, capelin, crab, smelt, mullet roe, pollock roe, butterfish, octopus, cuttlefish, squid, snapper, shellfish, surimi, sablefish

COMPANY: **Mitsui & Co., Ltd.**
ADDRESS: 2-1, 1-chome Ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 3285-6020
FAX: (03) 3285-9909
TELEX: J 22253
PRODUCTS: Tuna, skipjack, marlin, shrimp, lobster, salmon, salmon roe, herring, herring roe, king crab, octopus, cuttlefish, squid, mongo ika, loco, capelin, red snapper, surimi.

COMPANY: **Miyoshi Trading Co., Ltd.**
ADDRESS: 2F Ochiai Bldg., 10-7, 7-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3546-8225
FAX: (03) 3546-8227
PRODUCTS: Red fish, salmon, shrimp, crab, sablefish.

COMPANY: **New Nippo Corporation**
ADDRESS: 1-1, 2-chome Uchisaiwaicho, Chiyoda-ku, Tokyo 100
PHONE: (03) 3506-5376
FAX: (03) 3591-3575
TELEX: 03-3591-3575
PRODUCTS: All fishery products.

COMPANY: **Nissho Iwai Corporation**
ADDRESS: Marine Products Dept.
4-5, 2-chome Akasaka, Minato-ku, Tokyo 107
PHONE: (03) 3588-3991
FAX: (03) 3588-4860
TELEX: J 22233
PRODUCTS: Tuna, shrimp, lobster, crab, cuttlefish, mongo ika, squid, octopus, shark fin.

COMPANY: **Nomura Trading Co., Ltd. Tokyo Branch**
ADDRESS: Shin-Yaesuguchi Bldg, 2-1, 2-chome Yaesu, Chuo-ku, Tokyo 104
PHONE: (03) 3277-4766
FAX: (03) 3274-3803
TELEX: J 63367 NOMURA AJ63367
PRODUCTS: Shrimp, lobster, cuttlefish, squid, octopus, horse mackerel, sillago, abalone, clam, top shell, crab, salmon, salmon roe, herring roe, sablefish, red fish, butterfish, smelt, capelin, capelin roe, herring, flounder.

COMPANY: **Nosui Co., Ltd.**
ADDRESS: 2-1, 3-chome Tamagawa, Fukushimaku, Osaka 553
PHONE: (06) 443-8653
FAX: (06) 443-5655
TELEX: 252-4326
PRODUCTS: Shrimp, salmon, salmon roe, herring roe, cuttlefish, octopus, horse mackerel, crab, spanish mackerel, sablefish.

COMPANY: **Nozaki & Co., Ltd.**
ADDRESS: 16-19, 7-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 3542-9221
FAX: (03) 3545-2006
TELEX: J 22375
PRODUCTS: Salmon roe, herring roe, crab, sablefish, butterfish, jumbo octopus, cuttlefish, squid, capelin, capelin roe, shrimp, red fish, clam, abalone.

COMPANY: **Okaya & Co., Ltd.**
ADDRESS: 3F Ohtemachi Bldg., 6-1, 1-chome ohtemachi, Chiyoda-ku, Tokyo 100
PHONE: (03) 3214-8732
FAX: (03) 3214-8738
TELEX: J 2-2245
PRODUCTS: Shrimp, lobster, salmon, salmon roe, crab, herring, herring roe, bottomfish.

COMPANY: **Okura & Co., Ltd.**
ADDRESS: 5F Ohkurabekkan Bldg, 4-1, 3-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 3566-6580
FAX: (03) 3566-2873
TELEX: J 22306
PRODUCTS: Shrimp, king crab, snow crab, salmon, salmon roe, herring roe, sablefish, halibut, red fish, rock sole, ocean perch, herring, mackerel, horse mackerel, flounder, smelt, capelin, capelin roe.

COMPANY: **Osaka Uoichiba Co., Ltd.**
ADDRESS: 1-86, 1-chome Noda, Fukushima-ku, Osaka City 533
PHONE: (06) 469-2071
FAX: (06) 469-2168
TELEX: 524-2811
PRODUCTS: Surimi, pollock, pollock roe, herring, herring roe, salmon, salmon roe, eel, shrimp, squid, all marine products.

