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SQUID SUPPLY, DEMAND, AND MARKET OF JAPAN

Sunee C. Sonu

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

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EXECUTIVE SUMMARY

Japan was the world's largest producer of squid and cuttlefish until 2001, but its share of world landings has decreased sharply from 87 percent in 1950 to 4 percent in 2016. Japanese landings in 2016 of 108,000 metric tons (mt) were 14 percent of the record landings, and were the lowest in 67 years.

Japan is a major market for squid and cuttlefish, utilizing an average of 694,000 mt per year during 1982-2016. Supply for this market comes from both domestic catches and imports. The share of the Japanese market for squid supplied by imports increased from 13 percent in 1982 to 38 percent in 2016. In 2017, imports of frozen products dominated. Imports of squid into Japan from the United States have been almost exclusively confined to *Loligo opalescens.* In 2017, Japan's imports of squid from the United States were 6,348 mt, an increase by more than two-fold over 2016.

Prices of squid are primarily determined by supply and demand, but quality, origin, and species are also important. During 1997-2017, the highest annual average wholesale prices at Tokyo Central Wholesale Market for fresh *Todarodes pacificus* occurred in 2017, for frozen *T. pacificus* in 2017, for fresh *Ommastrephes bartrami* in 2016, and for *Illex argentinus* in 2015, which corresponded to periods of low supply of these products.

Squid and cuttlefish products imported into Japan are subject to import quotas (IQ) and tariffs. To meet strong demand for squid, the Japanese government increased the IQ for fresh and frozen squid from 7,000 mt for 1971 to 112,950 mt for 2017. Processed squid which have been flavored, such as smoked, prepared, or preserved products, are exempted from IQ. Common cuttlefish (*Sepia officinalis)*, which is not caught in Japanese waters, has been exempted from IQ since 1978.

As the United States and Japan are signatories to the World Trade Organization (WTO), WTO tariffs apply to imports of squid products from the U.S.: 3.5 percent for fresh or frozen cuttlefish, 5 percent for fresh or frozen squid, and 6.7 percent for smoked products. Tariff rates are calculated as a percentage of total cost, including insurance and freight.

INTRODUCTION

World squid and cuttlefish catches have increased considerably recently, nearly doubling since 30 years ago (Table 1). Japan has historically been the most important player in squid fisheries and consumption. In 2016, however, China finally took the lead in world catch of squid and cuttlefish, although Japan is still the largest consumer. To fill the domestic demand, Japan has greatly increased imports of squid and cuttlefish.

Although squid and cuttlefish are taxonomically different groups of cephalopods, they are normally lumped together in Japanese fishery statistics because of their general similarity in appearance as well as in how they are used as food. Squid and cuttlefish are used in various ways, depending on species and state of preservation, and prices for them vary accordingly.

Japanese squid catches are dominated by species in family Ommastrephidae, which can be characterized as oceanic species, but those in family Loliginidae are also important in local fisheries. Likewise cuttlefish species comprise only a small percentage of the total catch of both groups.

U.S. fisheries for squid target *Loligo peali* on the east coast and *L. opalescens* off California. The latter has found a niche in the Japanese market which can be developed.

This report provides a detailed examination of the Japanese fishery, as well as import, export, supply, demand, consumption, and wholesale prices of squid and cuttlefish.

FISHERY

The Japanese commercial fishery for squid and cuttlefish can be traced back as far as 1458, and throughout history Japan has been the leading nation in terms of total catch as well as consumption. In the last half century, however, Japan's dominance has decreased steadily, its share of world landings falling from 87 percent in 1950 to 4 percent in 2016, when China finally took over the top position (Table 1). Since 1950, Japanese squid and cuttlefish landings have ranged between 108,000 and 773,000 mt, averaging 486,000 mt.

Japanese, and indeed world catches of squid are dominated by species in family Ommastrephidae, which are generally found in offshore oceanic waters. Loliginid species, on the other hand, are generally caught in nearshore waters, and their catches are relatively minor. Thus detailed statistics are lacking on Japanese fisheries for the latter species, as well as cuttlefish. Five species of Ommastrephidae comprise the major targets of the Japanese squid fishery. These are *Todarodes pacificus*, *Ommastrephes bartrami*, *Nototodarus sloani*, *Illex argentinus*, and *Dosidicus gigas*. In 2016, landings of these five species accounted for 68 percent of Japan's total squid and cuttlefish landings (Table 2).

Todarodes pacificus is the species most familiar to Japanese consumers and, as such, sets standards for appearance and taste for the entire market. The availability of this species essentially dictates the extent of use of other squid species. When the landings of this species are low, *T. pacificus* goes to the high-value direct consumption market. Conversely, when the landings are high, more of it is used in processed form, at the expense of other species (Suisan Keizai Shinbun Sha 1992).

Japanese landings of *T. pacificus* steadily declined from 1968 to 1986 (Table 3). In 1968, landings of this species totaled 668,000 mt, an historical high, representing 86 percent of Japan's total squid and cuttlefish landings and 63 percent of the world's landings for that year. Landings of *T. pacificus* was 80 percent of total Japanese squid landings in 1970, but this dropped to 67 percent in 1975 and 13 percent in 1986. By 2016, Japanese catch of *T. pacificus* represented only about 4 percent of the world squid landings.

Following the sharp decline in its catch of *T. pacificus*, Japan developed fisheries for *O. bartrami* in the North Pacific,

using jigging in 1974 and later adding drift gillnet in 1978 (Kohrin Sha 1989). Landings of this species grew rapidly from 17,000 mt in 1974 to a peak of 163,000 mt in 1982 (Table 4). Between 1977 and 1990, landings of this species fluctuated between 100,000 and 163,000 mt. However, landings have decreased sharply since 1990. Lower landings have continued due mainly to a ban, starting in 1993, in the use of driftnets to catch *O. bartrami* on the high seas in the North Pacific. This action complied with United Nations General Assembly Resolution 46-215 which mandated a global moratorium on all large-scale driftnet fisheries by December 31, 1992.

Since the implementation of the United Nations' moratorium on squid driftnet fishing in the North Pacific, greater effort has been made to find additional sources of squid in other areas. At auctions held by the Peruvian government in April and June of 1993, Japan gained an allocation of 80,000 mt of *D. gigas* and 36 licenses to fish in the Peruvian Exclusive Economic Zone (EEZ) for a ten month period starting May 3, 1993 (Suisan Tsushin Sha 1993). In April 1993, the Fisheries Agency of Japan announced its approval of the operation of about 20 vessels in an experimental jig fishery in the area where driftnet operations had been prohibited after January 1, 1993 (Nikkan Shokuryo Shinbun Sha 1993). Japanese catches of giant squid *D. gigas* in waters off Peru, Mexico, Equador, and Costa Rica increased from 23,500 mt in 1991 to 56,000 mt in 1994 (Table 5). Landings of *D. gigas* have since fluctuated, with poor years associated with low catches in the Peruvian EEZ. (Hokkai Keizai Shinbun Sha 2004). In March 2004, Japan received an allocation of 70,000 mt of *D. gigas* to fish in the Peruvian EEZ for a three month period starting in April 2004 (Suisan Tsushin Sha 2004).

Japanese fishermen began to increase harvest of *N. sloani* off New Zealand in 1970 and *I. argentinus* off Argentina in 1978 (Korin Sha 1989). June through November constitutes the squid fishing season for most jig boat in Japanese waters (Zen Gyoren 2004). To extend the season, Japanese vessels fish squid from December through May off New Zealand and from February through May off Argentina.

Annual landings of *N. sloani* and *I. argentinus* fluctuated considerably between 1980 and 2003 and reached records of 78,000 mt in 1989 for *N. sloani* and 240,000 mt in 1987 for *I. argentinus* (Table 6). Since 1990, however, landings of these species have declined sharply, due mainly to reduced numbers of vessels operating in waters off New Zealand and Argentina.

Table 1. World landings of squid and cuttlefish by major countries, 1950-2016 (1,000 metric tons).

