



*A Repeated Story of the  
Tragedy of the Commons*

*A Short Survey on the Pacific Bluefin Tuna Fisheries  
and Farming in Japan*

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## **Acknowledgements**

This study was funded by the Pew Charitable Trusts based on a research agreement between Waseda University and the Pew Charitable Trust on "Research and Analysis on Fisheries Issues in Japan." We gratefully acknowledge generous support from the Pew Charitable Trust.

## ***Introduction***

On November 17, 2014, the news that the International Union for the Conservation of Nature (IUCN) added the Pacific Bluefin tuna (PBF) to its Red List of Threatened Species as “Vulnerable,” which meant that it was threatened with extinction, made headlines and received substantial TV coverage around Japan. After citing the IUCN’s comment that the species was extensively targeted by the fishing industry for the predominant sushi and sashimi markets in Asia, *Mainichi Shimbun*, one of the major newspapers in Japan, reported that the population was estimated to have declined by 19 to 33% over the past 22 years<sup>1</sup>. *Nihon Keizai Shimbun*, a leading Japanese economic newspaper, referring to the fact that the American eel was also added to the List as “Endangered,” pointed out that “(the decrease of) both species are influenced by mass consumption by Japan, and it is possible that Japan will be asked by the world to strengthen its conservation measures.”<sup>2</sup> *Asahi Shimbun*, also a major Japanese newspaper, noted that this action by the IUCN was a kind of alarm bell for Japanese people to carry out their responsibility to increase this resource, reporting the view of an official of Japan’s Fisheries Agency (JFA) that “I think this is a warning which says that regulatory measures already decided should be implemented steadily” by the Western and Central Pacific Fisheries Commission (WCPFC), an international organization which regulates tuna and tuna-like species in the western Pacific region<sup>3</sup>.

PBF are in a critical condition, indeed. According to the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC), an expert body responsible for conducting regular stock assessments of tuna, billfish, and shark, and making recommendations to the Northern Committee, a subsidiary body of the WCPFC, “(t)he current PBF biomass level is near historically low levels and experiencing a high exploitation rate,” and that “(i)f the low recruitment of recent years continues, the risk of SSB (Spawning Stock Biomass: the amount of matured fish) falling below its historically lowest level observed would increase.” The ISC further warned that “an increase of SSB cannot be expected under the current WCPFC and IATTC<sup>4</sup> conservation and management measures, even under full

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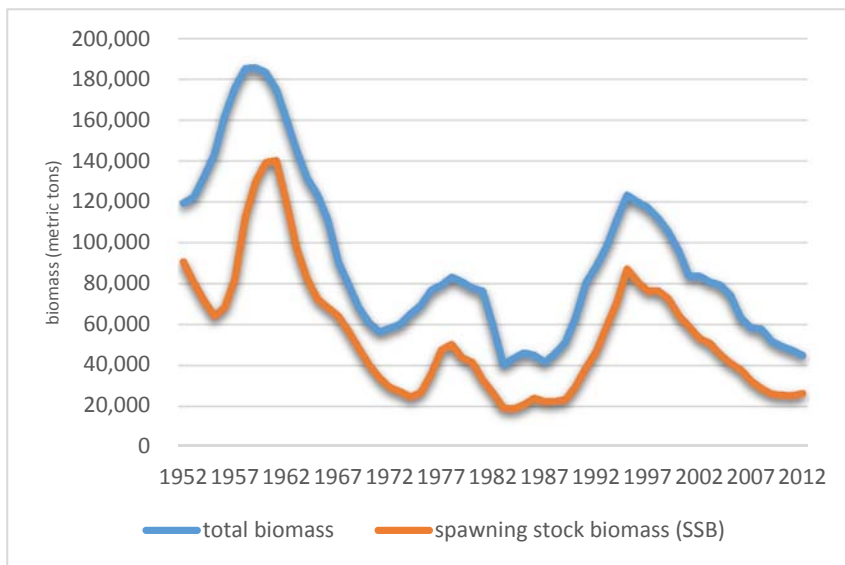
<sup>1</sup> IUCN, “Global appetite for resources pushing new species to the brink – IUCN Red List,” November 17, 2014, accessed March 15, 2015, [http://www.iucn.org/news\\_homepage/news\\_by\\_date/?18621/Global-appetite-for-resources-pushing-new-species-to-the-brink--IUCN-Red-List](http://www.iucn.org/news_homepage/news_by_date/?18621/Global-appetite-for-resources-pushing-new-species-to-the-brink--IUCN-Red-List); *Mainichi Shimbun*, November 18, 2014.

<sup>2</sup> *Nihon Keizai Shimbun (electronic edition)*, November 17, 2014.

<sup>3</sup> ISC, “Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean,” July 2014, p. 32.

<sup>4</sup> Inter-American Tropical Tuna Commission. This organization is responsible for management tuna and tuna-like species as well as their bycatch species such as shark and sea turtles.

implementation,<sup>5</sup> presenting the trend of PBF population, which is reproduced in Figure 1.



The figure, while showing an appreciable decline and a very low level of amount in recent years, may not seem to be so critical which calls for immediate and urgent actions as it seems to indicate that current spawning stock biomass still keeps about one-seventh of

**Figure 1: Total biomass and spawning stock biomass of PBF**

WCPFC, "Stock Assessment of Bluefin Tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group," WCPFC-SC10-2014/SA-WP-11, Aug. 2014, p. 72.

the highest number recorded in the figure. However, intensive commercial PBF fisheries has begun well before the systematic statistics were kept, and it is thought that the current spawning stock biomass in 2012 is "approximately 4% of the stock's estimated unfished SSB levels," as the IUCN points out in the Red List of Threatened Species<sup>6</sup>.

As it accounts for 63% of the total harvest of PBF (2004-2013 average)<sup>7</sup>, the role and the responsibility of Japan is critical with regard to conservation and management of PBF species. This report therefore focuses on the PBF fisheries and regulations in Japan, illuminating core issues and problems which call for attention and solutions both domestically and internationally.

The report consist of two parts. In Part One, we will take up fisheries, management measures, and market value of PBF in Japan. Specifically, we would like to shed light on purse seine fisheries in the Sea of Japan and the effects on other PBF fisheries and fishermen as well as PBF stocks. In addition, we will deal with the regulations currently in force in Japan as well as in the WCPFC, and consider whether these measures are effective in conservation and restoration of PBF stocks. In Part Two, we will take up PBF farming in Japan. As the Japanese government itself only recently began to grasp the whole picture of PBF farming and the sensitivity of the issue, the current situation of this business is not well understood even in

<sup>5</sup> *Asahi Shimbun*, November 18, 2014.

<sup>6</sup> The IUCN Red List of Threatened Species, "Thunnus orientalis (Pacific Bluefin Tuna)," accessed March 20, 2015, <http://www.iucnredlist.org/details/170341/0>.

<sup>7</sup> ISC, "Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean," July 2014, p. 69.



Japan. We will articulate who conducts PBF farming and to where and what extent, referring to problems around PBF aquaculture.

Our report may be the first opportunity to provide readers with a compendium of PBF fishing and aquaculture in Japan. We hope that the report can contribute toward enhancing understanding with regard to the issue on PBF, thereby also contributing to the conservation and management of this species.

## **List of Abbreviations**

ABF: Atlantic Bluefin Tuna

CCSBT: Commission for the Conservation of Southern Bluefin Tuna

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora

FRA; Fisheries Research Agency of Japan

ICCAT: International Commission for the Conservation of Atlantic Tunas

ISC: International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean

IATTC: Inter-American Tropical Tuna Commission

IUCN: International Union for the Conservation of Nature

JFA; Japan's Fisheries Agency

JPY: Japanese Yen

PBF: Pacific Bluefin Tuna

SBT: Southern Bluefin Tuna

SSB: Spawning Stock Biomass

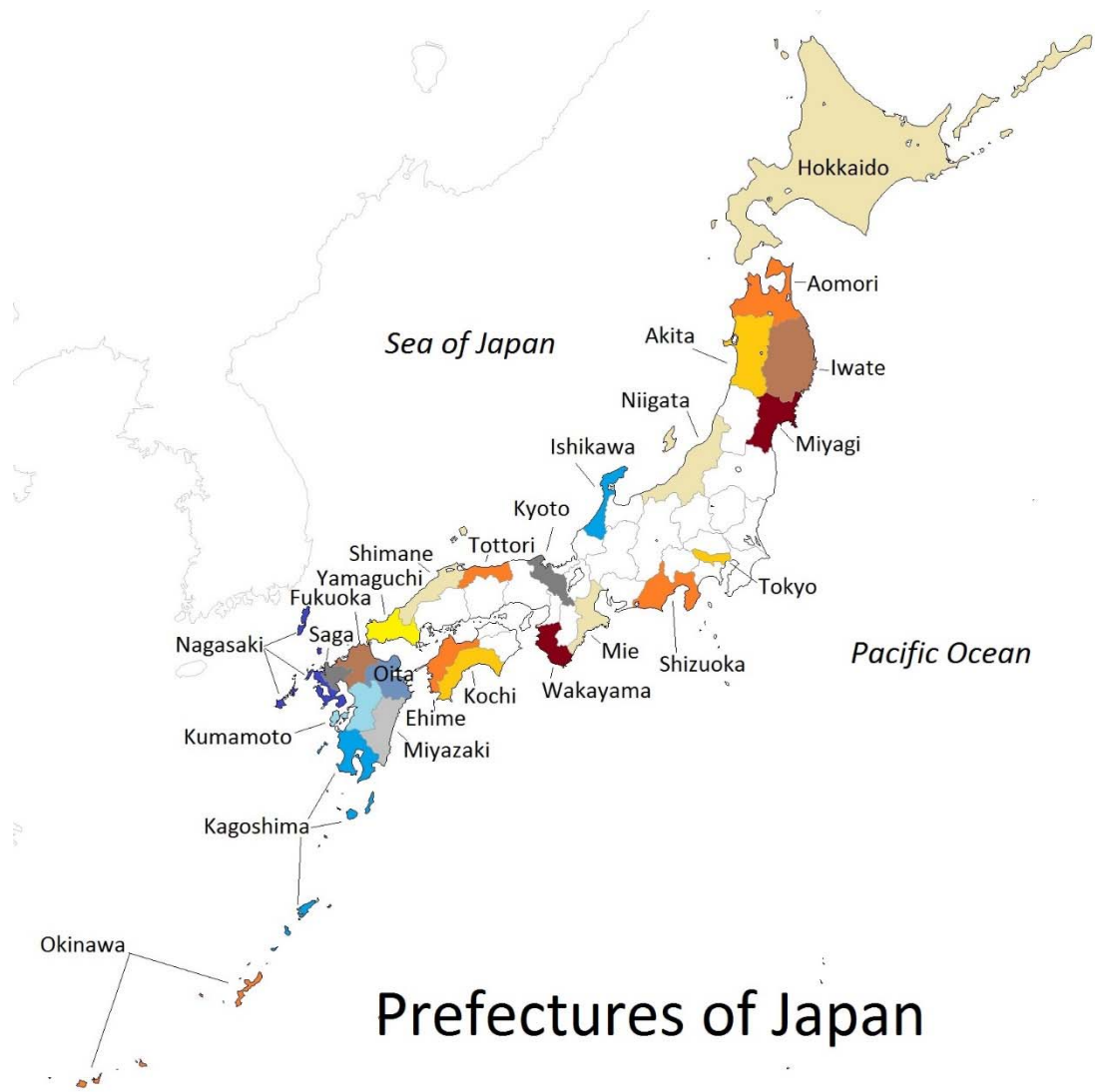
WCPFC: Western and Central Pacific Fisheries Commission

### ***Exchange conversion***

All figures in this report are converted at roughly 120 yen to a dollar to make calculation simple.

### **About the Author**

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# Prefectures of Japan

## Cities, towns, and islands referred in this report

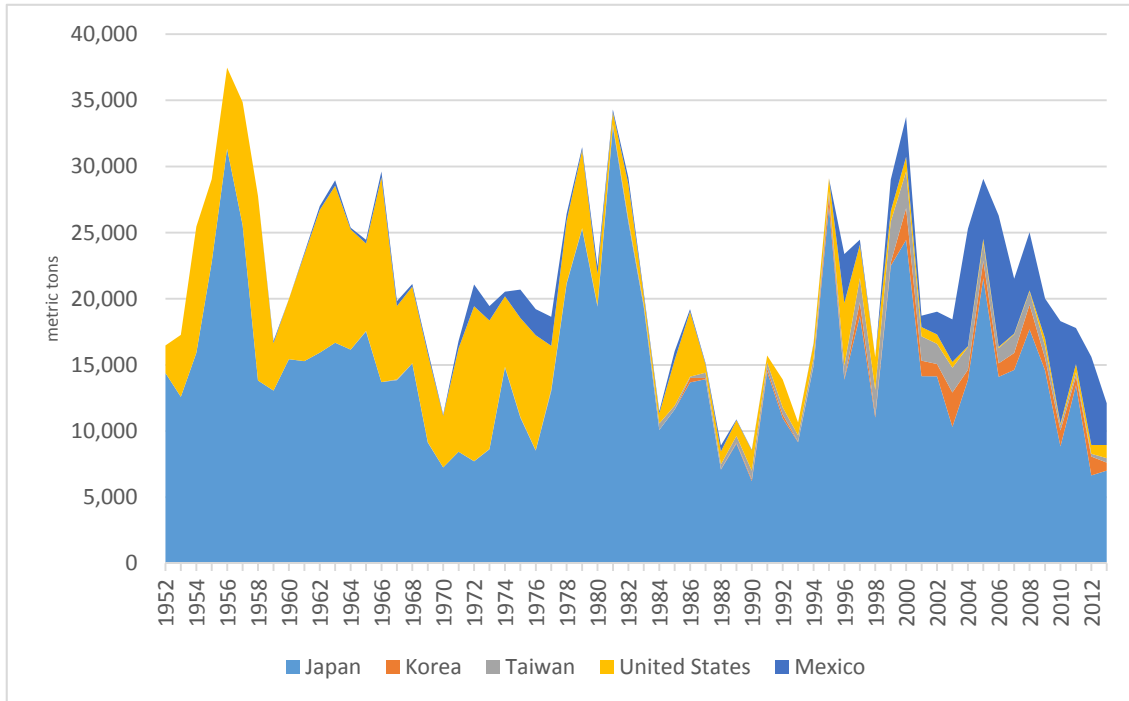


## ***PART I: PBF Fisheries in Japan***

### **Summary**

In this part, we will take up tuna fisheries, market, and regulations in Japan and associated issues. First, after briefly touching upon the tuna fisheries of the world, we will discuss tuna fisheries in Japan by examining fishing methods, ages of tuna captured, area of harvest, extent of fishing, and principal landing places. Second, we will deal with purse seine PBF fishing in the Sea of Japan and Sakaiminato, the largest landing port of PBF fisheries in Japan. In doing this, we will point out that one of the reasons of the development of PBF fisheries in Sakaiminato was the resource depletion of sardine and mackerel caused by overexploitation of these species and the need for alternative fish species for commercial harvesting, and second, development of PBF purse seine fisheries caused resource depletion of this species as evidenced by the decline of catches, average length, and weight of harvested PBF. Moreover, purse seine fisheries in the Sea of Japan are targeting spawning stocks, which may cause devastating effects on reproduction of PBF. Third, we will take a look at the effects which may be caused by massive overexploitation by touching on the situation of pole and line and longline PBF fisheries in the Iki Island of Nagasaki Prefecture and Katsuura, Wakayama Prefecture. Fourth, we will examine market value of PBF by looking at the amount, average price, total value landed in major port and Tokyo Tsukiji fish market, stockpiles of fresh as well as frozen tuna, import, and export bluefin tuna. Fifth, we will discuss international and domestic regulatory measures with regard to PBF and show that they are not sufficient for the conservation and restoration of this species, as most of them merely let current fisheries remain untouched except for the reduction of catches of juvenile tuna. This part concludes by showing that stock status of PBF is getting worse to the point that collapse of PBF may be close at hand, and stresses the importance of substantial strengthening of conservation measures by the WCPFC or trade restriction through the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

## 1 Overview



**Figure 2: Catch of PBF** ISC, "Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean," July 2014, p. 69.

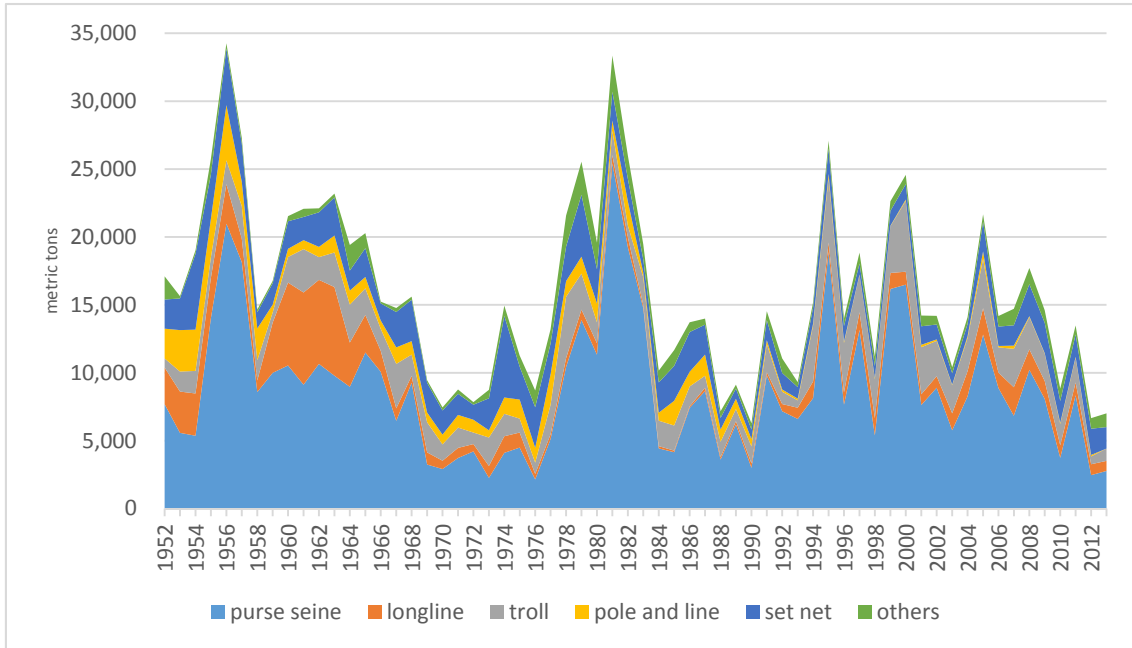
As a first step to grasp PBF fisheries, let us take a look at Figure 2, which shows the world catch of PBF divided by country. As the figure clearly shows, most Pacific bluefin tuna (PBF) has been caught by Japan (7,014 tons in 2013), which accounts for 58% of total catches in the entire Pacific Ocean, and 88% in the western Pacific region in 2013 (12,100 tons). In the western side of the Pacific, Korean offshore large purse seiners took 604 tons in 2013, the main fishing ground of which is the southern waters off Korea around Jeju Island<sup>8</sup>. The majority of catch from Taiwan has come from longline vessels, with 331 tons of landing being recorded in 2013<sup>9</sup>.

The United States and Mexico catch PBF in the Eastern Pacific Ocean region. While purse seiners in the United States had captured a sizable number of bluefin in the past, sports fishing occupies the bulk of catches in recent years. Mexico has emerged as the second largest takers, catching 3,154 tons of PBF in 2013. It began PBF farming in 1997, and almost all of their catch is destined for tuna farms. The Mexican purse-seine fleet now accounts for almost all of the PBF catch from the eastern Pacific Ocean except for sports fisheries in the

<sup>8</sup> ISC, "Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean," July 2014, p. 14.

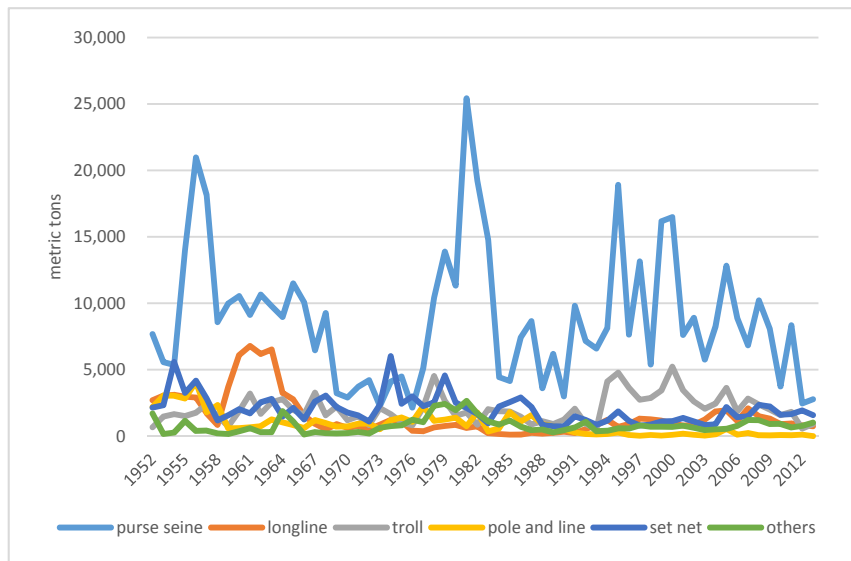
<sup>9</sup> *Ibid.*, p. 69.

United States mentioned above<sup>10</sup>.



**Figure 3: PBF catches in Japan** ISC, "Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean," July 2014, p. 69.

Figure 3 and Figure 4 gives the amount of PBF catches in Japan divided by the type of fishing gear. Purse-seine fishing has been and still is the dominant way of catching, which accounted for 40% (2,771 tons) of catch in 2013.



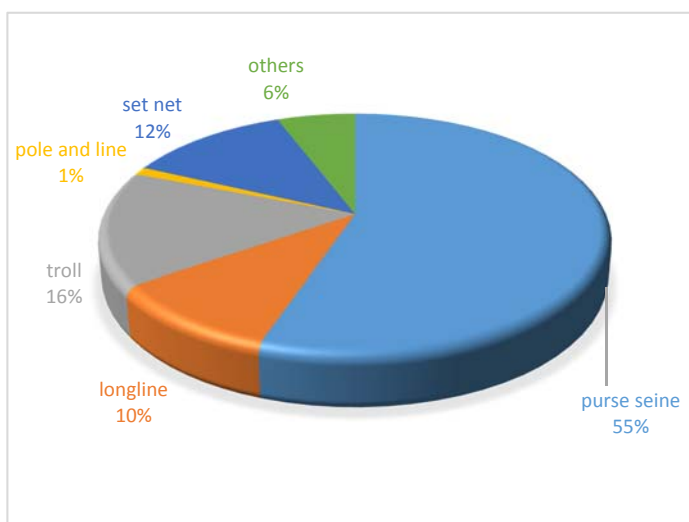
**Figure 4: PBF catches in Japan** ISC, "Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean," July 2014, p. 69.

Purse seine vessels had caught PBF off the coast of Aomori, Iwate, and Miyagi Prefectures in the Pacific Ocean during the summer season<sup>11</sup>, with the amount of catch reaching a peak in

<sup>10</sup> ISC, "Report of Pacific Bluefin Tuna Working Group Workshop," December 2008, p. 5.

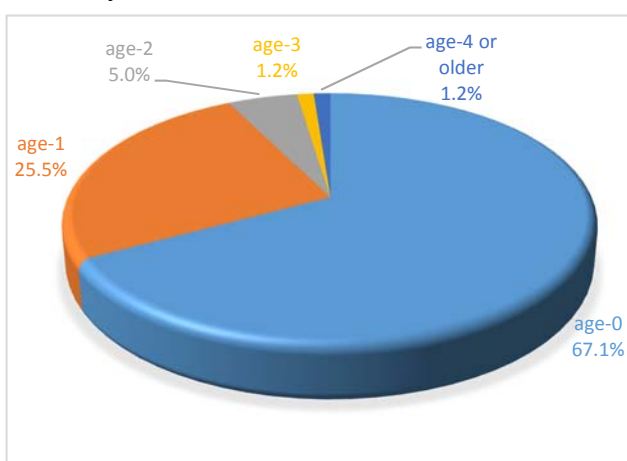
<sup>11</sup> Fisheries Research Agency, "Heisei 25 nendo kokusai gyogyo shigen no genkyo: Taiheiyo kuromaguro (State of the international fisheries resources in 2013: Pacific bluefin tuna)," 2014, accessed February 20, 2015, [http://kokushi.job.affrc.go.jp/H25/H25\\_04.html](http://kokushi.job.affrc.go.jp/H25/H25_04.html).

1981 at 25,422 metric tons. After 2004, most PBF has been harvested in the Sea of Japan by purse seiners, as we will touch on later in this section. As to the 2003 – 2012 average, purse seine vessels have caught 55% of PBF, followed by troll (16%), set net (12%), and longline (10%) (see Figure 5). The fishing grounds are generally coastal or near-shore waters, extending from Hokkaido to the Ryukyu Islands<sup>12</sup>. The distant-water longline fishery also catches a relatively small numbers of Pacific bluefin tuna.



**Figure 5: PBF catches in Japan /2003 – 2012 average**

Source: ISC, “Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean,” July 2014, p. 69.



**Figure 6: Ratio of PBF caught by age**

JFA, “Taiheiyō kuromaguro no shigen jōkyō to kanri no hokosei ni tsuite (Stock status and the management direction of Pacific bluefin tuna),” March, 2015, p. 5.

four or more. It is thought that PBF began spawning from the age of three and 20% of them mature by that age; 50% by four years of age; and 100% by five years of age. This means that more than 95% of them are caught before they can reproduce, which is one of the biggest problems with regard to the conservation of PBF stocks. The average weight, length, and rate of matured fish are shown in Table 1.

Figure 6 shows the ratio of PBF caught by age in the Pacific Ocean. Nearly 70% of them are harvested at the age of zero and only 1.2% is age-

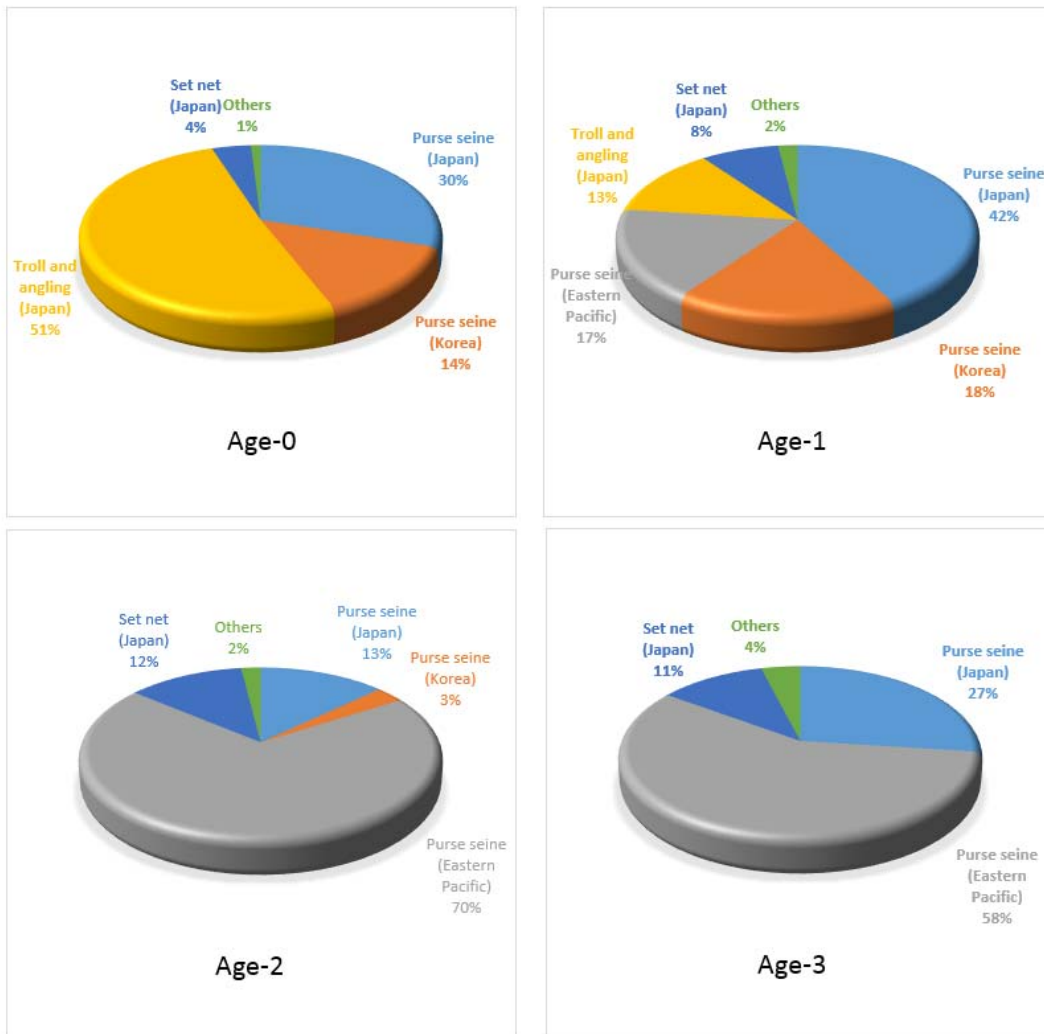
**Table 1: Age, average weight, length, and the rate of maturity of PBF**

JFA, “Taiheiyō kuromaguro no shigen jōkyō to kanri no hokosei ni tsuite (Stock status and the management direction of Pacific bluefin tuna),” March, 2015, p. 3.

age	length (cm)	weight (kg)	matured fish
0	30	0.4	
1	66	5.7	
2	97	19	
3	124	39	20%
4	145	63	50%
5	163	90	100%

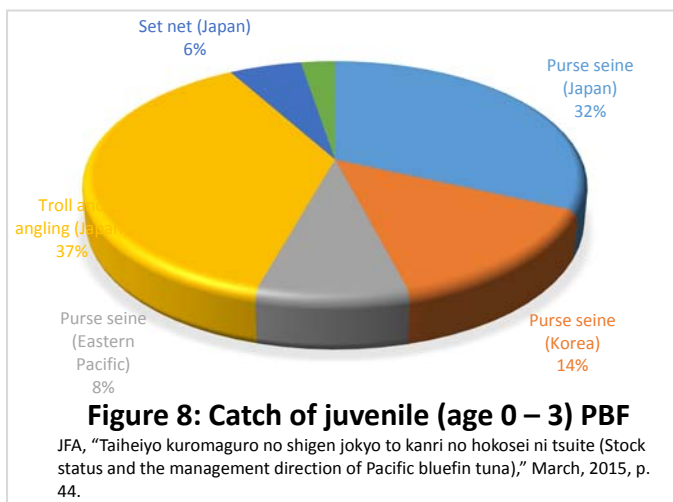
<sup>12</sup> ISC Pacific bluefin tuna Working Group, “Stock Assessment of Pacific Bluefin Tuna in 2010,” WCPFC-SC9-2013/ SA-WP-10 (Rev 1), July 30, 2013, p. 17.





**Figure 7: Catch of juvenile (age 0 – 3) PBF**

JFA, "Taiheiyō kuromaguro no shigen jōkyō to kanri no hokosei ni tsuite (Stock status and the management direction of Pacific bluefin tuna)," March, 2015, p. 44.



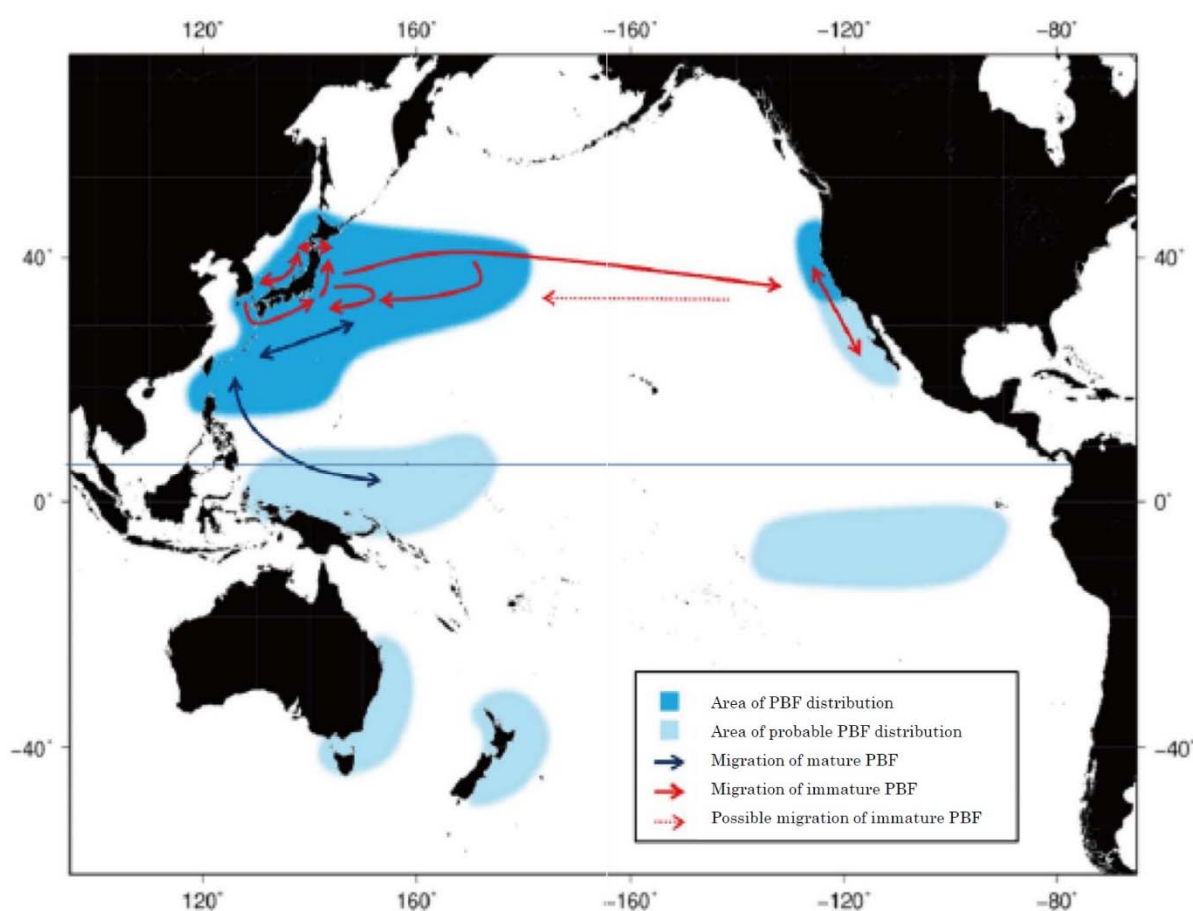
**Figure 8: Catch of juvenile (age 0 – 3) PBF**

JFA, "Taiheiyō kuromaguro no shigen jōkyō to kanri no hokosei ni tsuite (Stock status and the management direction of Pacific bluefin tuna)," March, 2015, p. 44.

Figure 7 and Figure 8 give the proportion of juvenile PBFT divided by gear type and age. In the Western Pacific, age-0 fish are mainly caught by troll, angling, and purse seine vessels which sold them for food as well as for farming seeds. Principal takers of one-year-old juveniles are purse seiner operating in western Japan as well as Korean purse seine vessels which sell them for human

consumption. As part of juvenile PBF (age 1-3) migrate across the Pacific Ocean toward off

the coast of Mexico, and spend up to several years in the Eastern Pacific Ocean before returning to the Western Pacific to reproduce (see Figure 9 for migration pattern and areas of distribution of PBF)<sup>13</sup>, Mexican purse seine vessels account for more than half of the age-3 and age-4 PBF catch, which are primarily then sold to tuna farmers. A substantial amount of age-2 and age-3 PBF are also captured by Japanese purse seine vessels operating in the



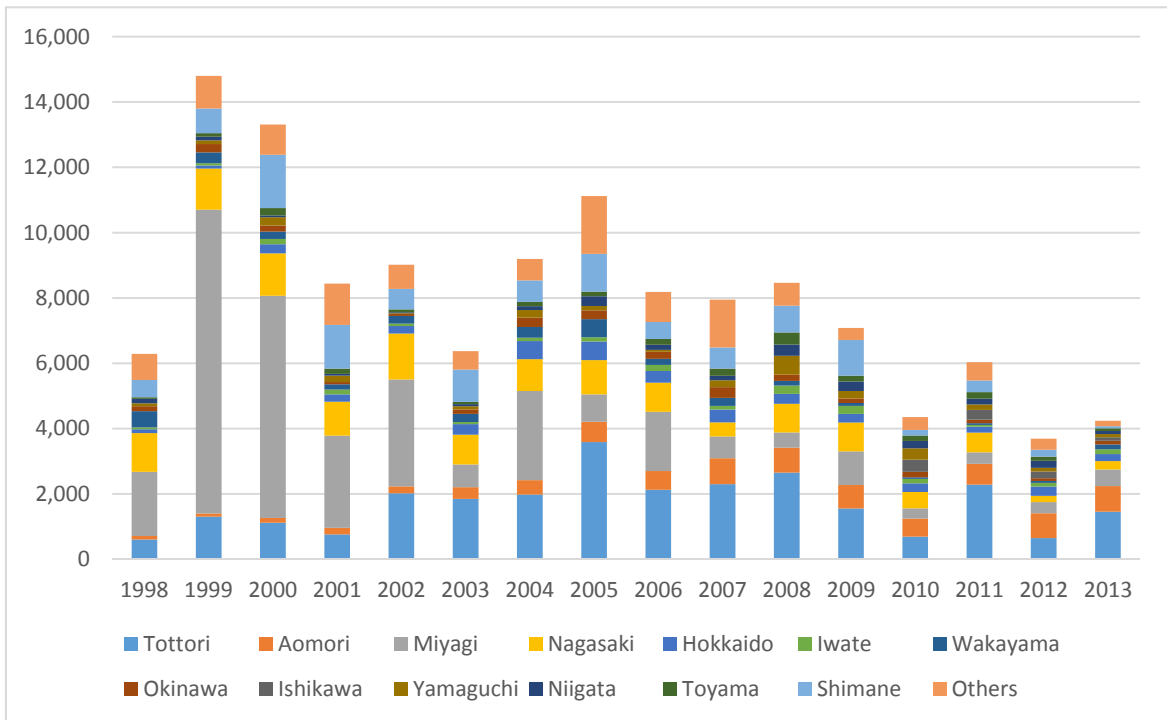
**Figure 9: Distribution of PBF**

ISC, "Stock assessment of bluefin tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group," 2014, p.25.