COMPANY: **Pegasus Foods Japan, Inc.**
ADDRESS: 1F Suisankaikan, 5-9, Toyomi-cho, Chuo-ku, Tokyo 104
PHONE: (03) 3532-1031
FAX: (03) 3532-1479
PRODUCTS: Bottom fish, salmon, crab, cuttlefish, fish roe.

COMPANY: **Sanyo Trading Co., Ltd. Head Office**
ADDRESS: 11, 2-chome Kanda-nishikicho, Chiyoda-ku, Tokyo 101
PHONE: (03) 3233-5882
FAX: (03) 3233-5917
TELEX: J 28470 PHOENIX
PRODUCTS: Shrimp, cuttlefish, octopus, baby clam, agar agar, mackerel.

COMPANY: **Schooner Trading Corporation**
ADDRESS: Tomizen Bldg, 11-4, 2-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 3545-6301
FAX: (03) 3545-8670
TELEX: 252-4124 SCHTRD J
PRODUCTS: Squid, herring, herring roe, capelin, crab, shrimp, red fish.

COMPANY: **Shibamoto & Co., Ltd.**
ADDRESS: 1-12, 1-chome Minato, Chuo-ku, Tokyo 104
PHONE: (03) 3552-4231
FAX: (03) 3552-4877
TELEX: J 23621 SHIBAMOTO
PRODUCTS: Shrimp, salmon, salmon roe, herring roe, sablefish, squid, red snapper, cuttlefish, loco.

COMPANY: **Shin Nihon Global Inc.**
ADDRESS: 3F SK Bldg, 13-19, 1-chome Shintomi, Chuo-ku, Tokyo 104
PHONE: (03) 3555-3600
FAX: (03) 3555-3601
TELEX: J 27607
PRODUCTS: Salmon, crab, shrimp, sablefish, red fish, halibut, herring, mackerel, salmon roe, herring roe, sea urchin.

COMPANY: **Sudoh Shoji Ltd.**
ADDRESS: SN Bldg., 3-19, 3-chome Kachidoki, Chuo-ku, Tokyo 104
PHONE: (03) 3533-7303
FAX: (03) 3531-4433
PRODUCTS: North American seafoods.

COMPANY: **Sumikin Bussan Kaisha, Ltd.**
Food Products Department
ADDRESS: Sumitomoseimei Aoyama Bldg., 1-30, 3-chome Minamiaoyama, Minato-ku, Tokyo 107
PHONE: (03) 3478-9185
FAX: (03) 3478-9463
TELEX: J22810
PRODUCTS: Salmon, tuna, shrimp, lobster, cuttlefish, squid, sea urchin, shells.

COMPANY: **Sumitomo Corporation (SC Marine Products Co., Ltd)**
ADDRESS: 7F Ginza East Bldg., 16-14, 7-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 3543-4910
FAX: (03) 3545-3458
TELEX: 222-2251 SUMIT J
PRODUCTS: Shrimp, deepwater shrimp, scampi, lobster, salmon, salmon roe, herring, herring roe, crab, sablefish, ocean perch, ladyfish, butterfish, squid, mongo ika, abalone, clam, smelt.

COMPANY: **Taito Seiko Co., Ltd.**
ADDRESS: Imaasa Bldg, 1-21, 1-chome Higashi-shinbashi, Minato-ku, Tokyo 105
PHONE: (03) 3572-3235
FAX: (03) 3571-7881
TELEX: J 25306
PRODUCTS: Tuna, squid, herring, capelin, capelin roe, red fish.

COMPANY: **Takaei Trading Co., Ltd.**
ADDRESS: 22-4, 6-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3542-4791
FAX: (03) 3542-4794
TELEX: 2523736 TAKAEI J
PRODUCTS: Tuna, skipjack, marlin, shark, scallop.

COMPANY: **Takeichi & Co., Ltd.**
ADDRESS: 2F Fujimoto Bldg, 12-6, 3-chome Nihonbashi Kayaba-cho, Chuo-ku, Tokyo 103
PHONE: (03) 3669-9252
FAX: (03) 3669-3540
TELEX: J 23348 TAKESUN
PRODUCTS: Butterfish, squid, herring, herring roe, mackerel, red fish, lobster, crab, shrimp.