Year	World total	Japan	China	Korea Rep. of	Argentina	Taiwan	Thailand	U.S.A.	Share (%) Japan/world
1950	542	469	14	20	0*	2	..**	4	87
1951	604	517	20	24	0	3	..	8	86
1952	754	656	25	24	0	3	..	3	87
1953	568	468	25	18	0	3	..	7	82
1954	540	443	31	9	0	2	..	5	82
1955	550	434	34	18	0	4	..	8	79
1956	473	346	39	22	0	5	..	10	73
1957	557	419	38	40	0	5	..	8	75
1958	555	412	38	34	0	5	..	5	74
1959	707	538	40	47	0	8	..	11	76
1960	707	542	40	42	1	7	..	3	77
1961	669	457	40	83	0	8	..	6	68
1962	809	613	42	57	1	14	..	6	76
1963	926	667	42	117	0	16	..	7	72
1964	574	329	42	87	1	14	..	8	57
1965	761	500	44	71	1	14	..	10	66
1966	736	485	44	76	2	19	..	10	66
1967	831	597	44	42	3	14	..	11	72
1968	1056	773	46	89	3	14	..	13	73
1969	849	590	46	65	1	15	..	11	69
1970	832	517	57	77	2	16	34	12	62
1971	819	482	73	46	2	14	37	16	59
1972	987	608	48	61	2	21	69	10	62
1973	868	482	-***	63	4	36	60	7	56
1974	858	474	-	58	5	21	63	16	55
1975	935	534	-	70	4	30	63	13	57
1976	969	497	36	89	8	36	60	13	51
1977	1,024	490	40	53	2	32	87	11	48
1978	1,137	519	62	73	59	33	87	19	46
1979	1,346	529	90	104	87	46	73	22	39
1980	1,344	687	80	109	9	45	67	16	51
1981	1,143	517	28	121	11	58	75	25	45
1982	1,395	551	50	128	39	86	110	27	39
1983	1,402	539	53	149	29	77	124	28	38
1984	1,421	526	54	164	29	103	123	22	37
1985	1,541	528	53	183	22	166	107	26	34
1986	1,481	463	50	197	13	160	123	38	31
1987	2,004	755	62	266	51	220	121	41	38
1988	1,913	661	76	270	21	227	112	58	35
1989	2,253	734	59	356	23	233	127	58	33
1990	2,019	567	69	322	28	215	117	43	28
1991	2,157	545	70	401	46	280	134	63	25
1992	2,363	724	71	464	78	207	130	51	31
1993	2,284	588	122	424	195	219	133	74	26
1994	2,343	596	194	373	198	190	129	98	25
1995	2,424	548	222	399	200	187	140	104	23
1996	2,658	678	173	428	293	171	150	109	26
1997	2,957	643	243	459	414	250	151	102	22
1998	2,325	386	375	283	292	236	156	45	17
1999	3,035	501	410	568	343	297	149	117	17
2000	3,064	621	478	407	279	259	153	144	20
2001	2,796	521	499	393	231	165	151	105	19
2002	2,698	434	520	371	177	128	151	93	16
2003	2,829	386	688	359	141	219	149	58	14
2004	3,037	353	860	286	77	93	142	79	12
2005	3,085	339	777	275	147	62	139	86	11
2006	3,473	296	776	372	292	149	131	81	9
2007	3,564	340	875	405	233	301	118	72	10

Table 1 (continued). World landings of squid and cuttlefish by major countries, 1950-2016 (1,000 metric tons).

Year	World total	Japan	China	Korea Rep. of	Argentina	Taiwan	Thailand	U.S.A.	Share (%) Japan/world
2008	3,523	305	857	380	256	241	102	66	9
2009	2,712	324	646	286	73	69	101	121	12
2010	2,849	285	725	236	86	60	119	153	10
2011	2,992	310	768	250	77	111	121	150	10
2012	3,181	219	903	273	95	106	110	122	7
2013	3,203	229	917	265	192	130	107	120	7
2014	3,920	211	1,217	338	169	212	92	125	5
2015	3,954	168	1,356	316	127	271	86	53	4
2016	2,785	108	876	150	60	30	104	64	4

0* more than zero but less than 500 mt
..** data not available
-*** magnitude known to be zero

Source: FAO 2003, 2004, 2018
Hokkai Keizai Shinbun Sha 2004

Table 2. Japan's landings of Ommastrephid squid, 2014-2016 (1,000 metric tons).

Species	*2014*	*2015*	*2016*
Todarodes pacificus	*172*	*129*	*68*
Dosidicus gigas	*0*	*0*	*0*
Illex argentinus	*0*	*0*	*0*
Ommastrephes bartrami	*3*	*3*	*4*
Nototodarus sloani	*0.9*	*0.7*	*0.9*
Sub-total	*175.9*	*132.7*	*72.9*
Japan's total squid and cuttlefish landings	211	168	108
Ommastrephid squid as percent of total	83	79	68

Sources: Suisan Tsushin Sha 2003
Suisan Keizai Shinbun Sha 2004
Hokkai Keizai Shinbun Sha 2004
Zen Gyoren 2004 FAO 2018

Table 3. Landings of *Todarodes pacificus* and total squid and cuttlefish landings, by world and by Japan, 1950-2016 (1,000 metric tons).

Year	*Todarodes pacificus*		Total Squid and Cuttlefish		Share (%)	
	World(A)	Japan(B)	World(C)	Japan(D)	B/D	B/C
1950	429	409	542	469	87	75
1951	480	456	604	517	88	75
1952	601	577	754	656	88	76
1953	422	403	568	468	86	71
1954	392	383	540	443	86	71
1955	386	368	550	434	85	67
1956	305	279	473	346	81	59
1957	390	350	557	419	84	63
1958	381	346	555	412	84	62
1959	507	457	707	538	85	65
1960	505	460	707	542	85	65
1961	472	385	669	457	84	57
1962	584	518	809	613	85	64
1963	701	574	926	667	86	62
1964	334	238	574	329	72	41
1965	477	397	761	500	79	52
1966	470	383	736	485	79	52
1967	526	477	831	597	80	57
1968	759	668	1,056	773	86	63
1969	545	478	849	590	81	56
1970	492	412	832	517	80	50
1971	407	364	819	482	76	44
1972	528	465	987	608	77	47
1973	401	334	868	482	69	39
1974	355	310	858	474	66	36
1975	418	358	935	534	67	38
1976	349	281	969	497	56	29
1977	243	208	1,024	490	42	20
1978	250	216	1,137	519	42	19
1979	269	213	1,346	529	40	16
1980	405	330	1,344	687	48	25
1981	290	197	1,143	517	38	17
1982	274	145	1,395	551	26	10
1983	246	143	1,402	539	27	10
1984	287	131	1,421	526	25	9
1985	214	108	1,541	528	20	7
1986	141	61	1,481	463	13	4
1987	262	139	2,004	755	18	7
1988	228	119	1,913	661	18	6
1989	320	164	2,253	734	22	7
1990	321	166	2,019	567	29	8
1991	403	196	2,157	545	36	9
1992	545	326	2,363	724	45	14
1993	548	235	2,284	588	40	10
1994	504	234	2,343	596	39	10
1995	513	256	2,424	548	47	11
1996	716	388	2,658	678	57	15
1997	603	310	2,957	643	48	10
1998	379	144	2,325	386	37	6
1999	498	203	3,035	501	41	7
2000	570	291	3,058	621	47	10
2001	529	254	2,776	521	49	9
2002	504	274	2,698	434	54	16

Table 3 (continued). Landings of *Todarodes pacificus* and total squid and cuttlefish landings, by world and by Japan, 1950-2016 (1,000 metric tons).

Year	*Todarodes pacificus*		Total Squid and Cuttlefish		Share (%)	
	World(A)	Japan(B)	World(C)	Japan(D)	B/D	B/C
2003	488	254	2,829	386	52	14
2004	448	235	3,037	353	52	12
2005	412	222	3,085	339	54	11
2006	388	190	3,473	296	49	9
2007	429	253	3,564	340	59	10
2008	403	217	3,523	305	54	9
2009	408	219	2,712	324	54	12
2010	359	200	2,849	285	56	10
2011	414	242	2,992	310	59	10
2012	350	168	3,181	219	48	7
2013	338	180	3,203	229	53	7
2014	340	173	3,920	211	51	5
2015	296	129	3,954	168	44	4
2016	195	68	2,785	108	35	4

Sources: FAO 2004, 2018
Zen Gyoren 1990-2004
Suisan Tsushin Sha 2003, 2004

Table 4. Japan's landings of *Ommastrephes bartrami*, 1974-2016 (metric tons).

Year	Driftnet	Jig	Others	Total
1974	0	-	-	17,000
1975	0	-	-	41,164
1976	0	-	-	84,184
1977	0	-	-	121,768
1978	-	-	-	151,307
1979	-	-	-	124,692
1980	-	-	-	144,000
1981	-	-	-	120,000
1982	108,000	38,000	17,000	163,000
1983	112,000	25,000	11,000	148,000
1984	73,000	15,400	11,600	100,000
1985	99,000	10,000	26,000	135,000
1986	85,000	8,000	15,000	108,000
1987	111,000	0	21,000	132,000
1988	86,000	2,000	13,000	101,000
1989	98,500	6,900	14,600	120,000
1990	103,000	16,000	17,000	136,000
1991	70,200	5,500	6,000	81,700
1992	67,600	2,100	300	70,000
1993	1,830	7,300	200	9,330
1994	0	35,300	3,600	38,900
1995	0	34,900	16,430	51,330
1996	0	38,630	2,140	40,770
1997	0	40,000	1,700	41,700
1998	0	53,960	4,290	58,250
1999	0	34,430	160	34,590
2000	0	16,250	1,250	17,500
2001	0	15,300	110	15,410
2002	0	8,940	0	8,940
2003	0	12,670	530	13,200
1999	0	34,430	160	34,590
2000	0	16,250	1,250	17,500
2001	0	15,300	110	15,410
2002	0	8,940	0	8,940
2003	0	12,670	530	13,200
2004	-	-	-	10,198
2005	-	-	-	6,278
2006	-	-	-	9,592
2004	-	-	-	10,198
2005	-	-	-	6,278
2006	-	-	-	9,592
2007	-	-	-	21,933
2008	-	-	-	24,393

Table 4 (continued). Japan's landings of *Ommastrephes bartrami*, 1974-2016 (metric tons).