Sea of Japan.

Figure 10 gives the trend of PBF catches divided by fish landing prefecture from 1998 to 2013. While substantial amount of PBF had been landed at ports such as Shiogama, Miyagi Prefecture, located on the Pacific side, Tottori Prefecture, along the coast of the Sea of Japan, came in at first place in 2003 with 1,851 tons of PBF catches, and has maintained its No. 1 position since 2005, except in 2012 (see also Appendix I for actual figures from 1998 to 2013).

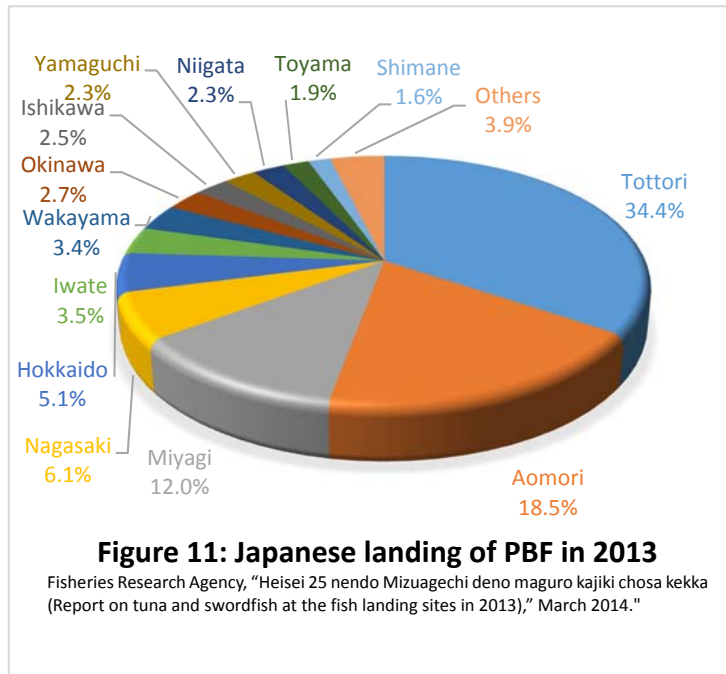
<sup>13</sup> ISC, "Stock assessment of bluefin tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group," 2014, p.25.



**Figure 10: PBF landing in Japan (metric tons)**

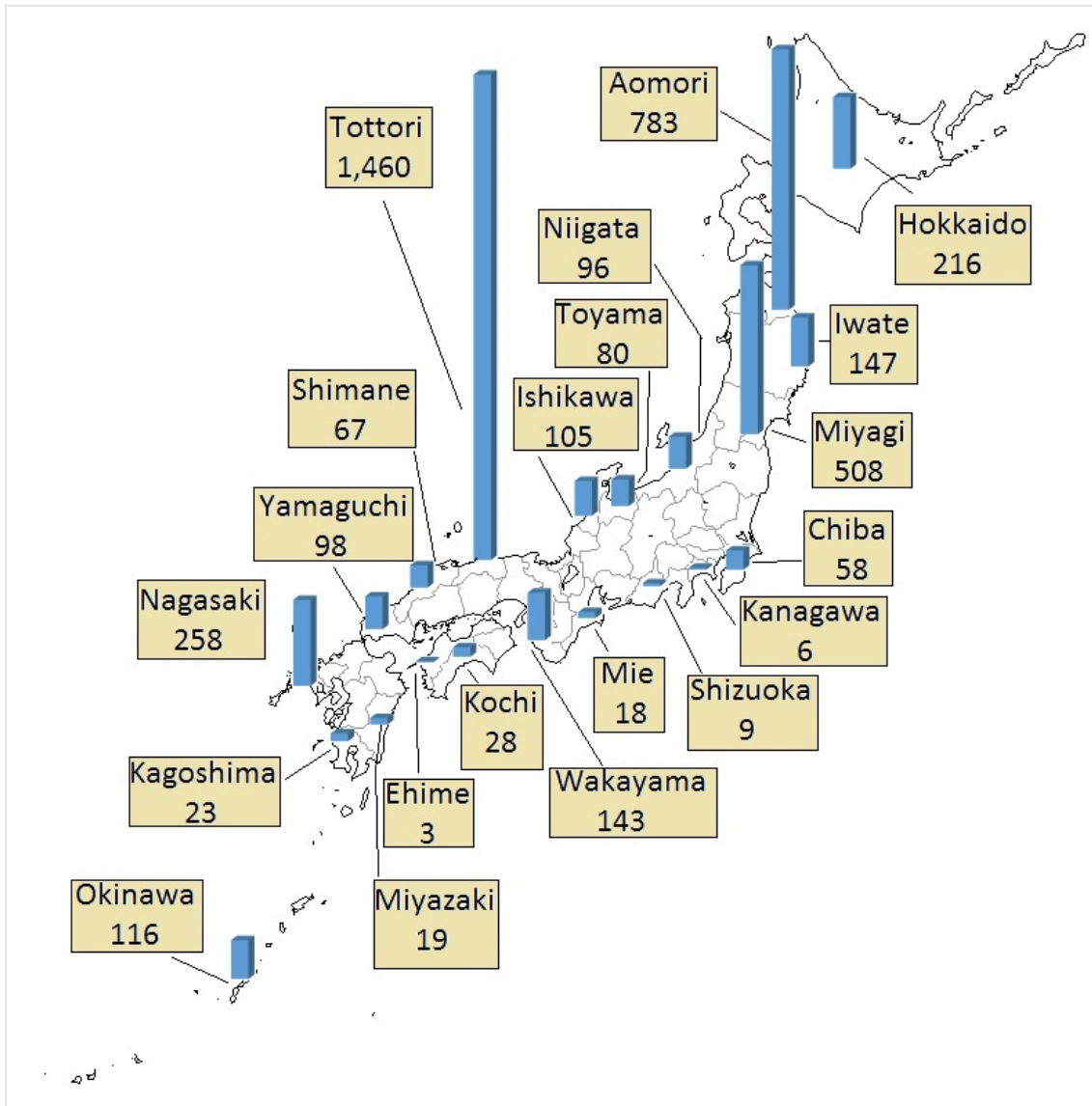
Fisheries Research Agency, "Nihon syuhen kokusai gyorui sigen chosa houkokusho," 2008-2011; Fisheries Research Agency, "Mizuagechi deno maguro kajiki tyosa kekka" 2012-2014."

Figure 11 and Figure 12 present the number and the percentage of Japanese PBF landing in 2013. Tottori Prefecture, in which almost all purse seiners landed PBF caught in the Sea of Japan at the Sakaiminato port, accounts for one-third (1,460 tons) of landing of PBF. Aomori Prefecture, which is well known to many Japanese for the highest-priced tuna caught by fishermen in Oma, ranks second (18.5%) with 783 tons of PBF landed in Oma, Fukaura, and other fishing ports. Miyagi Prefecture, with its three major landing port of Shiogama, Ishinomaki, and Kesenuma facing the Pacific Ocean, came in third with 508 tons of PBF.



**Figure 11: Japanese landing of PBF in 2013**

Fisheries Research Agency, "Heisei 25 nendo Mizuagechi deno maguro kajiki chosa kekka (Report on tuna and swordfish at the fish landing sites in 2013)," March 2014."



**Figure 12: Catches of PBF in 2013 (metric tons)**

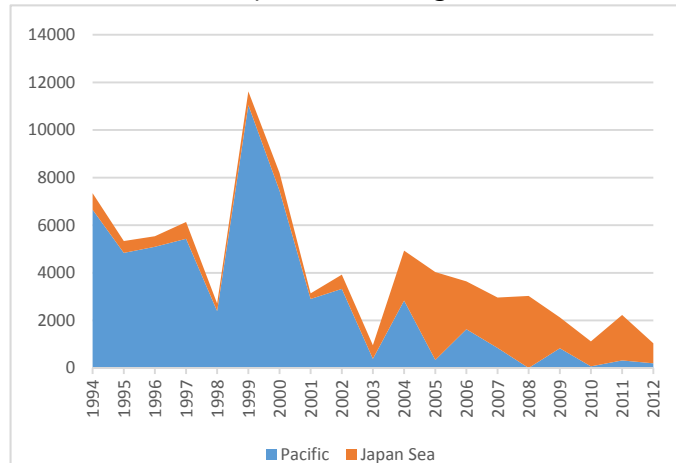
Fisheries Research Agency, “Heisei 25 nendo Mizuagechi deno maguro kajiki chosa kekka (Report on tuna and swordfish at the fish landing sites in 2013),” March 2014.

## 2 Sakaiminato (Tottori) and purse-seine catching

Purse seines, made of a long wall of netting framed with floatline and leadline, and which has purse rings hanging from the lower edge of the gear, is well known for being the most efficient gear for catching small and large pelagic species which are in shoals. While main fishing ground of Japanese purse seine PBF fishing had been in the Pacific Ocean before early 2000s, PBF fishing efforts by purse seining shifted in 2004, after the point when most PBF had been harvested off the coast of the Sea of Japan (See Figure 13). Purse seiners, which had

operated to catch mackerel and sardines in the Sea of Japan before, began to fish PBF in the summer. In addition, vessels which had fished PBF in the Pacific moved to the Sea of Japan to catch this species during the summer.

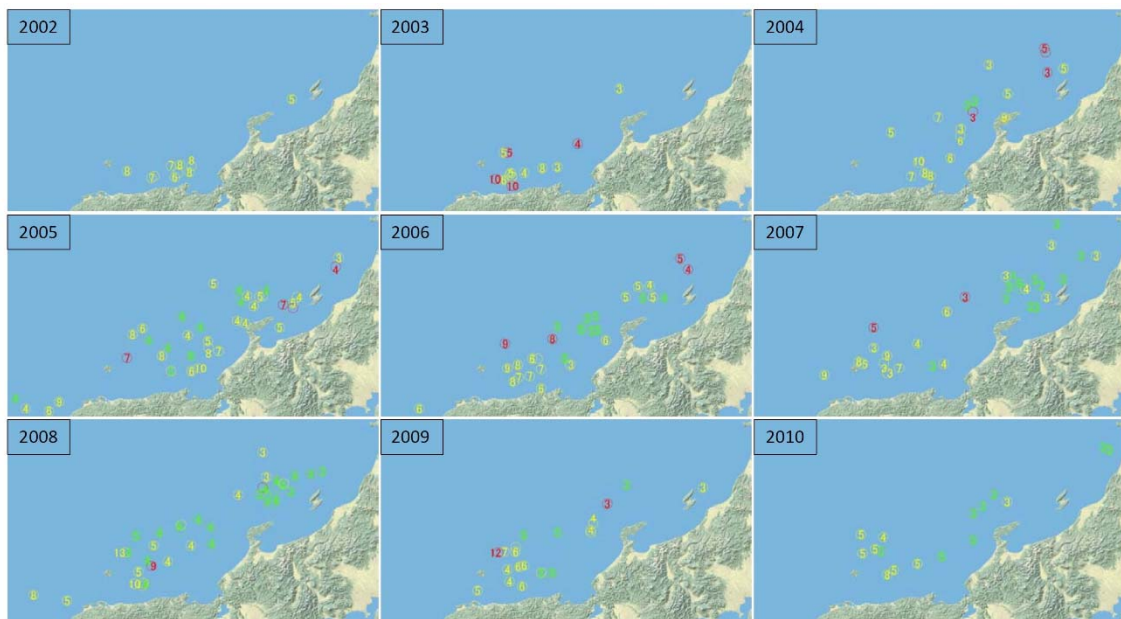
Figure 14, which is quoted from the report submitted to the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC), shows us when and where purse-seiner capture PBF in the Sea of Japan, as well as the ages of fish harvested. As the report



**Figure 13: Landing of PBF by purse seine vessels (metric tons)**

JFA, "Taiheiyo kuromaguro no shigen yoshoku kanri ni kansuru zenkoku kaigi: shiryō 3 (sankō shiryō) (The national conference on the management of Pacific bluefin tuna resources and farming: Document No. 3 (reference material)), August 26, 2014, p. 15.

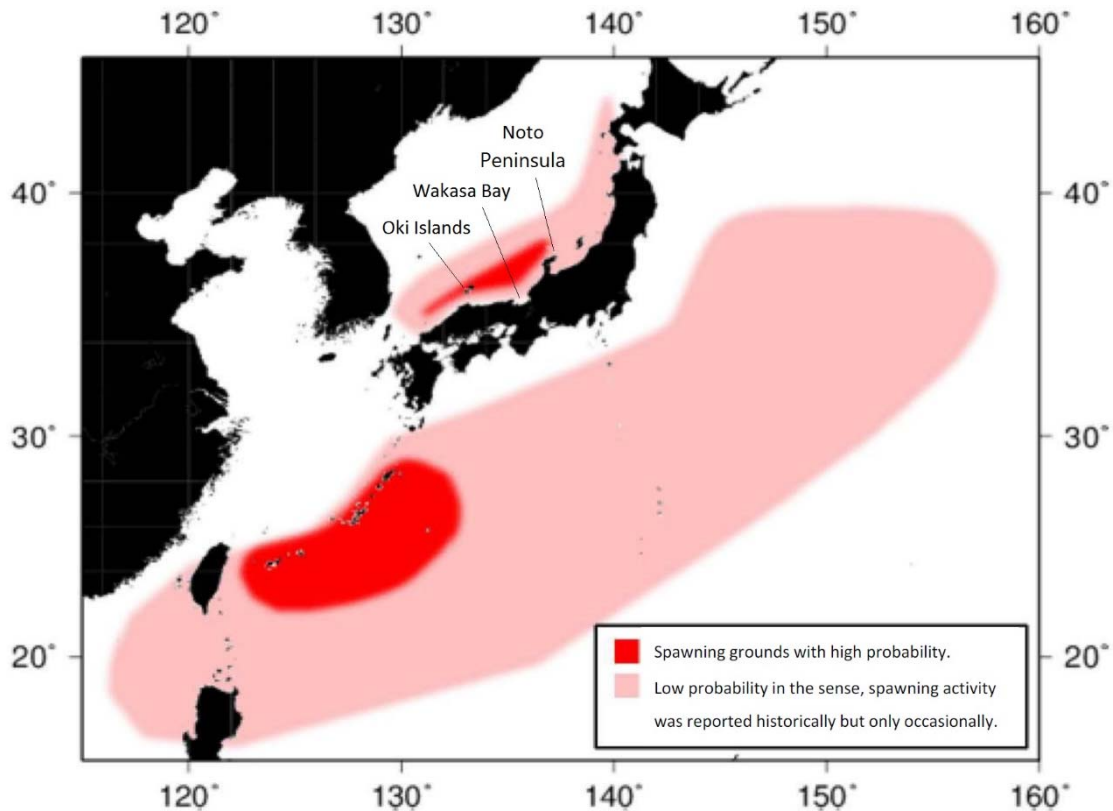
suggests, the increase of catches was caused by the decrease in PBF fishing by purse-seine vessels in the Pacific, and the relocation of fishing operations from the Pacific to the Sea of Japan, as well as the expansion of fishing grounds toward the west and the north.



**Figure 14: Fishing operation position and average age in each operation**

Each color indicates the operation month (June: green, July: yellow, August: red)

Hiromu Fukuda, Minoru Kanaiwa, Isana Tsuruoka, and Yukio Takeuchi, "A review of the fishery and size data for the purse seine fleet operating in the Japan Sea (Fleet 3)," ISC/12/PBFWG-3/03, November 2012, p. 9.



**Figure 15: Spawning ground for PBF**

ISC, "Stock assessment of bluefin tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group," 2014, p.25.

Fishing grounds and period of PBF in the Sea of Japan as shown in Figure 14 match up precisely with the spawning grounds and period of this species, which is shown in Figure 15. In the Sea of Japan, PBF starts spawning off Wakasa Bay in late June, and spawns around the area between Oki Islands and Noto Peninsula in July<sup>14</sup>. Spawning stocks migrate in schools, swimming at high speeds in the deep water without feeding. Recent technological development of sonars allow purse seine fishermen to chase these stocks until they surface in order to lay eggs, when Purse seiners encircle these school with nets and capture a great haul of tuna in one shot<sup>15</sup>.

Figure 17 below shows the amount of PBF landed from 2007 to 2013 divided by prefecture. While a certain amount of fish are landed in Shimane, Ishikawa, and Niigata on the Sea of Japan side, vast masses of PBF are landed in Tottori Prefecture, where all purse seiners unload

<sup>14</sup> Osamu Abe, Masachika Masujima, Nobuaki Suzuki, Haruyuki Morimoto, Yoshimasa Aonuma, Takahiko Kameda, Kyohei Segawa, Makoto Okazaki, Naoki Iguchi, Toshiyuki Tanabe, Taiki Ishihara, Mikio Watai, Tomoko Ota, and Wataru Doi, "Current status of spawning grounds and periods of Pacific Bluefin Tuna," July 2014, p. 29, accessed March 1, <http://isc.ac.affrc.go.jp/pdf/ISC14pdf/ISC-14-Plenary-INFO-19%20JPN%20PBF%20papers.pdf>.

<sup>15</sup> Toshio Katsukawa, "Nihon kinkai no kuromaguro no genjo sono 2 (Actual status of bluefin tuna around Japan: Part 2)," Toshio Katsukawa official blog, March 26, 2010, accessed March 5, 2015, <http://katukawa.com/?tag=%E3%82%AF%E3%83%AD%E3%83%9E%E3%82%B0%E3%83%AD>.

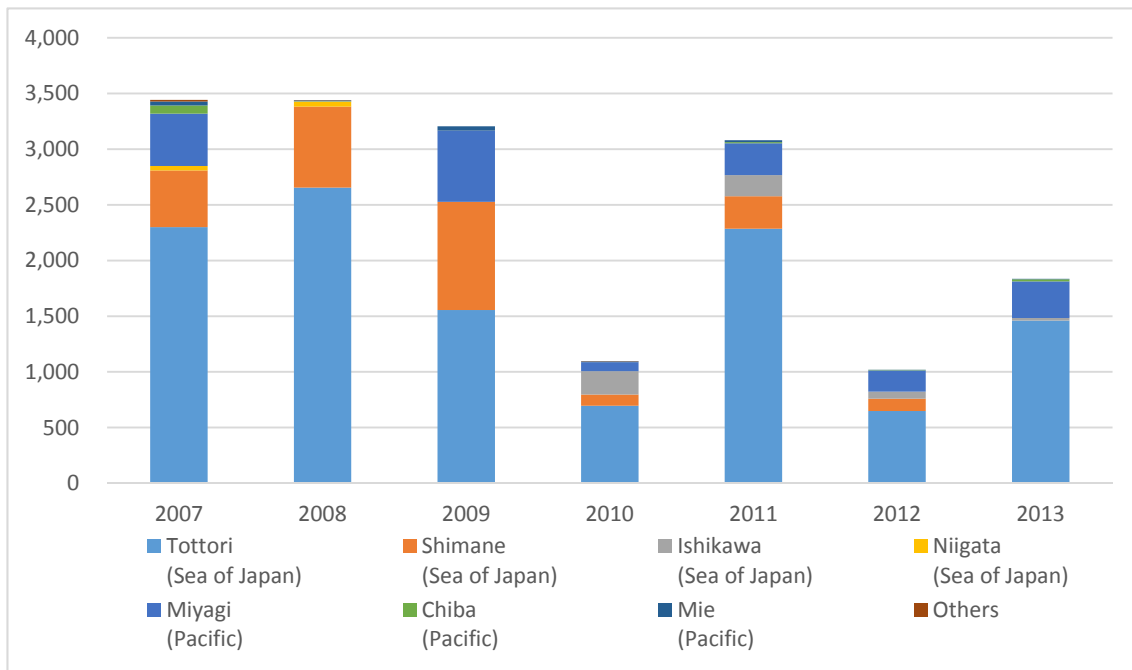


their PBF at the Sakaiminato Port (see Figure 16). To remove guts and gills promptly requires manpower, and it takes half a day to one day to transport in order to discharge their catches to ports from fishing grounds. There is no other place other than Sakaiminato where adequate facilities and manpower are easily available in the meantime<sup>16</sup>.



**Figure 16**

Being one of the biggest port for offshore fishing bordering the Sea of Japan, Sakaiminato had thrived on purse seine fishing for mackerel (*“masaba”* and *“maaji”* in Japanese) and sardines (*“maiwashi”*) as well as related businesses such as cannery and fish meal factories. From 1992 to 1996, it boasted Japan’s largest sardine catches and exported 10,000 – 30,000 tons to the Philippines, Malaysia, and other countries<sup>17</sup>.



**Figure 17: PBF catches by purse seining (metric tons)**

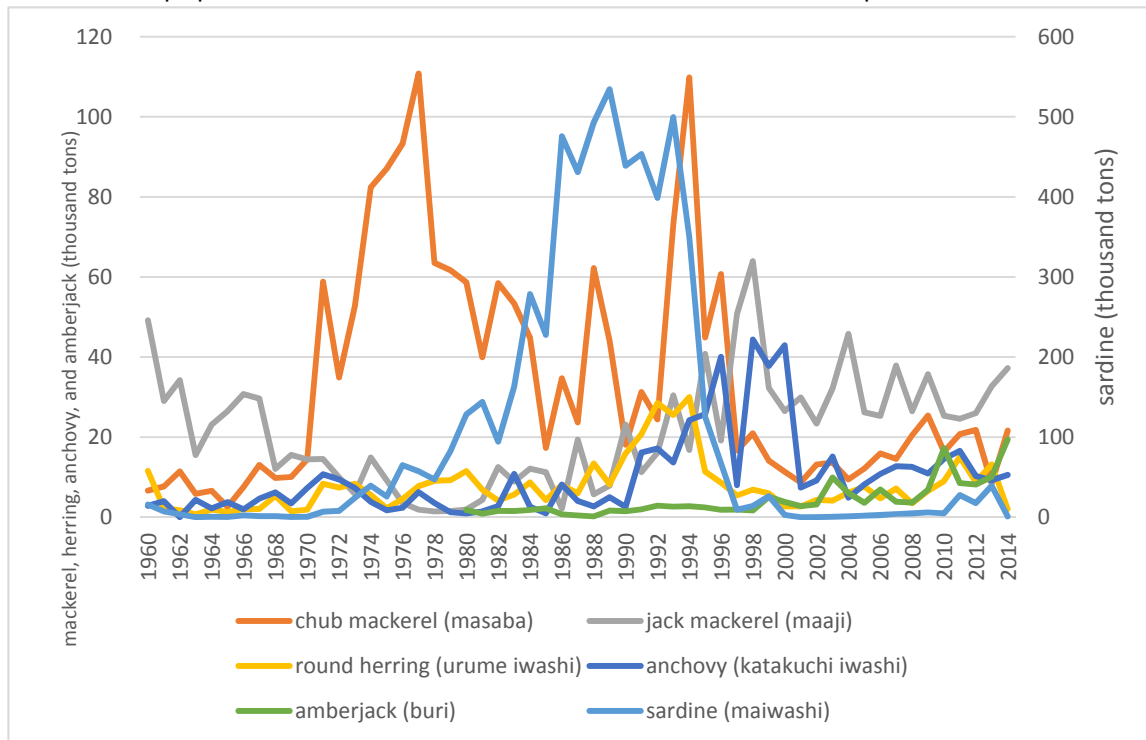
Fisheries Research Agency, “Nihon syuhen kokusai gyorui sigen chosa houkokusyo,” 2008-2011; Fisheries Research Agency, “Mizuagechi deno maguro kajiki chosa kekka” 2012-2014.

However, the catches of sardines dropped sharply from 1996 and became zero in 2002, forcing the regional fishing industry into dire straits. Moreover, catches of other species such as mackerel, herring (*“urume iwashi”*) and anchovy (*“katakuchi iwashi”*) declined considerably as well (see Figure 18 below). While the cyclical change of environmental conditions may

<sup>16</sup> Toshio Katsukawa, *Gyogyo to Iu Nihon no Mondai (Fishery as a Japan Problem)* (Tokyo: NTT Shuppan, 2012), pp. 214-215. 0

<sup>17</sup> Tottori Prefectural Government, “Sakaiminato no genjo (The situation of the Sakaiminato Port),” n.d., p. 6.

contribute to it to some degree, more than a few experts and journalists point out that the careless overexploitation by purse seiners is the main and biggest culprit of the collapse of the sardine population, as well as the drastic reduction of other species<sup>18</sup>. For instance,



**Figure 18: Catches of purse seine fishing landed in Sakaiminato**

Tottori Prefectural Government, "Sakaiminato no nen betsu makiami muzugeryo (Annual catches by purse seine vessels landed in Sakaiminato)," accessed March 10, 2015, <http://www.pref.tottori.lg.jp/87005.htm>.

Masayuki Komatsu, former high-ranking bureaucrat of the JFA, criticizes in a journal article that "these purse seine fisheries had decimated all of sardine and mackerel and now they have virtually nothing to catch other than bluefin tuna<sup>19</sup>." Indeed, since the development of PBF fishing in 2004 after the drop-off of sardine and mackerel fishing, it became one of the most important components of purse-seiners, earning ¥1 billion (\$8.3 million) of landing value<sup>20</sup>. As a member of Sanin Purse Seine Fisheries Cooperative Association (purse seine fishermen's association in Sakaiminato) put it, "without bluefin tuna in summer, we do not have any work to do<sup>21</sup>."

<sup>18</sup> WEDGE editorial board, "Unagi no tsugi wa maguro ga kieru (Bluefin tuna: Chasing the trace of disappearing eels)," *WEDGE*, Vol. 25, No. 8 (2013), pp. 24-35.

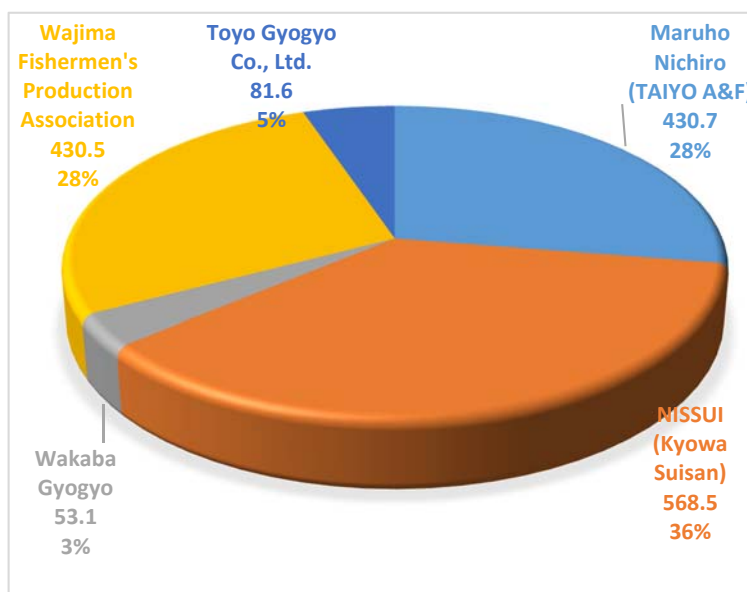
<sup>19</sup> Masayuki Komatsu, "Gyogyo kanri seido to atarashii Nihon gyogyo no kochiku (1): Maguro to unagi no shigen kokatsu to aratana seido (IQ) e "Fisheries management system and the construction of Japanese new fisheries (1): Depletion of tuna and eel resources and the a new mechanism (IQ)," *Syukan Norin*, No. 2196, pp. 4-5.

<sup>20</sup> Pacific Asia Resource Center (PARC), "Gurobarizumu jidai ni okeru maguro wo meguru gyogyo, ryutsu, syoku (Fisheries, distribution, and dietary culture about tuna in an era of globalization)," PARC, 2007, p. 20.

<sup>21</sup> *Nihon Keizai Shimbun (newspaper)*, June 15, 2013.



According to the report submitted by Japan to the WCPFC, the number of purse seine vessels catching PBF is 22 in western Japan ground, 18 in the Sea of Japan, and 26 in the Pacific Ocean<sup>22</sup> (the list of all the vessels is shown in Appendix II). In 2014, 1,564 tons of PBF were landed in the Sakaiminato Port, and the amount and the percentage of them are shown in Figure 19 (see Appendix V for the list of vessel names, owners,



**Figure 19: PBF catches landed at Sakaiminato (2014)  
(metric tons/%)**

Fisheries Division, Sakaiminato City, "Heisei 26 nendo kuromaguro mizuage jokyo (makiami) (Landing of bluefin tuna by purse seiners in 2014)," 2014, accessed March 10, 2015, <http://www.sakaiminato.net/site2/page/suisan/conents/news/1/160/attach01.pdf>.

parent companies, amount, and the landing dates). As the figure illustrates, more than 60% of PBF are harvested by affiliated firms of Maruha Nichiro and NISSUI, the two biggest seafood companies in Japan. TAIYO A&F, an affiliated company of Maruha Nichiro, owns TAIYO MARU NO.21 as well as one scout boat and two transport ships to conduct offshore purse seine fishing in the Sea of Japan. As of July 1, 2014, five purse seiners belong to TAIYO A&F (TAIYO MARU NO. 2, TAIYO MARU NO.21, HAYABUSA MARU NO.2, HAYABUSA MARU

NO.75, and HAYABUSA MARU NO.7) are recorded as vessels catching PBF, according to JFA documents (see Appendix II). In addition, it has two longline vessels for distant water tuna fishing, and runs a large-scale tuna farming business as described in Chapter II, making it a key actor in the PBF fishing and farming business in Japan. |



**Kyowa Suisan Co., Ltd. (Sakaiminato)**

Kyowa Suisan is one of the biggest fishery companies in Sakaiminato, having operated sardine fishing and fish meal

<sup>22</sup> Government of Japan, "Report on CMM 2013-09 (Pacific bluefin tuna)," WCPFC-NC10-2014/DP-01 (Rev.1), July 2014, p.3, accessed March 10, 2015, <http://www.wcpfc.int/system/files/NC10-DP-01%20%5BReport%20on%20CMM%202013-09%5D-Rev1.pdf>.

factories. As the catches of sardines dropped drastically, Kyowa Suisan filed for bankruptcy under the Corporate Reorganization Act in 2006. Together with a local regional bank (San-In Godo Bank), NISSUI supported the reconstruction of Kyowa and made it a subsidiary company. As of July 1, 2014, three



**Kyowa Suisan (back left) and its vessel, Koyo Maru No.88 (right)**

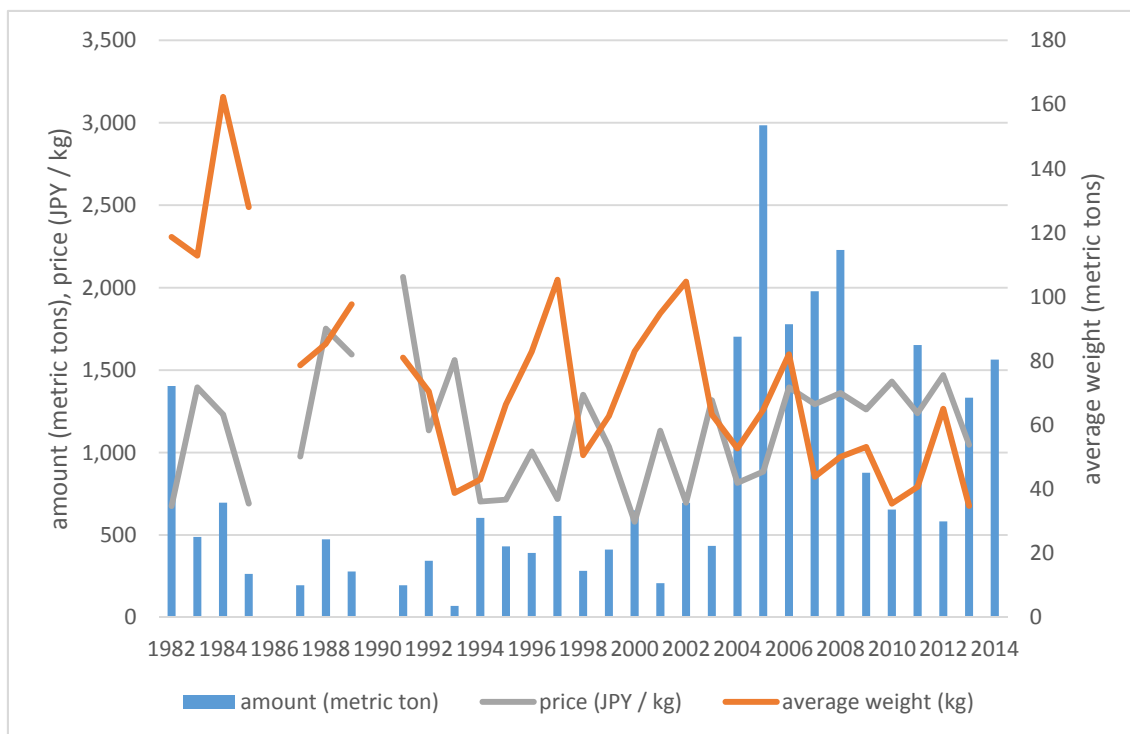
purse seiners (KOYO MARU NO.1, KOYO MARU NO.8, and KOYO MARU NO.28) are recorded as vessels catching PBF.

Toyo Gyogyo was formerly a fisheries division of the Kaneko Fisheries Group, which consisted of Toyo Gyogyo, Kanei Bussan, and Kaneko Sangyo. As the catches and prices of fish continued to decline in addition to a worsening balance sheet caused by massive investment to vessels and factories, the Group started to reconstruct its business under the Act on Special Measures Concerning Industrial Revitalization with support from the Japanese government in 2008<sup>23</sup>. In 2012, Kaneko Sangyo became a subsidiary company of NISSUI, as we will describe in PART II on tuna farming below. Toyo Gyogyo inherited the fisheries section of the Kaneko Group and has continued its business. Iwahisa Kaneko, president of Toyo Gyogyo and a grandchild of Iwazo Kaneko (the founder of the Kaneko Group and former Minister of Agriculture, Forestry and Fisheries), is also a nephew of Genjiro Kaneko, Upper House member of the National Diet from Nagasaki (2010 - ), former Governor of Nagasaki Prefecture (1998 – 2010), and former member of the Lower House of the Diet from Nagasaki (1983 – 1998), where the headquarter office of Toyo Gyogyo is located. As of July 1, 2014, two vessels (GENPUKU MARU NO.1 and GENPUKU MARU NO.31) were recorded as purse seiners related

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<sup>23</sup> JFA, “Toyo Gyogyo Kabushiki Kaisha, Kanei Bussan Kabushiki Kaisha, oyobi Kaneko Sangyo Kabushiki Kaisha no Sangyo Katsuryoku Saisei Tokubetsu Sochiho ni motozuku jigyo saikochiku keikaku no nintei ni tsuite (Approval of business reconstruction program of Toyo Gyogyo Co., Ltd., Kanei Bussan Co., Ltd., and Kaneko Sangyo Co., Ltd. under the Act on Special Measures Concerning Industrial Revitalization),” August 18, 2008, accessed March 10, 2015, <http://www.jfa.maff.go.jp/j/press/kakou/080818.html>.

to PBF catching<sup>24</sup>.