COMPANY: **The Marine Foods Corporation**
ADDRESS: 13-1, 3-chome Shibaura, Minato-ku, Tokyo 108
PHONE: (03) 3452-8121
FAX: (03) 3452-8912
PRODUCTS: Cuttlefish, jellyfish, abalone, scallop, squid, seaweed, sea urchin, octopus, surimi, clam, shrimp, cod, pollock, salmon, salmon roe.

COMPANY: **Toei Reefer Line, Ltd.**
ADDRESS: 6F, Kokusai Hamamatsucho Bldg, 9-18, 1-chome, Kaigan, Minato-ku, Tokyo 105
PHONE: (03) 3438-3203
FAX: (03) 3437-6176
TELEX: J 27529 FISHERY
PRODUCTS: Tuna, squid.

COMPANY: **Tohto Suisan Co., Ltd.**
ADDRESS: 2-1, 5-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 3541-5264
FAX: (03) 3541-6239
PRODUCTS: Fresh, frozen fish, salted fish roe.

COMPANY: **Tokusui Co., Ltd.**
ADDRESS: 5F Tokyo Suisan Bldg, 4-18, Toyomicho, Chuo-ku, Tokyo 104
PHONE: (03) 3533-5131
FAX: (03) 3533-5173
TELEX: 2522697
PRODUCTS: Shrimp, tuna, sablefish, butterfish, crab, salmon, clam.

COMPANY: **Tokusui Trading Corporation**
ADDRESS: Tokyo suisan Bldg., 5F, 4-18, Toyomicho, Chuo-ku, Tokyo 104
PHONE: (03) 3531-8161
FAX: (03) 3531-8167, 8168
TELEX: 2522697 TOKUSUI J
PRODUCTS: Tuna.

COMPANY: **Tokyo Commercial Co., Ltd.**
ADDRESS: 8-15, Toyomicho, Chuo-ku, Tokyo 104
PHONE: (03) 3534-1301
FAX: (03) 3532-9420
TELEX: 0252-2432
PRODUCTS: Tuna, marlin, shark, shrimp, lobster, red snapper, sea bream, salmon, crab, abalone, flounder, sole, octopus, cuttlefish, squid, ocean perch, pargo, blue fish, sablefish.

COMPANY: **Tokyo Maruichi Shoji Co., Ltd.**
ADDRESS: 16-9, 2-chome Uchikanda, Chiyoda-ku, Tokyo 101
PHONE: (03) 3256-1121
FAX: (03) 3256-1254
TELEX: TOKMARU J 22427
PRODUCTS: Salmon, crab, shrimp, herring, squid, capelin, capelin roe, perch, pollock roe, cod roe, herring roe, pollock, Pacific cod, clam meat, abalone, seaweed, red snapper, silver, smelt.

COMPANY: **Tokyo Seafoods Ltd.**
ADDRESS: 5F Saiesta Bldg., 14-5, 2-chome Tsukiji, Chuo-ku, Tokyo 104
PHONE: (03) 5565-3511
FAX: (03) 5565-3524
TELEX: J 29880 TKYSEA
PRODUCTS: Tuna, octopus, cuttlefish, squid, herring, salmon, crab, herring roe, salmon roe, cod roe, sablefish, red fish.

COMPANY: **Tomen Corporation**
ADDRESS: Marine Products Dept.
Kokusai Shin-akasaka Bldg., 1-20, 6-chome Akasaka Minato-ku, Tokyo 107
PHONE: (03) 3588-6905
FAX: (03) 3588-9996
TELEX: J 22421
PRODUCTS: Capelin, flounder, herring, horse mackerel, mackerel, red fish, red snapper, salmon, sole, capelin roe, herring roe, herring roe on kelp, salmon roes, shrimp, lobster, crab, cuttlefish, squid, octopus, abalone, geoduck, jelly fish, sea urchin.

COMPANY: **Tomen Suisan Co., Ltd.**
ADDRESS: 14-11, 4-chome Ginza, Chuo-ku, Tokyo 104
PHONE: (03) 3542-3721
FAX: (03) 3546-9018
TELEX: J22421 TKXPU
PRODUCTS: Salmon, shrimp, squid.