Year	Driftnet	Jig	Others	Total
2009	-	-	-	35,993
2010	-	-		22,326
2011	-	-	-	14,489
2012	-	-		5,454
2013				3,607
2014				3,274
2015				2,923
2016				3,500
2004	-	-	-	10,198
2005	-	-	-	6,278
2006	-	-	-	9,592
2007	-	-	-	21,933
2008	-	-	-	24,393
2009	-	-	-	35,993
2010	-	-	-	22,326
2011	-	-	-	14,489
2012	-	-	-	5,454
2013	-	-	-	3,607
2014	-	-	-	3,274
2015	-	-	-	2,923
2016	-	-	-	3,500

-...breakdown is not available

Sources: Zen Gyoren 1988, 1993, 2004
Kohrin Sha 1989
Suisan Tsushin Sha 2004
FAO 2018

Table 5. Japan's landings of *Dosidicus gigas*, 1991-2016 (metric tons).

Year	Waters off		Total
	Peru	Others*	
1991	18,500	5,000	23,500
1992	27,000	4,700	31,700
1993	46,100	0	46,100
1994	56,000	0	56,000
1995	25,000	0	25,000
1996	5,440	3,470	8,910
1997	2,500	22,000	24,500
1998	220	5,300	5,520
1999	0	410	410
2000	52,900	19,400	72,300
2001	51,600	160	51,760
2002	55,500	0	55,500
2003	25,970	0	25,970
2003	25,970	0	25,970
2004	-	-	46,187
2005	-	-	33,652
2006	-	-	37,428
2007	-	-	14,059
2008	-	-	14,143
2009	-	-	27,271
2010	-	-	17,113
2011	-	-	9,977
2012	-	-	1,448
2013	-	-	0
2014	-	-	0
2015	-	-	0
2016	-	-	0

Others* include Mexico, Equador, and Costa Rica
-...breakdown is not available

Sources: Zen Gyoren 1988, 1993, 2004
Suisan Tsushin Sha 2004
FAO 2018

Table 6. Japan's landings of *Nototodarus sloani*, and *Illex argentinus*, 1980-2016.

Year	*Nototodarus sloani*		*Illex argentinus*	
	Landings (metric tons)	Number of vessels	Landings (metric tons)	Number of vessels
1980	63,000	-	38,000	-
1981	40,000	-	18,000	-
1982	50,000	-	35,000	-
1983	49,000	112	25,000	-
1984	65,000	125	60,000	-
1985	50,000	116	77,000	-
1986	40,000	101	95,000	107
1987	52,000	129	240,000	134
1988	53,000	83	203,000	119
1989	78,000	151	174,000	108
1990	8,680	54	83,900	99
1991	8,950	30	91,200	82
1992	10,500	10	71,600	64
1993	8,000	14	96,800	-
1994	9,710	9	79,270	-
1995	20,400	22	65,950	51
1996	10,530	25	58,730	49
1997	5,210	25	87,650	50
1998	3,710	15	69,580	44
1999	1,840	15	122,860	48
2000	1,850	8	97,930	48
2001	1,390	4	53,880	42
2002	1,700	3	20,450	34
2003	3,090	4	17,500	25
1980	63,000	-	38,000	-
1981	40,000	-	18,000	-
1982	50,000	-	35,000	-
1983	49,000	112	25,000	-
1984	65,000	125	60,000	-
1985	50,000	116	77,000	-
1986	40,000	101	95,000	107
1987	52,000	129	240,000	134
1988	53,000	83	203,000	119
1989	78,000	151	174,000	108
1990	8,680	54	83,900	99
1991	8,950	30	91,200	82
1992	10,500	10	71,600	64
1993	8,000	14	96,800	-
1994	9,710	9	79,270	-

Table 6 (continued). Japan's landings of *Nototodarus sloani*, and *Illex argentinus*, 1980-2016.

Year	*Nototodarus sloani*		*Illex argentinus*	
	Landings (metric tons)	Number of vessels	Landings (metric tons)	Number of vessels
1995	20,400	22	65,950	51
1996	10,530	25	58,730	49
1997	5,210	25	87,650	50
1998	3,710	15	69,580	44
1999	1,840	15	122,860	48
2000	1,850	8	97,930	48
2001	1,390	4	53,880	42
2002	1,700	3	20,450	34
2003	3,090	4	17,500	25
2004	3,906	-	10,198	-
2005	4,757	-	6,278	-
2006	3,951	-	9,592	-
2007	3,081	-	0	-
2008	1,359	-	0	-
2009	761	-	0	-
2010	856	-	0	-
2011	1,336	-	0	-
2012	1,789	-	0	-
2013	1,711	-	0	-
2014	920	-	0	-
2015	689	-	0	-
2016	934	-	0	-

-...not available

Sources: Zen Gyoren 1990-2004
Suisan Tsushin Sha 2003, 2004
FAO 2018

IMPORTS

Japan has traditionally included both squid and cuttlefish Under the common name squid (ika). This tradition continues in its trade regulation, as both squid and cuttlefish are combined in a single IQ.

Squid and cuttlefish imports were previously not allowed because domestic demand was satisfied by Japanese catches. When landings of Japanese flying squid (*T. pacificus*) dropped sharply in 1969, however, Japan had to begin importing squid and cuttlefish in 1971 under a carefully administered quota system. From 1971 to 1979, imports of fresh and frozen squid and cuttlefish to Japan increased steadily from 21,000 mt to 156,000 mt, more than seven times in volume (Table 7). From 1982 to 2017, imports have fluctuated between 78,000 and 116,000 mt.

Japan liberalized the import of fresh and frozen common cuttlefish (*Sepia officinalis*) on April 1, 1978, making it free from import quota restrictions. This is the only squid or cuttlefish species exempt from IQ.

Imports of frozen squid fluctuated between 33,000 and 100,000 mt from 1988 to 2017 (Table 7). The products came mostly from China, with lesser quantities imported from Republic of Korea, Taiwan, Argentina, and the United States (Table 8 and 9).

Japan's imports of frozen cuttlefish have declined since 1995 (Table 7). Thailand remained the largest supplier of frozen cuttlefish with an annual average of 3,800 mt from 2013 to 2017, followed by Viet Nam, Morocco, Somalia, and Malaysia (Table 10).

Imports of squid into Japan from the United States have been almost exclusively confined to *Loligo opalescens* (U.S. Department of Commerce 2018). In 2017, Japan's imports of squid from the United States were 6,348 mt, an increase by more than two-fold over 2016 imports (Table 8 and 9).

Imports of fresh cuttlefish were only 1 mt in 2014 (Table 11). The United Arab Emirates was the single supplier of fresh cuttlefish products to Japan in 2014.

Imports of dried or salted squid and cuttlefish decreased from 349 mt in 2013 to 152 mt in 2017. China has been the major supplier of dried squid and cuttlefish to Japan since 1999.

Peru supplied 5 mt of dried or salted products to Japan in 2016. (Table 12).

Trade barriers

Japan regulates imports of squid and cuttlefish with IQ and tariffs. IQs are set once a per year, with new quotas announced each year. To meet strong demand, the Japanese government has gradually increased the IQ for fresh and frozen squid and cuttlefish from 53,000 mt for 1993 to 112,950 mt for 2017 (Table 13).

Product forms which are exempted from IQ regulations include processed squid and cuttlefish which have been flavored, such as prepared or preserved products (i.e. canned, boiled, seasoned, or fermented products). Common cuttlefish (*Sepia officinalis*) has been exempted from IQ since 1978, when the quota was removed from this highly prized species which is not caught in Japanese waters.

While the Ministry of International Trade and Industry is the lead agency in administering the quota system, it coordinates its actions closely with the Fisheries Agency (FAJ) of the Ministry of Agriculture, Forestry, and Fisheries. In addition to setting quotas for imports, the government also controls allocations among the following recipient groups:

A. Traders: Trading companies with past import history;

B. Users: Processors' associations which usually hire traders to perform import functions on their behalf;

C. Fishermen: Fishermen or fishery organizations fishing in overseas waters and designated by FAJ Director General, or those who received import orders from such fishermen or fishery organizations;

D. Joint venture: Japanese joint venture participants in which the Japanese equity exceeds 40 percent;

E. First-Come-First-Served: Companies which have import contracts for squid and cuttlefish signed after the date of the IQ announcement.

There is a great deal of variation in the amount of quota held by recipient groups (Table 14) and individual importers. Trading companies have held the largest share of quota

allocations, and since 2000 this has been about 40 percent. The share of the processors' associations has been about 35 percent

since 2001. The fishermen’s quota increased to 24 percent in 2017.

Imports of squid and cuttlefish are subject to tariffs. As the United States and Japan are signatories to the World Trade Organization (WTO), WTO tariffs apply to U.S. exports of squid products: 3.5 percent for fresh or frozen cuttlefish (excluding Rossia macrosoma and Sepiola spp.), 5 percent for fresh or frozen squid and cuttlefish (Rossia macrosoma and Sepiola spp.), 6.7 percent for smoked products. Tariff rates are calculated as a percentage of total cost, including insurance and freight.

Table 7. Japan's annual imports of fresh and frozen squid and cuttlefish products by volume, 1971-2017 (metric tons).