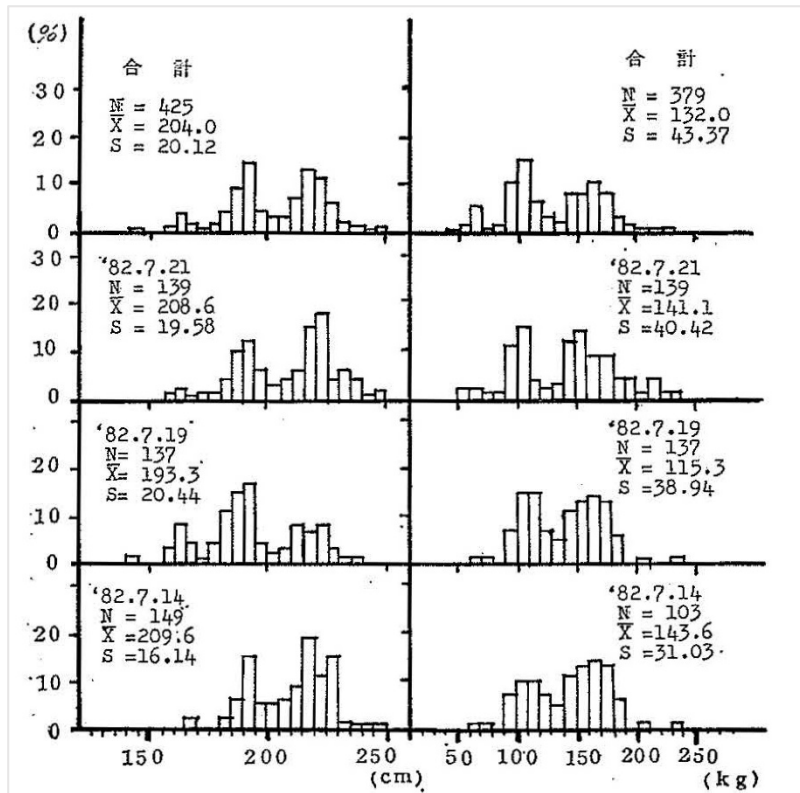
**Figure 20: Amount, average weight, price of PBF at Sakaiminato Port**

Yukio Ishihara, “Kuromaguro shigen chosa (Resource survey on bluefin tuna),” Tottori-ken Suisan Shikenjo (Tottori Prefectural Fisheries Experimental Station), Suisan Shikenjo Nenpo (Annual Report of the Tottori Prefectural Fisheries Experimental Station) (Tottori: Tottori Prefectural Fisheries Experimental Station, 2014), accessed March 12, 2015, <http://www.pref.tottori.lg.jp/secure/906140/2013-2-3.pdf>.

Figure 20 shows the amount, average weight (estimated by total weight in a year divided by total number of PBF), and average price of large PBF categorized as “*maguro*” landed in the Sakaiminato Port PBF. While PBF catching by purse seiners started in 1981 and succeeded in harvesting 1,404 tons of PBF for the first time in 1982, full-fledged catching began in 2004, as previously noted. In 2005, the amount of catch hit the highest number ever, recorded at 2,985 tons. It went up and down thereafter, while showing a decreasing trend. The average wholesale price of PBF in 2013 is ¥1,047 (\$9) per one kilogram which is about one-fifth of the wholesale price in Oma, Aomori Prefecture at ¥5,035 (\$42), in which the main target of fishermen are larger, adult tuna, and is well known as being the highest-priced PBF in Japan.

The notable trend shown in Figure 20 is the gradual decline of average weight from 162kg in 1985 to 35kg in 2013. According to Kawaguchi (1982), the weight of PBF caught in 1982 ranged from 36kg to 273kg, with the average being 120.4kg. They are composed of around age-six (60kg/160cm), age-seven or eight (90 – 100kg/180 – 190cm), age-ten (160 – 170kg/210 – 220) schools (Figure 21). As Figure 22 shows, most PBF caught in 2013 are around

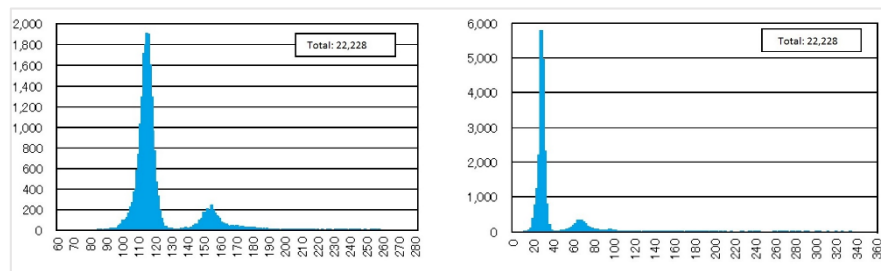
<sup>24</sup> GENPUKU MARU NO.1 sank off the coast of Shimane during mackerel fishing operation on December 24, 2014, with two crew members being dead and three person missing. *Mainichi Shimbun* (newspaper), English electronic edition, December 24, 2014, accessed March 10, 2015, <http://mainichi.jp/english/english/newsselect/news/20141224p2a00m0na011000c.html>.



**Figure 21: Frequency distribution of PBF landed at Sakaiminato Port in 1982**

Tetsuo Kawaguchi, "Tottori-ken Sakaiminato ni okeru makiami ni yori gyokaku sareta ogata kuromaguro ni tsuite (A study on large bluefin tuna caught by purse seiners in Sakaiminato, Tottori prefecture)," *Suisan Kaiyo Kenkyu Kaiho*, No. 41 (1982), p. 94, accessed March 12, 2015, <http://www.jsfo.jp/contents/pdf/26-3131.pdf>.

"*maguro* (adult PBF)," but as "*yokowa* (juvenile PBF)<sup>26</sup>." As Ishihara (2014) points out, "many 10 – 20 kg bluefin tuna were harvested as *yokowa*," by purse seining operation



**Figure 22: Frequency distribution of large PBF (*maguro*) landed at Sakaiminato Port in 2013 (cm / kg)**

Yukio Ishihara, "Kuromaguro shigen chosa (Resource survey on bluefin tuna)," Tottori-ken Suisan Shikenjo (Tottori Prefectural Fisheries Experimental Station), *Suisan Shikenjo Nenpo (Annual Report of the Tottori Prefectural Fisheries Experimental Station)* (Tottori: Tottori Prefectural Fisheries Experimental Station, 2014), accessed March 12, 2015, <http://www.pref.tottori.lg.jp/secure/906140/2013-2-3.pdf>.

in 2013. The total weight of PBF categorized as *yokowa* landed in Sakaiminato (126 metric tons) occupies 9% of the total weight of all PBF (1,459 metric tons) in 2013, as shown in Figure

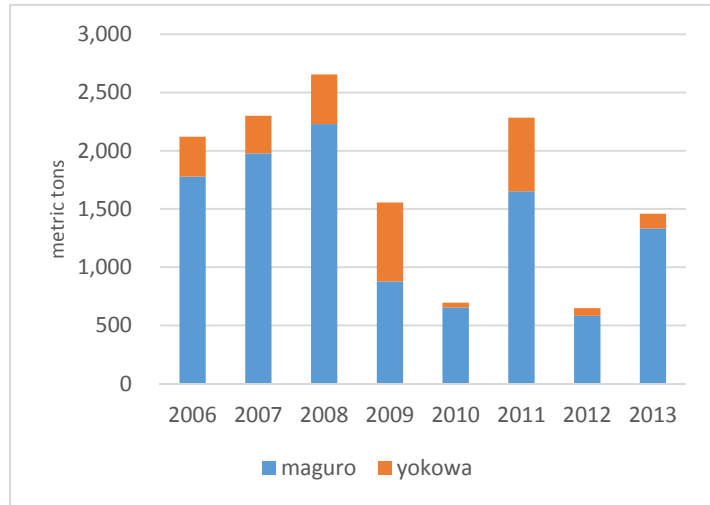
30kg, which means that they are immature or may have just attained sexual maturity at about the age of three. It is reported that most PBF shipped from Sakaiminato to the Tsukiji fish market in early July 2014 were around 35kg, stirring concerns even in wholesalers in the market, saying that "I'm afraid of the resource as so many small tuna came into the market<sup>25</sup>." Moreover, the statistical numbers shown in the above figures do not include small (less than about 20 – 30kg) PBF, as they are categorized and recorded not as

<sup>25</sup> *The Suisan Keizai Daily News*, July 11, 2014.

<sup>26</sup> Not a few people in Japan fail to recognize *yokowa* as bluefin tuna because of this different categorization between "*maguro*" and "*yokowa*" in Japanese.

23. In 2011, it was much higher (632 metric tons), accounting for about 28% of total amount of PBF (2,284 metric tons).

A fisheries biologist of Tokyo University of Marine Science and Technology and a well-known critic of Japanese fisheries policy, Toshio Katsukawa notes, purse seine fishing “decimated spawning stocks accumulated for over a number of years in no time<sup>27</sup>.” His statement is just one example of voices of concern shared by more than a few experts and



**Figure 23: Total amount of PBF (*maguro* + *yokowa*) landed in Sakaiminato by purse seiners (metric tons)**

Yukio Ishihara, “Kuromaguro shigen chosa (Resource survey on bluefin tuna),” Tottori-ken Suisan Shikenjo (Tottori Prefectural Fisheries Experimental Station), *Suisan Shikenjo Nenpo (Annual Report of the Tottori Prefectural Fisheries Experimental Station)* (Tottori: Tottori Prefectural Fisheries Experimental Station, 2014 accessed March 12, 2015, <http://www.pref.tottori.lg.jp/secure/906140/2013-2-3.pdf>).

journalists who have some knowledge of the issue. Tatsuoro Tsuruta (not real name), who has been involved in the fisheries industry in Sakaiminato, and who wishes to remain anonymous, told a Japanese media reporter of his misgivings, saying that “the way of fishing in Sakaiminato may drive bluefin tuna to extinction<sup>28</sup>.” Although the purse seine fisheries cooperative association, tourist association, and local government in Sakaiminato formed an advocacy group, *Sakaiminato Honmaguro PR Suisin Kyogikai* (Sakaiminato Bluefin Tuna PR Promotion Association), to promote PBF in Sakaiminato, saying that “we are committed to resource management on bluefin tuna” in stickers or video clips they made<sup>29</sup>, Tatsuoro expressed his outrage at their allegation, exclaiming that “they must stop making such an irresponsible statement<sup>30</sup>.” Likewise, Yoshikatu Ikuta, a famous tuna wholesaler in the Tokyo Tsukiji fish market, published an angry response to the campaign, commenting that “I can’t put up with their attitude any longer as if they care only about themselves!<sup>31</sup>” Almost all eggs

<sup>27</sup> Toshio Katsukawa Official Blog, “Kuromaguro gyogyo no mittsu no mondaiten (Three points at issue on bluefin tuna fisheries)” August 29, 2014, accessed February 25, 2015, <http://katukawa.com/?p=5753>

<sup>28</sup> WEDGE editorial board, “Unagi no tsugi wa maguro ga kieru (Bluefin tuna: Chasing the trace of disappearing eels),” *WEDGE*, Vol. 25, No. 8 (2013), p. 29.

<sup>29</sup> Tottori Prefectural Government official youtube channel, “Sakaiminato tennen honmaguro: Sakaiminato kara Nihon zenkoku e (Natural bluefin tuna made in Sakaiminato: From Sakaiminato to all over Japan),” December 16, 2014,

<sup>30</sup> WEDGE editorial board, “Unagi no tsugi wa maguro ga kieru (Bluefin tuna: Chasing the trace of disappearing eels),” *WEDGE*, Vol. 25, No. 8 (2013), p. 29.

<sup>31</sup> Yoshikatsu Ikuta official facebook, December 21, 2015, accessed March 15, 2015, [https://www.facebook.com/permalink.php?id=1400232413560508&story\\_fbid=1533561100227638](https://www.facebook.com/permalink.php?id=1400232413560508&story_fbid=1533561100227638).



stored in the ovaries of millions of PBF who are caught are simply discarded as worthless garbage or used as fish meal for feed, although modest attempts have been made to utilize these eggs as rare delicacies<sup>32</sup>.



**PBF at Sakaiminato Fish Market (2015): the numbers written in stickers on fish denote gilled and gutted weight (kilograms)**

### 3 The Effect of Purse Seine Fishing on the Other Types of PBF Fisheries

As noted above, the decline of the PBF population is due to the facts that (1) more than 95% of harvested PBF in the Pacific Ocean are juveniles, and (2) large amounts of spawning stocks are heavily overexploited in the Sea of Japan. The depletion of PBF stocks has caused severe suffering among coastal fishermen.

One such example can be found in Iki Island, Nagasaki Prefecture (see Figure 24 and Figure 25). In the small island located off the coast of Kyushu between Fukuoka and Korea, with a total area of 138.46km<sup>2</sup> and total population of 28,000, there are about 200 fishermen who engage in pole and line PBF fishing. While the total amount of catch reached 358 metric tons in 2005, the amount of



**Figure 24**

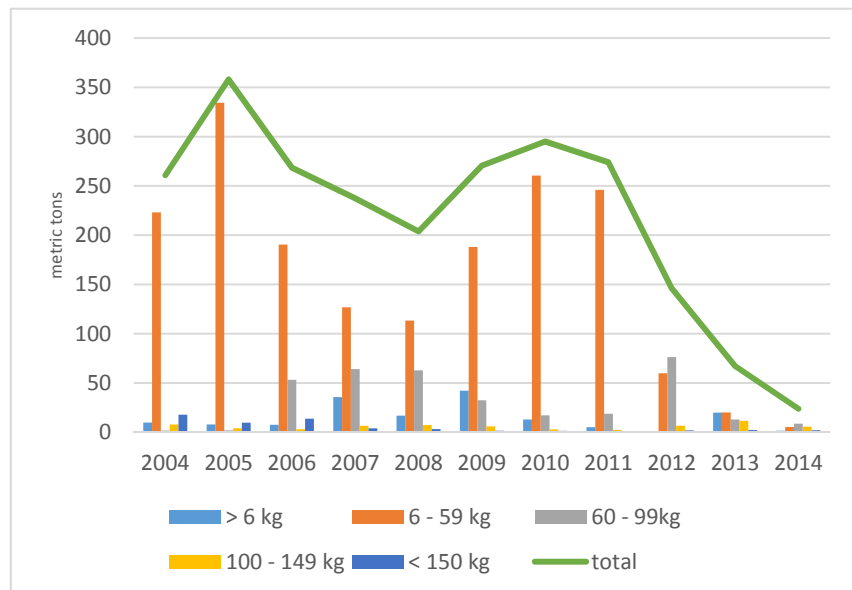
<sup>32</sup> Kyodo News Service, "Maguro no tamago umini ni: Sakaiminato Uo Ichiba ga syohinka si hanbai (Eggs of tuna sold as delicacies: Sakaiminato Uo Ichiba succeeds in the development and release of new products)," July 25, 2007; Yukitoshi Kodani and Ai Kato, "Maguro naizo no yuko riyo gijyutsu kaihatsu (Technological development toward efficient utilization of internal organs of tuna), 2010, accessed March 10, 2015, [http://suisankaiyo.com/seeds/wp-content/uploads/2011/02/2010\\_tottorisanngi\\_tuna\\_lock.pdf](http://suisankaiyo.com/seeds/wp-content/uploads/2011/02/2010_tottorisanngi_tuna_lock.pdf).



**Figure 25: Iki Island**

Maguro Shigen wo Kangaeru Kai (Iki Bluefin Tuna Association) and member of the Katsumoto Fisheries Cooperative told a newspaper, "there are absolutely no tuna whatsoever"<sup>33</sup>. He and other member of Ikishi Maguro Shigen wo Kangaeru Kai repeatedly point out that large-scale

catch has decreased thereafter, with 67 metric tons being harvested in 2013, which is 19% of the catch recorded in 2005 (see Figure 26). In 2014, the amount of catch was further reduced to 24 metric tons, only 7% of the catch in 2005, which forced fishermen to consider changing target species from PBF to squid or mackerel, or to get out of the fisheries business completely. "Although we could catch two or three (PBF) in a day, four or five years ago," Minoru Nakamura, chair of Ikishi



**Figure 26: Catches of PBF in Katsumoto Fisheries Cooperative, Iki Island (Nagasaki prefecture)**

Ikishi Maguro Shigen wo Kangaeru Kai official blog, "Maguro gyokaku ryo (Catches of tuna)," February 27, 2015, accessed March 10, 2015, <https://box.yahoo.co.jp/guest/viewer?sid=box-l-a4pqurqda7k32uwuhxrdlljpie-1001&unigid=2d752375-34b9-447b-bf25-243e5c9f6f90&viewtype=detail>.

purse seine PBF fishing in the Sea of Japan is the principal reason behind the near collapse of PBF fisheries off the coast of Iki Island<sup>34</sup>.

Another example of the massive decline of PBF is found in Katsuura, Wakayama Prefecture. Katsuura is one of the most well-known landing ports for offshore longline vessels, with 1,200 – 1,500 boats offloading their catches there. The main fishing grounds are off the coast of Kii Peninsula, where PBF are most commonly harvested during the spring season (March – May)<sup>35</sup>.



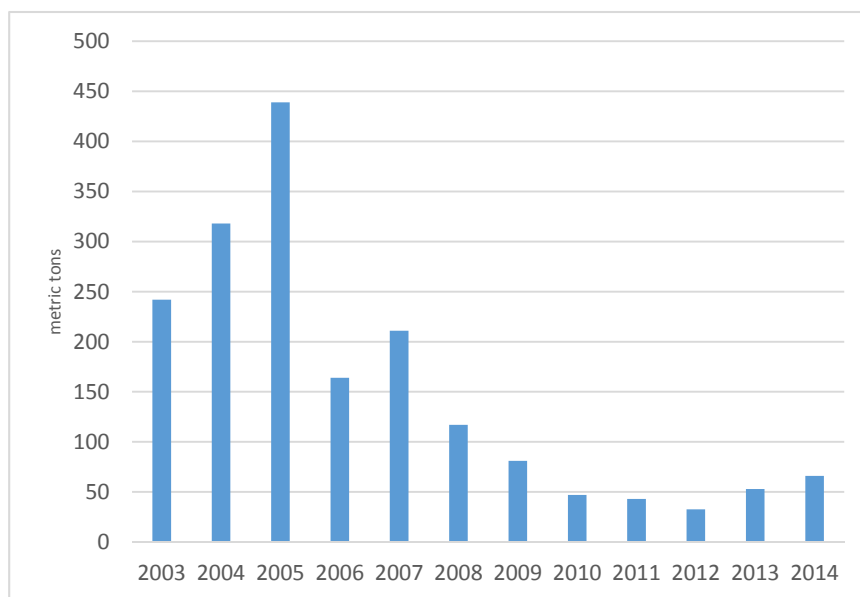
**Figure 27**

<sup>33</sup> *The Asahi Shimbun (newspaper)*, August 3, 2014.

<sup>34</sup> *The Suisan Keizai Daily News*, August 25, 2014.

<sup>35</sup> Wakayama Prefectural Fisheries Experimental Station, "Heisei 25 nendo Nihon syuhen kokusai gyorui

While the landings of PBF reached its peak in 2005 at 439 metric tons and ¥1.4 billion (\$11 million) in total, it plummeted to 32.6 metric tons in 2012, with its total wholesale value being only ¥221 million (\$1.8 million). Even though the catches increased to 66 metric tons in 2014, it is merely



**Figure 28: Amount of PBF landed at Katsuura Port (metric tons)**

Japan Fisheries Information Service Center, "Sanchi suisanbutsu ryutsu chosa (Survey on fisheries products in producing areas)," accessed February 10, 2015, <http://www.market.jafic.or.jp/suisan/>; MAFF, *Suisanbutsu ryutsu tokei nenpo (Annual report of fisheries products)*

15% of the amount harvested in 2005 (see Figure 28). "Katsuura is facing a critical predicament," said Okitoshi Hamaguchi, who runs a seafood wholesale business in Katsuura and headed *Maguro Haenawa Gyosen wo Fukkatsu Saseru Kai* (Group for Revitalizing Tuna Longline Fisheries). "The poor catches of bluefin tuna has begun in parallel with the commencement of tuna farming," he added, blaming that "purse seine vessels are encircling juveniles and catching every single fish<sup>36</sup>."

More than a few coastal fishermen share the above view. At *Taiheiyo Kuromaguro no Shigen Yosyoku ni kansuru Zenkoku Kaigi* (the National Conference on the Pacific Bluefin Tuna Resources and Farming) held in August by the Fisheries Agency, a fisherman from Hokkaido, the most northerly prefecture in Japan, appealed their plight to the government officials and other participants of the Conference. Drawing attention to the fact that there have been fewer and fewer PBF coming into coastal and offshore areas of Hokkaido since the commencement of the purse seine PBF fisheries in the Pacific Ocean in 1990s and in the Sea of Japan in 2004, he stressed that many fishermen had no option but to go out of business. He went on to say that "the Fisheries Agency has not said the specific cause (of the decline of PBF population) out loud," while a few government officials such as Masanori Miyahara, chair of the Northern Committee of the WCPFC hinted about "purse seine fishing." "While

shigen tyosa kekka hokoku (Report of the international fisheries resources around Japan in 2013)," FRA, *Heisei 25 Nendo Mizuagechi deno Maguro Kajiki Tyosa Hokoku (Report of the Survey on Tuna and Billfish at the Landing Areas)*, (unpublished: FRA, March 2014), p. 71.

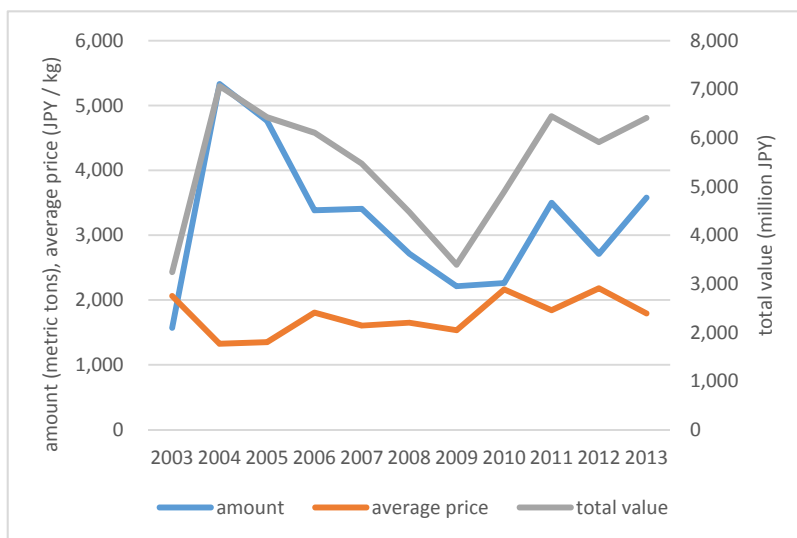
<sup>36</sup> *The Minato Daily*, April 30, 2014.



purse seine fishermen may have the cause of providing cheap tuna with consumers," he said, "that kind of excuse does not makes sense any longer," stressing the importance of recovery of the PBF population as well as sustainable fisheries<sup>37</sup>.

#### 4 Market Value of PBF

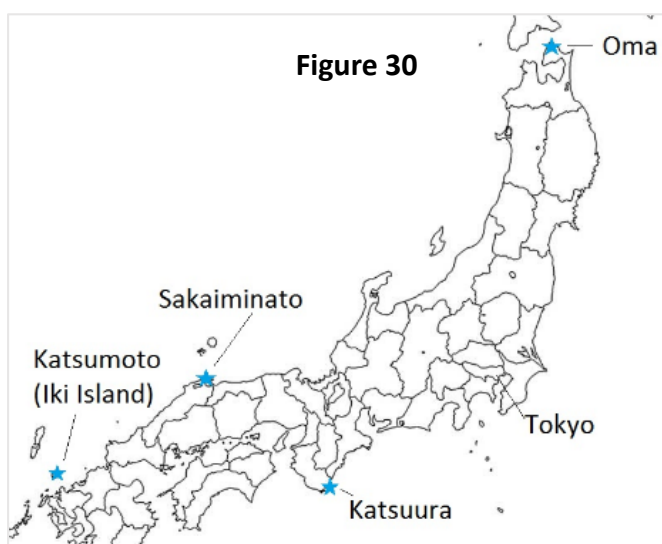
As the fisherman from Hokkaido said, the market prices of PBF are substantially different depending on where the PBF are caught, landed, or imported. In this section, we will examine the market value of PBF by taking a look at various statistics related to them.



**Figure 29: Amount, average price, and total value of fresh PBF in landing areas**

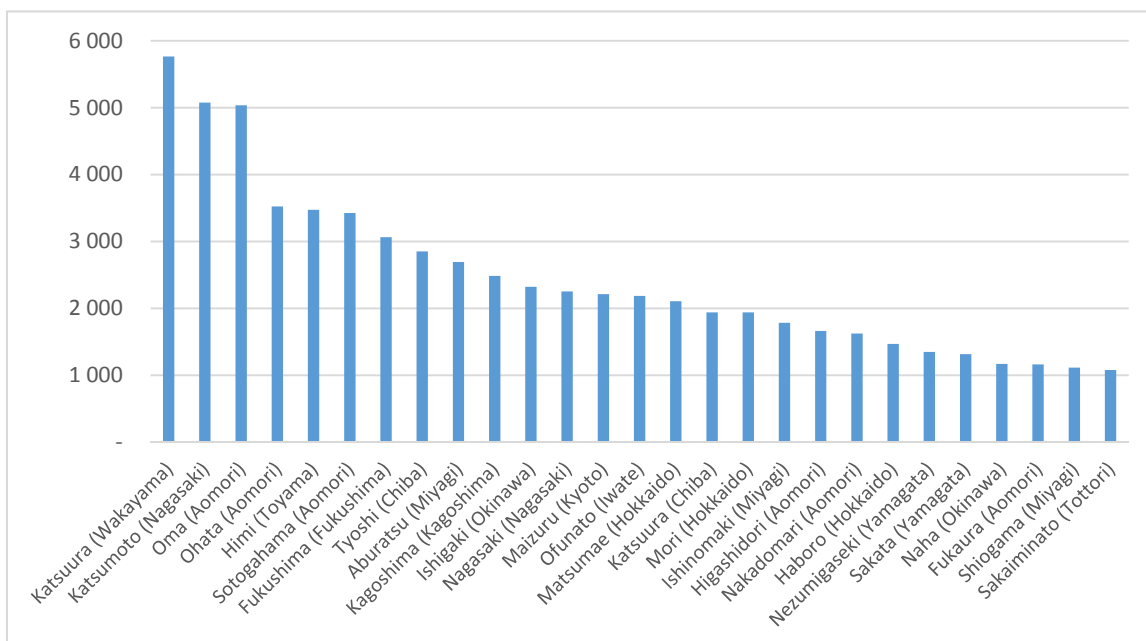
MAFF, Survey on Marketing of Fisheries Products in Landing Areas

Figure 29 gives an overall amount and the value of fresh PBF landed in ports in Japan. The average prices of fresh PBF range from ¥1,300 – 2,200 (\$11 – 18) per one kilogram, with the total value being ¥3.2 – 7 billion (\$27 – 58 million) (see actual figures in Appendix VI). While the average prices shown in the above figure seem to be relatively stable, there are huge differences of wholesale



<sup>37</sup> JFA, Summary record of *Kuromaguro no Shigen Yosyoku ni kansuru Zenkoku Kaigi (the National Conference on the Pacific bluefin tuna Resources and Farming)*, August 26, 2014, accessed March 10, 2015, <http://www.jfa.maff.go.jp/j/study/enoki/pdf/magurogijigaiyou140826.pdf>.

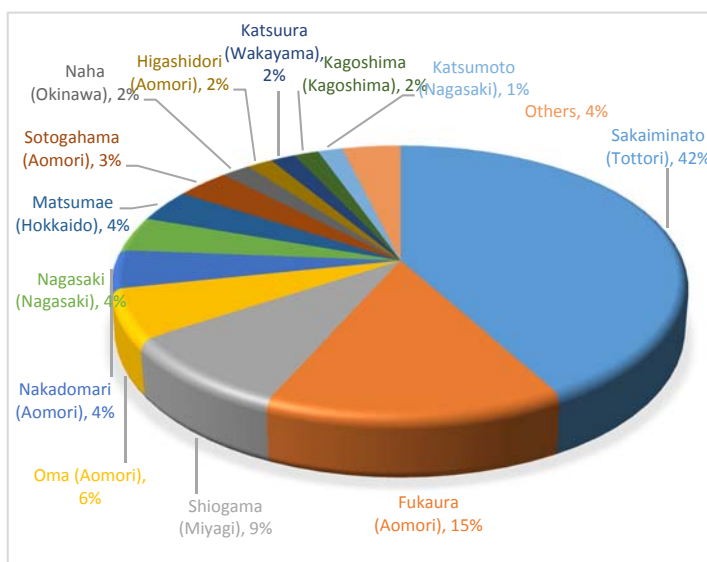
prices of PBF depending on how PBF are caught, and where they are landed. Katsuura of Wakayama Prefecture, Katsumoto, Iki Island of Nagasaki Prefecture, Oma of Aomori



**Figure 31: Average wholesale price of PBF in major landing ports in 2013 (JPY / kg)**

Japan Fisheries Information Service Center, "Sanchi suisanbutsu ryutsu chosa (Survey on fisheries products in producing areas)," accessed February 10, 2015, <http://www.market.jafic.or.jp/suisan/>.

Prefecture (see Figure 30 for their locations) are well-known for their pole and line fisheries and high quality PBF which are reflected in prices at ¥5,000 – 6,000 (\$42 – 50) per one kilogram, while they only make up just 12% of the total amount landed (see Figure and Figure 32). Oma is quite popular with its high-priced PBF among many Japanese and the news that a 222-kilogram bluefin tuna was sold for all-time high of ¥155.4 million (\$1.3 million), or ¥700,000 (\$6,000) per one kilogram at the first auction at the Tokyo Tsukiji fish market in 2013 made headlines around the world<sup>38</sup>. The news and reality shows focusing



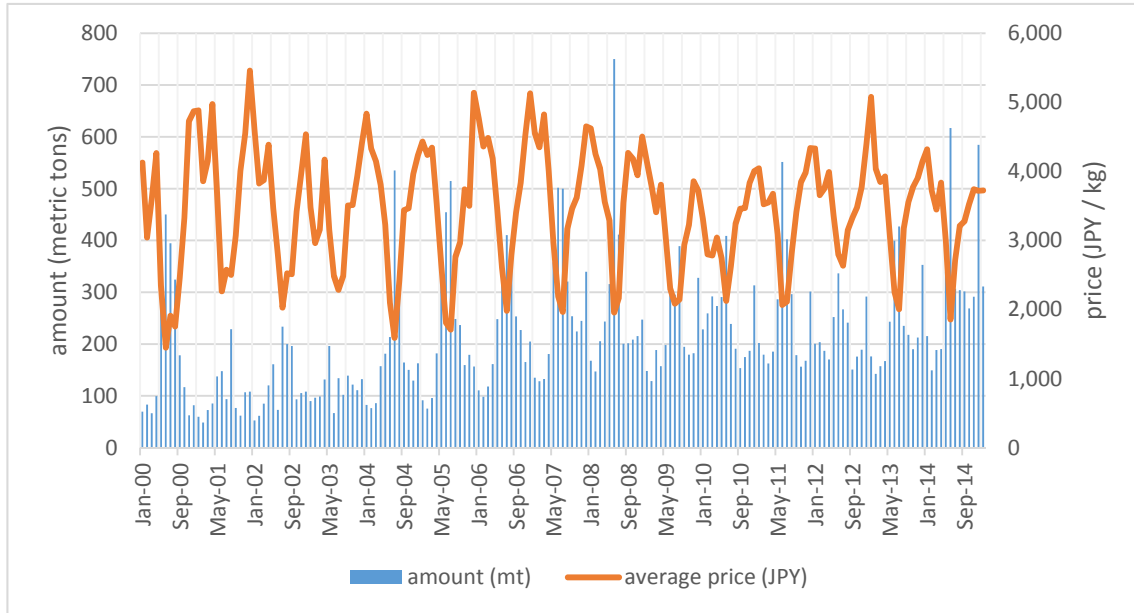
**Figure 32: Amount of fresh PBF landed in major ports (2013)**

Japan Fisheries Information Service Center, "Sanchi suisanbutsu ryutsu chosa (Survey on fisheries products in producing areas)," accessed February 10, 2015, <http://www.market.jafic.or.jp/suisan/>.

<sup>38</sup> *Kyodo News Service*, "Tuna sells for record 155.4 mil. yen at Tsukiji market," January 5, 2013.

on pole and line fishermen in Oma are often aired in TV programs.

In contrast, PBF caught by purse seiners and landed in Sakaiminato costs only about ¥1,000 (\$8) per one kilogram, the lowest price among 27 fishing ports which landed more

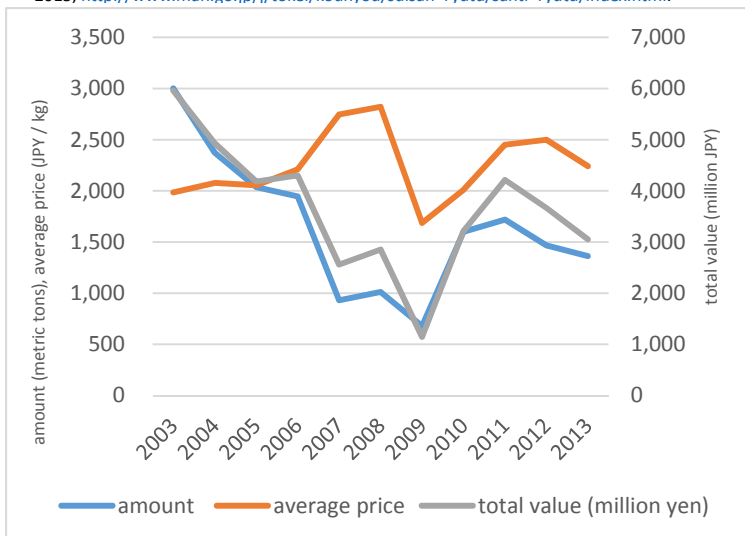


**Figure 33: Amount and average price of fresh bluefin tuna at Tokyo Tsukiji fish market**  
Tokyo Metropolitan Central Wholesale Market, *Annual Report of Tokyo Metropolitan Central Wholesale Market*; Tokyo Metropolitan Central Wholesale Market, “Shijo tokei joho (Statistics on the market),” accessed February 10, 2015, <http://www.shijou-tokei.metro.tokyo.jp/index.html>.

than 10 metric tons of PBF in 2013, as Figure 31 shows. At the Tokyo Tsukiji fish market, the largest fish market in Japan where many of the tuna traded through the market in Japan are transacted, the price gap between pole-and-line or longline tuna on the one hand and purse seine tuna on the other hand are reflected in the yearly fluctuation of prices of fresh bluefin

**Figure 34: Amount, average price, and total value of frozen PBF in landing areas**

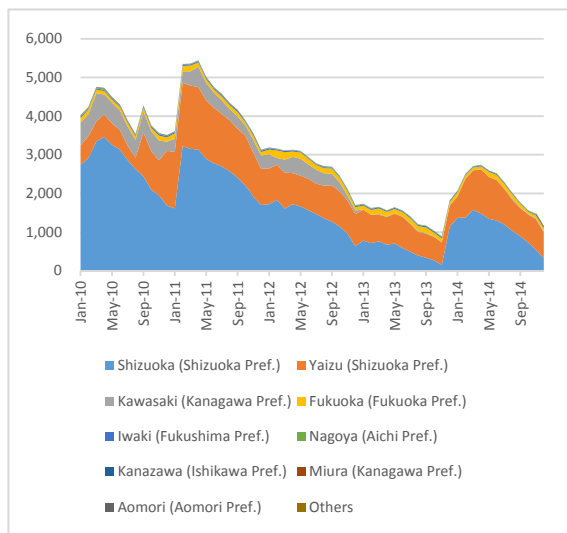
MAFF, “Survey on Marketing of Fisheries Products in Landing Areas,” accessed February 10, 2015, [http://www.maff.go.jp/i/tokei/kouhyou/suisan\\_ryutu/santi\\_ryutu/index.html](http://www.maff.go.jp/i/tokei/kouhyou/suisan_ryutu/santi_ryutu/index.html).



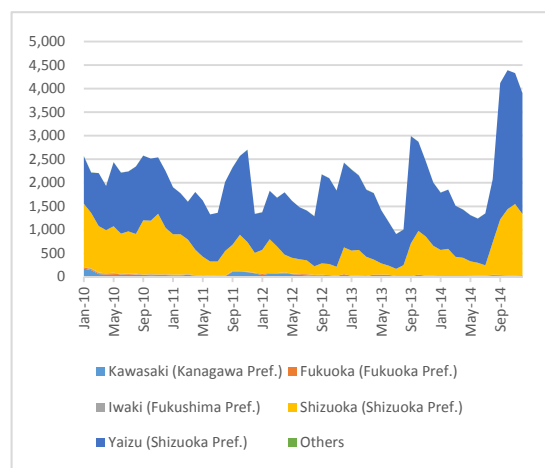
tuna, as Figure 33 shows. In the summer, when purse seine vessels catch thousands of PBF off the coast of the Sea of Japan, a large amount of cheap tuna pour into the Tsukiji market, thereby drastically pushing down the price of fresh PBF. After the end of purse seine fishing, the price goes up again, reaching the summit in December or January, when PBF are in high demand for *Oshogatsu*, or Japanese New

Year's Holidays.

PBF caught by distant water fishing vessels are quick-frozen and transported to ports where large cold storage facilities are located, such as Shimizu Ward of Shizuoka City or Yaizu City, both of which are located in Shizuoka Prefecture. The amount, average prices, and total value are shown in Figure 34 (see Appendix VI for actual figures). The average price of frozen



**Figure 35: Stockpile of frozen bluefin tuna**  
 Fisheries Information Service Center (JAFIC), “Sanchi suisanbutsu ryutsu chosa (Survey on fisheries products in producing areas),” accessed February 10, 2015, <http://www.market.jafic.or.jp/suisan/>.