COMPANY: **Toshoku Ltd.**
ADDRESS: 2-4, Nihonbashi Muromachi, Chuo-ku, Tokyo 103
PHONE: (03) 3245-2184
FAX: (03) 3245-2393
TELEX: J 22352
PRODUCTS: Tuna, squid.

COMPANY: **Toshoku Seafoods Ltd.**
ADDRESS: Sumitomo Tsukiji Bldg, 4-14, 5-chome Tsukiji, Chuo-ku Tokyo 104
PHONE: (03) 3541-1171
FAX: (03) 3546-0491
TELEX: J 22352
PRODUCTS: Salmon, salmon roe, herring, herring roe, tuna, octopus, cuttlefish, squid, sablefish, red snapper, horse mackerel, crab, shrimp.

COMPANY: **Towa Foods Co., Ltd.**
ADDRESS: 2-1, North 3 East 3-Jo, Nishishoro, Shiranuka-cho, Shiranuka-gun, Hokkaido 088-05
PHONE: (01547) 5-2014
FAX: (01547) 5-2329
PRODUCTS: Salmon roe, salmon, herring, herring roe.

COMPANY: **Toyo Suisan Kaisha, Ltd.**
ADDRESS: 13-40, 2-chome Kohnan, Minato-ku, Tokyo 108
PHONE: (03) 3458-5161
FAX: (03) 3474-8900
TELEX: J 28606
PRODUCTS: Salmon roe, herring roe, crab, shrimp, eel, bottomfish, salmon, capelin, horse mackerel, mackerel.

COMPANY: **Toyota Tsusho Corporation**
ADDRESS: Foodstuff Dept.
3-18, 2-chome Kudanminami, Chiyoda-ku, Tokyo 102
PHONE: (03) 3230-8081
FAX: (03) 3230-8042
TELEX: J 22827
PRODUCTS: Capelin, sablefish, herring, mackerel, red fish, salmon, tuna, shrimp, lobster, squid.

COMPANY: **Watarai Co., Ltd.**
ADDRESS: 7-10, 1-chome Shinhamacho, Shiogama, Miyagi 985
PHONE: (022) 364-0355
FAX: (022) 365-5799
TELEX: 72-0859250 WARAI J
PRODUCTS: Sablefish, cod, flat fish, red fish, sole.

Source: Japan Marine Products Importers Association 1994

Appendix 3. Auction houses at the Tokyo Central Wholesale Market

COMPANY:	**Tohto Suisan**
ADDRESS:	Tokyo Central Wholesale Market 2-1, 5-Chome, Tsukiji, Chuo-ku, Tokyo 104
CONTACT:	Shoichi Kobayashi, Manager
PHONE:	(03) 3541-1803
FAX:	(03) 3541-5647
TELEX:	2522757

COMPANY:	**Daiichi Suisan**
ADDRESS:	Tokyo Central Wholesale Market 2-1, 5-Chome, Tsukiji, Chuo-ku, Tokyo 104
CONTACT:	Akihide Takeuchi, Manager
PHONE:	(03) 3545-1345
FAX:	(03) 3541-1466
TELEX:	2522660

COMPANY:	**Chuo Gyorui**
ADDRESS:	Tokyo Central Wholesale Market 2-1, 5-Chome, Tsukiji, Chuo-ku, Tokyo 104
CONTACT:	Hideo Oya, Director
PHONE:	(03) 3541-6071
FAX:	(03) 3545-5612
TELEX:	05222871

COMPANY:	**Daito Gyorui**
ADDRESS:	Tokyo Central Wholesale Market 2-1, 5-Chome, Tsukiji, Chuo-ku, Tokyo 104
CONTACT:	Masatoshi Nishikawa, Deputy Manager
PHONE:	(03) 5565-8151
FAX:	(03) 3543-6611
TELEX:	2522248

COMPANY:	**Tsukiji Uoichiba**
ADDRESS:	Tokyo Central Wholesale Market 2-1, 5-Chome, Tsukiji, Chuo-ku, Tokyo 104
CONTACT:	Kozo Takahashi, Chief
PHONE:	(03) 3541-6130
FAX:	(03) 3543-4960
TELEX:	25222061

Source: U.S. Embassy, Fisheries Industry Section, Tokyo, Japan 1994.