Year	Cuttlefish		Squid		total
	Fresh	Frozen	Fresh	Frozen	
1971	-	-	-	-	21,330
1972	-	-	-	-	27,844
1972	-	-	-	-	27,844
1973	-	-	-	-	28,980
1974	-	-	-	-	44,762
1975	-	-	-	-	58,580
1976	-	-	-	-	68,533
1977	-	-	-	-	74,732
1978	-	-	-	-	118,142
1979	-	-	-	-	155,868
1980	-	-	-	-	94,375
1981	-	-	-	-	68,776
1982	-	-	-	-	96,399
1983	-	-	-	-	101,661
1984	-	-	-	-	102,581
1985	-	-	-	-	112,883
1986	-	81,759	-	43,455	125,214
1987	-	62,751	-	39,170	101,921
1988	239	53,703	4	47,891	101,837
1989	80	67,312	9	48,176	115,577
1990	80	61,166	0	53,030	114,276
1991	98	51,683	0	46,236	98,019
1992	66	48,300	40	52,890	101,296
1993	55	54,001	19	43,998	98,073
1994	86	60,769	81	54,882	115,818
1995	43	53,144	0	33,057	86,244
1996	46	49,345	0	58,124	107,515
1997	32	46,982	3	48,661	95,678
1998	9	44,761	5	48,602	93,377
1999	5	43,373	18	62,513	105,909
2000	13	41,426	1	56,077	97,517
2001	28	38,955	0	43,136	82,119
2002	2	36,092	2	60,362	96,458
2003	14	32,607	4	51,272	83,897
2004	2	32,316	0	60,734	93,052
2005	2	32,036	0	64,268	96,306
2006	2	28,083	0	65,898	93,983
2007	4	26,025	0	75,100	101,129
2008	4	19,702	0	67,745	87,451
2009	2	19,013	0	59,013	78,028
2010	0	18,922	0	59,422	78,344
2011	0	16,030	0	73,919	89,949
2012	0	16,178	0	75,071	91,249
2013	0	13,244	0	93,166	106,410
2014	1	11,859	0	85,634	97,494
2015	0	12,343	0	78,279	90,622
2016	0	11,861	0	93,308	105,169
2017	0	11,506	0	99,547	111,053

-..not available
0......no imports

Sources: Japan Fish Traders Association 1972-2004
Ministry of Finance 2018

Table 8. Japan's imports of frozen squid* by country of origin and volume, 2013-2017 (metric tons).

Country of origin	2013	2014	2015	2016	2017
Korea, Rep. of	328	148	61	10	49
China	8,380	7,311	622	68	156
Hong Kong	6	0	1	0	2
Viet Nam	4,360	3,551	2,900	2,376	3,708
Thailand	6,200	5,557	5,219	4,061	3,734
Malaysia	100	142	60	67	105
Philippines	816	700	602	620	1,332
Indonesia	753	656	511	599	304
Myanmar	432	638	331	297	198
India	1,699	1,283	1,029	1,564	1,761
Sri Lank	166	147	67	126	22
USA	7,066	3,627	2,966	2,813	6,247
Mexico	313	0	0	15	2,664
Peru	119	0	9	0	76
Falk Land	12	2,966	0	0	114
Argentina	0	0	0	2	2
Morocco	575	0	191	327	523
Somalia	0	0	0	5	0
South Africa	100	9	107	137	0
New Zealand	190	0	112	339	523
Total	31,617	26,735	14,789	13,426	21,520

* Ommastrephes spp., Loligo spp., Nototodarus spp., Sepioteuthis spp

Source: Ministry of Finance 2018

Table 9. Japan's imports of frozen squid* by Country of origin and volume, 2013-2017 (metric tons).

Country of origin	2013	2014	2015	2016	2017
Korea, Rep. of	1,003	1,048	551	7,337	7,386
China	31,206	29,093	35,504	38,099	50,375
Taiwan	486	133	629	982	7,034
Viet Nam	31	18	12	60	91
Thailand	273	116	133	22	85
Malaysia	91	127	54	77	-118
Indonesia	38	1	1	4	-
Myanmar	6	74	-	-	2
Pakistan	7	-	-	-	-
USA	281	189	153	23	101
Mexico	388	995	53	-	-
Peru	14,276	10,902	9,401	15,688	1,593
Chili	7,410	8,142	9,204	4,041	4,744
Argentina	5,666	7491	5,149	999	6,729
New Zealand	3	0	-	43	0
Spain	0	74	26	49	-
Ecuador	0	-	1,851	1,568	0
Total	61,549	58,899	63,490	79,882	78,027

* excluding Ommastrephes spp., Loligo spp., Nototodarus spp., Sepioteuthis spp

Source: Ministry of Finance 2018

Table 10. Japan's imports of frozen cuttlefish by country of origin and volume, 2013-2017 (metric tons).

Country of origin	2013	2014	2015	2016	2017
Korea, Rep. of	437	186	526	139	0
China	39	15	27	13	81
China	-	-	-	-	81
Hong Kong	27	4	6	6	-
Viet Nam	2,483	2,205	2,285	2,878	3,170
Thailand	4,454	4,569	4,402	3,029	2,576
Malaysia	1,275	1,251	1,248	1,125	785
Philippines	116	56	75	127	146
Indonesia	302	173	99	423	863
Myanmar	16	-	-	-	-
India	151	143	118	154	64
Pakistan	90	-	-	-	-
Sri Lanka	146	77	25	1	49
Iran	346	458	591	378	311
Bahrain	-	-	-	-	93
Saudi Araibia	-	-	-	-	-
Omen	86	118	90	109	347
United Arab Emirates	-	15	84	37	-
Yemen	24	38	75	123	14
France	1	-	-	-	-
Morocco	3,004	2,321	2,209	2,571	1,893
Somalia	-	-	81	585	949
Maritan	145	47	271	37	93
Senegal	103	183	112	122	45
United Kingdom	-	-	-	-	25
Total	13,244	11,859	12,323	11,857	11,506

Source: Ministry of Finance 2018

Table 11. Japan's imports of fresh cuttlefish by country of origin and volume, 2013-2017 (metric tons).

Country of origin	2013	2014	2015	2016	2017
United Arab Emirates	0	1	0	0	0
Total	0	1	0	0	0

Source: Ministry of Finance 2018

Table 12. Japan's imports of dried or salted squid and cuttlefish by country of origin and volume, 2013-2017 (metric tons).

Country of origin	2013	2014	2015	2016	2017
China	349	161	143	200	152
Peru	0	0	0	5	0
Total	349	161	143	205	152

Source: Ministry of Finance 2018

Table 13. Japan's import quotas for fresh or frozen squid and cuttlefish*, 1971-2018 (metric tons).

Year	quota	Year	quota
1971	7,000	1995	55,100
1972	10,000	1996	55,100
1973	12,000	1997	55,100
1974	14,900	1998	55,600
1975	15,900	1999	55,600
1976	18,200	2000	56,450
1977	40,000	2001	58,450
1978	60,000	2002	64,750
1979	76,500	2003	59,450
1980	18,000	2004	59,950
1981	25,000	2005	59,950
1982	41,000	2006	69,950
1983	38,000	2007	74,950
1984	41,000	2008	74,950
1985	46,000	2009	74,950
1986	53,000	2010	74,950
1987	53,000	2011	74,950
1988	53,000	2012	74,950
1989	53,000	2013	74,950
1990	53,000	2014	89,950
1991	53,000	2015	82,450
1992	53,000	2016	93,950
1993	53,000	2017	112,950
1994	55,100	2018	86,950

*....excludes *Sepia officinalis*

Sources: Zen Gyoren 1993, 2004
Minato Shinbun Sha 2004
Ministry of Economy, Trade and Industry 2015-2018

Table 14. Allocation of Japan's import quotas for fresh or frozen squid and cuttlefish* by recipient groups for 1984-1992, 2000-2003 and 2016-2018 (metric tons).

Year	Total	Traders	Users	Joint venture	Fishermen	First-come First-served
1984	41,000	20,244	15,956	4,800	0	0
1985	46,000	21,799	18,601	5,600	0	0
1986	53,000	23,598	21,496	4,906	3,000	0
1987	53,000	23,598	21,496	4,906	3,000	0
1988	53,000	23,598	21,496	4,906	3,000	0
1989	53,000	23,598	21,496	4,906	3,000	0
1990	53,000	23,598	21,496	4,906	3,000	0
1991	53,000	23,598	21,496	4,906	3,000	0
1992	53,000	23,598	21,496	4,906	3,000	0
2000	56,450	23,629	20,766	1,620	9,100	1,335
2001	58,450	23,789	20,766	1,620	10,010	2,265
2002	58,950	23,829	20,766	1,620	10,238	2,497
2003	59,450	23,869	20,994	0	11,858	2,729
2016	93,950	33,840	33,072	0	20,258	6,780
2017	112,950	40,920	45,792	0	19,458	6,780
2018	86,950	32,050	28,002	0	21,298	5,600

*...excludes *Sepia officinalis*

Sources: Zen Gyoren 1985-2004
Ministry of Economy, Trade and Industry 2015-2018

COLD STORAGE HOLDING

Japan's cold storage holdings of squid and cuttlefish fluctuate from year to year. Table 15 shows year-end inventories of frozen squid and cuttlefish between 1981 and 2017. Large increases in inventory are seen starting in 1987, attributed to increased inventories of Ommastrephid squid, (*T. pacificus, N. sloani,* and *I. argentinus).* For some unknown reason *O. bartrami*, another Ommastrephid squid, is separated from the other three.

The sharp increases in inventory of the three Ommastrephid squid in 1987, 1988, and 1989 were due to increased landings of *I. argentinus* in the Southwest Atlantic, and of *T. pacificus* in the Northwest Pacific.