**Figure 36: Stockpile of frozen southern bluefin tuna**

Fisheries Information Service Center (JAFIC), “Sanchi suisanbutsu ryutsu chosa (Survey on fisheries products in producing areas),” accessed February 10, 2015, <http://www.market.jafic.or.jp/suisan/>.

bluefin in landing areas are about ¥2,000 – 2,800 (\$17 - 23) per one kilogram, with the exception in 2009, when the collapse of Lehman Brothers led to Japan’s economy being “in a mild deflationary phase” in that the decline of prices was continuing, as the Japan’s Cabinet Office said in its *Getsurei Keizai Hokoku*, or the Monthly Economic Report in November, 2009<sup>39</sup>.

The location of stockpiled frozen Pacific as well as



**Shimizu Port and Mt. Fuji**

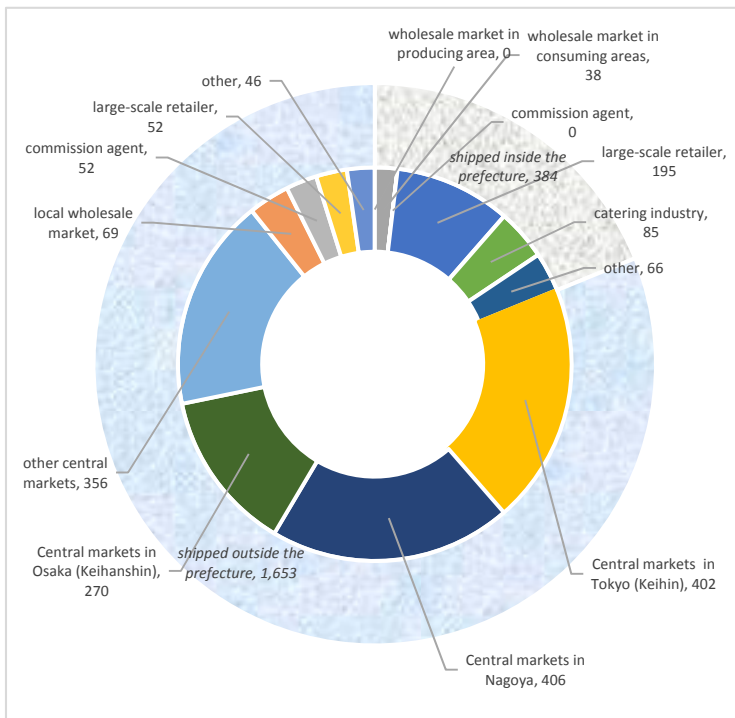
Atlantic bluefin and southern bluefin tuna



**Figure 37: Shimizu (Shizuoka City) and Yaizu City**

since 2010 are shown in Figure 35 and Figure 36 (see Appendixes VII - IX for the actual figures). As these figures show, the bulk of them are stored in either (Shimizu

<sup>39</sup> Cabinet Office, *Getsurei Keizai Hokoku (Monthly Economic Report)*, November 20, 2009, p. 1.



**Figure 38: Destinations of fresh tuna**

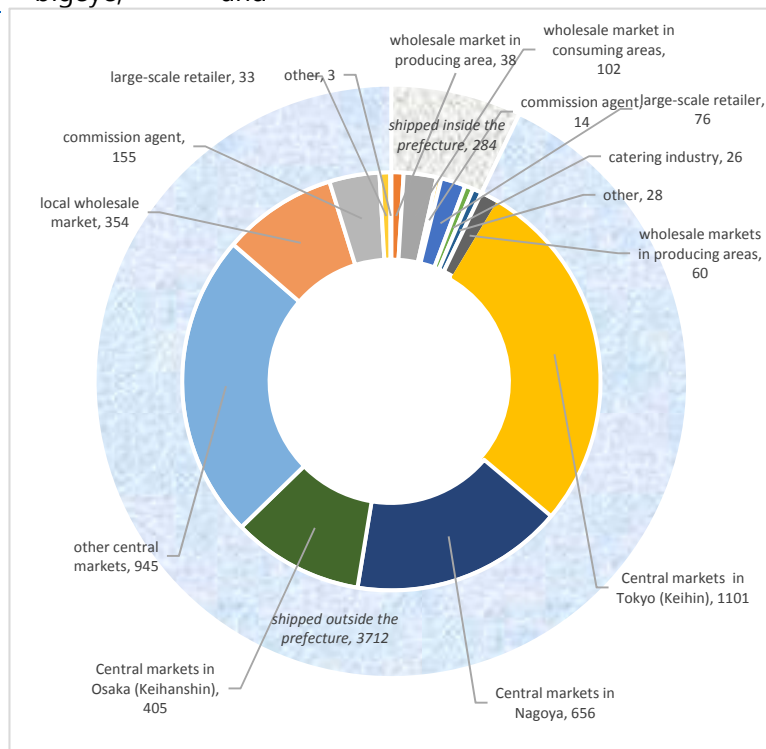
MAFF, "Sanchi suisanbutsu ryutsu tyosa (Survey on marketing of fisheries products in landing areas)," accessed March 15, 2015, [http://www.maff.go.jp/i/tokei/kouhyou/suisan\\_ryutu/santi\\_ryutu/index.html](http://www.maff.go.jp/i/tokei/kouhyou/suisan_ryutu/santi_ryutu/index.html).

Bluefin, and is the home of seventeen longline vessels (see Appendixes II and III for the name of the vessels). According to the report of the Pacific Asia Resource Center (2007), 60% of tuna unloaded in Shimizu Port are bought by an affiliated company of Mitsubishi Corporation, Toyo Reizo Co. Ltd., which has a branch and large storage facilities there<sup>40</sup>. These tuna are

in Shizuoka City receives one of the largest tuna catches in Japan, including skipjack, yellowfin, bigeye, and

**Figure 39: Destinations of frozen tuna**

MAFF, "Sanchi suisanbutsu ryutsu tyosa (Survey on marketing of fisheries products in landing areas)," accessed March 15, 2015, [http://www.maff.go.jp/i/tokei/kouhyou/suisan\\_ryutu/santi\\_ryutu](http://www.maff.go.jp/i/tokei/kouhyou/suisan_ryutu/santi_ryutu)

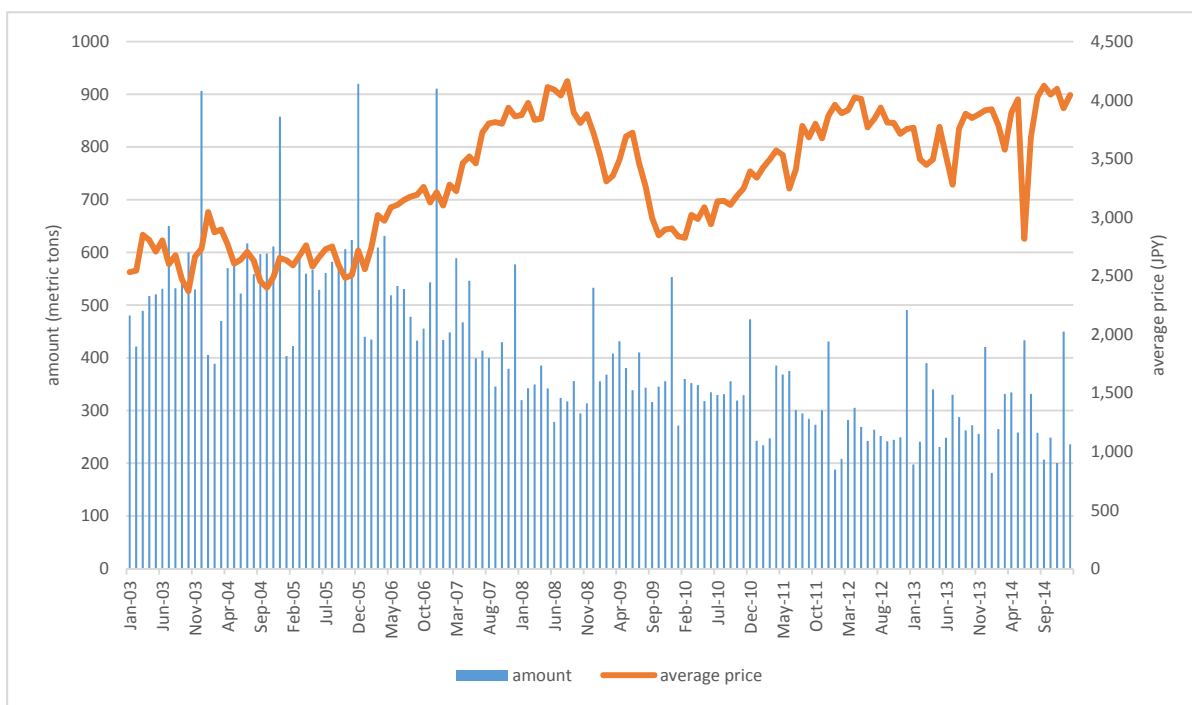


<sup>40</sup> Pacific Asia Resource Center (PARC), "Gurobarizumu jidai ni okeru maguro wo meguru gyogyo, ryutsu, syoku (Fisheries, distribution, and dietary culture about tuna in an era of globalization)," PARC, 2007, p.

stockpiled until they shipped to wholesale markets or directly to retailers in accordance with market trend in order them to be sold at a high price. For this reason, the price of frozen tuna does not so much fluctuate as fresh tuna.

Figure 38 and Figure 39 give the proportion of the overall total of bluefin tuna in major ports in Japan divided by destination in 2005 (for the table of the amount of PBF divided by destination since 1997, see Appendix X). These figures show that a large proportion of fresh as well as frozen tuna are shipped to major consuming areas, such as Tokyo, Nagoya (Aichi Prefecture), and Osaka. Tokyo Tsukiji is the most famous fish market in Japan, where the price of tuna determined by auctions is a common reference point of tuna all over Japan.

The wholesale price at the Tokyo Tsukiji market are shown in Figure 40. Unlike fresh tuna, the price of frozen PBF does not display periodic variation, as wholesalers can adjust shipping to demand and market price.



**Figure 40: Amount and average price of frozen bluefin tuna at Tokyo Tsukiji fish market**

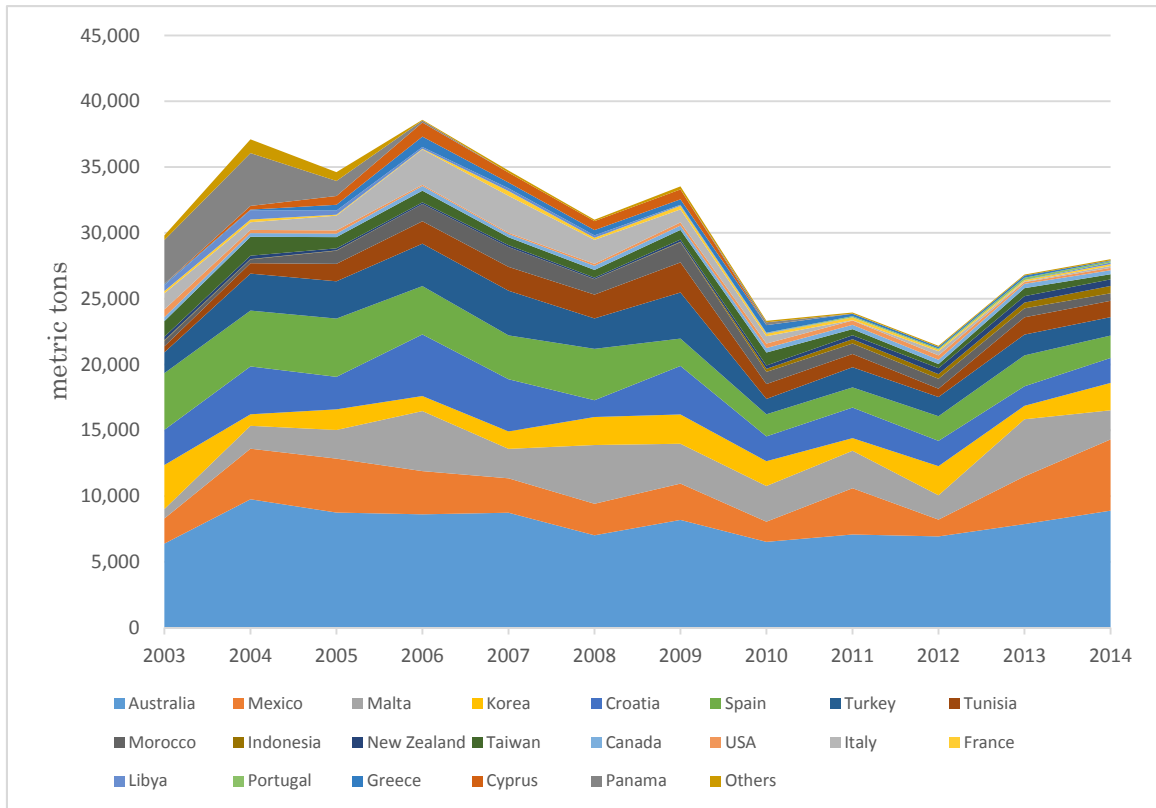
Tokyo Metropolitan Central Wholesale Market, *Annual Report of Tokyo Metropolitan Central Wholesale Market*; Tokyo Metropolitan Central Wholesale Market, “Shijo tokei joho (Statistics on the market),” accessed February 10, 2015, <http://www.shijou-tokei.metro.tokyo.jp/index.html>.

The amount and price of frozen bluefin tuna sold in the Tokyo Tsukiji market shown in the above figure does not distinguish whether the tuna came from Japan or abroad. The statistics about amount, price, and overall value of Pacific and Atlantic bluefin as well as southern bluefin tuna imported to Japan are recorded by *Zaimusyo Boeki Tokei*, or Trade Statistics of Japan, published by the Ministry of Finance, of which Figure 41 gives the amount

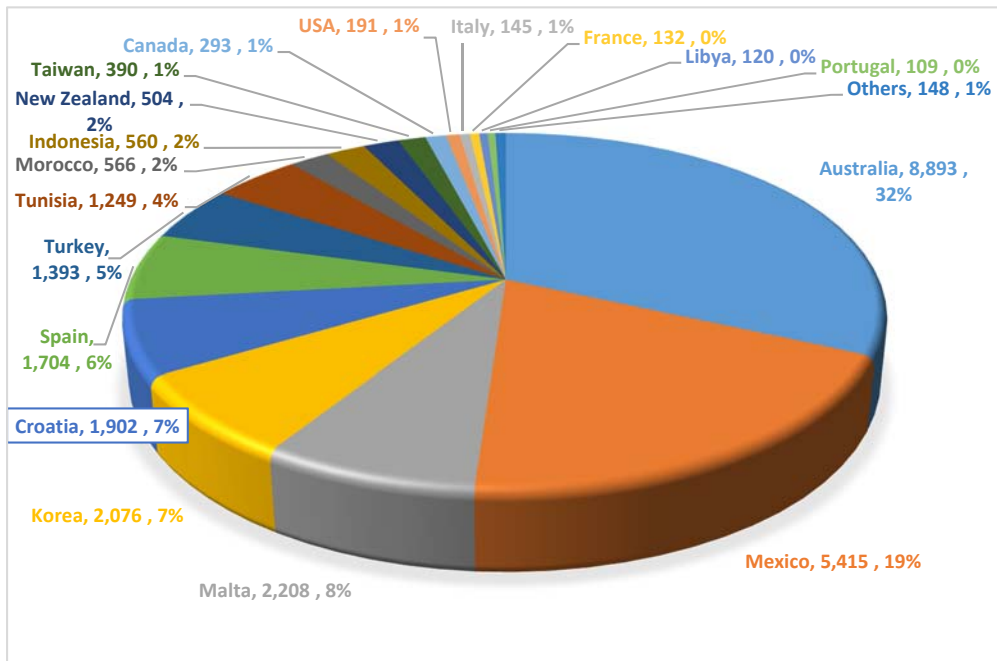
11, accessed January 31, 2015, [http://www.parc-jp.org/kenkyuu/2008/2007\\_report.pdf](http://www.parc-jp.org/kenkyuu/2008/2007_report.pdf).



by country (see Appendix XI for all the above actual figures). The amount and share of import



**Figure 41: The amount of bluefin (Atlantic and Pacific) and southern bluefin tuna imported to Japan (metric tons)** Ministry of Finance, "Zaimusyo Boeki Tokei (Trade Statistics of Japan)," accessed May 1, 2015, <http://www.customs.go.jp/toukei/info/>



in 2014 are shown in Figure 42. Australia is the biggest importer with 8,893 metric tons of ABF, comprising 32% of total imports in 2014. Mexico is the second largest (5,415

**Figure 42: Import of bluefin tuna (2014)** Ministry of Finance, "Zaimusyo Boeki Tokei (Trade Statistics of Japan)," accessed February 10, 2015, <http://www.customs.go.jp/toukei/info/>.

tons; 19%), followed by Malta (2,208 tons; 8%),

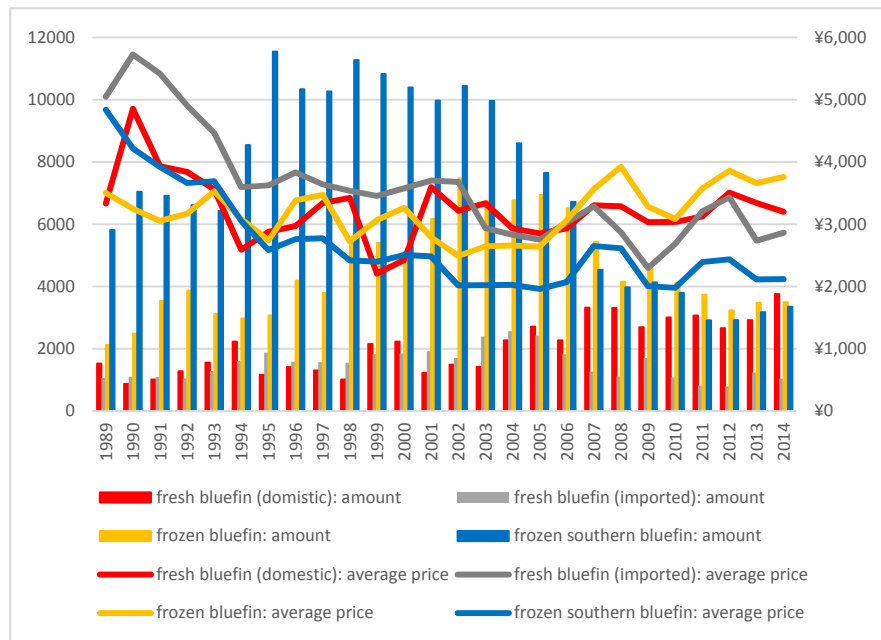
Korea (2,076 tons; 7%), Croatia (1,902; 7%), Spain (1,704 tons; 6%), and Turkey (1,393 tons; 5%). As to Korea and Mexico, JFA has been collecting trade statistics from these countries since 2010 apart from the survey by the Ministry of Finance based on the Act on Special Measures for Enhancement of the Conservation and Management of Tuna Resources (“the Tuna Act”) which authorize JFA to collect information on imported tuna<sup>41</sup>. According to the statistics, import from Korea declined from 1,382 to 542 metric tons from 2012 to 2013. In contrast, Mexico

increased from 1,196 to 2,695 metric tons during those years<sup>42</sup>.

Figure 43 shows the amount and average prices of fresh and frozen bluefin tuna at Tokyo Tsukiji fish market from 1989 to 2014.

While the prices of fresh bluefin is the highest in 1990, they went

down steadily throughout 1990 when Japan experienced economic stagnation after the burst of the bubble economy. The transaction volume of frozen bluefin tuna hit a peak in 2002 with 7,000 metric tons, after when it gradually reduced in line with the reduction of catch quota in the Atlantic Ocean. The average prices of fresh domestic bluefin, imported bluefin, frozen bluefin, and frozen southern bluefin are ¥3,202 (\$27), ¥2,864 (\$24), ¥3,763 (\$31), ¥2,118 (\$18) per one kilogram, respectively. Appendix XII shows the list of retail prices provided by the



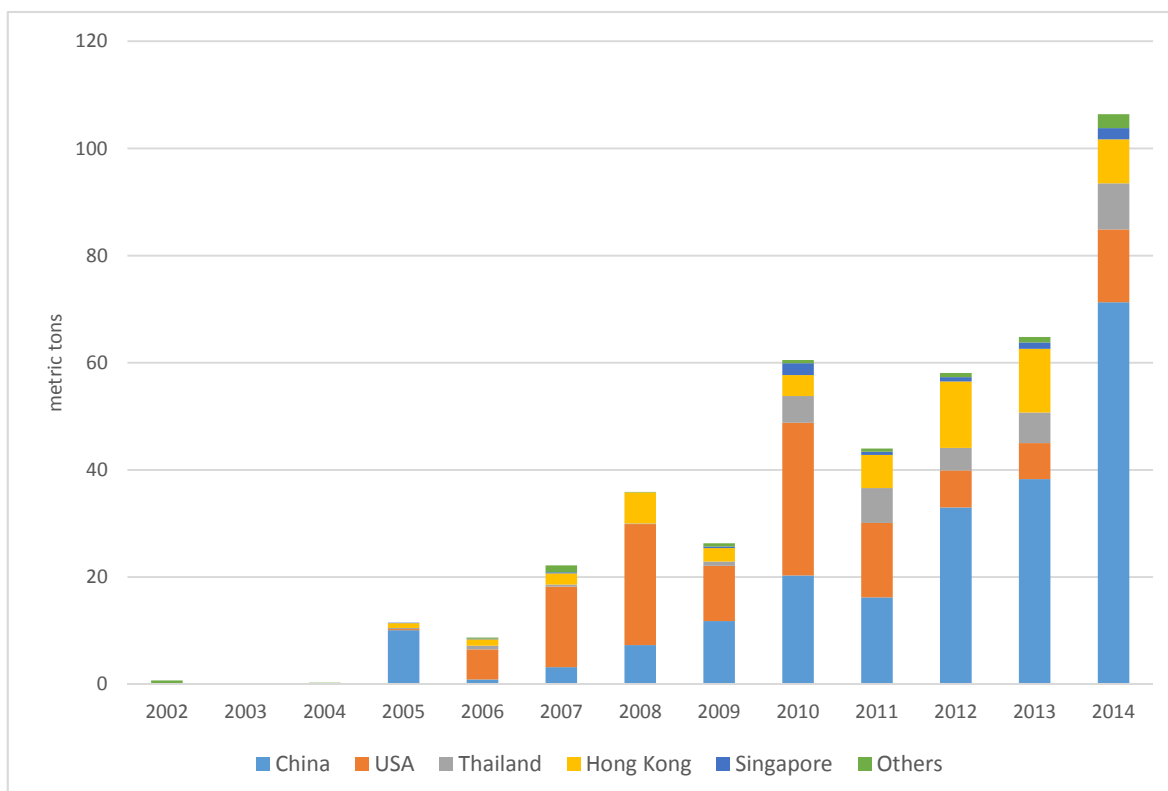
**Figure 43: Amount and prices of bluefin tuna at Tokyo Tsukiji fish market (metric tons/JPY)**

Tokyo Metropolitan Central Wholesale Market, *Annual Report of Tokyo Metropolitan Central Wholesale Market*; Tokyo Metropolitan Central Wholesale Market, “Shijou tokei joho (Statistics on the market),” accessed February 10, 2015, <http://www.shijou-tokei.metro.tokyo.jp/index.html>.

<sup>41</sup> Article 9 (1) of the Tuna Acts stipulates that “(i)n order to contribute to enhancing the conservation and management of tuna resources, the government shall endeavor to collect information on imported tuna.”

<sup>42</sup> JFA, “Taiheiyo kuromaguro no shigen jokyo to kanri no hokosei ni tsuite (Stock status and the management direction of Pacific bluefin tuna),” March, 2015, p.52, accessed March 20, 2015, [http://www.ifa.maff.go.jp/j/tuna/maguro\\_gyogyou/pdf/kuromaguroshiryou201503.pdf](http://www.ifa.maff.go.jp/j/tuna/maguro_gyogyou/pdf/kuromaguroshiryou201503.pdf).





**Figure 44: Export of fresh and refrigerated bluefin tuna from Japan (metric tons)**

Ministry of Finance, "Zaimusyo Boeki Tokei (Trade Statistics of Japan)," accessed March 10, 2015, <http://www.customs.go.jp/toukei/info/>.

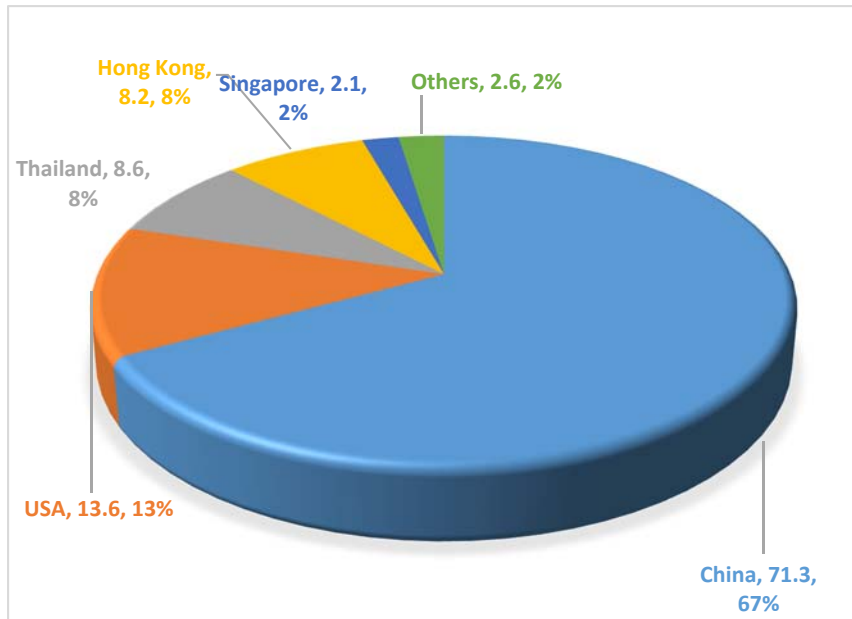
Japan Fisheries Information Center. In general, fresh domestic bluefin tuna costs ¥9,000 – 15,000 (\$75 - 130) per one kilogram in 2014, at retail which is about three to five times the wholesale price. The exception of them are bluefin landed in Tottori or labeled as "harvested in the Pacific," sold in summer, which are probably caught by purse seiners, with the price being about ¥4,000 – 6,000 (\$33 – 50) per one kilogram.

While most PBF caught or farm-raised by Japan has been consumed domestically, export of fresh and refrigerated bluefin tuna to other countries has been increasing in recent years, which is shown in Figure 44. Ministry of Agriculture, Forestry and Fisheries of Japan announced its target to increase the export of fisheries products from ¥170 billion (\$1.4 billion) in 2012 to ¥350 billion (\$2.9 billion) by 2020, responding to the "Japan Revitalization Strategy" advocated by the current Abe Administration, one of the pillars of which is to increase the value of exports of agricultural, forestry, and fishery products and foods to ¥1 trillion (\$8 billion) by 2020<sup>43</sup>.

Spurred by the strategic target and rapid development of the tuna farming industry,

<sup>43</sup> Prime Minister of Japan and His Cabinet, "Japan Revitalization Strategy: Japan's challenge for the future," June 2014, accessed March 13, 2015, <http://www.kantei.go.jp/jp/singi/keizaisaisei/pdf/honbunEN.pdf>

some have launched to redouble its efforts to export PBF to other countries, especially to East Asian nations. For instance, Sojitz Corporation, which has recently expanded its tuna farming business as described in PART II below, began to export farmed PBF to China in 2013, targeted at the newly mushrooming wealthy population there<sup>44</sup>. Indeed, export to China has increased rapidly in recent years,



as the above figure shows. In 2014, China received two-thirds of

**Figure 45: Export of fresh and refrigerated bluefin tuna from Japan (2014) (metric tons)** Ministry of Finance, “Zaimusyo Boeki Tokei (Trade Statistics of Japan),” accessed March 10, 2015, <http://www.customs.go.jp/toukei/info/>.

fresh and refrigerated bluefin tuna export from Japan with 71.3 metric tons, followed by the United States (13.6 metric tons/13%), Thailand (8.6 metric tons/8%), and Hong Kong (8.2 metric tons/8%) (see Figure 45). As Hiroshi Kashihara, member of editorial board of Nihon Keizai Shimbun (newspaper) notes, “fish farming in Japan ..... is growing up as a big business which can export to neighboring countries such as China and Korea,” while he adds that “the impact on resources cannot be disregarded as the business has grown in scale<sup>45</sup>.”

## 5 Regulatory Measures for Pacific Bluefin Tuna in Japan

As the population decreased due to overexploitation, the WCPFC gradually but belatedly tightened management measures in recent years. These attempts started in 2008 when at its Fifth Regular Session the WCPFC agreed that participating members would not increase the level of fishing mortality on a voluntary basis, as a temporary measure applicable in 2009<sup>46</sup>. At its Sixth Regular Meeting held the following year, the WCPFC adopted the regulation which

<sup>44</sup> *Yomiuri Shimbun (newspaper)*, March 11, 2011.

<sup>45</sup> Hiroshi Kashihara, “Kuromaguro yoshoku kisei no hamon (The repercussions of the regulation on bluefin tuna farming),” *NIKKEI Global*, No. 203 (September 2012), p.41.

<sup>46</sup> WCPFC, Summary Report of the Fifth Regular Session, Busan, Korea, 8 -12 December 2008, p. 15, para. 99.

held “fishing effort (not the amount of catch)” to levels no greater than the 2002 – 2004 levels for 2010 except the Korean EEZ<sup>47</sup>. In 2010, the WCPFC introduced the measure to reduce catches of juveniles (age 0 – 3) below the 2002 – 2004 level<sup>48</sup> in addition to effort control, which held fishing effort to stay below the 2002 – 2004 levels for 2011 and 2012, except for artisanal fisheries<sup>49</sup>. After extending the above measure for one year up to 2013<sup>50</sup>, at its Tenth Session held in 2013 the WCPFC moved just a little bit further by adopting the measure to reduce catches of juveniles (age 0 – 3) by 15% below the 2002 – 2004 average level in 2014, in response to the warning from the ISC that the population of PBF was near historically low levels, and that the risk of spawning stock biomass falling below the historically lowest level would increase under the current conditions<sup>51</sup>. Officially acknowledging that these measures were not expected to contribute to rebuild the PBF stocks, the WCPFC adopted the regulation which stipulated that, starting in 2015, all catches of PBF less than 30kg be reduced to 50% of the 2002 – 2004 annual average levels, and that total fishing effort be below the 2002 – 2004 average levels. The resolution also calls for parties to limit their catches of PBF 30kg or larger to the 2002 – 2004 average levels<sup>52</sup>.

In line with these regulations, Japan has introduced domestic control measures, albeit in an insufficient manner. In this section we will briefly touch on these measures for purse seine, longline, troll, set net, and farming (Table 2 below provides summary of these regulations).

#### (1) Purse Seine

Article 52 of the Gyogyo Ho (Fishery Act) stipulates that persons who conduct “designated fisheries” will shall obtain licenses from the MAFF minister, and large- and medium-type purse seining are prescribed by the Cabinet Order as designated fisheries<sup>53</sup>. The name, tonnage, type of fishing, and area of operations of accredited vessels are made public via the Internet, while the owner of each vessel is not disclosed. One hundred fifteen

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<sup>47</sup> WCPFC, Sixth Regular Session, Papeete, Tahiti, French Polynesia, 7 – 11 December 2009, Conservation and Management Measure (CMM) 2009-07, “Conservation and Management Measure for Pacific Bluefin Tuna,” para. 2.

<sup>48</sup> This measure did not apply in Korea.

<sup>49</sup> WCPFC, CMM 2010-04, “Conservation and Management Measure for Pacific Bluefin Tuna,” para. 2.

<sup>50</sup> WCPFC, CMM 2012-06, “Conservation and Management Measure for Pacific Bluefin,” para. 2.

<sup>51</sup> WCPFC, CMM 2013-09, “Conservation and Management Measure for Pacific Bluefin Tuna,” the second preambular paragraph and second operative paragraph.

<sup>52</sup> WCPFC, CMM 2014-04, “Conservation and Management Measure to establish a multi-annual rebuilding plan for Pacific bluefin tuna,” the third preambular paragraph and the operative paragraph 3 and 4.

<sup>53</sup> *Shitei Gyogyo no Kyoka Oyobi Torishimari Tou ni Kansuru Syorei* (Ministerial Ordinance on the Permission, Regulation, Etc. of Designated Fisheries), Art. 1.

vessels are registered as of January 1, 2015<sup>54</sup>. According to the document submitted by the JFA to the WCPFC, there are 22 vessels in western Japan ground, 18 in the Sea of Japan ground, and 26 in the Pacific ground which target PBF during their migration seasons<sup>55</sup> among the above 115 purse seiners. The list of all these vessels, obtained through the Information Disclosure Act, are attached in Appendix II. The amount of catch is shown in Figure 3 and Figure 4 above.

	2009	2010	2011	2012	2013	2014	2015
WCPFC	holding fishing mortality at current levels on a voluntary basis	holding fishing effort at 2002-2004 levels	holding fishing effort at 2002-2004 levels/reducing catches of juveniles (age 0-3) below 2002-2004 levels	holding fishing effort at 2002-2004 levels/reducing catches of juveniles (age 0-3) below 2002-2004 levels	holding fishing effort at 2002-2004 levels/reducing catches of juveniles (age 0-3) below 2002-2004 levels	holding fishing efforts at 2002-2004 levels/reducing catches by 15% below 2002-2004 levels.	holding fishing effort at 2002-2004 levels/reduces catch for PBF less than 30 kg by 50% of 2002-2004 levels
purse seine	licensing	licensing	licensing / 2,000t (June-Aug., Sea of Japan, 30kg or more) / 5,000t (less than 30 kg)	Licensing / 2,000t (June-Aug., Sea of Japan, 30kg or more) / 5,000t (less than 30 kg)	licensing / 2,000t (June-Aug., Sea of Japan, 30kg or more) / 5,000t (less than 30 kg)	licensing / 2,000t (June-Aug., Sea of Japan, 30kg or more) / 4,250t (less than 30 kg)	licensing / 1,800t (June-Jul., Sea of Japan, 30kg or more) / 2,000t (less than 30 kg)
Longline	licensing	licensing	Licensing	licensing	licensing	licensing	licensing / 2,007mt/year (> 30 kg, all coastal fisheries)
Troll	(none)	(none)	mandatory registration (since July 2011/ Sea of Japan and East China Sea)	mandatory registration (since April 2012/ all areas)	mandatory registration	licensing (since April 2014)	licensing / 2,007t/year (> 30 kg, all coastal fisheries)
set net	(none)	limiting the number of licenses	limiting the number of licenses	limiting the number of licenses	limiting the number of licenses	limiting the number of licenses	limiting the number of licenses / 2,007t/year (> 30 kg, all coastal fisheries)
Farmin g	(none)	(none)	mandatory registration	mandatory registration / capacity limit (since December 2012)	mandatory registration/capacity limit	mandatory registration/capacity limit	mandatory registration/capacity limit

**Table 2: Regulations in WCPFC and Japan.** Red indicates no regulation. Pink-red indicates mandatory licensing/registration only. Light pink indicates voluntary catch limit. Orange indicates

<sup>54</sup> JFA, “Dai- chu-gata makiami gyogyo (Large- and medium-type purse seine fisheries),” January 1, 2015, accessed March 20, 2015, <http://www.jfa.maff.go.jp/j/kikaku/sitei/pdf/daichumaki2015.pdf>.

<sup>55</sup> WCPFC, “Report on CMM 2013-09 (Pacific bluefin tuna): JAPAN,” WCPFC-NC10-2014-DP-01 (Rev.1), September 2014, p. 3.

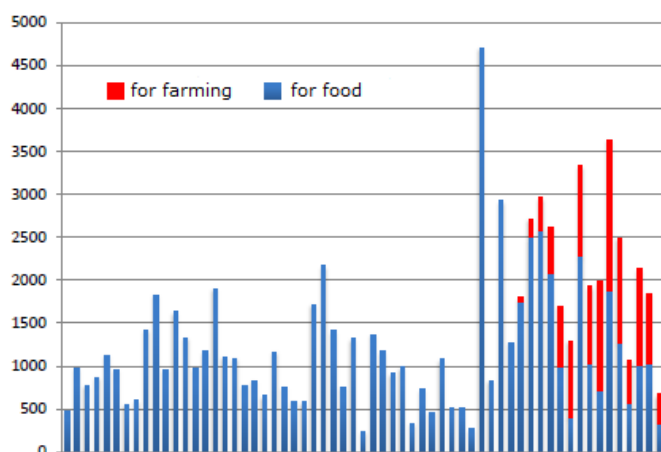
capacity limit. Yellow indicates mandatory catch limit.

With regard to adult fish (30kg or more), annual voluntary catch limit of 2,000 metric tons during June-August in the Sea of Japan was introduced by a purse-seine fishermen’s association in 2011<sup>56</sup>. This voluntary catch limit was tightened to 1,800 metric tons in 2015, and fishing season was shortened from three months to two months (June 1- July 31). As for juveniles, Japan initiated an annual catch limit of 5,000 metric tons for less than 30 kilograms in 2011. As the WCPFC strengthened regulations for juveniles, catch limit was reduced to 4,250 metric tons for 2014, and 2,000 metric tons for 2015, respectively. With regard to adult fish, there are no mandatory catch quota regulations except the licensing system and voluntary limit described above.