Table 15. Japan's year-end cold storage holdings of frozen squid and cuttlefish, 1981-2017 (metric tons).

Year end	Ommastrephid squid*	Cuttlefish	Other squid	Total
1981	52,303	11,771	32,684	96,758
1982	52,331	13,755	53,294	119,380
1983	48,982	14,137	55,302	118,421
1984	54,158	14,592	43,681	112,431
1985	59,117	20,203	65,477	144,797
1986	43,371	29,873	67,582	140,826
1987	115,868	27,455	75,021	218,344
1988	127,246	18,421	71,530	217,197
1989	181,537	23,590	80,770	285,897
1990	137,744	23,862	77,604	239,210
1991	100,148	20,099	81,979	202,226
1992	124,493	14,238	75,889	214,620
1993	86,112	14,099	56,614	156,825
1994	81,636	17,869	66,231	165,736
1995	75,712	18,509	60,952	155,173
1996	113,199	16,784	51,411	181,394
1997	115,665	13,915	55,447	185,027
1998	64,015	12,599	42,335	118,949
1999	78,489	11,961	38,634	129,084
2000	106,528	12,145	58,745	177,418
2001	84,940	10,541	49,313	144,794
2002	72,755	9,420	44,516	126,691
2003	64,447	9,394	39,459	113,300
2004	53,170	10,024	39,305	102,499
2005	56,515	10,161	36,044	102,720
2006	50,523	8,273	34,718	93,514
2007	68,236	10,304	33,220	111,760
2008	63,652	8,061	29,052	100,765
2009	57,579	5,006	32,358	94,943
2010	41,653	6,880	24,709	73,242
2011	49,185	4,993	30,330	84,508
2012	38,302	4,674	27,832	70,808
2013	37,592	5,083	29,012	71,687
2014	42,713	4,377	26,532	73,622
2015	31,665	4,665	23,896	60,227
2016	16,251	4,607	19,566	40,424
2017	19,527	5,555	22,404	47,486

Sources: Ministry of Agriculture, Forestry, and Fisheries, 1983-2018
Hokkai Keizai Shinbun Sha 2004

SUPPLY

The annual supply of squid and cuttlefish for the Japanese market and for export is comprised of the cold storage inventory of January 1, plus that year's domestic catches and imports. The annual supply reached a record high in 1989 due mainly to sharply increased domestic catches (Table 16).

Between 1982 and 2016, annual supply of squid ranged between 273,000 and 1,081,000 mt, averaging 694,000 mt. During this period catches averaged 448,000 mt (about 63 percent of the total supply). The January inventory averaged 137,000 mt (20 percent), and imports 109,000 mt (17 percent) but the latter was higher (27 percent) in 2015 and (38 percent) in 2016, when the catch was lower.

Table 16. Japan's annual supply of squid and cuttlefish, 1982-2016 (1,000 metric tons).

Year	Inventory January 1)	Catch	Imports	Supply	Percent of Supply		
					Inventory	Catch	Import
1982	97	551	101	749	13	74	13
1983	119	539	106	764	16	71	14
1984	118	526	111	755	16	70	15
1985	112	528	125	765	15	69	16
1986	145	463	142	750	19	62	19
1987	141	755	118	1,014	14	74	12
1988	218	661	122	1,001	22	66	12
1989	217	734	130	1,081	20	68	12
1990	286	567	129	982	29	58	13
1991	239	545	112	896	27	61	13
1992	202	724	116	1,042	19	69	11
1993	215	588	109	912	24	64	12
1994	157	296	127	580	27	51	22
1995	166	548	101	815	20	67	12
1996	155	678	123	956	16	71	13
1997	181	643	110	934	19	69	12
1998	185	386	106	677	27	57	16
1999	119	501	123	743	16	67	17
2000	129	621	126	876	15	71	14
2001	177	521	113	811	22	64	14
2002	145	434	136	715	20	61	19
2003	127	382	123	632	20	60	19
2004	113	353	93	559	20	63	17
2005	102	339	96	538	19	63	18
2006	103	296	94	493	21	60	19
2007	94	340	101	535	17	64	19
2008	112	305	87	504	22	60	17
2009	101	324	78	503	20	64	16
2010	95	285	78	458	21	62	17
2011	73	310	90	473	15	66	19
2012	85	219	91	395	21	55	23
2013	71	229	106	406	17	56	26
2014	72	211	97	380	19	55	26
2015	74	168	91	332	22	51	27
2016	60	108	105	273	22	40	38
Average (1982-2016)	137	448	109	694	20	63	17

Sources: Ministry of Agriculture, Forestry, and Fisheries, 1983-2018
Hokkai Keizai Shinbun Sha 2004
Japan Fish Traders Association 1983-2004
FAO 2018

EXPORTS

Japanese exports of squid and cuttlefish products from 2015 through 2017 are summarized in Table 17. In 2017, Japan exported 3,432 mt, amounting to 2,472 million yen worth of squid and cuttlefish products, a decrease of 64 percent in volume and 23 percent in value from the 2015 level.

Frozen squid and cuttlefish were the most important export products, worth 2,445 million yen, followed by dried or salted product (17 million yen), and fresh (10 million yen).

Japanese exports of frozen squid and cuttlefish in 2017 decreased 64 percent in volume and 23 percent in value from the 2015 level (Table 18). Viet Nam has been the major market, taking 54 percent in volume of Japanese exports of frozen squid and cuttlefish in 2017. Other important buyers in 2017 were Thailand (18 percent), the USA (9 percent) and Hong Kong (5 percent). Exports to the United States were low but values were high (16 percent).

Exports of fresh squid and cuttlefish in 2017 also showed a decrease from 2015 (Table 19). Much of the decrease was due to lower exports to Viet Nam which is by far the largest market for this product. The United States purchased 2 mt of fresh squid and cuttlefish in 2017.

Japanese exports of dried, salted, or in brine squid and cuttlefish increased 17 percent in volume and 44 percent in value from the 2015 level (Table 20). The main markets for this product in 2017 were the United States (5,801 kilograms), Taiwan (964 kilograms) and Macao (936 kilograms).

Table 17. Japan’s exports of squid and cuttlefish by volume and value, 2015-2017.

Product form	Volume (metric tons)			Value (Million yen)		
	2015	2016	2017	2015	2016	2017
Fresh	45	35	4	22	16	10
Frozen	9,507	7,149	3,420	3,181	3,564	2,445
Dried/ salted	4	8	8	7	14	17
Total	9,556	7,192	3,432	3,210	3,595	2,472

Source: Ministry of Finance 2018

Table 18. Japan's exports of frozen squid and cuttlefish by country, 2015-2017.

	Volume (metric tons)			Value (million yen)		
	2015	2016	2017	2015	2016	2017
Korea, Rep. of	4	39	66	7	16	35
China	3,715	1,645	50	825	376	15
Taiwan	82	50	37	26	21	19
Hong Kong	191	213	159	108	152	164
Viet Nam	1,650	2,774	1,847	814	1,832	1,205
Thailand	2,036	1,435	627	627	499	349
Singapore	201	99	74	65	61	65
Malaysia	127	82	43	48	49	43
Brunei	-	-	-	-	1	0
Philippines			5		15	1
Indonesia	58	-	47	13	6	23
Myanmar	3	-	2	4	1	2
Macao	5	5	47	6	87	7
Saudi Arabia	0	-	-	1	400	0
Kuwait	0	-		0	15	1
Lebanon	0	-	-	1	5	1
United Arab E.	0	-	-	0	6	1
Canada	179	138	95	93	6	95
USA	538	522	333	353	3	389
Peru	42	36	7	12	10	6
Australia	3	8	10	2	0	11
New Zealand	662	5	4 -	158	0	4
Guam	9	3	6	17	0	9
Mariana	-	-	1	-	-	1
Total	9,507	7,149	3,420	3,181	3,564	2,445

-*....no exports
0**...more than zero but less than 0.5 metric ton
Total may not add due to rounding

Source: Ministry of Finance 2018

Table 19. Japan's exports of fresh squid and cuttlefish by country, 2015-2017.

Country of	Volume (metric tons)			Value (Million yen)		
	2015	2016	2017	2015	2016	2017
Korea, Rep. of	10	12	-*	4	5	-
Taiwan	-	0**	-	-	0	-
China	9	-	0	2	-	1
Hong Kong	-	-	-	-	-	-
Viet Nam	24	21	-	14	10	-
Singapore	0	-	2	0	-	1
USA	-	-	2	1	-	8
Canadas	1	1	-	1	1	-
Total	45	35	4	22	16	10

-*... no exports
0**...more than zero but less than 0.5 metric ton
Total may not add due to rounding

Source: Ministry of Finance 2018

Table 20. Japan's exports of dried, salted, or in brine squid and cuttlefish by country, 2015-2017

	Volume (kilograms)			Value (1,000 yen)		
	2015	2016	2017	2015	2016	2017
Taiwan	300	-	960	237	-	3,330
Hong Kong	-	-	25	-	-	300
Thailand	-	-	240	-	-	353
Singapore	146	256	14	351	306	591
Macao	-	-	936	-	-	1,344
USA	3,132	7,604	5,801	5,938	14,146	11,038
Myanmar	95	-	-	436	-	-
Total	3,673	7,860	7,976	6,962	14,452	16,956

-*...no exports

Source: Ministry of Finance 2018

DEMAND

Annual demand for squid and cuttlefish for both the Japanese market and for export (annual supply minus the cold storage inventory on December 31) was 233,000 mt in 2016, a decrease of 14 percent compared with 2015 (Table 21). Between 1982 and 2016, annual demand for squid and cuttlefish ranged between 224,000 and 827,000 mt, averaging 559,000 mt per year.