## (2) Longline

As is the case with purse seine fisheries, longline tuna fisheries are prescribed by the Cabinet Order as “designated fisheries” and regulated by licensing system permitted by the MAFF minister under Article 52 of the Fishery Act. According to the JFA 688 vessels conduct PBF fishing operations<sup>57</sup> (see Appendix II and III for the list of tuna longline vessels, which is also obtained through the Information Disclosure Act). Although there were no effort and/or catch limit except the licensing system until 2014, total catch limit of 2007 metric tons for tuna less than 30 kilograms in 2015 was set for all coastal fisheries (longline, troll, and set net).

## (3) Troll



**Figure 46: Number of PBF caught by troll fisheries**

JFA, “Taiheiyo kuromaguro no shigen yoshoku kanri ni kansuru zenkoku kaigi: shiryo 3 (sanko shiryo) (The national conference on the management of Pacific bluefin tuna resources and farming: Document No. 3 (reference material)),” August 26, 2014, p. 19.

Troll fisheries are widely conducted throughout the Japanese coast, using small vessels less than 5 gross registered tons with one or two fishermen on board. The bulk of tuna caught is juvenile and sold for food and farming. With the increase of tuna farming, the proportion of catch of juveniles for sale for PBF farmers

<sup>56</sup> JFA, “Taiheiyo kuromaguro no shigen jokyo to kanri no hokosei ni tsuite (Stock status and the management direction of Pacific bluefin tuna),” March, 2015, p. 48.

<sup>57</sup> *Ibid.*, p. 4.

has grown since the 2000s. These fishing activities are mainly conducted in the Pacific coastal area in Western Japan, the Goto Islands (Nagasaki), and the Tsushima Islands (Nagasaki) from July onward. Juveniles caught are thought to be born in the spawning ground of the coast of the Nansei Islands, Okinawa Prefecture. Also, troll fisheries targeting juvenile PBF for sale for tuna farmers are operated off the coast of the Oki Islands (Shimane Prefecture)<sup>58</sup>. As the JFA admitted, no management measures for PBF fishing was established and fishermen had no need for data reporting about PBF, "it was impossible to identify even how many vessels were engaged in PBF fishery annually"<sup>59</sup>. JFA began to introduce mandatory reporting toward troll fisheries in 2011, and according to the JFA there are 24,086 artisanal fishing vessels which are registered to catch PBF<sup>60</sup> (see Figure 3 and Figure 4 above for the amount of catch).

Though PBF were freely caught by troll fisheries until 2010, a mandatory registration system and reporting for their catch was started in July 2011 for troll fishing vessels targeting PBF in the Sea of Japan and the East China Sea, expanded in all areas in April 2012 under Article 68(1) (instruction of the Wide Sea-Area Fisheries Adjustment Commission) of the Fishery Act<sup>61</sup>. Since 2014, all troll fishing vessels are required to obtain licenses from the Japanese government. Also, a total catch limit of 2007 metric tons for tuna less than 30 kilograms was set for all coastal fisheries, including troll fisheries.

#### (4) Set Nets

There are about 1,800 set-net fisheries and they are regulated by prefectural governments through licensing. Until 2014, there are no regulations with respect to the catch of PBF except this licensing system, although the MAFF minister instructed the prefectural government not to increase the number of license set-nets for PBF. Starting from 2015, a total catch limit of 2007 metric tons for tuna less than 30 kilograms was introduced across all coastal fisheries including set-nets.

#### (5) Aquaculture

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<sup>58</sup> Fisheries Research Agency, "Taiheiyo kuromaguro no kanyu ryo to hikiami monitaringu sen tyosa ni tsuite (Recruitment of Pacific bluefin tuna and the monitoring survey by troll fishing vessels)," September 2014, accessed March 8, 2015, <http://fsf.fra.affrc.go.jp/pdf/kuro-kanyushousai20140930.pdf>.

<sup>59</sup> WCPFC, "Report on CMM 2013-09 (Pacific bluefin tuna): JAPAN," WCPFC-NC10-2014-DP-01 (Rev.1), September 2014, p. 3.

<sup>60</sup> *Ibid.*, p. 11.

<sup>61</sup> The article stipulates that the Wide Sea-area Fisheries Adjustment Commission concerned may give an instruction such as restriction or prohibition concerning the gathering and catch of aquatic animals and plants when the commission finds it necessary for the protection of reproduction of aquatic animals and plants.

Although the tuna farming business has been growing rapidly since the 2000s as described in PART II, there were no regulatory measures to halt unchecked overexploitation of juvenile tuna seeds, and the Japanese government had not even collected information of the business systematically. As a fisheries expert at Kinki University, Takeshi Hidaka noted in his book in 2010, “the biggest obstacle for the future developments of tuna farming industry is the complete lack of statistical data related to the production structure and the amount of production of tuna farming in Japan,” adding that “it could be said that fish farming in Japan remains in the dark.”<sup>62</sup>

Faced with growing concerns over lack of information, JFA held *Waga Kuni Syuhen Kuromaguro Shigen no Riyo ni Kansuru Kento Kai (Panel on the Utilization of Bluefin Tuna Resources around Japan)* in August 2007 for the first time, and released its interim report in December, calling for collecting information about coastal and offshore PBF fishing as well as PBF farming<sup>63</sup>. In 2011, Japan introduced a mandatory registration system for PBF farming sites, asking fish farmers to submit reports on the performance of farming activities such as the numbers of pens<sup>64</sup>. As the production capacity of PBF increased and further measures were thought to be necessary, in October 2012 the MAFF minister instructed prefectural governors not to increase the capacity of aquaculture facilities which would cause the growth of the number of input from natural fry above the 2011 levels under Article 11(6) of the Fishery Act<sup>65</sup>, and to limit the capacity or set conditions on the number of pens and so forth in order not to increase the input of natural fry above the 2011 levels<sup>66</sup>.

## 6 Assessment of the Management Measures

As we have noted above, the WCPFC strengthened its regulation on PBF by adopting the resolution which obligated members as well as cooperating non-parties to reduce catches of

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<sup>62</sup> Takeshi Hidaka, *Kenkyu Repoto: Sekai no Maguro Yosyoku (Tuna Aquaculture in the World)* (Tokyo: Norin Tokei Kyokai, 2010), p. 16.

<sup>63</sup> Waga Kuni Syuhen Kuromaguro Shigen no Riyo ni Kansuru Kento Kai (Panel on the Utilization of Bluefin Tuna Resources around Japan), “Waga kuni syuhen kuromaguro shigen no riyo ni kansuru chukan torimatome (Interim report on the utilization of bluefin tuna resources around Japan,” December, 2007, accessed March 15, 2015, <http://www.jfa.maff.go.jp/j/press/kanri/pdf/071218-02.pdf>.

<sup>64</sup> MAFF, “Taiheiyo kuromaguro no kanri kyoka ni tsuite (Measures on the strengthening of management on the Pacific bluefin tuna), tuna),the st, accessed January 5, 2015, [http://www.jfa.maff.go.jp/j/kokusai/kanri\\_kyouka/index.html](http://www.jfa.maff.go.jp/j/kokusai/kanri_kyouka/index.html).

<sup>65</sup> Article 11(6) stipulates that “(w)hen the Agricultural, Forestry and Fisheries Minister finds it especially necessary for protecting the reproduction of aquatic animals and plants... he/she may instruct the Governors concerned to decide or change the matters to be specified for licenses”.

<sup>66</sup> MAFF, “Kokunai kuromaguro yoshoku no kanri kyoka ni tsuite (Strengthening of management on bluefin tuna aquaculture in Japan),” October 26, 2012, accessed January 5, 2015, <http://www.jfa.maff.go.jp/j/press/enoki/121026.html>.

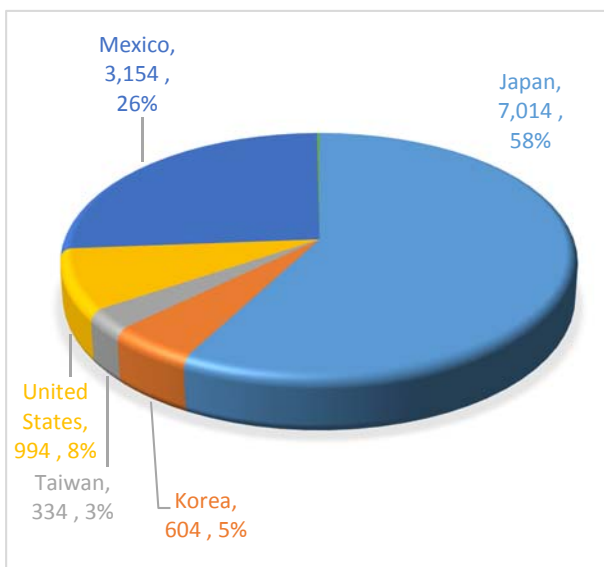


PBF less than 30kg to 50% of the 2002-2004 average levels, and to hold total fishing effort at 2002 – 2004 average levels. This urged placing a limit on catches of PBF 30kg or larger at 2002 – 2004 average levels, in response to the recommendation from the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. Masanori Miyahara, chair of the Northern Committee of the WCPFC, praised this as a “management measure which involves huge sacrifice<sup>67</sup>” to Japanese fishermen. Hisashi Endo, head of the Japanese delegation to the WCPFC, also commended this as a “sufficient measure as a starting point toward the recovery of the resource,” adding that “we can expect a certain amount of recruitment (if we implement this properly)<sup>68</sup>.” In this section, we will touch on the extent of sacrifice, if any, they will have to make in order to fulfill the measures adopted internationally and domestically, as well as the degree of resource recovery we can really expect.

Table 3 gives annual catches of PBF from 1994 to 2013 and estimated quotas in 2015. The Inter-American Tropical Tuna Commission (IATTC), which regulates tuna and tuna-like species in the Eastern Pacific Ocean, adopted conservation measures for PBF, calling for reduction of the catch to 6,600 metric tons during 2015 and 2016, which means 3,300 metric tons a year if the quota is evenly divided. As the catch of 6,600 metric tons includes quotas of 600 metric tons for countries other than Mexico with historical commercial catches of PBF in the Eastern

Pacific, which essentially means the United States, the quota for Mexico is estimated to be 3,000 metric tons in 2015 in the Table 3 below<sup>69</sup>.

As the table shows, while Mexico and the United States, which account for one-third of PBF catch in 2013 in the regulatory area of IATTC, agreed to reduce their catches from 2015 compared with those in 2012 and 2013, catch quotas in Japan, Korea, and Taiwan for the 2015 season are larger than actual catches in 2012 as well as in 2013, except for Korea in 2012, which means the regulatory measure for PBF adopted



**Figure 47: Catches of PBF in 2013 (metric tons/percent)** ISC, “Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean,” July 2014, p. 69.

<sup>67</sup> *The Suisan Keizai Daily News*, September 8, 2014.

<sup>68</sup> *The Suisan Keizai Daily News*, December 10, 2014.

<sup>69</sup> IATTC, Resolution C-14-16, “Measures for the Conservation and Management of Pacific Bluefin Tuna in the Eastern Pacific Ocean 2015-2016,” paras. 1 and 2.

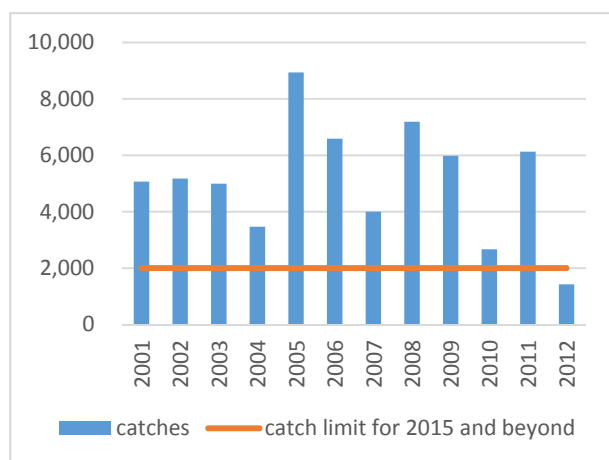
by the WCPFC did nothing more than to rubber-stamp and perpetuate the status quo of overexploitation in the north-western Pacific Ocean. This is because the reference point of reduction in the WCPFC is not the average in recent years but the 2002 – 2004 annual average, when the actual amount of catches was much higher than now.

	Japan		Korea		Taiwan	Mexico		USA	
	Juveniles	Adults	Juveniles	Adults	Adults	Juveniles	Adults	Juveniles	Adults
1994	6,165	9,021	50		559	51	14	822	232
1995	20,740	6,350	821		337	10	1	918	46
1996	9,480	4,527	102		956	3,482	218	4,470	279
1997	13,610	5,242	1,054		1,814	287	81	1,984	546
1998	7,049	4,142	188		1,910	1	0	1,923	542
1999	10,624	12,004	256		3,089	2,239	165	722	87
2000	15,445	9,132	2,401		2,782	2,902	216	1,024	72
2001	10,251	3,960	1,186		1,843	767	97	606	89
<b>2002</b>	<b>9,309</b>	<b>4,877</b>	<b>932</b>		<b>1,527</b>	<b>1,366</b>	<b>344</b>	<b>555</b>	<b>162</b>
<b>2003</b>	<b>7,951</b>	<b>2,455</b>	<b>2,601</b>		<b>1,884</b>	<b>2,635</b>	<b>619</b>	<b>343</b>	<b>92</b>
<b>2004</b>	<b>6,785</b>	<b>7,314</b>	<b>773</b>		<b>1,717</b>	<b>6,375</b>	<b>2,519</b>	<b>40</b>	<b>20</b>
2005	14,796	6,872	1,318		1,370	3,778	765	237	51
2006	9,828	4,350	1,012		1,150	8,791	1,136	89	9
2007	8,515	6,191	1,281		1,411	3,227	920	45	13
2008	11,879	5,836	1,743	123	981	3,706	701	75	19
2009	9,701	4,896	901	34	888	2,709	310	525	66
2010	5,500	2,787	1,128	68	409	5,731	2,015	95	28
2011	9,127	4,659	670	1	316	1,866	865	414	205
2012	3,815	2,468	1,406	16	213	5,280	1,388	516	144
2013	7,014		604		334	3,154		994	
2015	4,008	4,882	718		1,709	3,000		300*	
average (02-04)	8,015	4,882	1,435		1,709	3,459	1,161	313	91

**Table 3: Catches and quotas of PBF in 2015.** Figures regarding Korea (2002-), Taiwan (2002-), and all countries (2013) are data submitted to the ISC. Figure regarding Korea (-2001), Taiwan (-2001), Japan (-2012), Mexico (-2012), the United States (-2012) are estimated by the National Research Institute of Far Seas Fisheries of FRA. Green indicates increase of catches from 2012 and 2013. Yellow indicates increase from 2013 while decrease from 2012. Red indicates decrease from 2012 and 2013.

\* For commercial fisheries only. The recreational catch is currently unlimited (only managed by a bag limit)

JFA, "Taiheiyo kuromaguro no shigen yoshoku kanri ni kansuru zenkoku kaigi: shiryō 3 (sankō shiryō) (The national conference on the management of Pacific bluefin tuna resources and farming: Document No. 3 (reference material))," August 26, 2014, p. 15; ISC, "Report of the Fourteenth Meeting of



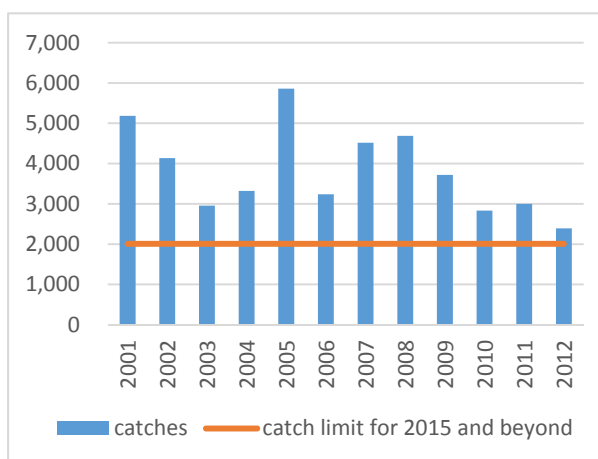
**Figure 48: Catches of PBF less than 30kg by purse seiners**

JFA, “Taiheiyō kuromaguro no shigen yoshoku kanri ni kansuru zenkoku kaigi: shiryo 3 (sanko shiryo) (The national conference on the management of Pacific bluefin tuna resources and farming: Document No. 3 (reference material)),” August 26, 2014, p. 15.

actual catches since 2001 except in 2012. Likewise, a catch limit of 2,007 metric tons for other than purse seiners is lower than any other actual catch since 2001, which means that all types of Japanese PBF fisheries will have to pay a price to some extent in order to fulfil the obligation laid by the WCPFC as well as the Japanese government.

However, we have to point out that the conservation measure for juveniles by the WCPFC is not in line with the advice from the ISC, an international scientific body with regard to tuna and tuna-like species in the North Pacific Ocean. Whereas the ISC recommended that “further substantial reductions in fishing mortality and juvenile catch *over the whole range of juvenile ages* should be considered to reduce the risk of SSB (Spawning Stock Biomass) falling below its historically lowest level (emphasis added),<sup>70</sup>” and it further said that 80% of age-three and 50% of age-

Next, we will take a look at the conservation measure on juveniles. As we have noted, Japan introduced domestic regulation with regard to juveniles, setting the limit for purse seine fisheries at 2,000 metric tons and for fisheries other than purse seiners at 2,007 metric tons. Figure 48 and Figure 49 give the actual catches and catch limit for 2015 and beyond of PBF less than 30kg by purse seiners, as well as other than purse seiners. With regard to purse seine fisheries, a catch limit of 2,000 metric tons is lower than the



**Figure 49: Catches of PBF less than 30kg by other than purse seiners**

JFA, “Taiheiyō kuromaguro no shigen yoshoku kanri ni kansuru zenkoku kaigi: shiryo 3 (sanko shiryo) (The national conference on the management of Pacific bluefin tuna resources and farming: Document No. 3 (reference material)),” August 26, 2014, p. 15.

<sup>70</sup> ISC, “Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean,” July 2014, p. 34.

four PBF are not matured<sup>71</sup>, what the WCPFC adopted was to reduce the catch of PBF “*less than 30kg*” only. As Table 1 above shows, PBF with 30kg are about two or three years old, which means that substantial amount of juvenile bluefin would be captured even with the measure by the WCPFC. Indeed, at the WCPFC annual meeting in 2014, Mexico expressed its disappointment over the result of the meeting, saying that “ISC advice on juvenile catch warned ... that reduction should be effected not only on Pacific bluefin tunas weighing less than 30kg, but across the range of juvenile sizes; therefore the CMM (conservation measure by the WCPFC) adopted does not take account of the scientific advice.” This concern is even shared by Masanori Miyahara, former Deputy Director-General of the JFA, President of the FRA, and Chair of the Northern Committee of the WCPFC, who asked Japanese fishermen to make sure that “please be reminded that what the ISC recommended is not the reduction of bluefin tuna less than 30kg,” adding that “I take it that they said we should consider the whole range of juvenile tuna, including the ones weighing between 30kg and 90kg.”<sup>72</sup>

The WCPFC also asked that limitation of total fishing efforts be below the 2002 – 2004 average levels as an obligatory measure. Again, this is not a catch limit but an effort limit, which leads us to ask on what basis the fishing effort is determined. The Northern Committee of the WCPFC, which is responsible for managing species above 20°N in the western and central Pacific, posed the same question<sup>73</sup> and the report of the ISC provided the answer, in which the annual fishing effort in Japan is thought to be evaluated by the number of vessels or nets licensed, while the definition of each fishing effort is not specified<sup>74</sup>. These are shown in Figure 50, 51, 52 and 53 below. In all of the cases in the figures, fishing efforts are on downward trends, as fish have become scarce year after year owing to overexploitation, and fisheries have become an unprofitable business to many fishermen. With regard to the fifty purse seiners listed in Appendix I, five companies became bankrupt in 2014 alone<sup>75</sup>. Indeed

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<sup>71</sup> ISC, “Stock assessment of bluefin tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group,” 2014, p. 8.

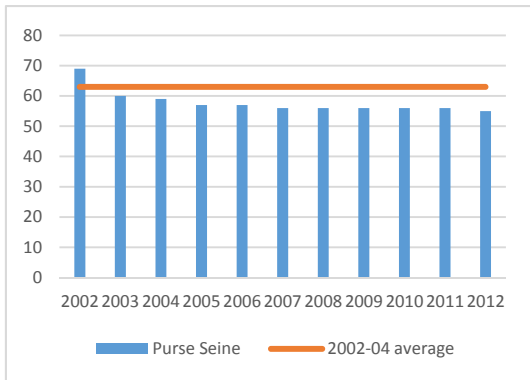
<sup>72</sup> JFA, Summary record of *Kuromaguro no Shigen Yosyoku ni kansuru Zenkoku Kaigi (the National Conference on the Pacific bluefin tuna Resources and Farming)*, August 26, 2014, p. 7, accessed March 10, 2015, <http://www.jfa.maff.go.jp/j/study/enoki/pdf/magurogijigaiyou140826.pdf>.

<sup>73</sup> The Northern Committee at its Ninth Session in 2013 requested the ISC to produce a catch and effort data table of juvenile and adult Pacific bluefin tuna for the reference year (2002 – 2004). WCPFC, “Northern Committee: Ninth Regular Session – Summary Report,” 2013, p. 10, para. 63.

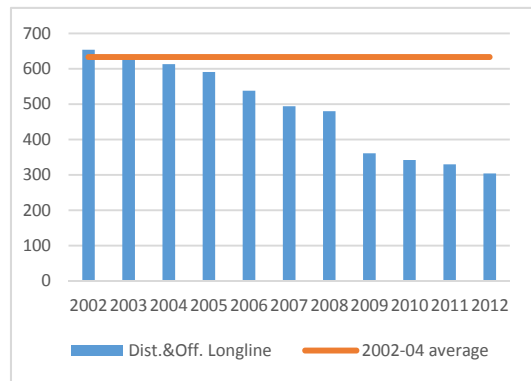
<sup>74</sup> WCPFC, “ISC’s request to NC9’s information request regarding north Pacific albacore tuna and Pacific bluefin tuna,” WCPFC-NC10-2014/IP-03, 2014, p. 24.

<sup>75</sup> Hamada Gyogyo Co. Ltd., the owner of TAKOSHIMA MARU NO.3, went bankrupt on April 30, 2014. Teikoku Databank, Ltd., “Ogata tosan sokuho (Major bankruptcy newsflash),” May 2, 2014, accessed March 25, 2015, <http://www.tdb.co.jp/tosan/syosai/3909.html>; Maruno Gyogyo Co. Ltd., the owner of NOMURA MARU NO.28, became bankrupt on December 1, 2014. Teikoku Databank, Ltd., “Ogata tosan sokuho (Major bankruptcy newsflash),” December 9, 2014, accessed March 25, 2015, <http://www.tdb.co.jp/tosan/syosai/3987.html>; Marukawa Gyogyo Co. Ltd. as well as its affiliated companies Marufuku Gyogyo Co. Ltd. and Yukyu Gyogyo Seisan Kumiai, the owners of DAIKICHI MARU

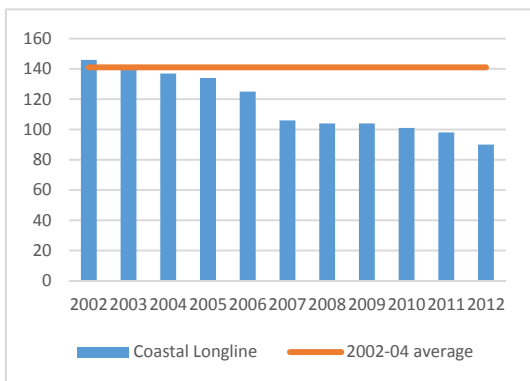
JFA admitted in its report submitted to the WCPFC that “(t)he number of (purse seine) vessels has been decreasing year by year,” adding that “(t)he catch (of longline vessels) is also decreasing.<sup>76</sup>” As Figure 50, 51, 52, and 53 show, fishing efforts since 2003 onward have never stayed above the 2002 – 2004 average level, which means that in order for Japanese officials and fishermen to implement the effort limit laid by the WCPFC they will only need to maintain a wait-and-see attitude, doing nothing at all.



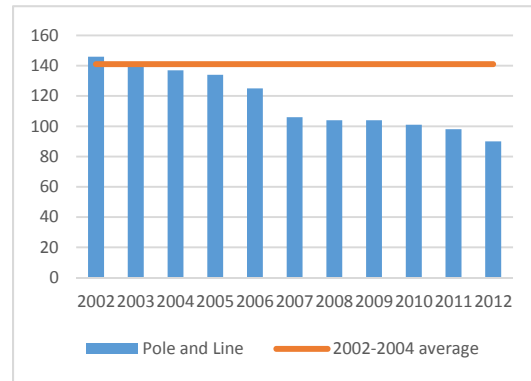
**Figure 50: Fishing effort (number of vessels) of purse seine PBF fisheries and 2002-2004 average.** WCPFC, “ISC’s request to NC9’s information request regarding north Pacific albacore tuna and Pacific bluefin tuna,” WCPFC-NC10-2014/IP-03, 2014, p. 24.



**Figure 51: Fishing effort (number of vessels) of distant and offshore longline PBF fisheries and 2002-2004 average.** WCPFC, “ISC’s request to NC9’s information request regarding north Pacific albacore tuna and Pacific bluefin tuna,” WCPFC-NC10-2014/IP-03, 2014, p. 24.



**Figure 52: Fishing effort (number of vessels) of coastal longline PBF fisheries and 2002-2004 average.** WCPFC, “ISC’s request to NC9’s information request regarding north Pacific albacore tuna and Pacific bluefin tuna,” WCPFC-NC10-2014/IP-03, 2014, p. 24.

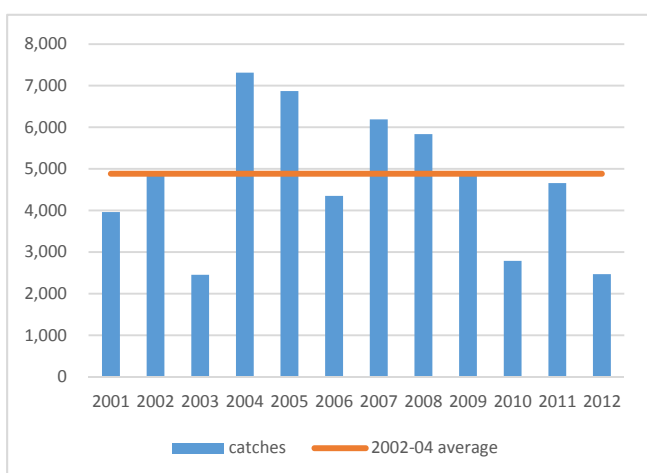


**Figure 53: Fishing effort (number of vessels) of pole and line PBF fisheries and 2002-2004 average.** WCPFC, “ISC’s request to NC9’s information request regarding north Pacific albacore tuna and Pacific bluefin tuna,” WCPFC-NC10-2014/IP-03, 2014, p. 24.

As the third pillar of the management measure for PBF, at its regular session in 2014, the WCPFC urged parties concerned to limit

NO.8, MARUSHIGE MARU NO.21, and YUKYU MARU NO.3 filed for bankruptcy on May 23. Teikoku Databank, Ltd., “Ogata tosan sokuho (Major bankruptcy newsflash),” May 27, 2014, accessed March 25, 2015, <http://www.tdb.co.jp/tosai/syosai/3921.html>.

<sup>76</sup> Government of Japan, “Report on CMM 2013-09 (Pacific bluefin tuna),” WCPFC-NC10-2014/DP-01 (Rev.1), July 2014, pp. 2-3, accessed March 10, 2015, <http://www.wcpfc.int/system/files/NC10-DP-01%20%5BReport%20on%20CMM%202013-09%5D-Rev1.pdf>.



**Figure 54: Catches of PBF 30kg or more in Japan**

WCPFC, “ISC’s request to NC9’s information request regarding north Pacific albacore tuna and Pacific bluefin tuna,” WCPFC-NC10-2014/IP-03, 2014, p. 23.

of the ISC acknowledged<sup>78</sup>, it is highly unlikely that this measure adopted by the WCPFC will protect the already depleted PBF stocks from further overexploitation.

As we have note above, the annual voluntary catch limit of 2,000 metric tons during June-August in the Sea of Japan was introduced since 2011 alongsides regulatory measures adopted by the Japanese government and the WCPFC. Iwahisa Kaneko, President of well-known purse seiner Toyo Gygyo Co. Ltd. and a nephew of Genjiro Kaneko, Upper House member of the National Diet from Nagasaki (2010 - ) as well as a member of “*nosuizoku*,” or agriculture and fisheries policy “tribe<sup>79</sup>” in the ruling Liberal and Democratic Party of Japan (LDP), spoke on behalf of the purse seine fishing industry before the members of *Shigen Kanri no Arikata Kento Kai* (Discussion Panel for the Future of Resource Management), a panel of experts under the JFA consisting of fisheries bureaucrats and academics. He stated that “large- and medium purse seine fisheries have already accomplished huge cuts in the amount of catches,” adding that “if the government are to promote tightening of regulations, you should pay direct compensation in order for us to maintain the level of revenue before regulations introduces.” Kaneko further said to fisheries bureaucrats that “if we do not implement management measures jointly with Korea and Mexico ... only Japan would waste money and effort without restoring the resource,” requesting further that the “Japanese government should take responsibility in order to be dealt with equally both domestically

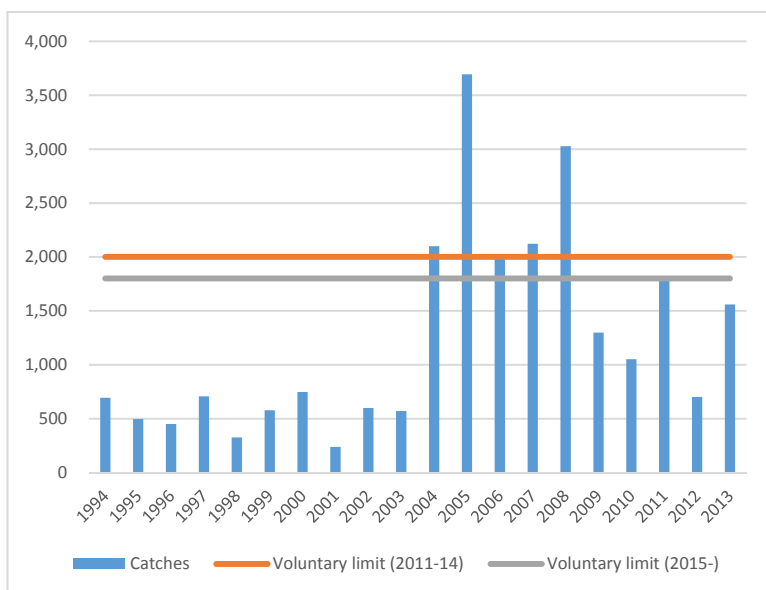
catches of PBF 30kg or larger from the 2002 – 2004 average levels as far as possible<sup>77</sup>. Figure 54 gives the catches of PBF 30kg or more in Japan. As the figure shows, the catch in 2009 (4,896 metric tons) is almost the same as the 2002 – 2004 average catch (4,882 metric tons) and the catches since 2010 have never reached the 2002 – 2004 average. Considering that the current stock level is “near historically low levels;” as the PBF Working Group

<sup>77</sup> WCPFC, CMM 2014-04, “Conservation and Management Measure to establish a multi-annual rebuilding plan for Pacific bluefin tuna,” the third preambular paragraph and the operative paragraph 3 and 4.

<sup>78</sup> ISC, “Stock assessment of bluefin tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group,” 2014, p. 4.

<sup>79</sup> *Zokugijin* or “policy tribe” MP are Japanese politicians who are exercising a strong influence concerning specific policy areas such as construction, welfare, agriculture, and education.

and internationally<sup>80</sup>.”



**Figure 55: Catches of PBF in the Sea of Japan** JFA, “Taiheiyo kuromaguro no shigen Jyokyo to kanri no hokosei ni tsuite (Stock status of Pacific bluefin tuna and the direction of resource management),” May 2015, p. 50; internal document of JFA.

If we take a look at the reality of the voluntary measure which is shown in Figure 55, that does not seem to be “huge cuts in the amount of catches” as Kaneko eloquently boasted, however. The voluntary limit (2011-14) of 2,000 metric tons is almost the same as the actual catches in 2004, 2005, and 2007, when purse seine PBF fishing began to intensify on a massive scale, and the catches have never reached the

current voluntary limit of 1,800 metric tons since 2009. As Ayumu Katano, Vice Manager of the Second Fisheries Division, Maruha Nichiro Corporation said, “the current catch quota allows fishing to go unchecked and it is something like a target amount rather than a quota<sup>81</sup>.” Likewise, Toshio Katsukawa, associate professor at Tokyo University of Marine Science and Technology, criticizes that it “has no effect whatsoever to conserve resources,” pointing out that “it is something like setting the catch quota to assert their claim to fish.<sup>82</sup>” Considering that Mexico bore a burden by accepting catch quota reduction in the IATTC, it seems high time for the Japanese purse seine industry to take responsibility in order to restore PBF species both domestically and internationally.

The assessment we have made regarding the measures adopted by the WCPFC as well as Japan leads us to conclude that except for the lenient reduction for juveniles, they will not have significant effect on the conservation of PBF stocks. If the above appraisal is valid, we have to ask to what extent we can expect the recovery of resources in the event that PBF

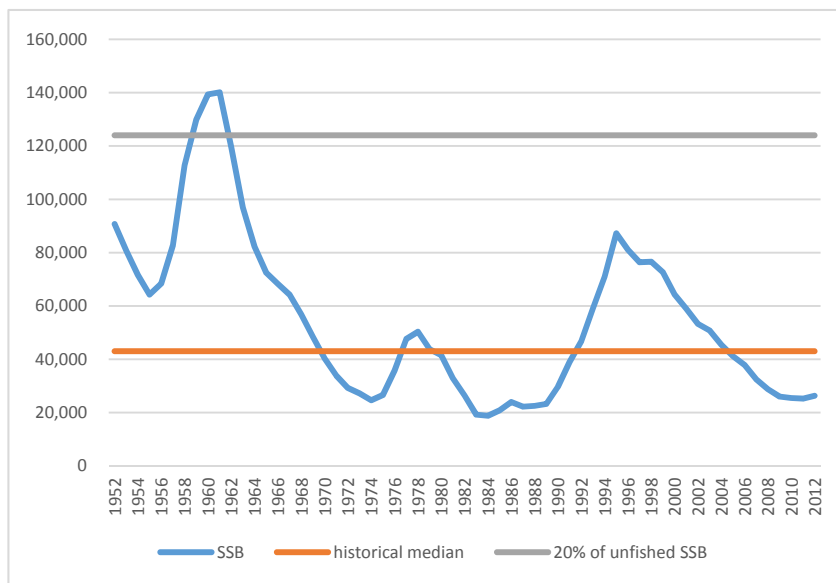
<sup>80</sup> JFA, Verbatim record of *Dai 3 Kai Shigen Kanri no Arikata Kento Kai* (Third Session of the Discussion Panel for the Future of Resource Management), May 20, 2014, p. 10, accessed March 20, 2015, <http://www.jfa.maff.go.jp/j/kanri/other/pdf/3gijiroku.pdf>.

<sup>81</sup> Ayumu Katano, “Kuromaguro mo gakeppuchi: Suisancho ‘mejimaguro tabenaide’ no wake (Bluefin tuna on the brink of extinction: The reason why the JFA says ‘don’t eat juvenile tuna’),” WEDGE Infinity, September 20, 2013, accessed March 20, 2015, <http://wedge.ismedia.jp/articles/-/3171?page=3>.

<sup>82</sup> Toshio Katsukawa, “Zetsumetsu kigu syu no kuromaguro: Sanranjyo no gyokaku kisei wo isoge (Bluefin tuna on the brink of extinction: Need for hurry up regulation in spawning grounds),” *Wedge*, Vol. 27, No. 5 (May 2015), p. 32.



regulations by the WCPFC are strictly and fully implemented. The overall goal of the measure



**Figure 56: Spawning Stock Biomass (SSB) of PBF**

WCPFC, "Stock Assessment of Bluefin Tuna in the Pacific Ocean in 2014: Report of the Pacific Bluefin Tuna Working Group," WCPFC-SC10-2014/SA-WP-11, Aug. 2014, p. 72.

approximately 4% of the stock's original size. As 42,592 metric tons is the median of the recorded catches of PBF and the catches themselves have begun well before the statistics were kept, the goal aimed at for the current resolution is only an increase to 7% of its original population, far below the 20% of the unfished biomass (20% of the original size of matured fish), a reference point proposed by the United States at the WCPFC and used by some fish stocks such as southern bluefin tuna to rebuild the population (see Figure 56). What the WCPFC aims at with 60% probability is to increase the PBF from four fish to seven fish in ten years, whereas the amount before fishing began is one hundred fish.