Table 21. Japan's demand for squid and cuttlefish and apparent consumption, 1982-2016 (1,000 metric tons).

Year	Supply	Cold storage holdings	Demand	Exports	Apparent consumption
1982	749	119	630	6	624
1983	764	118	646	10	636
1984	755	112	643	6	637
1985	765	145	620	4	616
1986	750	141	609	4	605
1987	1,014	218	796	5	791
1988	1,001	217	784	1	783
1989	1,081	286	795	4	791
1990	982	239	743	2	741
1991	896	202	694	7	687
1992	1,042	215	827	9	818
1993	912	157	755	11	744
1994	580	166	414	10	404
1995	815	155	660	14	646
1996	956	181	775	50	725
1997	934	185	749	27	722
1998	677	119	558	12	546
1999	743	129	614	3	611
2000	876	177	699	9	690
2001	811	145	666	43	623
2002	715	127	588	24	564
2003	632	113	519	16	503
2004	559	102	457	21	436
2005	538	103	435	14	421
2006	493	94	399	71	328
2007	535	112	423	14	409
2008	504	101	403	32	371
2009	503	95	408	28	380
2010	458	73	385	31	354
2011	473	85	388	66	322

2012	395	71	324	29	295
2013	406	72	334	14	320
2014	380	74	306	9	297
2015	332	60	272	10	262
2016	273	40	233	7	226

Sources: Ministry of Agriculture, Forestry, and Fisheries, 1983-2018
Hokkai Keizai Shinbun Sha 2004
Japan Fish Traders Association 1983-2004
Ministry of Finance 1983-2018
FAO 2018

WHOLESALE PRICES

Squid and cuttlefish are usually sold through auction at consumer wholesale markets located in consumption areas, and at production wholesale markets located at Japanese ports of landing. Squid and cuttlefish are also sold directly to processors and representatives of supermarket chains. The largest consumer wholesale fish market is the Tokyo Central Wholesale Market. In 2017, this market handled about 408,000 mt of seafood products valued at about 453,153 million yen (Tokyo Metropolitan Government 2018). It therefore plays an important role in providing indicators about supply and demand of fishery products in Japan. Wholesale prices at the Tokyo Central Wholesale Market generally serve as price indices for fishery products throughout the world.

Wholesale prices for squid and cuttlefish vary widely, depending on species, quality, origin, and supply and demand, as well as other factors.

Table 22 shows annual average wholesale prices of major species of squid and cuttlefish at the Tokyo Central Wholesale Market between 1997 and 2017. All species showed fluctuations in wholesale prices, which were influenced mainly by volume of supply (Figure 1-3); usually, the greater the supply, the lower the price, and vice versa. Fresh *O. bartrami* and *S. officinalis* clearly brought higher prices.

Table 22. Annual average wholesale prices of squid and cuttlefish at Tokyo Central Wholesale Market, 1997-2017 (yen/kg).

	T. pacificus		*O. bartrami*	*I. argentinus*	*S. officinalis*	
Year	Fresh	Frozen	Fresh	Frozen	Fresh	Frozen
1997	413	316	1,402	233	968	563
1998	566	263	854	279	828	580
1999	453	297	1,037	287	859	493
2000	400	230	980	285	830	415
2001	347	261	825	232	709	455
2002	387	264	847	261	736	446
2003	410	278	919	358	826	479
2004	442	320	1,346	431	786	475
2005	472	364	1,393	443	760	468
2006	465	357	1,309	398	712	524
2007	430	329	1,354	388	915	656
2008	415	317	1,354	299	861	623
2009	398	328	1,466	700	776	567
2010	426	338	1,292	831	764	601
2011	426	396	1,510	927	588	687
2012	429	363	760	807	516	744
1013	464	420	1,028	372	627	747
2014	483	452	1,505	382	884	717
2015	536	458	1,469	1,084	1193	776
2016	716	602	1,771	641	1086	796
2017	750	911	1,606	n/a	1126	889

Source: Tokyo Metropolitan Government 1998-2018

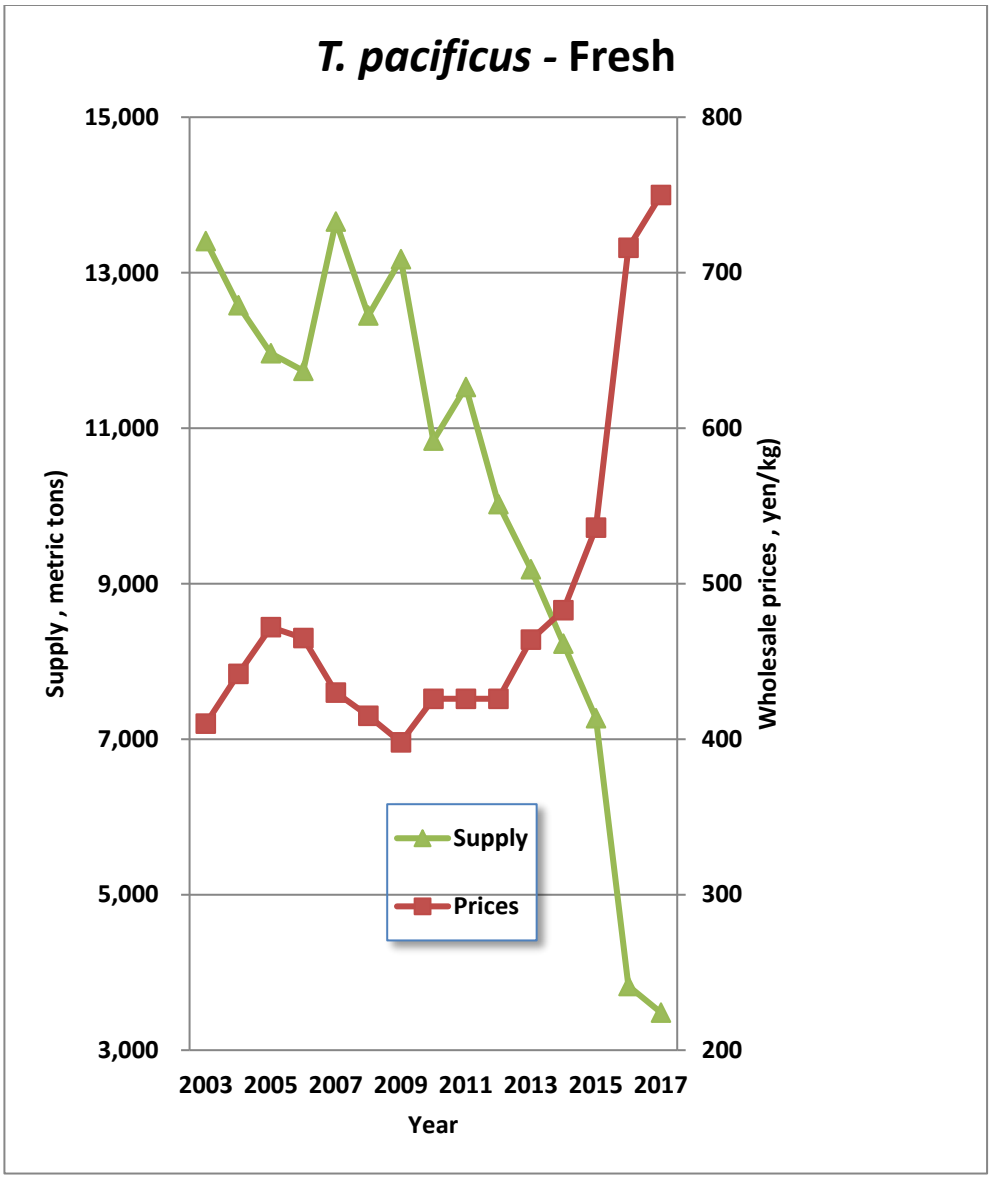

Figure 1. Annual average wholesale prices and supply of Fresh *T. pacificus* at Tokyo Central Wholesale Market, 2004-2017.

Source: Tokyo Metropolitan Government 2004-2018

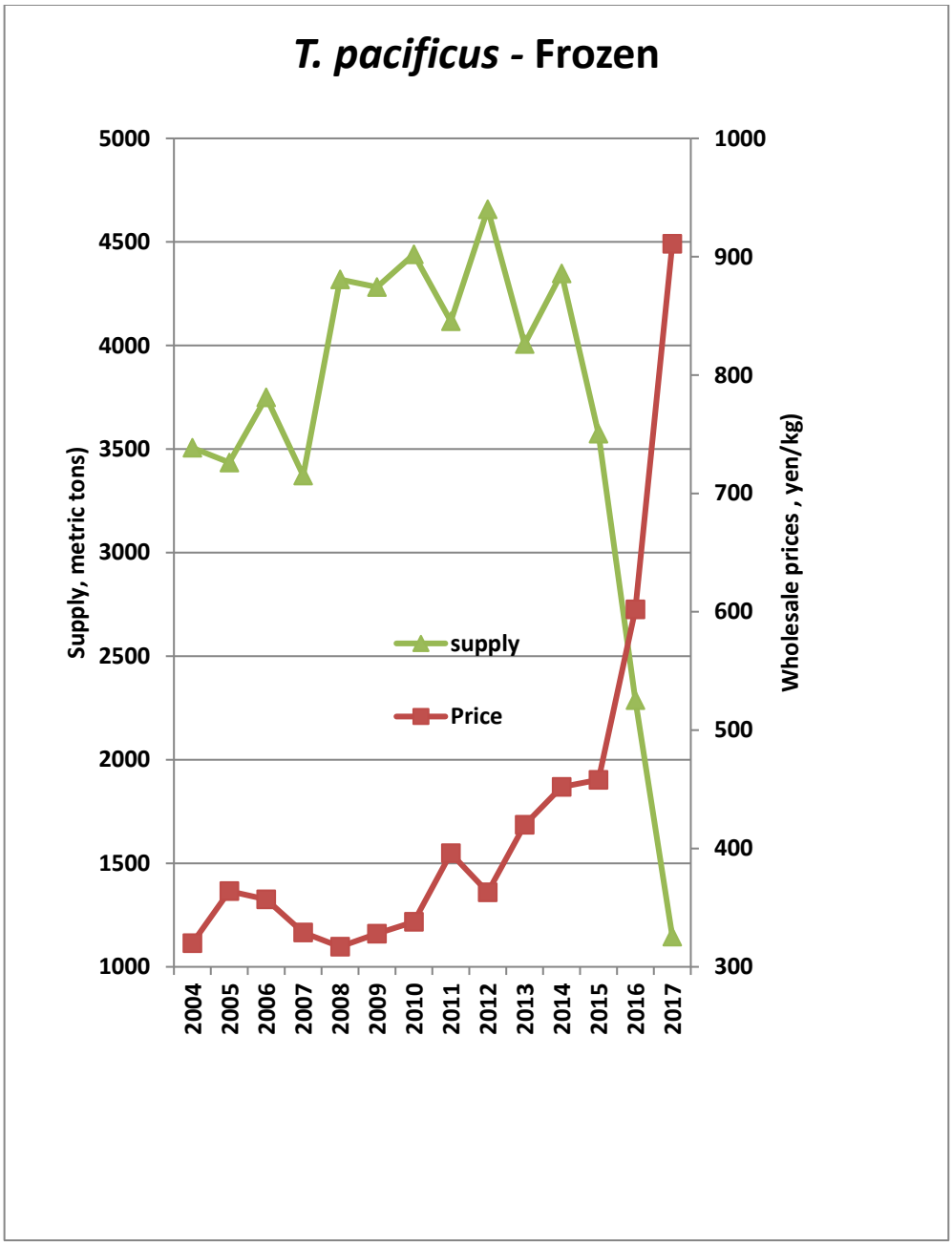

Figure 2. Annual average wholesale prices and supply of Frozen *T. pacificus* at Tokyo Central Wholesale Market, 2004-2017.

Source: Tokyo Metropolitan Government 2004-2018

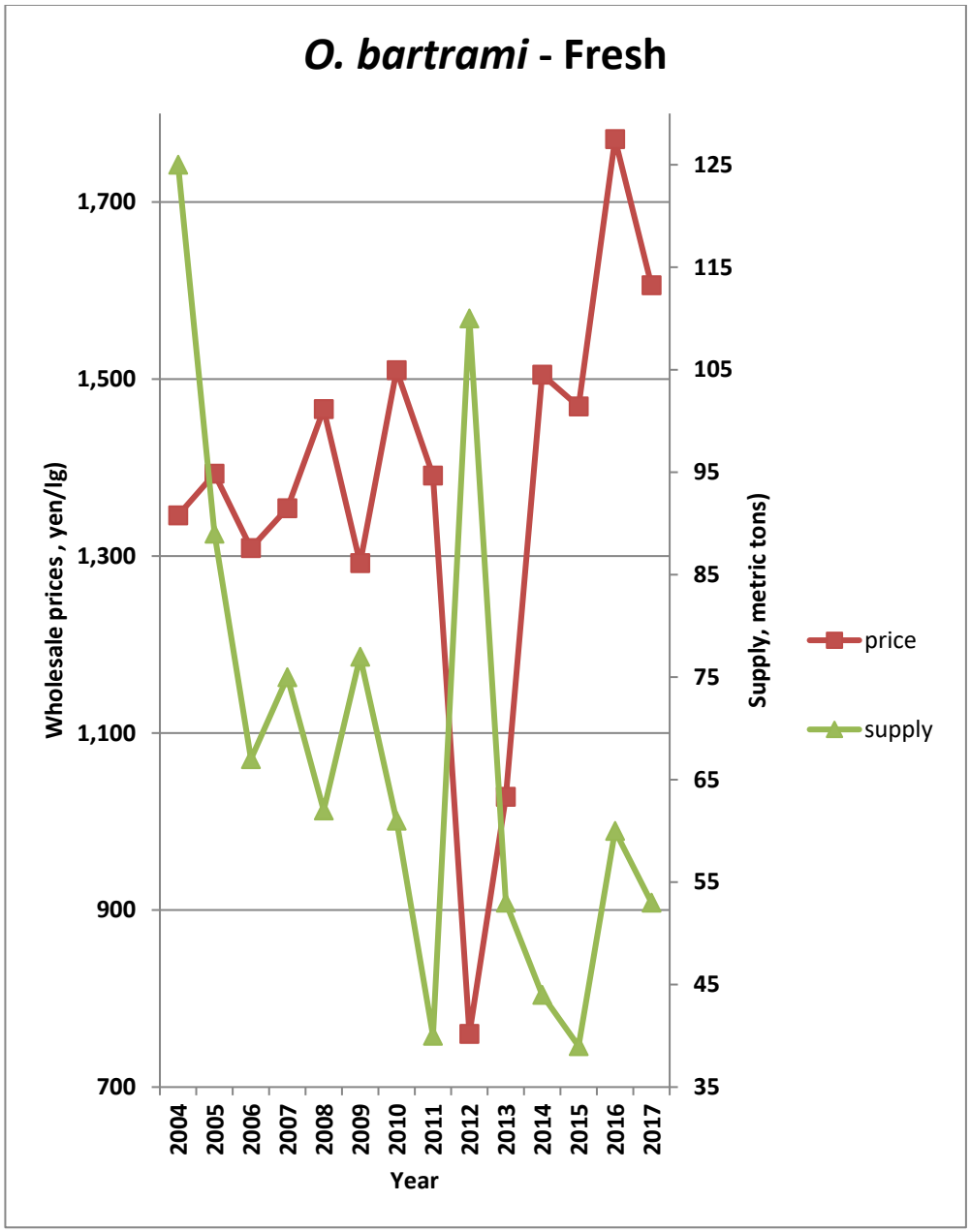

Figure 3. **Annual average wholesale prices and supply of Fresh *O. bartrami* at Tokyo Central Wholesale Market, 2004-2017.**