At the Eleventh Meeting of the WCPFC held in 2014, Canada stressed the need for a more comprehensive measure to rebuild the stock. The European Union put it more frankly, making public its "disappointment at the lack of ambition of the WCPFC Pacific bluefin measure." The EU went on to point out that "WCPFC should have aimed at rebuilding the stock to a higher percentage of the unfished biomass" while not opposing the adoption of the measure recommended by Japan<sup>84</sup>. These views are also shared by independent Japanese experts. Toshio Katsukawa of Tokyo University of Marine Science and Technology commented that "the catch quota agreed will not bring about the restoration of bluefin tuna," although the outcome of the negotiation at the WCPFC, "which is to cut off the catches of other countries

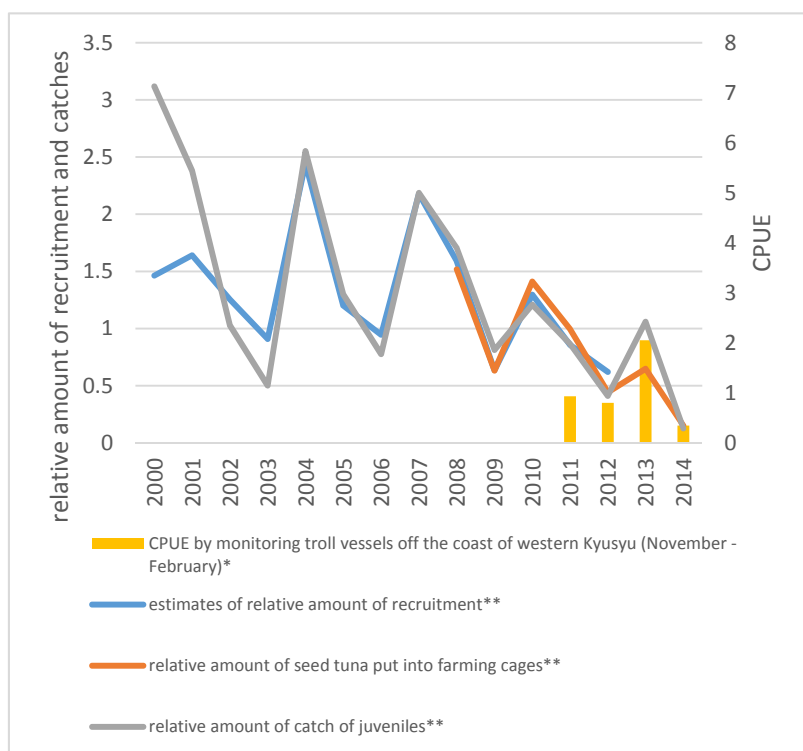
is, as the resolution stipulates, to rebuild matured fish "to the historical median (42,592 t) within 10 years with at least 60% probability.<sup>83</sup>" As we have noted before, PBS has been so overexploited and decimated that the current Spawning Stock Biomass, the amount of matured fish, is only

<sup>83</sup> WCPFC, CMM 2014-04, "Conservation and Management Measure to establish a multi-annual rebuilding plan for Pacific bluefin tuna," para. 1.

<sup>84</sup> WCPFC, "Eleventh Regular Session, Apia, Samoa, 1 – 5 December 2014, Summary Report," 2014, pp. 59-60.

while Japan will not reduce its catches, was what Japan really wanted to achieve<sup>85</sup>.” Masayuki Komatsu, a former bureaucrat of JFA, also stressed that “member nations should take adequate measures in order to restore the population to the level of 20% of its original recourse or halving the catches as proposed by the United States,” adding that “the problem lies in Japan, which catches large numbers of fish and has many fishermen.<sup>86</sup>”

The situation is getting worse and worse at the moment. According to the preliminary results issued by the JFA and FRA on the recruitment of PBF in 2014, the number of juvenile fry for farm seeds captured in Japan decreased by 76% from the previous year. If we take the relative amount of catch of juvenile tuna from 2000 to 2012, it could have been reduced by



96% from 2000, which means that the amount of juvenile fish in 2014 is only 4% of that of fourteen years ago. The above estimate observed in western Japan agrees with the Catch Per Unit Effort (CPUE) observed by monitoring troll vessels off the coast of western Kyusyu Island in 2014, which decreased by 83% from the previous year (see Figure 57 and Appendix XIII). There is a real possibility that the collapse of PBF stocks is close at hand, thereby necessitating urgent actions.

While the

**Figure 57: CPUE by monitoring vessels off the coast of western Kyusyu Island (yellow)\*, Estimates of relative amount of recruitment (blue) \*\*, relative amount of juvenile fry put into farming cages (orange) \*\*, and relative amount of catch of juveniles (gray) \*\***

\* The 2008 – 2012 average level is set at 1.

\*\* CPUE at 2013 is set at 1.

The National Research Institute of Far Seas Fisheries, FRA, “Taiheyo kuromaguro 2014 umare kanyuryo monitoring sokuho (Preliminary results on the monitoring of the recruitment of Pacific bluefin tuna in 2014),” May 2015, <http://www.ifa.maff.go.jp/j/press/sigen/pdf/201505kuromaguro.pdf> (accessed August 1, 2015).

<sup>85</sup> Toshio Katsukawa, “Kuromaguro no kokusai goi naiyo no sokatsu (Summary of the outcome of the international agreement on bluefin tuna)” *BLOGOS*, November 10, accessed March 20, 2015, <http://blogos.com/article/98401/>.

<sup>86</sup> Masayuki Komatsu, “Katsuo maguro gyogyo no syorai (8) (The future of tuna fisheries)” *The Minato Daily News*, October 30, 2014.

management measures adopted by the WCPFC in 2014 stipulates that it “shall be reviewed and, if necessary ...amended in 2016,” that should not be an excuse for not taking an immediate response by adopting more stringent measures both internationally and domestically in order to conserve and restore the PBF stocks from the brink of extinction. Above all, purse seine fishing in the Sea of Japan, which is causing devastating effects on the species, should be strictly regulated by imposing drastic cuts of all catches of PBF as well as rigorous schemes for implementation such as on-board observers. If not, trade and pelagic fishing restrictions under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) should be seriously considered and adopted at the next Conference of Parties which is to be held in 2016 in South Africa, for the sake of present and future generations of all humankind, and this species itself.



## **PART II: Fish Farming in Japan**

### **Summary**

In this part, we will take up tuna farming business in Japan. Firstly, we will overview bluefin tuna aquaculture in the world in general, then move on to PBF farming in Mexico, which has been the only country that does the business on a large scale beside Japan, touching upon its relationship with Japanese companies. Second, we will take a look at the historical development of tuna farming in Japan, initiated by Kinki University and expanded by the university as well as major seafood companies such as Maruha Nichiro Corporation, then point out the reason of rapid development of the business, that is, (1) the need for change from existing fish farming such as red sea-bream and yellowtail to other species owing to price decline in reverse proportion to the amount of production of these farmed fish, in addition to the protracted slump of fishing business in general, (2) the need for seeking the source of supply of bluefin tuna domestically in Japan as the output of bluefin tuna was reduced because of the strengthening of regulation toward these species adopted by the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Thirdly, we will examine Japanese farming business more in-depth, taking up major tuna farming sites by major prefecture and tuna farming companies. In doing so, we will point out that (1) while the amount of artificial seed fry had been increasing, most of tuna farmers are still heavily dependent on natural seeds, thus this business is greatly affected by also has substantial impact on this species, (2) there has been a movement towards the oligopolization by major seafood and trading companies such as Maruha Nichiro, NISSUI, KYOKUYO, Mitsubishi, and Sojitz as setting up a tuna farming site requires large amount of money and involves substantial risks from natural disasters. Lastly, we will take up production schedule, cost, and price of farmed tuna, comparing it with bluefin tuna farming in other countries.

## PART II: Fish Farming in Japan

### 1. Overview

In the late 1960s, Taito Seimo, a subsidiary company of Maruha Nichiro Corporation formerly known as Taiyo Fishery Co., Ltd., initiated tuna farming in St. Margarets Bay, Nova Scotia, Canada, raising large bluefin tuna (more than 150kg) caught by set net, which they exported to Japan. When Taito heard the news that Kinki University had succeeded in farm-raising juvenile tuna, it launched a farming site in Canada, with technical support from Kinki University in 1975. Taito then opened another site in Ceuta, Spain in the late 1970s. However, its attempts failed as it relied on set net to capture seed tuna, which made the supply of seeds unstable. Taito withdrew from this business in the mid-1980s because of the above reason, and the soaring cost of seed tuna<sup>87</sup>.

Another endeavor for tuna farming was made in Port Lincoln of South Australia, beginning in the early 1990s. Faced with severe catch control as the result of overfishing and the decrease of southern bluefin tuna, Australian fishermen initiated farming of this species with the technical support of the Overseas Fishery Cooperation Foundation of Japan, which hoped that Japanese fishermen could continue tuna fishing off the coast of Australia in contrast with the intent of the Australian federal government, which planned to introduce a moratorium of bluefin tuna fishing. The experimental farming was started in 1991, in cooperation among the Australian Tuna Boat Owner's Association, the South Australian Government, and the Overseas Fishery Cooperation Foundation of Japan<sup>88</sup>. A new method for catching seed tuna was developed in which purse-seine nets were used to capture seed tuna, which were then transferred to towing preserves and raised in large circular nets. This "Australian style" tuna farming became quite successful, resulting in huge profit for Australian fishermen, who shipped all farmed tuna to the Japanese market.

Stimulated by this success, fisheries farms started a similar type of operation in the Mediterranean Sea in the mid-1990s. In Spain, tuna farming started in 1996 in Murcia, which is the major Mediterranean landing port for Spanish, French, and Italian purse seiners which caught bluefin tuna in the western Mediterranean, as well as the center of exports of these fish to Japan<sup>89</sup>. Japanese companies were also involved in this business. For instance, Maruha

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<sup>87</sup> Fisheries Research Agency, ed., *Maguro Shigen to Seibutsugaku (Tuna Resources and Biology)* (Tokyo: Seizando Syoten, 2014), p. 230; Shigeru Miyashita, "Jizokuteki na maguro yosyokugyo e muketa kadai to chosen (Agendas and challenges toward sustainable tuna farming industry)," *Yosyoku (Aquaculture)*, Vol. 49, No. 3, p. 46.

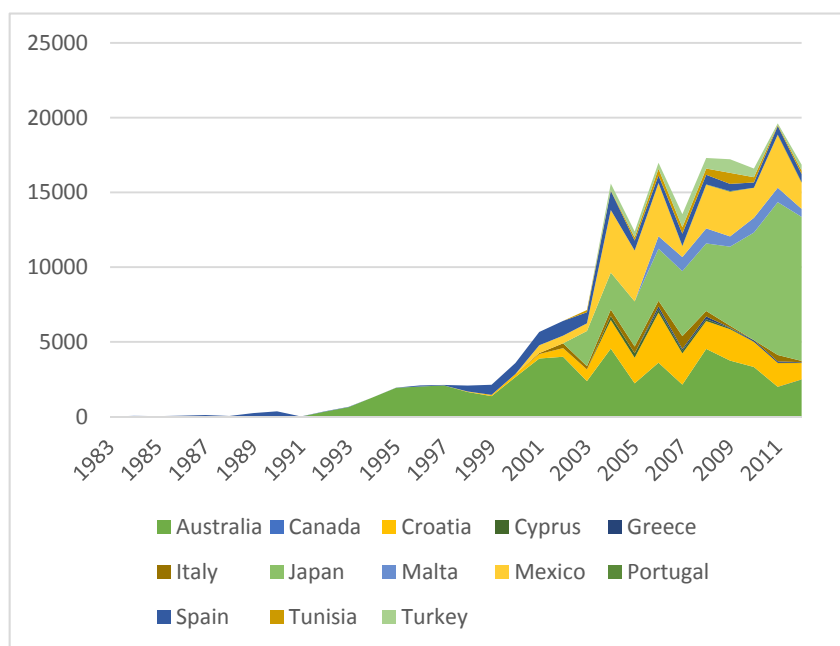
<sup>88</sup> Takeshi Hidaka, *Kenkyu Repoto: Sekai no Maguro Yosyoku (Tuna Aquaculture in the World)* (Tokyo: Norin Tokei Kyokai, 2010), p. 24.

<sup>89</sup> P. M. Miyake, J. M. De la Serna, A. Di Natale, A. Farrugia, I. Katavic, N Miyabe, and V. Ticina, "General

Nichiro and Mitsui & Co., Ltd., which had conducted processing and importing business in the Mediterranean region launched experimental tuna farming developed in Australia. Ricardo Fuentes e Hijos from Murcia established joint venture companies with Maruha Nichiro (Viver-Atun Cartagena) and Mitsui & Co., Ltd. (Tuna Graso) in 1996. Mitsubishi Corporation, Japan’s largest trading company, also followed suit, setting up a joint company (Anunes de Levante) with Ricardo<sup>90</sup>.

“Australian-style” farming spread rapidly in the Mediterranean from the late 1990s to the early 2000s. In Croatia, the fishermen who had been engaged in southern bluefin tuna farming in Australia returned to their home country and started the operation in 1996. In Malta, farming started in 2000 following the system adopted in Croatian and Spanish farming. In Italy, test fish farming also took place in 1999 to 2000 in southwest Sicily, and in 2001 in the central Adriatic Sea<sup>91</sup>. Ricardo Fuentes e Hijos from Spain expanded its farming business to another countries,

creating joint business ventures in Croatia (1998), Italy (2000), Tunisia (2003), Cyprus (2003), and Malta (2006)<sup>92</sup>. According to WWF (2006), Ricardo Fuentes e Hijos accounts for some 60% of total ranched bluefin tuna in the Mediterranean Sea and over 50% of Spain’s bluefin tuna ranching capacity in



**Figure 58: Tuna farming (metric tons)**

Source: FAO (excluding Japan), JFA (Japan)

Review of Bluefin Tuna Farming in the Mediterranean Area,” ICCAT SCRS/2002/36 Revised (2002), pp. 116-117.

<sup>90</sup> Naotoshi Yamamoto, “Maguro yoshokugyo no rekishiteki tenkai to kongo no tenbo (Historical development and future prospects of tuna farming business),” *Nagasaki Daigaku Suisan Gakubu Kenkyo Hokoku*, No. 93 (2012), p. 66.

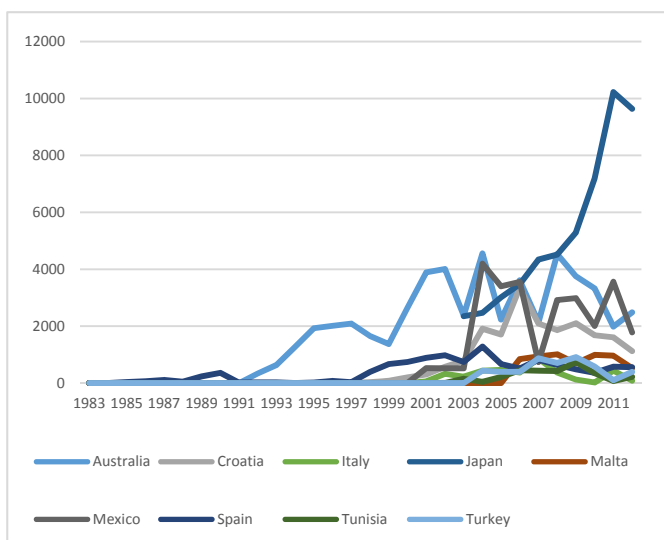
<sup>91</sup> P. M. Miyake, J. M. De la Serna, A. Di Natale, A. Farrugia, I. Katavic, N Miyabe, and V. Ticina, “General Review of Bluefin Tuna Farming in the Mediterranean Area,” ICCAT SCRS/2002/36 Revised (2002), pp. 116-117.

<sup>92</sup> Naotoshi Yamamoto, “Maguro yoshokugyo no rekishiteki tenkai to kongo no tenbo (Historical development and future prospects of tuna farming business),” *Nagasaki Daigaku Suisan Gakubu Kenkyo Hokoku*, No. 93 (2012), p. 66.



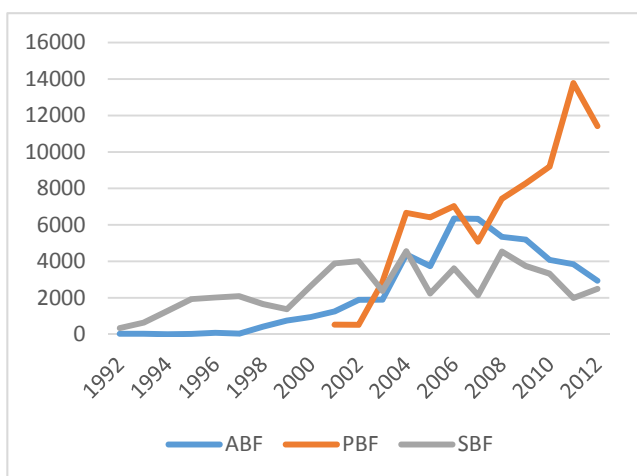
Murcia, and became one of the largest conglomerates of bluefin tuna fishing and farming in this region<sup>93</sup>.

Figure 58 and Figure 59 represent the amount of tuna farming in the world. The total amount was 1,942 tons in 1995, which became one-and-a-half times in 2000 (3,591 tons), was tripled two years later (6,408 tons), before finally reaching its peak in 2011 (20,000 tons). As Figure 59 shows, bluefin tuna farming grew rapidly in the 1990s and became 4,000 tons in 2002 in Australia. Farming increased gradually since the late 1990s in Spain and other Mediterranean countries, and began in the early 2000s in Japan and Mexico. The amount of production varies year by year, as farmers depend on the seeds of natural juvenile tuna.



**Figure 59: Tuna farming (metric tons)**

Source: FAO (excluding Japan), JFA



**Figure 60: Farmed tuna (metric tons)**

Source: FAO (excluding Japan), JFA

Figure 60 shows the amount of farmed tuna by species. The share of Atlantic bluefin tuna (ABF) from the Mediterranean decreased after its peak (6,342 tons) in 2006 because of the tightening of regulations by the International Commission for the Conservation of Atlantic Tunas (ICCAT), a regional fisheries organization dealing with conservation and management of tuna. Also, southern bluefin tuna (SBF) from Australia shows the same trend as

the decrease of this stock and the tightening of regulatory measures by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). In contrast, pacific bluefin tuna (PBF) farming in Japan as well as Mexico filled the space of these species. While total output of farmed PBF was only 521 tons in 2001, the amount quintupled (2,867 tons) in 2003, exceeding the production of ABF farming. It became twelve times (6,663 tons) in 2004, and reached

<sup>93</sup> WWF, "The plunder of bluefin tuna in the Mediterranean and East Atlantic in 2004 and 2005," May 2006, p. 8, accessed January 15, 2015, [https://www.wwf.or.jp/activities/lib/pdf\\_marine/tuna/wwfbftreportfinaleditionreducido\\_final.pdf](https://www.wwf.or.jp/activities/lib/pdf_marine/tuna/wwfbftreportfinaleditionreducido_final.pdf).

13,781 tons in 2011.

The farmed tuna was imported to Japan in various forms; fresh, fresh fillet, frozen, and frozen fillet. Forms of shipment vary among countries. For instance, Spain exports ABF in fresh or frozen fillet form chiefly. In Mexico, most PBF was shipped in fresh form to Japan until 2007, while the share of frozen form has been augmented since 2008. The vast majority of farmed tuna in Japan is shipped in gutted and gilled fresh form<sup>94</sup>.

## 2. Tuna Farming in Mexico and its Relationship with Japan

In Mexico, tuna farming was started by MARICULTURA DEL NORTE in 1997, followed by RANCHO MARINO GUADALUPE, and BAJA ACUAFARM in 1999. The increase in the number of issuances of farming licenses by the Mexican government spurred new entries into farming, leading to the joining of another eight companies to this business in the 2000s.

**Table 4: Tuna Farming Companies in Mexico**

Naotoshi Yamamoto, "Maguro yoshokugyo no rekishiteki tenkai to kongo no tenbo (Historical development and future prospects of tuna farming business)," *Nagasaki Daigaku Suisan Gakubu Kenkyo Hokoku*, No. 93 (2012), p. 69.

	Farming site	Inaugural year	Pens (2006)	Joint venture
RANCHO MARINO GUADALUPE	Ensenada	1999	2	
MARICULTURA DEL NORTE	Ensenada	1997	20	
BAJA ACUAFARMS	Tijuana	1999	10	Joint venture (USA)
FRESCATUN	Ensenada	2004	8	Joint venture (Japan/Suzuran)
DUARCUICOLA	Ensenada	2004	8	Joint venture
INTERMARKETING	Ensenada	2004	9	(Japan/Explorer Corporation)
OPERADORA PESQUERA DEL ORIENTE	Ensenada	2001	10	
ACUACULTURA DE BAJA CALIFORNIA	Ensenada	2002	7	Joint venture (Japan/Dohsui Co., Ltd)
ADMINISTRADORA PESQUERA DEL NORDESTE	Ensenada	2006	1	
BAJA MACHI	Ensenada	2006	3	Joint venture (Japan/Toho Syoji Corp.)

As the above Table 4 shows, six out of ten companies are joint venture with Japanese companies. For instance, ACUACULTURA DE BAJA CALIFORNIA was established by Dohsui

<sup>94</sup> Takeshi Hidaka, *Kenkyu Repoto: Sekai no Maguro Yosyoku*, p. 7.

Co., Ltd, which had undertaken tuna farming in the Mediterranean Sea (Malta). About 90% of tuna farmed in Mexico are imported to Japan and all farming companies have specific Japanese business partners with regard to shipment. For instance, MARICULTURA DEL NORTE and BAJA ACUAFARMS sell tuna to Maruha Nichiro, and ACUACULTURA DE BAJA CALIFORNIA turns over all tuna to Toyo Reizo<sup>95</sup>.

As fishermen in this area had already conducted yellowfin tuna fishing, and because bluefin tuna migrate from the western Pacific to the sea off the coast of Baja California at the age of two, most farming sites are concentrated in Ensenada, Baja California. Also, the existence of large fishing ports and refrigeration facilities as well as the proximity of Los Angeles International Airport, in which there are many regular direct flights to Tokyo (Narita) International Airport, means that transportation of fresh tuna from Mexico to Japan can be completed within only three days. These reasons are considered to be why Ensenada was selected as the center of tuna farming in Mexico<sup>96</sup>. As of 2007, 1,500 Mexicans are directly employed by the tuna-related industry, and the industry generates \$1 million worth of profits, accounting for 5% of the economic activities in Ensenada. If other industries related to tuna fishing and farming are taken into account, this business is thought to create 16,000 jobs<sup>97</sup>.

However, tuna farming in Mexico is not free from business risks. One of them is the volatility of juvenile fish catch, making tuna farming vulnerable to natural conditions. Another risk is the death of farmed tuna caused by environmental changes such as red tide, blue tide, and hurricanes. For instance, the outbreak of red tide in 2005 caused the mass mortality of juvenile tuna, halving the output of farmed tuna, and affected many tuna farmers' income. As a result, Explorer Corporation went under, and OPERADORA PESQUERA DEL ORIENTE and other subsidiary companies scaled down or stopped their operations<sup>98</sup>.

### 3. Tuna Farming in Japan: Historical Overview

Tuna farming in Japan began in 1970 by a project commissioned by JFA. This undertaking, "Experimental Project on the Technological Development and Commercialization of Aquaculture of Tuna," was made by Kinki University, Tokai University, and prefectural research laboratories in Mie, Kochi, and Nagasaki. Since the end of the project in 1972, Kinki University

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<sup>95</sup> Pacific Asia Resource Center (PARC), "Gurobarizumu jidai ni okeru maguro wo meguru gyogyo, ryutsu, syoku (Fisheries, distribution, and dietary culture about tuna in an era of globalization)," PARC, 2007, p. 69, accessed January 31, 2015, [http://www.parc-jp.org/kenkyuu/2008/2007\\_report.pdf](http://www.parc-jp.org/kenkyuu/2008/2007_report.pdf).

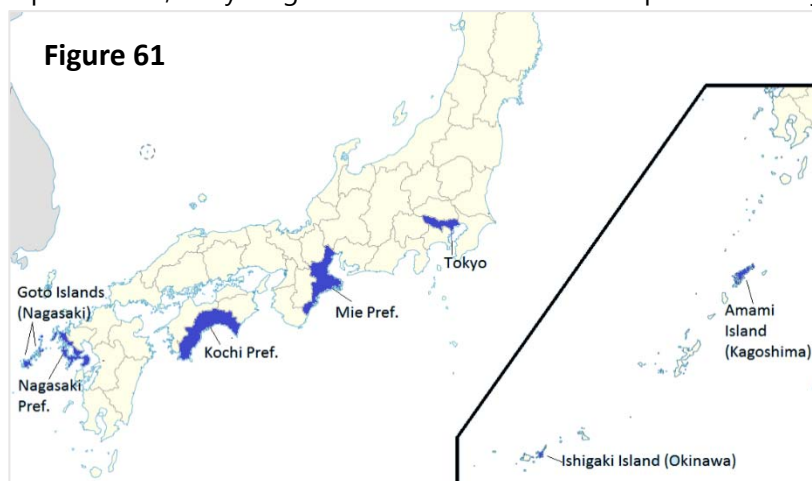
<sup>96</sup> *Ibid.*

<sup>97</sup> Takeshi Hidaka, *Kenkyu Repoto: Sekai no Maguro Yosyoku*, p. 77.

<sup>98</sup> Naotoshi Yamamoto, "Maguro yoshokugyo no rekishiteki tenkai to kongo no tenbo (Historical development and future prospects of tuna farming business)," *Nagasaki Daigaku Suisan Gakubu Kenkyo Hokoku*, No. 93 (2012), p. 69.

has continued to conduct research on tuna farming, and developed technology on rearing juvenile tuna in large cages. In 1979, Kinki University succeeded in the hatching of age-5 tuna in the cage, and raised a larval fish for 47 days. Kinki University finally came through with completely farm-raised bluefin tuna in 2002<sup>99</sup>.

At the governmental level, JFA opened its Yaeyama office of the National Center for Stock Enhancement (presently known as Yaeyama Laboratory, Seikai National Fisheries Research Institute of the Fisheries Research Agency) in Ishigaki Island, Okinawa Prefecture, one of the southernmost islands in Japan. There, they began research on tuna seed production by



commissioning the study to the Japan Sea Farming Association (now the Fisheries Research Agency). It started raising age-0 or age-1 juveniles in the sea cages which were caught in Kochii, and shipped farming sites more than one thousand kilometers on average. The research and development of bluefin tuna farming was handed down to Amami Laboratory of the Japan Sea-Farming Association (presently known as Amami Station, National Center for Stock Enhancement, Fisheries Research Agency) in Amami Island, Kagoshima Prefecture, and the laboratory has continued studying the development of the technology of seed tuna production since then<sup>100</sup>.

At the corporate level, Amami Yogyo, a subsidiary owned by Maruha Nichiro, embarked on experiments for seed tuna production in Amami Island, Kagoshima Prefecture in 1987, and succeeded in the harvest of fertilized eggs from 1991 to 1996. It went so far as to produce 1,600 fry (5 – 8cm) in 1996, but stopped the experiment as it thought that it could not sustain the business, because much larger addition costs were required for the mass production of seed. Followed by the development of technology in tuna aquaculture, and the rapidly evolving farming business throughout the world, Maruha Nichiro resumed experiments on seed tuna production. With regard to feed for tuna, Maruha Nichiro developed “Tuna-Food,” a sausage-like compounded diet made from fish meal, fish oil, and vitamin preparations<sup>101</sup>.

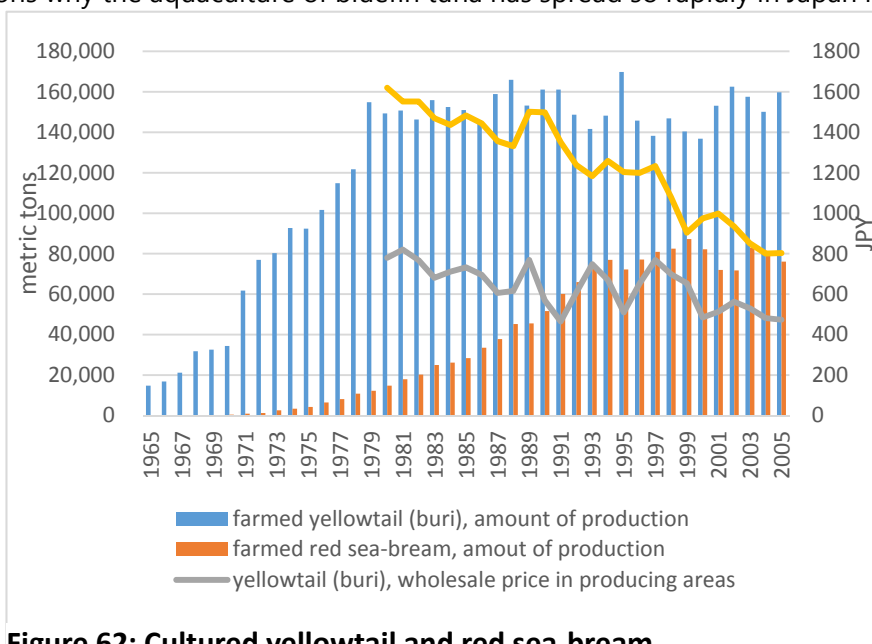
<sup>99</sup> Naotoshi Yamamoto, “Kyukakudai wo togeru maguro yosyoku sanchi to jukyū, shijō joken no henka (Burgeoning tuna farming areas and change of demand and supply and market conditions),” *Yosyoku (Aquaculture Magazine)*, Vol. 47, No. 10, p. 42.

<sup>100</sup> Fisheries Research Agency, ed., *Maguro Shigen to Seibutsugaku (Tuna Resources and Biology)*, p. 235.

<sup>101</sup> Takashi Kusano, “Maruho Nichiro Suisan no maguro yosyoku jigyo no tenkai to kongo (The current

Taiyo A&F, also an affiliated firm of Maruha Nichiro, started its tuna farming business in Kashiwajima Island, Kochi Prefecture, in 1986, and expanded its operation to Okinawa in 1990. Nakatani Suisan Co. Ltd. launched tuna aquaculture operations in Kochi in 1991 and Amami Island (Kagoshima Prefecture) in 1993. In 1997, Amami Yogyo shifted its business from the development of artificial seed tuna to the production of farmed tuna for sale, and several fisheries cooperatives in Goto Island (Nagasaki Prefecture) started experimental operation of tuna farming. In this way, several companies entered the tuna farming business in 1990s<sup>102</sup>.

One of the reasons why the aquaculture of bluefin tuna has spread so rapidly in Japan is the high market value of fattened tuna compared with other tuna as well as other farm-raised fish. Red sea-bream ("madai") and yellowtail ("buri" or "hamachi") have been cultured since 1960 or 1970, and have been the principal fish stock for farm-raising.



**Figure 62: Cultured yellowtail and red sea-bream**

MAFF, the Survey on Marine Fisheries Production and the Survey on Marketing of Fisheries Production in Landing Areas

However, as Figure 62 shows, the prices have been falling contrary to the increase of production. Farmers had to find another fish species which would make more profit.

#### 4. Seed Tuna ("Yokowa")

As Figure 63 shows, the demand for seed tuna increased exponentially, owing to the expansion of the tuna farming business. While the number of seeds put into pens are 205,000 in 2005, it doubled to 432,000 in 2008, then more than quadrupled in 2011 and peaked at 853,000 in 2011. After that, it dropped sharply to 473,000 in 2012 as the overfishing of wild

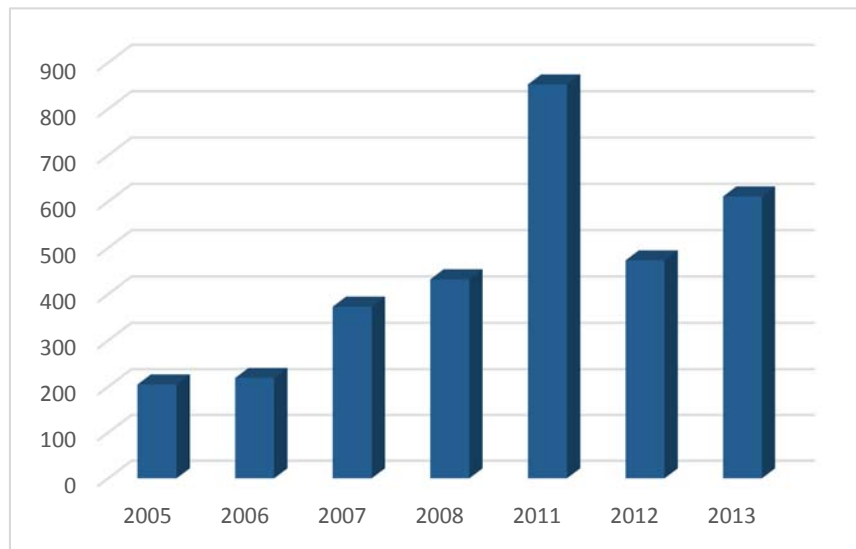
development and the future prospect of tuna farming business in Maruho Nichiro Fisheries Corporation),” *Yosyoku (Aquaculture Magazine)*, Vol. 45, No. 10, pp. 22-24.

<sup>102</sup> Naotoshi Yamamoto, “Maguro yoshokugyo no rekishiteki tenkai to kongo no tenbo (Historical development and future prospects of tuna farming business),” *Nagasaki Daigaku Suisan Gakubu Kenkyo Hokoku*, No. 93 (2012), p. 66.

tuna forced fishermen to poor catches of juveniles.

Seed tuna, or "yokowa" in Japanese, most of which are about 15 – 30 cm in length, were mainly caught by artisanal and small-scale troll fisheries.

These juveniles are taken around the warm Japan Current



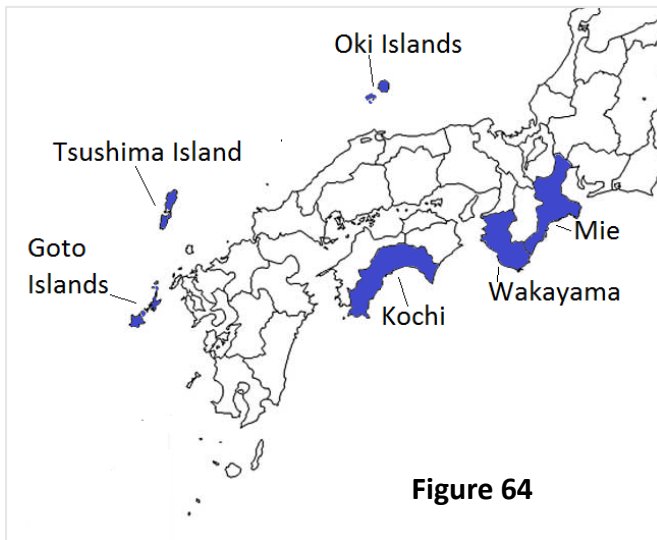
**Figure 63: Number of seed tuna put into pens (thousand)**

Source: JFA  
\*data during 2009 – 2010 are not available

(or "Kuroshio") off the coast of Kochi, Wakaya, and Mie Prefecture in the Pacific Ocean side

of Japan during the summer season (July – August).

To ensure enough seed tuna to carry out the business as planned, they need a large amount of money for instance, setting up catching stations. On the side of the Sea of Japan, seed tuna about 15 – 25 cm in length are taken off the coast of Goto Islands (Nagasaki pref.), Tsushima Island (Nagasaki pref.), and Oki Islands (Shimane pref.) from September through November<sup>103</sup>. In



**Figure 64**

recent years, some juveniles (3 – 5kg)

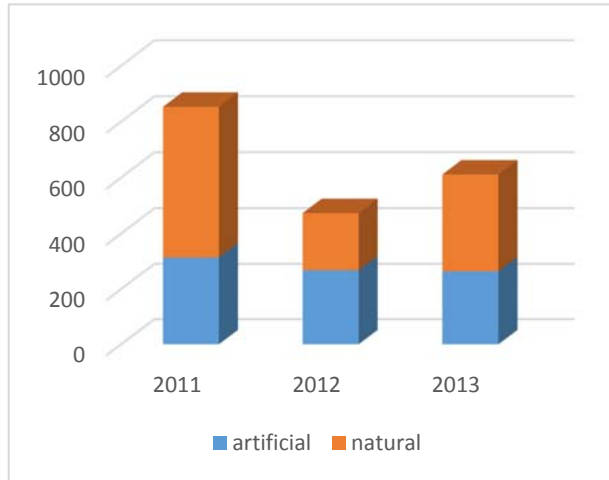
are caught by purse seiners<sup>104</sup>, and Kyowa Suisan in Tottori, Toyo Gyogyo in Nagasaki, Kaiko Suisan in Goto Islands, and Seisyo Suisan in Mie, catch and provide seed tuna with their purse seine vessels<sup>105</sup>.

<sup>103</sup> Takashi Kusano and Kunio Shirasu, "Kuromaguro yosyoku jigyo no tenkai (Development of tuna farming business)," in Hidemi Kumai, Misao Arimoto, and Seichiro Ono, eds., *Kuromoguro Yosyokugyo: Gizyutsu Kaihatsu to Jigyo Tenkai (Aquaculture Industry of Bluefin Tuna: Development of Technology and Business)* (Tokyo: Koseikaku Koseisya, 2011), p. 114.

<sup>104</sup> *Ibid.*

<sup>105</sup> Naotoshi Yamamoto and Shinichi Kitano, "Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo (Present status and market structure of the bluefin tuna farming

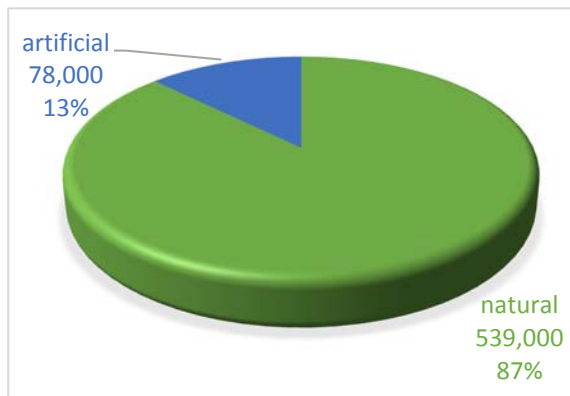
Figure 65 shows the official statistics of Japan's Fishery Agency about the number of seed tuna put into the farming cages, divided by natural and artificial ones. While the amount of artificial seed was relatively stable (314,000 in 2011, 268,000 in 2012, 264,000 in 2013), the input of natural seed fluctuates year by year (539,000 in 2011, 205,000 in 2012, 347,000 in 2013). Though quantity of seed tuna required for farming is thought to be 400 – 500



**Figure 65: Number of seeds (thousand)**

Source: JFA

thousand per year<sup>106</sup>, only Kinki University and or a few other major companies such as Maruha Nichiro, NISSUI, and KYOKUYO can afford to produce artificial seeds, and other



**Figure 66: Estimate of seed put into pens in 2011**

Yamamoto and Kitano, "Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo," p. 7.

farmers have to depend on natural seeds or buy artificial ones from Kinki University, the only institution which is able to provide artificial seeds to outside tuna farmers<sup>107</sup>. In addition, as Yamamoto and Kitano (2014)<sup>108</sup> pointed out, 64.5% of artificial seeds die within 50 days after they are put into cages in the sea. If we take this into consideration, the real number of artificial seeds in 2011 is thought to be only 78,000 tuna, as compared with the 314,000 tuna in the official statistics (see Figure 66).

Moreover, the ratio of artificially hatched and raised tuna in the total amount of farmed tuna (197,200 fish) shipped in 2013 is reported to be only 3% (see Figure 67)<sup>109</sup>. This implies that tuna farmers rely to a large extent on natural seed even now. Demand for seed tuna has led

industry in Japan: business behavior and market share of major companies)," *Gyogyo Keizai Kenkyu*, Vol. 58, No. 2 (2014), p. 7. As Yamamoto and Kitano do not explicitly show the name of companies, describing them instead such as "company α" or "company β," we specify these names based upon the WCPFC vessels register list, JFA list of purse seiners, and other materials.

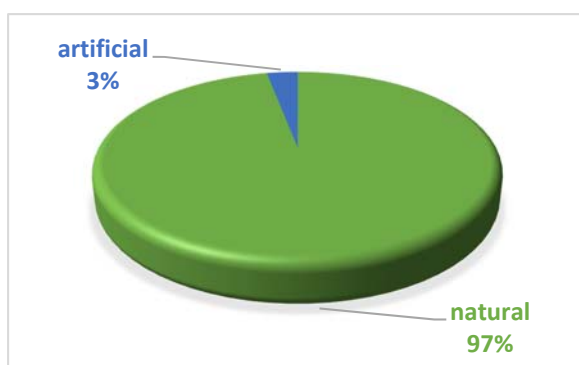
<sup>106</sup> Shigeru Miyashita, "Jizokuteki na maguro yosyokugyo he muketa kadai to chosen," pp. 46-50.

<sup>107</sup> Hiroshi Kashihara, "Kuromaguro yoshoku kisei no hamon (Repercussions on bluefin tuna regulations)," *Nikkei Global*, No. 203 (2012), p. 40.

<sup>108</sup> Yamamoto and Kitano, "Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo," p. 7.

<sup>109</sup> *The Minato Daily*, November 27, 2014.





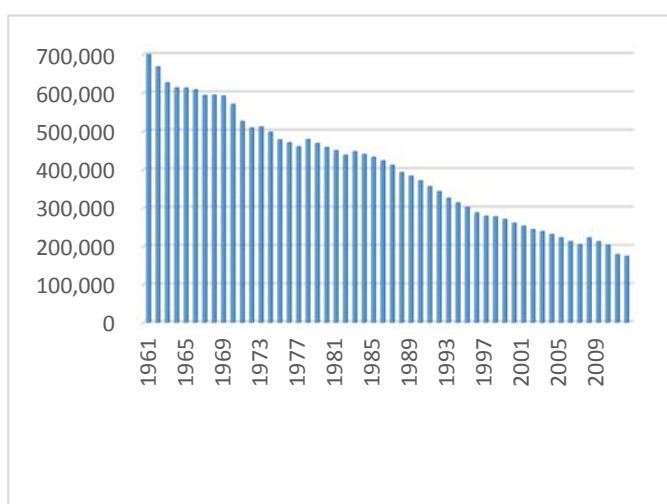
**Figure 67: Ratio of artificially hatched and raised tuna**

An estimate made by *the Minato Daily*, November 27, 2014.

to higher prices in recent years. While the price of natural seed tuna was around ¥1,200 (\$10) per one fish several years ago<sup>110</sup>, it has more than doubled or tripled, about ¥2,500 – 4,000 (\$20 – 33) today. The price of an artificial seed is thought to be about ¥7,000 (\$60), well above the natural seed tuna<sup>111</sup>.

The rising price of seed tuna gives a business chance to some local fishermen who have been suffering from an

unprofitable business due to the rising price of oil, overfishing and depletion of various fish stocks, and the failure of governmental regulations on fisheries. The average annual income of fishermen is about ¥2 million (\$1,700), and the number of persons engaged in fisheries has continuously decreased in recent decades (See Figure 68). Therefore, the catching of juvenile tuna has



**Figure 68: Number of persons engaged in fisheries in Japan**

MAFF, "Gyogyo syugyosya tyosa (Survey of persons engaged in fishery)"

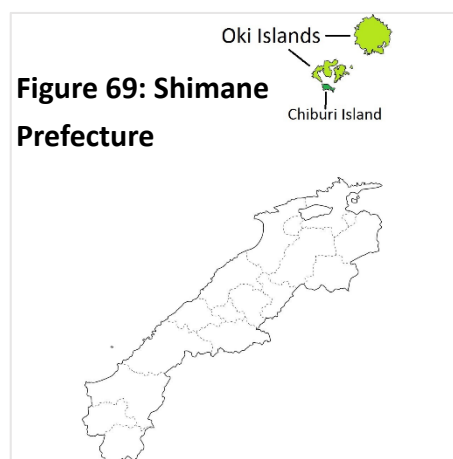
provided one of the very few opportunities for some artisanal fishermen to earn income.

Let us take an example of Oki Islands, one of the major fishing grounds of seed juvenile tuna. As fishery resources around the islands have substantially decreased compared with the old days, and prices of fish are falling, it is very difficult for fishermen in the islands to make their living by catching only single fish species. In the early 2000s, seed tuna fishing was introduced in Chiburi, one of the Oki Islands. There are twelve fishermen who are engaged in this business, and they operate fishing from

<sup>110</sup> Naotoshi Yamamoto, "Shinkoku ka suru maguro no sigen mondai to yosyoku bijinesu (Deepening tuna resource problem and farming business)," *Teikoku Syoin Chizu Chiri Shiryo*, Vol. 3, No. 6 (2011), p. 6.

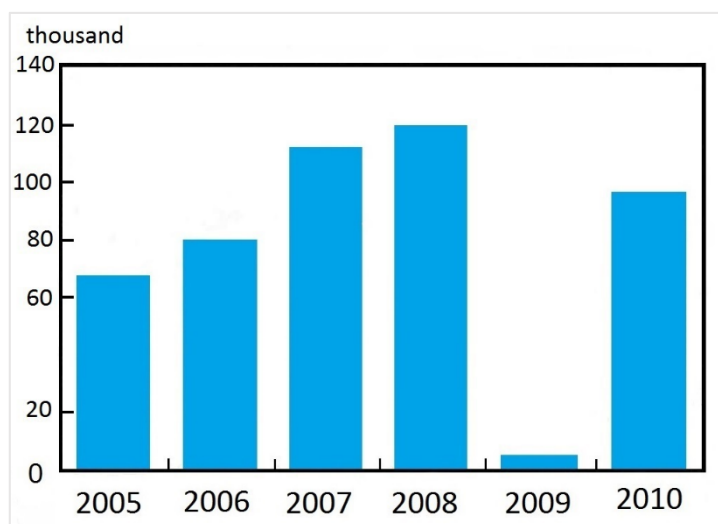
<sup>111</sup> Hajime Ishii, "Yosyoku maguro no genjo to sashimi maguro no jukyū (Current situation of tuna aquaculture and supply and demand of sashimi grade tuna)," *Suisan Shinko*, Vol. 538 (2012), p. 12; Naotoshi Yamamoto and Shinichi Kitano, "Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo (Present status and market structure of the bluefin tuna farming industry in Japan: business behavior and market share of major companies)," *Gyogyo Keizai Kenkyu*, Vol. 58, No. 2 (2014), p. 7.

mid-September to early December, harvesting juveniles 100 – 1,000g in weight (20 – 50 cm in length). These fish are kept in cages in the island for about one week, then bought and transferred to Amami Island or other tuna farming grounds by a major trading company. According to a fishermen in Chiburi, the trading company buys all the seed tuna he catches, and juvenile tuna fishing accounts for 30 – 40% of his annual total catch. Juvenile tuna became a “savior” for fishermen in the Island<sup>112</sup>.



**Figure 69: Shimane Prefecture**

However, the harvest of juvenile tuna fluctuates widely year by year as the Figure 70 shows. In addition, the rush for juvenile tuna catching creates an opportunity for overfishing. Tuna farmers tend to buy as many tuna seeds as they can, as they want to increase productivity by increasing the amount of juveniles per cage. When juveniles grow and cages cannot accommodate all the fish, farmers adjust the



**Figure 70: Number of seed tuna caught in Oki Islands**  
 Fisheries Research Agency, “Heisei 22 nendo Nihon syuhen kokusai gyorui sigen chosa houkokusyo (2010 Report of the International fisheries resources around Japan),” unpublished internal document, p. 82.

condition of cages by culling surplus juveniles or shipped them earlier than usual<sup>113</sup>. The competition among operators of tuna aquaculture vying with each other to get seed tuna from local fishermen has intensified in recent years, resulting in an increase in seed tuna prices<sup>114</sup>. This propelled fishermen to catch seed juveniles more than ever, provoking a further increase in fishing efforts. If the trend continues, it may cause further and irreversible damage

<sup>112</sup> “Yu-tan ryoshi, fukugo gyogyo de gambaru! (A “U-turn” fisherman: working hard on multiple fisheries)” *Aqyanet*, Vol. 15, No. 7 (2012), pp. 12-14.

<sup>113</sup> Seiichiro Ono, ed., *Yosyoku Maguro Bijinesu no Keizai Bunseki: Fudo Sisutemuron ni yoru Apurochi (Economic Analysis of Fish Farming Business: An approach from Food System Theory)*, (Tokyo: Seizando Syoten, 2008), p. 42.

<sup>114</sup> Takashi Torii, “Kokusan yosyoku kuromaguro sanchi goto no shigen kanri eno taio (Domestic bluefin tuna farming: Responses by each producing area to resource management),” *Yosyoku Bijinesu (Aquaculture Business)*, Vol. 51, No. 12 (2014), p. 5.

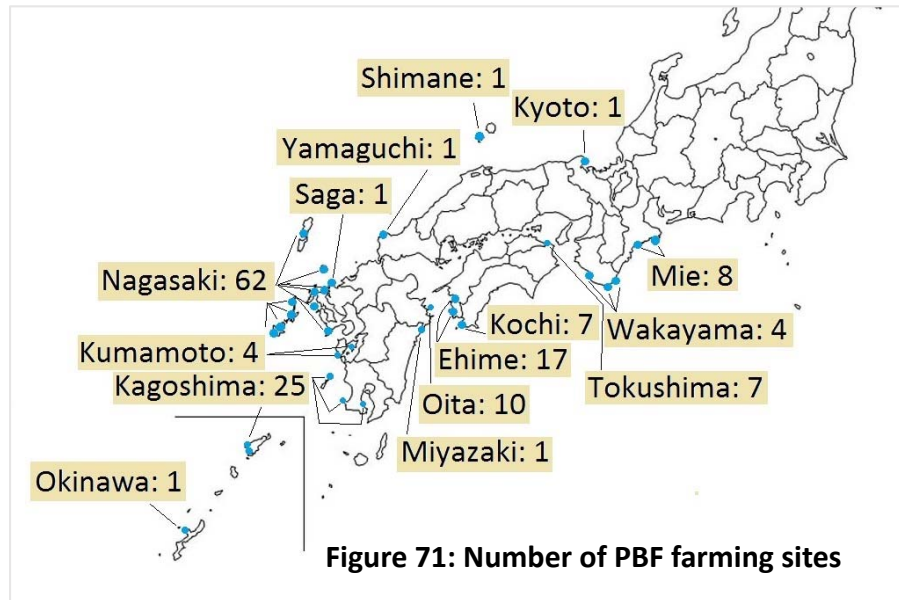
to the declining tuna resources<sup>115</sup>.

## 5. Tuna Farming Sites

Tuna farming sites require the following conditions.

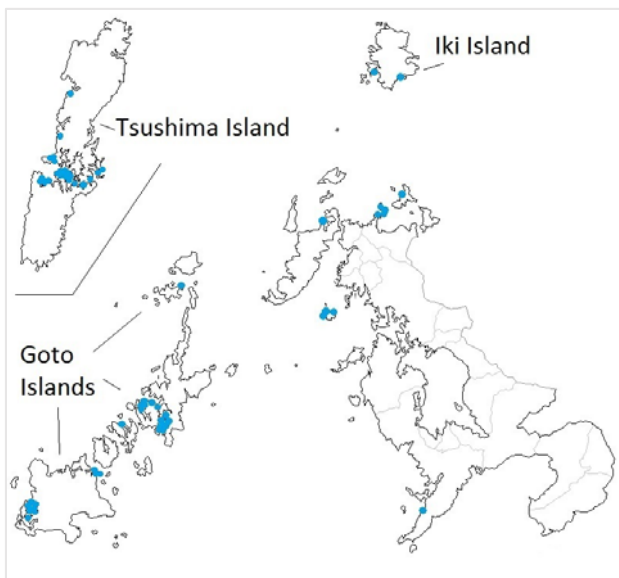
First, the areas must be free from cloudy waters.

Therefore, sites are not set up near rivers, where muddy



**Figure 71: Number of PBF farming sites**

water may pour into the sea. Second, the depth of water must be more than 30 meters. Third, the sites must be located in places such as coves or armlets, which are relatively unsusceptible



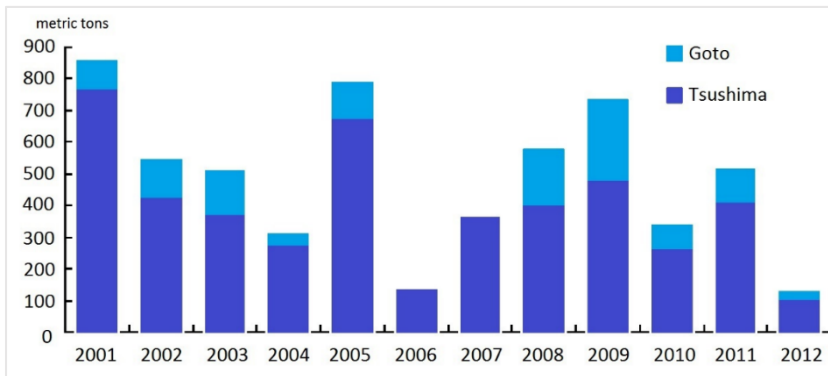
**Figure 72: PBF farming sites in Nagasaki Pref.**

to the effects of typhoons compared to open waters. Fourth, the water temperature must be warm <sup>116</sup>. Therefore, farming sites are established only in the western part of Japan, and fish become larger in shorter periods in the southern warmer Amami Islands and in Okinawa, than in northern Mie farming sites.

Figure 71 gives the location and number of tuna farming sites in Japan (see also Appendix XIV). Nagasaki Prefecture has 62 farms, the largest number in Japan. In Nagasaki, most

<sup>115</sup> Naotoshi Yamamoto, "Shinkoku ka suru maguro no sigen mondai to yosyoku bijinesu (Deepening tuna resource problem and farming business)," *Teikoku Syoin Chizu Chiri Shiryo*, Vol. 3, No. 6, p. 6.

<sup>116</sup> Hajime Ishii, "Yosyoku maguro no genjo to sashimi maguro no jukyū (Current situation of tuna aquaculture and supply and demand of sashimi grade tuna)," *Suisan Shinko*, Vol. 538 (2012), p. 12.



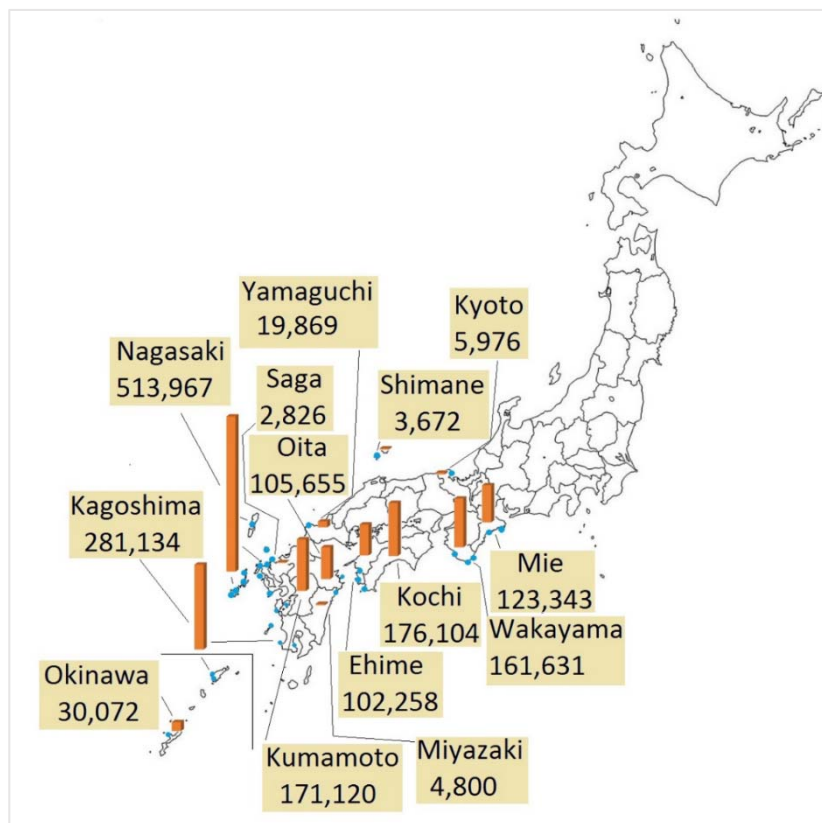
**Figure 73: Catches of juvenile PBF ("yokowa") in Goto and Tsushima Islands**

Nobuo Takagi, Daisaku Masuda, and Masahiko Yoshida, "Nihon syuhen kodo kaiyusei gyorui shigen chosa (Survey on highly migratory species around Japan)," in Nagasaki Prefectural Institute of Fisheries, ed., Nagasakiken Sogo Suisan Shikenjo Jigyo Hokoku: Heisei 24 Nendo (Annual Business Report of the Nagasaki

sites are located in Goto Islands, Tsushima Island, and Iki Island (see Figure 72), where there are many indented coastlines and coves protected from heavy waves in the open sea. Nagasaki is also blessed with fishing ground for juvenile bluefin for farming as well as

baitfish for tuna, while catches of juvenile tuna fluctuate widely year to year (see Figure 73) as with the case of Oki Island shown above.

The Nagasaki prefectural government has actively supported aquaculture of local fishermen by providing financial and other kind of assistance for changing the farming business from amberjack ("buri") to bluefin tuna<sup>117</sup>. In 2008, the prefectural government drew up "Nagasaki Tuna



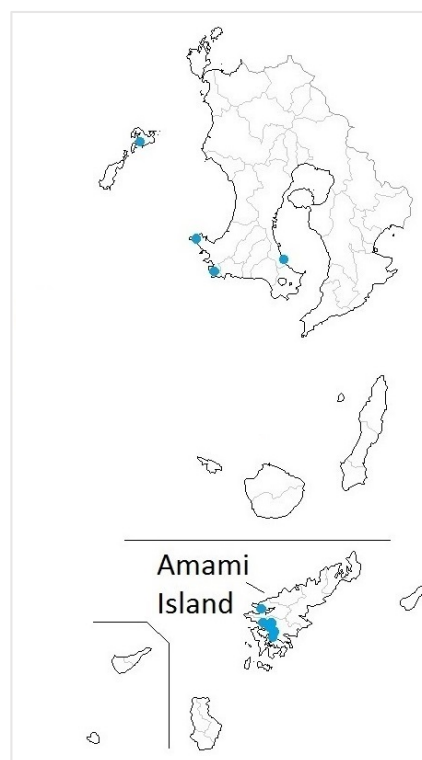
**Figure 74: Areas of PBF farming sites (square meters)**

Fisheries Agency, "Kuromaguro yosyokujo oyobi kuromagura yosyokugyosha ichiran (Directory of bluefin tuna farming sites and farmers)," December 1, 2014, accessed May 1, 2015, [http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro\\_itiran\\_10.pdf](http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro_itiran_10.pdf).

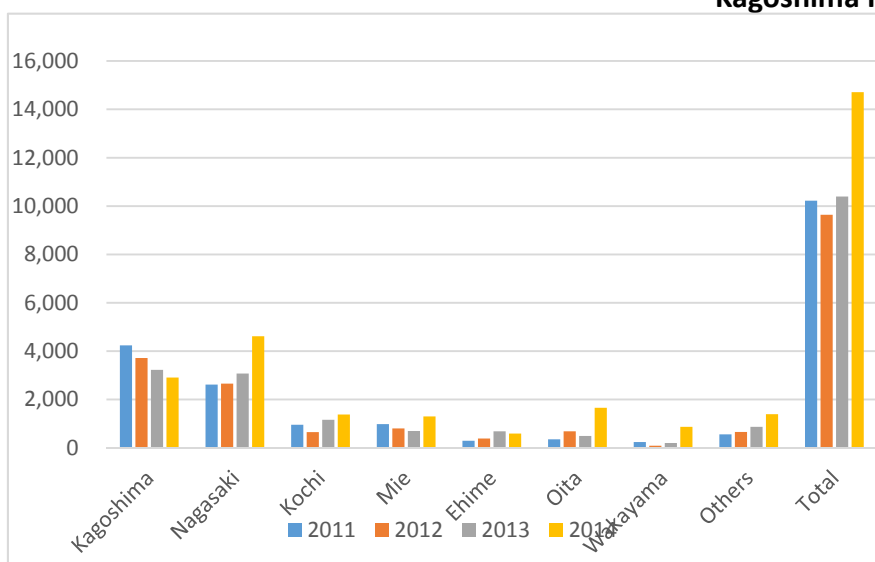
<sup>117</sup> Takashi Torii, "Kokusan yosyoku kuromaguro sanchi goto no shigen kanri eno taio (Domestic bluefin tuna farming: Responses by each producing area to resource management)," *Yosyoku Bijinesu (Aquaculture Business)*, Vol. 51, No. 12 (2014), p. 5.

Aquaculture Promotion Plan,” aiming at expanding annual production of tuna farming to 2,000 metric tons (¥7 billion / \$60 million) by 2013. This goal was achieved with a total output of 3,070 metric tons (¥9.1 billion / \$70 million) of farmed bluefin tuna which is the second largest amount behind Kagoshima Prefecture. In 2014, Nagasaki produced the largest amount of farmed tuna. As the Japanese government limits the total input of natural juvenile tuna into farming cages at the 2011 level, Nagasaki plans to step up production to 3,300 metric tons by increasing the weight of tuna through technological advancement<sup>118</sup>. Nagasaki also has the largest area of farming cages, with a total of 478,238 m<sup>2</sup> (see Figure 74).

While Kagoshima has fewer farming sites (25) (see Figure 75) and area of cages (281,134m<sup>2</sup>) than Nagasaki, most of the farming areas are occupied by major fisheries companies such as subsidiaries of NISSUI and Maruha Nichiro, with the result that Kagoshima produced 3,222 metric tons of farmed tuna, the largest



**Figure 75: PBF farming sites in Kagoshima Pref.**

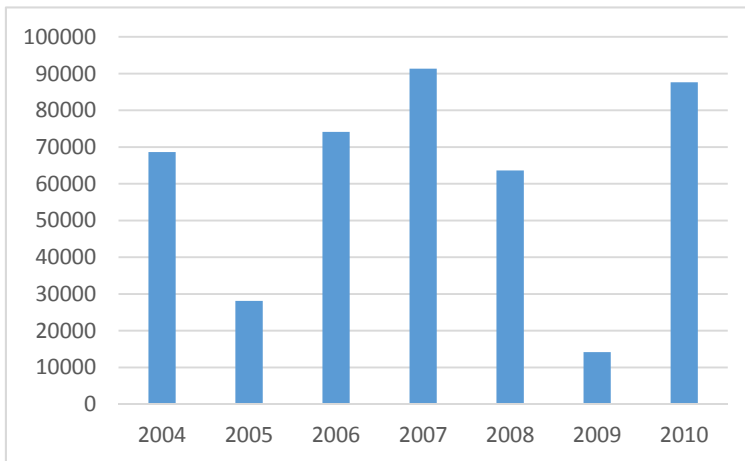


**Figure 76: Output of farmed tuna** JFA, “Kuromaguro yosyokujo oyobi kuromagura yosyokugyosha ichiran (Directory of bluefin tuna farming sites and farmers),” December 1, 2014, accessed May 1, 2015, [http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro\\_itiran\\_10.pdf](http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro_itiran_10.pdf); JFA, “Heisei 26 nen ni okeru kokunai no kuromaguro yoshoku jisseki ni tsuite,” March 31, 2015, [http://www.jfa.maff.go.jp/j/press/saibai/150331\\_1.html](http://www.jfa.maff.go.jp/j/press/saibai/150331_1.html).

amount in 2013 and the second largest in 2014 (see Figure 76). As major corporations have taken the lead in Kagoshima, the local government is not as actively involved in promotion of the business compared

<sup>118</sup> Fisheries Division, Nagasaki Prefecture, “Nagasaki-ken maguro yosyoku shinko puran (Nagasaki tuna aquaculture promotion plan),” July 2014, accessed January 24, 2015, accessed January 27, <http://www.pref.nagasaki.jp/shared/uploads/2014/07/1406702613.pdf>.

to Nagasaki. Though farming firms had been less interested in exchange of information due to concerns about possible leaks of their industrial secrets, they set up the Council for the Promotion of Bluefin Tuna Aquaculture with the Kagoshima prefectural government and academic institutions in order to share information, improve production technology, and explore new business opportunities in July 2012, followed by the strengthening of regulations about tuna farming<sup>119</sup>. The majority of sites (eighteen out of twenty-two) are located in Amami Island.



**Figure 77: Number of juvenile seeds caught in Kochi**

Fisheries Research Agency, "Heisei 22 nendo Nihon syuhen kokusai gyorui sigen chosa houkokusyo (2010 Report of the International fisheries resources around Japan)," unpublished internal document, p. 104.

by private companies, such as Taiyo A&F (Maruha Nichiro Group), Kaneko Sangyo (NISSUI Group), KYOKUYO, and MATSUOKA. In 2012, the Kochi prefectural government set up the Study Group for the Promotion of Tuna Aquaculture with tuna farmers, and fisheries cooperatives, and drew up the Tuna Aquaculture Improvement Program. Juvenile tuna for farming are harvested off the coast of Kochi, although total catch of seed fry fluctuates greatly year by year, making tuna farming susceptible to their availability (see Figure 77).

The northernmost tuna farming cages are nestled in Mie Prefecture, where Kumano Yogyo (Maruha Nichiro), Marukyo Suisan, Owase Bussan, and Bluefin Mie have been operating their businesses with 80 cages (123,343m<sup>2</sup>) in total, producing 3013 metric tons of tuna,

The output of farmed bluefin tuna in Kochi Prefecture is the third largest in 2013 (1,163 metric tons) and the fourth largest in 2014 (1,381 metric tons) in Japan. Farmed tuna for sale by private businesses are initiated in Japan by Taiyo A&F in Otsuki, Kochi. Since then, all sites are located in this town and have been led



**Figure 78: PBF farming sites in Mie Prefecture**

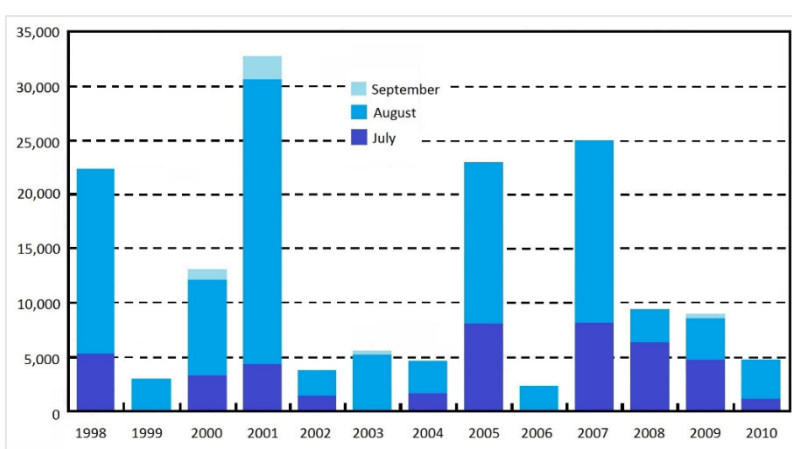
<sup>119</sup> Kyodo News Service, July 15, 2012; The Suisan-Keizai Daily News, June 6, 2012.



the fourth largest output in Japan (see Figure 78). While the sea temperature is relatively low and the growth rate of tuna is slow relative to other farming sites, Mie has other ideal conditions for tuna aquaculture, such as the availability of seed tuna as well as baitfish such as mackerel and sardine in offshore waters.

Figure 79 shows the number of seed tuna captured around Hamajima of Shima City, one of the most active areas of seed tuna fishing in Mie. Seed tuna fishing has been in operation since 1998, with an average annual capture of 10,000 – 50,000 age-0 fish (20 – 30 cm, 165 – 600g) during the summer season.

Among the farming operators in Mie, Bluefin Mie is unique for being established by 13 fisheries cooperatives in the region. As in other areas, fisheries in Mie have been deteriorating year by year, contributing to a shrinking population, economy, and community in the region. In this context, tuna farming was selected as the core business to revitalize the area. Established in 2011,



**Figure 79: Number of seed PBF caught in Hamajima**

Fisheries Research Agency, "Heisei 22 nendo Nihon syuhen kokusai gyorui sigen chosa houkokusyo (2010 Report of the International fisheries resources around Japan)," unpublished internal document, p. 104.

Bluefin Mie is running 18 pens (50m across) with 3,000 – 6,000 juveniles held in each cage, spending ¥800 million (\$6.7 million) for an initial three years. It buys seeds from local fishermen in the summer (July – September), raises them to about 30kg for two years, and then begins shipping two years later after autumn<sup>120</sup>. On September 14, 2013, it shipped "*Ise Maguro* (Ise Bluefin Tuna)," a new brand-name tuna, for the first time<sup>121</sup>. Bluefin Mie now hires 15 employees from among the local population and procures seeds, baitfish, and other materials from local businesses, thus creating direct or indirect economic opportunities in the region. The local authority in the town (Minami-Ise Cho) set up a regional development association with farmers and other stakeholders to support the farming and tourism industry by promoting the *Ise Maguro* tuna brand<sup>122</sup>.

<sup>120</sup> *The Suisan-Keizai Daily News*, October 29, 2013; Bluefin Mie, "Yosyoku rirekisyo (Production details)," February 18, 2014.

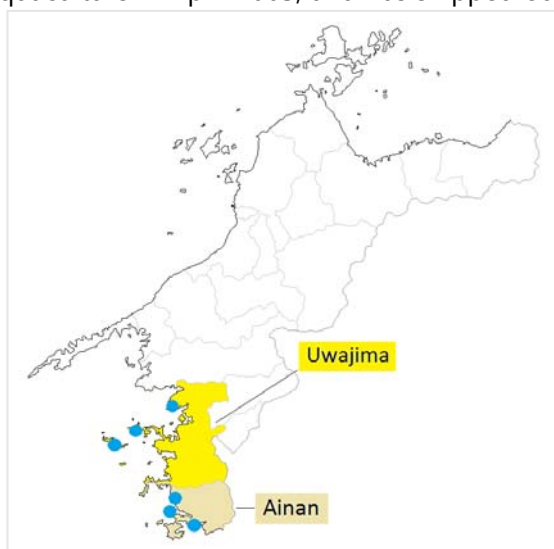
<sup>121</sup> *The Suisan-Keizai Daily News*, September 18, 2013.

<sup>122</sup> "'Ise Maguro' no honkaku syukka kaishi: Bluefin Mie ('Ise Maguro' getting shipped for the first time: Bluefin Mie)," *AquaNet*, Vol. 16, No. 11 (2013), pp. 13-17.



While Bluefin Mie got off to a relatively good start, it has not been free from any problems. The most important one is the availability of seed tuna. As is the case for other areas, the amount of catch varies widely from year to year (see Figure 79 above). Though Bluefin Mie originally intended to put 30,000 seed tuna into cages annually, it was only able to acquire half of its planned volume in 2012 and 2013, with only 27,000 tuna in total being reared. The catch of tuna seed in 2014 is even smaller than the previous year, which will press them to modify their business plan through reducing the depletion rate of juveniles during rearing and/or through introducing artificial seeds<sup>123</sup>.

Ehime Prefecture produces the fifth largest production of farmed tuna in 2013, second to Kagoshima, Nagasaki, Kochi, and Mie. Faced with falling prices of amberjack and red sea bream, twenty-eight local fish farmers in Uwajima and Ainan jointly established the Uwaumi Fishermen’s Production Association for tuna aquaculture in April 2005, and has shipped out farmed tuna since 2007. They buy several thousand seed tuna (100 – 150g per one fish) from several pole and line fishermen in Kochi Prefecture from July to August, and then raise them for about two years until they grow to 30 – 40kg<sup>124</sup>. Dainichi Corporation, a seafood company in Uwajima, joined the business in cooperation with local fish farmers in 2007, and operates several cages<sup>125</sup>. Dainichi now introduces artificial seeds from Kinki University, rears them until they grow up to be age-three (30 – 40kg), and then sells them under the brand name



**Figure 80: PBF farming sites in Ehime Pref.**

"*Hime Maguro* ('Princess Tuna' in English)." In 2010, Kyokuyo, a major fisheries company in Japan, also set up a subsidiary company, Kyokuyo Marine Ehime in Ainan, which now intends to produce 4,200 farmed fish in 2014<sup>126</sup>.

<sup>123</sup> *Ibid*; Fisheries Research Agency, "Taiheiyo kuromaguro 2014 nen umare kanyuryo monitoringu sokuho (2014 nen 12 gatsu) ni tsuite (Preliminary figures on the recruitment of PBF in 2014 (as of December 2014))," December 18, 2014, accessed December 25, 2014, <http://fsf.fra.affrc.go.jp/pdf/kuro-kanyushousai20141218.pdf>.

<sup>124</sup> "Uwa-kai wo yosyoku maguro no aratana sanchi ni! (Pursuing for making the Uwa Sea a new production center of farmed tuna)," *AquaNet*, Vol. 10, No. 3 (2007), pp. 4-6.

<sup>125</sup> *The Ehime Shimbun*, March 23, 2010.

<sup>126</sup> *The Suisan-Keizai Daily News*, January 20, 2014.

## 6. Major Fish Farming Companies in Japan and the Economic Value of Farmed Tuna

### (1) Overview

**Table 5: Major tuna farming companies**

Parent company	Company name	Location	Area (m <sup>2</sup> )	Artificial seeds
Maruha Nichiro	Amami Yogyo	Amami Island, Kagoshima	82,994	3%
	Kumano Yogyo	Kumano, Mie	49,216	
	Kushimoto Marine Farm	Kushimoto, Wakayama	110,808	
	Genkai Yogyo	Karatsu, Saga	2,826	
	TAIYO A&F	Otsuki, Kochi	46,348	2-5%
		Motobu, Okinawa	30,072	
		Goto Islands, Nagasaki	71,186	
		Nagato, Yamaguchi	71,186	
NISSUI	Seinan Suisan	Amami Island, Kagoshima	24,192	10%
		Koshikijima Islands (Satsuma-Sendai) Kagoshima	58,952	
		Tsushima Island, Nagasaki	42,287	
		Ine, Kyoto	5,976	
		Saiki, Oita	61,446	
	Kaneko Sangyo	Tsushima Island, Nagasaki	8,600	
		Iki Island, Nagasaki	30,950	
		Goto Islands, Nagasaki	18,558	
		Kuroshima Island, Sasebo, Nagasaki	37,350	
KYOKUYO	Kyokuyo Marine Farm	Otsuki, Kochi	41,325	7%
	Kyokuyo Marine Ehime	Ainan, Ehime	13,927	
Sojitz	Sojitz Tuna Farm Takashima	Takashima Island, Matsuura, Nagasaki	42,704	20-30%
Mitsubishi (Toyo Reizo)	Mitsushima Suisan	Tsushima Island, Nagasaki	14,528	?
		Goto Islands, Nagasaki	51,662	
	Nanki Kushimoto Suisan	Kushimoto, Wakayama	152,991	
TOYOTA	Tuna Dream Goto	Goto Islands, Nagasaki	19,500	100%

JFA, "Kuromaguro yosyokujo oyobi kuromagura yosyokugyosha ichiran"; Yamamoto and Kitano, "Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo" p. 8.