Source: **Tokyo Metropolitan Government 2004-2018**

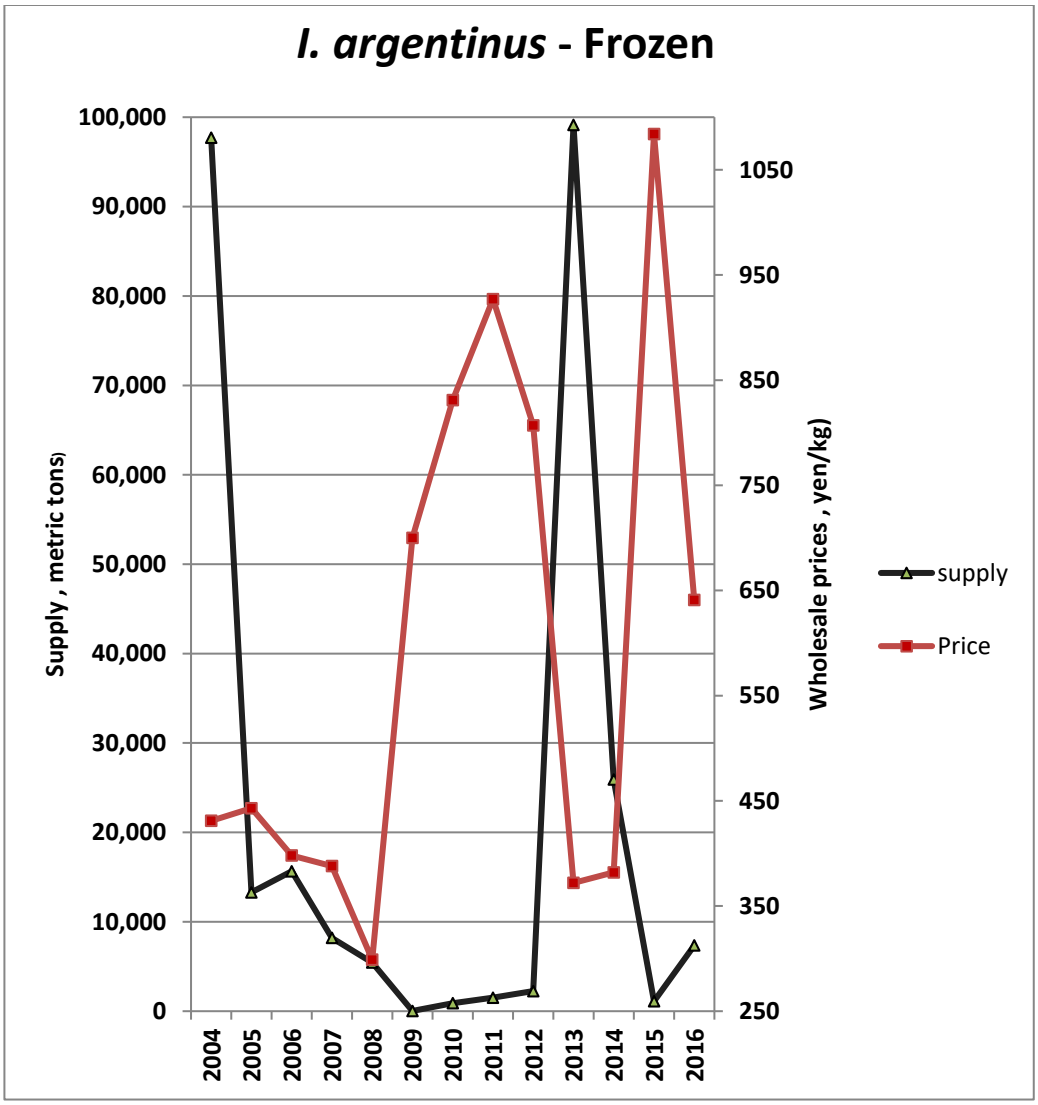

Figure 4. **Annual average wholesale prices and supply of frozen *I. argentinus* at Tokyo Central Wholesale Market, 2004-2017.**

Source: **Tokyo Metropolitan Government 2004-2018**

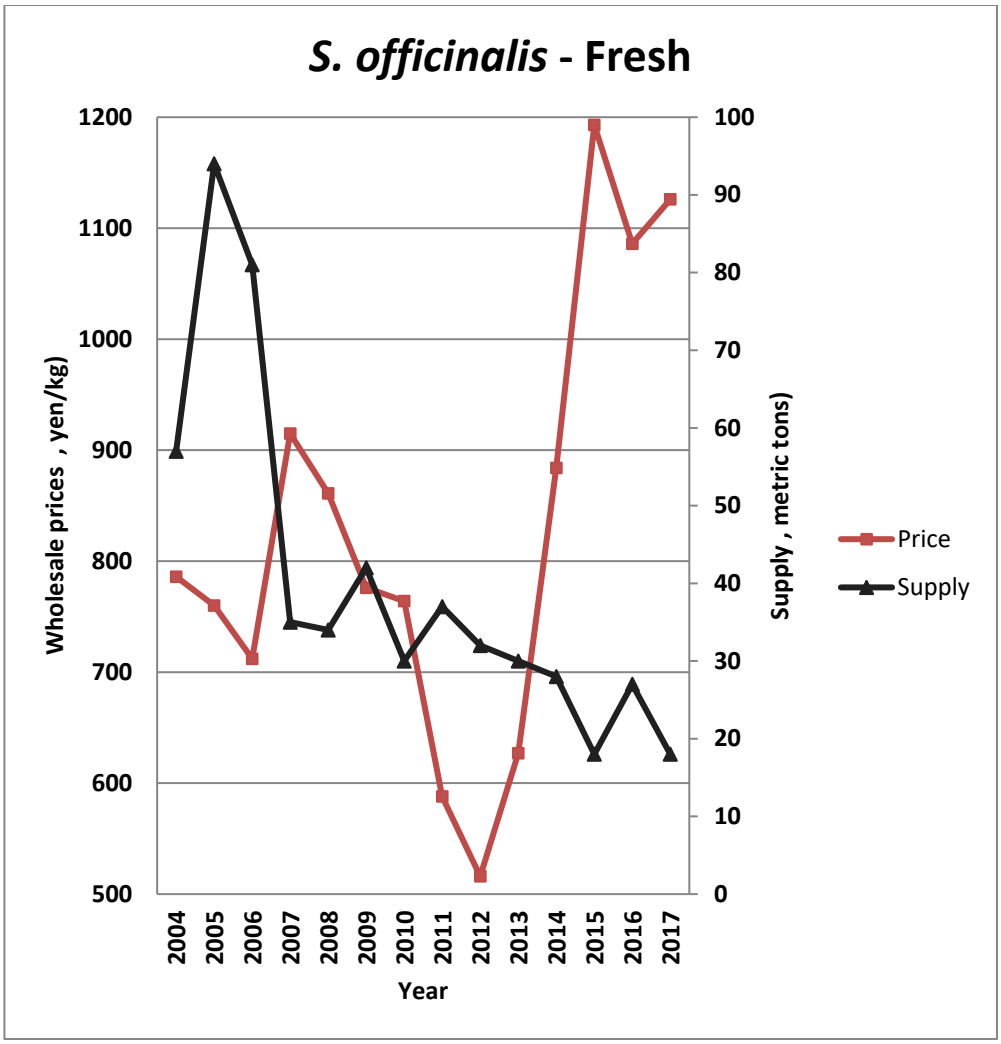

Figure 5. **Annual average wholesale prices and supply of Fresh *S.officinalis* at Tokyo Central Wholesale Market, 2004-2017.**

Source: **Tokyo Metropolitan Government 2004-2018**

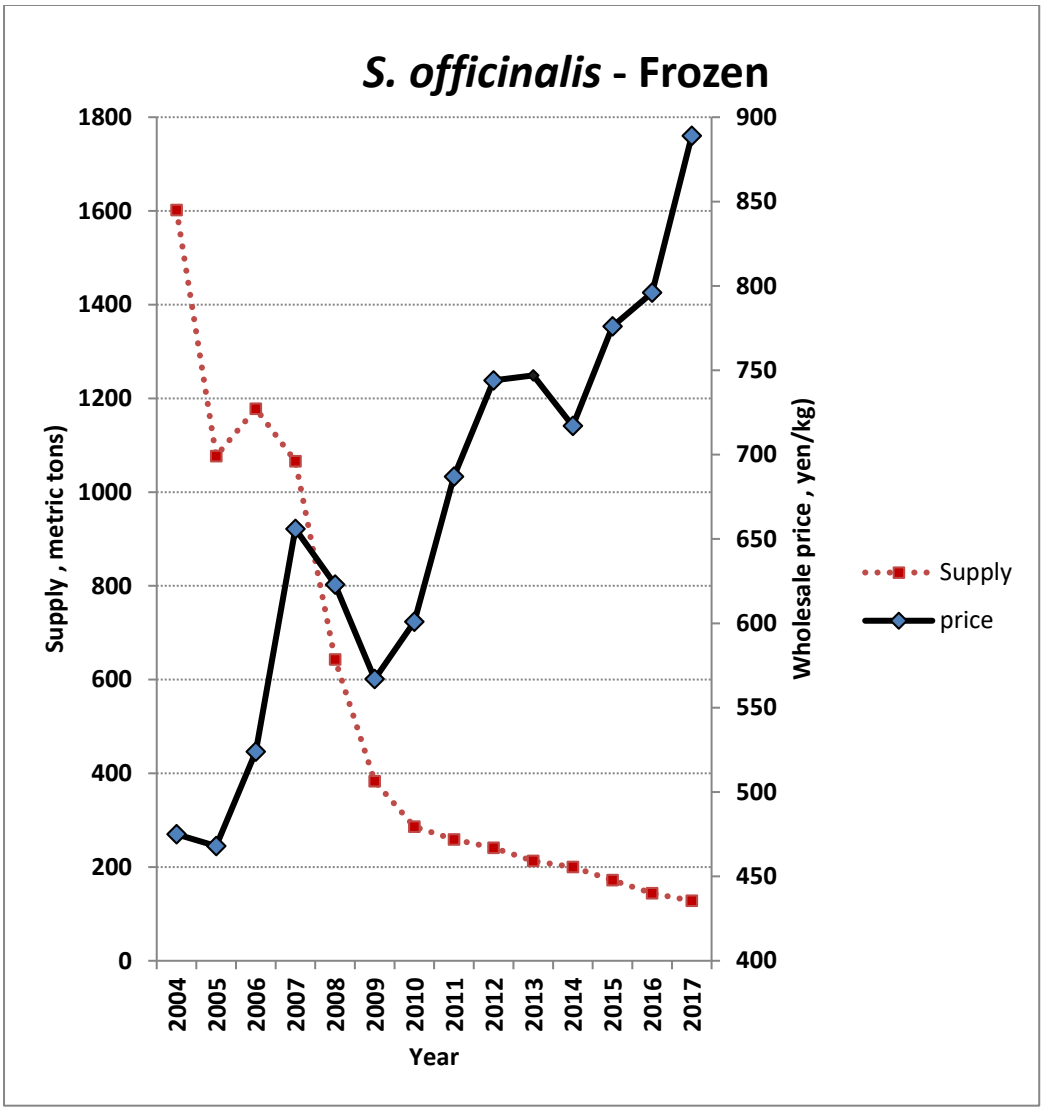

Figure 6. Annual average wholesale prices and supply of frozen *S.officinalis* at Tokyo Central Wholesale Market, 2004-2017.

Source: Tokyo Metropolitan Government 2004-2018

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