Number of management entities	Number of farming sites	Number of farming cages	Total area of farming cages (m <sup>2</sup> )	Output (metric tons shipped)	Output (number of fish shipped)	Estimate of wholesale value (JPY)*	Estimate of wholesale value (USD)*
95	150	1,375	478,238	14,713	197,000	44 billion	370 million

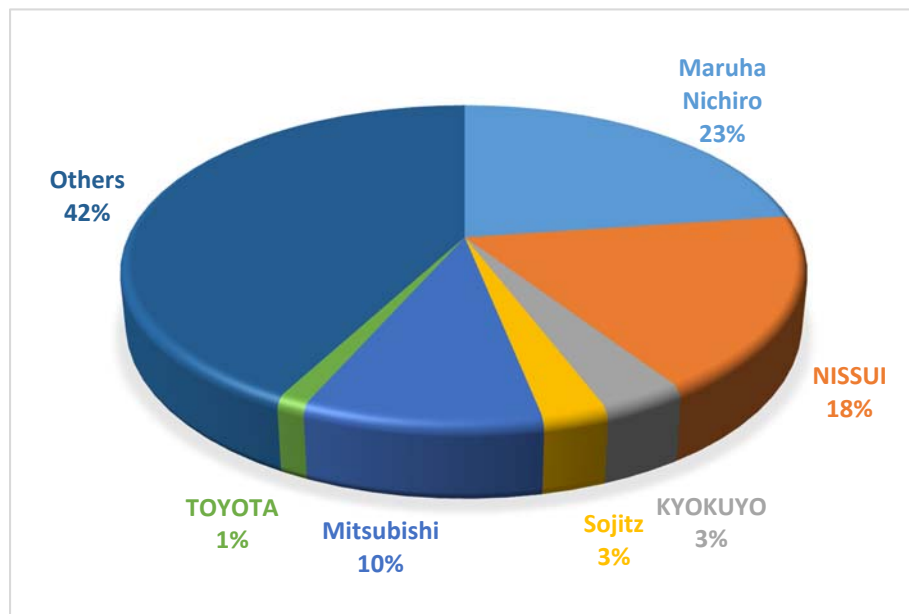
**Table 6: Capacity, output, and total value of PBF farming**

JFA, "Heisei 26 nen ni okeru kokunai no kuromaguro yoshoku jisseki ni tsuite," March 31, 2015, accessed April 5, 2015, [http://www.jfa.maff.go.jp/press/saibai/150331\\_1.html](http://www.jfa.maff.go.jp/press/saibai/150331_1.html).

\* Value calculated on the assumption that one kilogram of PBF is ¥3,000 (\$25).

Table 5 gives the list of the names of major tuna farming companies, their locations, gross area of pens, and the percentage of artificial seeds. Total capacity, output, and estimated value are shown in Table 6. As major seafood and fisheries companies in Japan, Maruha Nichiro, NISSUI, and KYOKUYO join the business, and Sojitz and Toyo Reizo, a subsidiary of Mitsubishi Corporation, also entered the tuna farming industry from the trading industry. In addition, Toyota Tsusyo Corporation, a trading company affiliated with auto giant TOYOTA, recently went into the seed raising business.

Maruha Nichiro occupies about one-fourth, and NISSUI also holds about 20% of the gross area on farming cages in Japan, suggesting that the tuna farming business is dominated by



**Figure 81: Area of tuna farming cages**

JFA, "Kuromaguro yosyokujo oyobi kuromagura yosyokugyosha ichiran (Directory of bluefin tuna farming sites and farmers)," December 1, 2014, accessed May 1, 2015, [http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro\\_itan\\_10.pdf](http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro_itan_10.pdf).

several large fisheries and trade companies (see Figure 81). It is quite a challenge for small businesses to enter the industry, as setting up a tuna farming site for the production of 10,000 fish (400 – 500 metric tons) annually requires about ¥500 million (\$4 million) of initial investment. In addition, it will take a longer time (2 – 3 years) to raise tuna than other cultured fish, and natural disasters such as typhoons and red tides could inflict unexpected and serious damage on farmed tuna. Indeed, Taiyo A&F closed its farming site in Wakayama Prefecture

in 2012 due to the harm caused by the typhoon and bad weather<sup>127</sup>. To hedge these risks, major farming businesses spread their farming grounds across several locations<sup>128</sup>.

These major seafood companies are able to make use of seed tuna harvested by their affiliated purse seiners. As stated above, there are only a few corporations (Kyowa Suisan, Toyo Gyogyo, Seiyo Suisan, and Kaiko Suisan) which catch seed tuna using purse sein vessels (see Appendix II for the list of purse seiners and the name of the vessels). Kaiko Suisan provides seed tuna to Maruha Nichiro, while NISSUI receives them from its consolidated subsidiary, Kyowa Suisan.<sup>129</sup> In 2011, one of the subsidiaries of NISSUI was able to ensure almost all the required amount of seeds from the provision from purse seiners. As the catches of natural seed fluctuate greatly year by year, the availability of tuna fry from purse seiners is one of the advantages of being a big fisheries conglomerate<sup>130</sup>.

The above merit does not mean that big businesses are free to get the required seed they need. On the contrary, owing to the fluctuation over the years or manifest decline in recent years of the seed tuna population, they can only obtain 70 – 80% of required tuna during some years. This situation may lead to competition for seed tuna among farmers, militating against small local businesses in addition to a large amount of initial investment money, risks of natural disasters, and the increase of new entries by major companies. As Masanori Miyahara, chair of the Northern Committee of the WCPFC put it, “Small businesses conducted by farmers in each cove will soon come up against the limit. It will be difficult for them to survive in the middle- and long-term ... if they do not come together in each region or advance to integrate by grouping each management unit under the company structure, which extends beyond each region<sup>131</sup>.”

The new entry or expansion of the farming business by big companies is concentrated after 2006. NISSUI launched the industry by making Seinan Suisan (formerly known as Nakatani Suisan) and Kaneko Sangyo its subsidiaries in April 2006 and April 2012, respectively. KYOKUYO and Sojitz followed suit by establishing Kyokuyo Marin Farm in Kochi in 2007 and Sojitz Tuna Farm Takashima in Nagasaki in 2008, and Mitsushima Suisan in Nagasaki in 2008. Mitsubishi (Toyo Reizo) also entered by setting up Mitsushima Suisan in the Goto Islands of Nagasaki Prefecture, one of the centers of tuna farming grounds in 2010.

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<sup>127</sup> *The Kii Mipnou*, January 17, 2012.

<sup>128</sup> Yamamoto and Kitano, “Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo,” p. 6.

<sup>129</sup> After running into financial trouble because of the fall-off of fish catches, Kyowa Suisan went through voluntary liquidation and restart its business as a consolidated subsidiary of NISSUI in 2008.

<sup>130</sup> Yamamoto and Kitano, “Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo,” p. 8.

<sup>131</sup> “Interview: Masanori Miyahara (President, Fisheries Research Agency),” *The Suisan-Keizai Daily News*, October 20, 2014.

The year 2006 marked a watershed moment in the global tuna fisheries industry. The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) slashed the quota of southern bluefin tuna from 14,925 tons to 11,530 tons, and underreported catches by Japanese vessels were revealed by Australia.<sup>132</sup> As a result, the CCSBT adopted punitive action by reducing the Japanese quota by half, from 6,065 tons to 3,000 tons. While the Japanese tuna fishing industry and fishermen had previously pushed hard to increase their share “under the policy to conform catch quota to the reality<sup>133</sup>,” they had to concede that they should conform to the reality of the natural resources of southern bluefin tuna. Likewise, the International Commission for the Conservation of Atlantic Tunas (ICCAT) agreed on the gradual reduction of the total allowable catch (TAC) of the eastern stock of Atlantic bluefin tuna from 32,000 to 29,500 in 2007; 28,500 in 2008; 27,500 in 2009; and 25,500 in 2010. This was in response to the rallying cry of environmental NGOs and media condemning the overexploitation and illegal fishing of bluefin tuna resources. The Standing Committee on Research and Statistics (SCRS), a scientific body of the ICCAT, endorsed this allegation, and called for a severe cutback of the quota of this species. As big seafood and tuna trading companies were familiar with what was going on in the world tuna industry – for instance, Mitsubishi is the biggest trader in Japan, and deals with about 40% of all the bluefin tuna in this country, and Sojitz has about a 15% share of the import of bluefin to Japan – it is understandable that they responded to the tightening of regulations by beginning or intensifying tuna farming within Japan<sup>134</sup>.

## (2) Maruha Nichiro Corporation

As stated above, Maruha Nichiro is the first company which initiated research on fish farming in Japan, beginning in the early 1970s. New Nippo Corporation, a subsidiary of Maruha, commenced trial tuna farming in Kashiwajima of Otsuki, Kochi Prefecture in 1985. Amami Yogyo, another subsidiary of Maruha, began experimental operations for tuna seed production in the Amami Islands of Kagoshima in 1987, leading to the technical support for starting up southern bluefin tuna farming in Australia in 1991. Maruha expanded its farming business overseas further in Spain, by creating Viver Atun Cartagena S.A., a corporate joint venture in 1996.

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<sup>132</sup> Andrew Darby, “Revealed: how Japan caught and hid \$2b worth of rare tuna,” *Sydney Morning Herald (electric edition)*, August 12, 2006.

<sup>133</sup> Japan Tuna Fisheries Cooperative Association, *Katsuo Maguro Gyokaishi (The History of Japanese Tuna Industry)* (Tokyo: Japan Tuna Fisheries Cooperative Association, 2008), p. 483.

<sup>134</sup> Yamamoto and Kitano, “Kokunai maguro yosyokugyo ni okeru ote shihon no sannyu seisan jissei to shijo kozo,” pp. 1-14.

1970	Maruha begins research on tuna farming.
1985	New Nippo Corporation (predecessor of TAIYO A&F) commences trial tuna farming in Kashiwajima (Otsuki, Kochi Prefecture).
1987	Amami Yogyo commences experimental operations for tuna seed production in Amami Islands, Kagoshima.
1990	New Nippo commences tuna farming in Motobu, Okinawa Prefecture.
1991	Maruha lends technical assistance about farming to and begins to buy from Australian tuna fishermen.
1996	Maruha commences a joint enterprise (Viver Atun Cartagena S.A.) on tuna farming in Spain. Taiyo A&F Company Limited was incorporated by New Nippo and two other firms. TAIYO A&F opens a new farming station in Goto Islands, Nagasaki (Yamamoto and Kitano)
1997	Amami Yogyo suspends juvenile tuna seed production, commencing instead farming for sales of adult tuna.
2000	Sales of farmed tuna by Kumano Yogyo goes into full swing.
2003	Amami Yogyo sets up a new farming station in Amami Island Maruha begins tuna farming in Tunisia through the formation of a joint venture company with Viver Atun Cartagena S.A.
2004	Maruha establishes Kumano Yogyo in Wakayama TAIYO A&F opens a new farming station in Yamaguchi.
2006	Maruha resumes experimental tuna seed production.
2006	TAIYO A&F launches a tuna farming station in Wakayama.
2007	Maruha consolidates Nichiro Corporation and alters its name to Maruha Nichiro
2009	TAIYO A&F strengthens the capacity of tuna farming through setting up a new farming station in Goto Islands, Nagasaki.
2010	Maruha establishes Kushimoto Marine Farm in Kushimoto, Wakayama
2012	TAIYO A&F closed a farming site in Wakayama due to the damage caused by a typhoon.

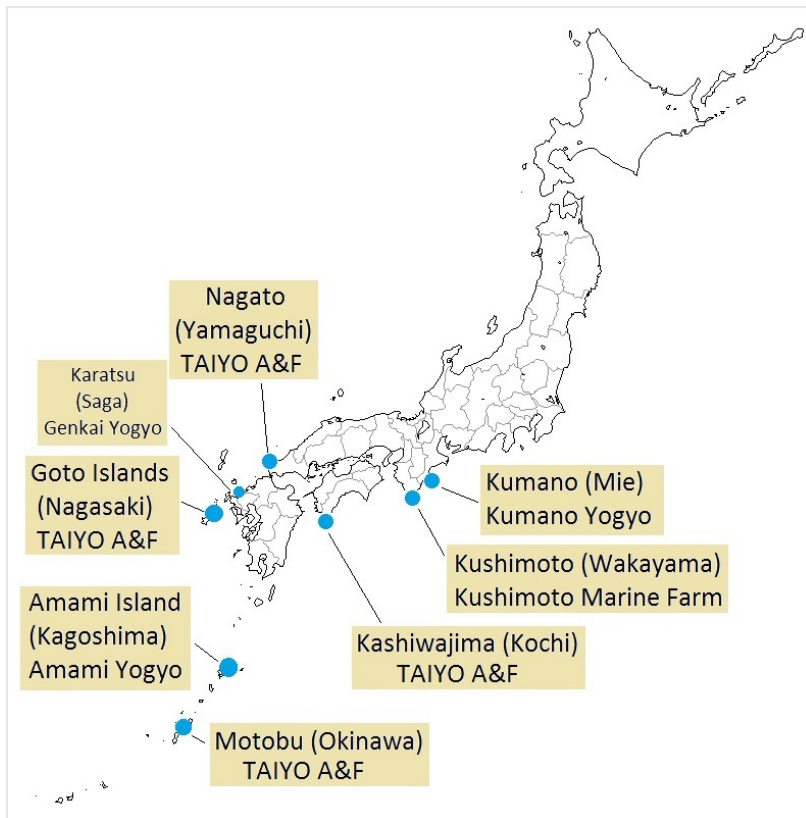
**Table 7: Timeline on Tuna farming in the Maruha Nichiro Group**

Naotoshi Nakahara, "Ote suisan gaisya no seisan, hanbai katsudo to jigyo saihen (Production, marketing practice, and business restructuring of a major fisheries company)," in Seiichiro Ono, ed., *Yosyoku Maguro Bijinesu no Keizai Bunseki: Fudo Sisutemuron ni yoru Apurochi (Economic Analysis of Fish Farming Business: An approach from Food System Theory)*, (Tokyo: Seizando Syoten, 2008), p. 39; Takashi Kusano, "Maruho Nichiro Suisan no maguro yosyoku jigyo no tenkai to kongo (The current development and the future prospect of tuna farming business in Maruho Nichiro Fisheries Corporation)," *Yosyoku (Aquaculture Magazine)*, Vol. 45, No. 10, pp. 22-24; Takashi Torii, "Maguro yosyoku eno shihon sannyu to gyojo riyo keitai (Entry into tuna farming industry and forms of utilization about fishing grounds)", *Gyogyo Keizai Kenkyu* Vol. 55, No. 1 (2011), p. 9; Web pages of Maruha Nichiro Corporation.

However, the new entry of Japanese multinational trading companies such as Mitsubishi Corporation intensified competition regarding the tuna farming business abroad, putting Maruha into a less advantageous position, as trading companies were far better financed and able to outbid them. Faced with this situation, Maruha put substantial effort into expanding

its domestic tuna farming operation, and since then, has set up new farming stations in Amami Island in 2003, Wakayama and Yamaguchi in 2004, Wakayama in 2006, Goto Islands in 2009, and Kushimoto in 2010. The Maruha Nichiro group now has more than ten farming sites run by subsidiaries such as TAIYO A&F, Amami Yogyo, Kumano Yogyo, and Kushimoto Marine Farm in eight locations in Japan, estimating that it would produce 3,000 metric tons of bluefin tuna in 2014<sup>135</sup>.

Kumano Yogyo, one of the subsidiaries of Maruha Nichiro, possesses 18 pens (80m x 48m x 10, 52m x 26m x 8) run by a staff of 18 people, with a labor cost of around ¥100 million (\$83 million). Total running cost save feeding is estimated to be 300 – ¥350 million (2.5 – \$3 million). With regard to the output, Kumano shipped 8,000 tuna (35 – 70kg on average) in 2002, the average price of which was 3,000 – ¥3,100 (\$25 – 26) per one kilogram.



**Figure 82: PBF farming sites of Maruha Nichiro Group**

It has 1,800 age-2 (20kg on average), 8,000 age-3 (40kg on average) tuna in 2013 and shipped 3,000 age-4 tuna annually. 30% of them are directly sold to mass retailers and the restaurant industry, and 70% of them are distributed to wholesale markets<sup>136</sup>.

With regard to Kushimoto Marine Farm, the newest farming base in Maruha Nichiro which started its operation in 2010, it shipped 400 tons of tuna worth ¥3,200 (\$27) per one kilogram for the first time in 2012, the average weight of which was 50kg per one fish. Maruha Nichiro amplified its farming facility further by building up 16 rectangular-shaped pens

<sup>135</sup> *The Minato Daily*, November 28, 2014.

<sup>136</sup> Seiichiro Ono, “2010 nendai syoto ni okeru nihon no magura sangyo (Tuna aquaculture of Japan in the early 2010’s),” p. 7.

(61,440 m<sup>2</sup> in total) in cooperation with a local fisheries cooperative and Mitsubishi subsidiary Toyo Reizo<sup>137</sup>.

According to the financial statements of Maruha Nichiro, net sales of the fisheries & aquaculture unit generated ¥32 billion (\$270 million), consisting of 6% of total sales of its marine products segment (¥51.67 billion, \$4.3 billion). In the matter of operating income, the fisheries aquaculture unit earned ¥1.4 billion (\$12 million), which accounts for 17% of total operating income of the marine products segment (¥8 billion, \$67 million)<sup>138</sup>. While the proportion of tuna farming or tuna fisheries in general is not shown in the financial statements, Nakahara and Yamamoto estimate that sales of all tuna comprised 3% of total sales (¥27.44 billion, \$230 million) of Maruha Corporation in 2003<sup>139</sup>.

(3) Nippon Suisan Kaisha, Ltd (NISSUI)

**Table 8: Timeline on tuna farming in the NISSUI**

2006	NISSUI enters tuna farming business by acquiring ownership of Nakatani Suisan, which has operated tuna farming stations in Amami Island (Kagoshima), Tsushima Island (Nagasaki), Koshikijima Islands (Kagoshima), and Ine (Kyoto).
2007	NISSUI begins experimental project on artificial seed production. NISSUI begins raising tuna caught by purse seine vessels owned by its subsidiary Kyowa Suisan. Nakatani Suisan opens a new farming station in Ine, Kyoto Prefecture.
2008	Nakatani Suisan opens a new farming station in Saiki, Oita Prefecture.
2012	NISSUI makes Kanago Sangyo, which has conducted tuna farming stations since 1996 its wholly-owned subsidiary.
2013	Nakatani Suisan altered its name to Seinan Suisan.

Source: Takashi Torii, "Maguro yosyoku eno shihon sannyu to gojo riyo keitai (Entry into tuna farming industry and forms of utilization about fishing grounds)," *Gyogyo Keizai Kenkyu* Vol. 55, No. 1 (2011), p. 9; Web pages of NISSUI.

Nippon Suisan Kaisha, Ltd, or NISSUI, joined the tuna farming business through the acquisition of two companies, Nakatani Suisan in 2006 and Seinan Suisan (formerly Nakatani Suisan) in 2012, against a backdrop of tightening regulations concerning the Atlantic and

<sup>137</sup> *The Mainichi Shimbun (electric version)*, June 24, 2012.

<sup>138</sup> Maruha Nichiro Corporation, "2014 nen 3 gatsuki renketsu kessan (Maruha Nichiro Holdings bun) (Consolidated financial settlement on Maruha Nhiro Holdings in the business year ending on March 31, 2014)," May 30, 2014, p. 4 accessed on January 25, 2015, [http://www.maruha-nichiro.co.jp/ir/library/pdf/201403\\_MNHDrenketsukessan.pdf](http://www.maruha-nichiro.co.jp/ir/library/pdf/201403_MNHDrenketsukessan.pdf).

<sup>139</sup> Naotomo Nakahara and Naotoshi Yamamoto, "Yosyoku maguro wo meguru sijyo jyoken no kendo to gyomu saihen: Ote suisan gaisya A wo jirei to shite (The transformation of market conditions and the reorganization of operations on tuna farming industry: A case study on a major fisheries company)," *Gyogyo Keizai Kenkyu*, Vol. 51, No. 3 (2007), p. 56.

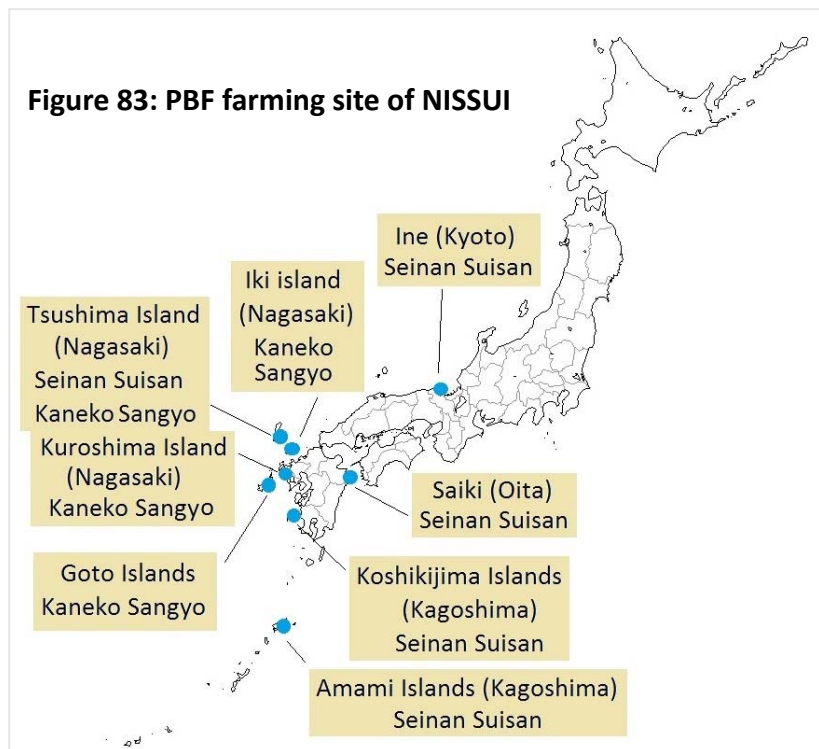


southern bluefin tuna since the late 2000s. Seinan Suisan, having started tuna farming since 1996, has five farming sites in Kagoshima (83,186m<sup>2</sup>), Nagasaki (42,287m<sup>2</sup>), Oita (61, 446 m<sup>2</sup> with other six companies), and Kyoto 5,976 m<sup>2</sup>), totaling 192,895m<sup>2</sup>. The total quantity of output is around 1,500 metric tons.

A substantial portion of juveniles Seinan Suisan purchases are juveniles from fishermen operating in the Pacific Ocean off Shikoku and in the Sea of Japan off the Oki Islands in July and August. These juveniles are then given feed in taming fish cages set in Shikoku and Oki for about two months until they weigh about 500g to 1kg. After that, they are transported to pens set in each region. Tuna are farmed for 2 to 3 years until they weigh about 50kg. Half of the harvested fish are then distributed to a wholesale market, while the other half are sold to mass retailers. Seinan Suisan also purchases tuna seeds weighing 3 to 4kg caught in June and July by purse seine vessels owned by Kyowa Suisan, a subsidiary of NISSUI. The seeds are put in towed cages, after which they are transported to taming fish cages in Tsushima and Oki by offshore towboats and tugboats, and further transported from these taming fish cages to farming fish cages set in the various regions.

Seinan Suisan also conducts Australian-style tuna farming in Ine-cho, Kyoto, where adult tuna of around 100kg are raised to 120kg or more, sometimes more than 200kg. The wholesale price of these “Ine-maguro (Ine bluefin)” is about 50% higher than common farmed tuna<sup>140</sup>.

Kaneko Sangyo, which started fish

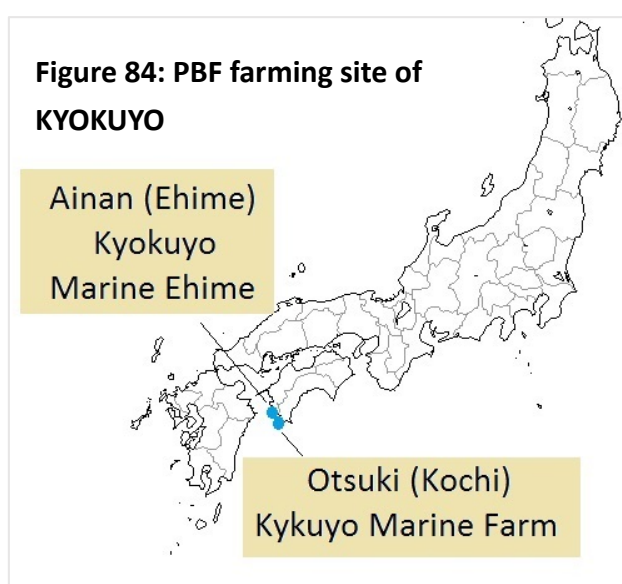


aquaculture in the 1980s and primarily raises red sea bream, embarked on tuna farming in 1999. It operates five farming sites in Nagasaki (95,458 m<sup>2</sup> in total). Two of them also raised

<sup>140</sup> NISSUI, “Toward the development of a supply chain for bluefin tuna aquaculture business in Japan,” *NISSUI Frontier*, No. 59 (2008), accessed February 10, 2015, <http://www.nissui.co.jp/english/corporate/frontier/03/02.html>.

tiger puffer to hedge the risk of tuna farming. The annual number of input put into pens is around 20,000 juveniles. 80% – 90% of the juveniles purchased by Kaneko Sangyo are caught in Nagasaki, while the remaining 10% – 20% are harvested in Kochi. The average price of these juveniles are 2,000 – ¥4,000 (17 – \$33) per one fish. Tuna are raised until they weigh about 40kg and sold to wholesale markets (50%), the food-service industry (10% – 20%), and tuna wholesalers such as Toyo Reizo Co. Ltd (20% – 30%)<sup>141</sup>.

(4) KYOKUYO



Kyokuyo started tuna farming in 2007 and now operates two sites in Kochi (Kyokuyo Marine Farm: 8,478m<sup>2</sup>) and Ehime (Kyokuyo Marine Ehime: 13,927m<sup>2</sup>), with the total amount of production exceeding 500 metric tons. In 2011, KYOKUYO established the joint venture company Kyokuyo Nippai Marine Co., Ltd. with Nippon Formula Feed Manufacturing (NIPPAI), a compound food producing company which had been engaged in research on techniques for hatching bluefin

tuna since 1986, with the aim of full-life cycle aquaculture of bluefin tuna. On September 26, 2014, KYOKUYO announced that it had succeeded in transferring fully cultured bluefin fries into farming cages and is planning to sell farmed bluefin tuna within three years<sup>142</sup>.

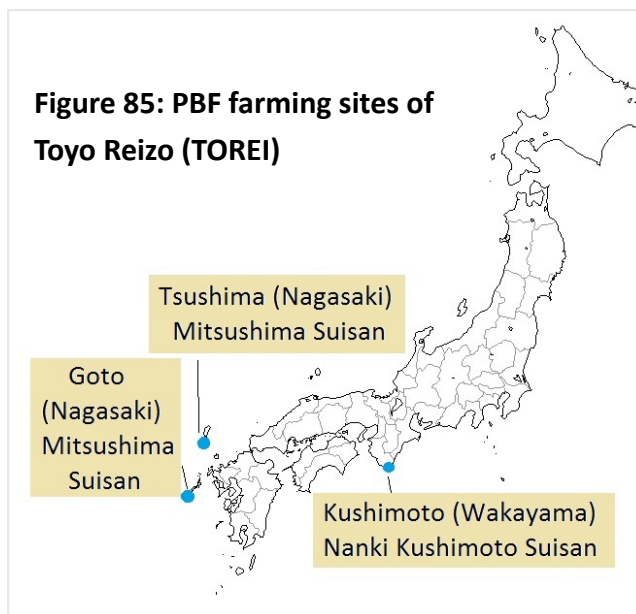
(5) Toyo Reizo Co., Ltd. (TOREI)/Mitsubishi Corporation

Toyo Reizo, or TOREI, an affiliated company of Mitsubishi Corporation, Japan's largest general trading company, entered the tuna farming business by establishing Mitsushima Suisan in 2008, located in Tsushima Islands, Nagasaki. In 2010, TOREI expanded its business by creating a Mitsushima Suisan Goto branch in Goto Islands, Nagasaki and by obtaining Nanki Kushimoto Suisan in Wakayama from Mercian Corporation, a wine company with

<sup>141</sup> Seiichiro Ono, "2010 nendai syoto ni okeru nihon no magura sangyo (Tuna aquaculture of Japan in early 2010's)," pp. 4-6.

<sup>142</sup> *The Minato Daily*, September 29, 2014.

excessive debt owing to the price slump and soaring price of feeding stuff. Through the acquisition of two farming sites, one in the Pacific Ocean and the other in the Sea of Japan, Mitsubishi was able to hedge the risk of typhoons or other natural phenomena<sup>143</sup>. With the invitation from Kushimoto-cho, a local municipality in Wakayama, and from local fishermen's cooperative, Nanki Kushimoto Suisan built the largest farming site in Japan (more than 100,000m<sup>2</sup> in total) with Kushimoto Marine Farm, a subsidiary company of Maruha Nichiro. It also embarked on farming artificially hatched and raised tuna with the collaboration of Kinki University, and is now selling them under the brand name "Tuna Princess," estimating 300 metric tons of shipment in 2014.



#### (6) Sojitz Corporation

Sojitz Corporation, one of the biggest general trading companies in Japan, began tuna farming by creating a totally-held subsidiary, Sojitz Tuna Farm Takashima Corporation in Nagasaki in September 2008, leading to the commencement of shipping in December 2010. With eight rectangular floating cages (40m x 80m) and 12 circular cages (40m in diameter) which amount to 42,500m<sup>2</sup>, it produced around 100 metric tons of farmed tuna in 2012. Stepping up its operation in 2013, Sojitz Tuna Farm shipped 6,500 tuna (300 metric tons) which was worth ¥1 billion (\$8.3 million)<sup>144</sup>.

Juveniles are put into pens from June to November, mainly in August, September, and October. Though their cost range from ¥2,000 – 1,000 (\$17 - 8) per one fish, the average price is ¥3,000 (\$25). The size of juveniles also vary widely from 150g – 800g, while a fairly good number of them is between 200g and 500g. Around 2,000 juveniles are put into one cage and raised for about three years by feeding live bait such as mackerel and sardine until they

<sup>143</sup> *The Minato Daily*, October 20, 2010.

<sup>144</sup> Seiichiro Ono, "2010 nendai syoto ni okeru nihon no magura sangyo (Tuna aquaculture of Japan in early 2010's)," p. 10.

grow to 30 – 70kg. In 2011, Sojitz embarked on raising juveniles which were born from completely farm-raised tuna and were supplied by Kinki University. However, they are relatively slow-growing and have a low survival rate (50%) compared with naturally hatched and raised juveniles (70%) and this project is still in the research phase.

Although most tuna are distributed to the domestic market, around 10% of them are exported to China and other countries. As Sojitz has Dalian Global Food Corporation, the biggest tuna processing company in China, sales to China are conducted through this affiliated company. As the CEO of Sojitz Tuna Farm said that they “will develop a market abroad,” Sojitz plans to expand its exports, especially to China<sup>145</sup>.

## (7) TOYOTA

Toyota Tsusho, a general trading company and totally-held subsidiary of the world's biggest car manufacturer TOYOTA, launched Tuna Dream Goto to join the tuna farming business in 2010.

Unlike other tuna farmers, Tuna Dream Goto only cultivates small tuna fry 0.003 – 0.004kg (3 – 4g) in weight into larger juveniles about 1 – 3kg. All tuna fry are artificially cultivated by and acquired from Kinki University, and Tuna Dream Goto does not raise tuna until they become adults, but supplies juveniles to Japanese fish farmers.

While demand for artificially hatched juvenile tuna grows because of the increase of tuna farmers, due to the yearly fluctuation of the abundance of juveniles in the wild, overfishing and decrease of the wild tuna population, and gradual tightening of regulatory measures in Japan, Kinki University faced several difficulties in boosting the supply of artificially incubated juveniles. First, chances of success of raising tuna from eggs into juveniles around 500g is only 1%. Secondly, while tuna is bigger than other farmed fish, and rearing density is extremely low, thus requiring 100 times larger space than other fish farming, Kinki University had problems finding farming places because of funding issues, as well as the fact that Kinki University is an academic institution and has difficulty in expanding its farming space. Although hatching and raising fry to be 5 – 6cm is conducted in onshore facilities, space for “intermediate breeding” which nurtures fry into juveniles about 20 – 30cm have to be found in the ocean. To solve these problems, Kinki University and Toyota Tsusho formed a technological tie-up on tuna farming, and Toyota set up this intermediate breeding facility, equipped with 18 circular farming cages in Goto Islands, Nagasaki. Its interim goal is to increase its supply and to be able to cover the half of the demand for fry for tuna aqua farmers.

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<sup>145</sup> “Yoshokujo homon - maguro – Sojitz Tuna Farm Takashima (A visit to the tuna farming station: Sojitz Tuna Farm Takashima,” *Yosyoku Bijinesu*, Vol. 49, No. 11 (2012), pp. 43-46.

Tuna Dream Goto bought 43,000 tuna and shipped 15,000 in 2011, and bought 150,000 and shipped 20,000 in 2012<sup>146</sup>.

The biggest challenge Tuna Dream Goto faces is how to reduce the high mortality rate (50%) of tuna fry during their transportation, which takes 48 hours from Kinki University's hatching site in Wakayama to Goto. To solve the problem, Toyoto Tsusho established Tuna Dream Goto Fish Nursery Center with the technological and personnel support from Kinki University in order to hatch and cultivate in land-based tanks located there. By 2020, Toyota Tsusyo will invest ¥15 million (\$125,000) and produce 300,000 adult tuna annually<sup>147</sup>.

Toyota announced in July 2014 that it plans to set up tuna farming facilities by September 2015 in Okinawa, the southernmost and warmest Prefecture in Japan. This site will be composed of 6 farming cages (30m in diameter) and nurse fry until they become 30cm-long (1kg) juveniles. Toyoto estimates that annual output will be 10,000 tuna, in addition to the current production of 18,000 tuna in Tuna Dream Goto<sup>148</sup>.

#### (8) A-marine Kindai

A-marine Kindai was established by Kinki University, known as Kindai, as a venture company in February 2003, and now has four business establishments in Wakayama Prefecture and Amami Islands, Kagoshima Prefecture, with a staff of about 140 people<sup>149</sup>. It succeeded in "completely farm-raised" bluefin tuna in 2002, and made the first shipment of these tuna in 2004. In complete-cycle farming, artificially hatching eggs are raised to become fry, juveniles, and adults, then these farm-raised adult tuna spawn eggs, which are again artificially hatched to repeat the cycle. These "completely farm-raised" and artificially hatched ones spawned by wild species are labeled as "Kindai-maguro (Kinki university tuna)." The number of shipped artificial PBF juveniles was increased to more than 5,000 in 2008, 30,000 in 2009, and 57,000 in 2011. The quantity further grew to 80,000 juveniles in 2012, which accounted for more than 10% of the total farmed tuna<sup>150</sup>. As described above, Kinki University

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<sup>146</sup> "Toyota Tsusyo ni yoru kindai maguro tyukan ikusei jigyo: Tuna Dream Goto (Intermediate breeding of 'Kindai-Tuna' by Toyota Tsusyo: Tuna Dream Goto)," *Aquanet*, Vol. 16, No. 3 (2013), pp. 6-10.

<sup>147</sup> Toyota Tsusyo, "Toyota Tsusho and Kinki University Sign Memorandum on Promoting Marine-product Cultivation Business - Agreement Outlines World's First Industry-academic Mass Production of Bluefin Tuna Nursery-," accessed January 28, 2015, [http://www.toyota-tsusho.com/english/press/detail/140716\\_002662.html](http://www.toyota-tsusho.com/english/press/detail/140716_002662.html).

<sup>148</sup> *The Suisan-Keizai Daily News*, August 29, 2014.

<sup>149</sup> Seiichiro Ono, "2010 nendai syoto ni okeru nihon no magura sangyo (Tuna aquaculture of Japan in early 2010's)," p. 17.

<sup>150</sup> Keitaro Kato, "Kinki daigaku ni okeru sekaihatu kuromaguro no kanzenyosyoku tassei to sono sangyoka ni tsuite (The world's first achievement of completely farm-raised bluefin tuna and its industrialization)," *21 Seiki WAKAYAMA*, Vol. 74, pp. 9-12, accessed February 8, 2015, <http://www.wsk.or.jp/book/74/03.pdf>.

decided on the cooperation with Toyota Tsusyo to expand its tuna farming by using larger facilities of the company, and a cooperative arrangement between them tightened further in 2014.

## 9. Operational/Production Schedule, Cost, and Price of Farmed Tuna

As described above, tuna fry are captured by troll fisheries in the summer season (July – August) in the Pacific Ocean, and in autumn (September – November) off the coast of Goto Islands, Tsushima Island, and the Oki Islands in the Sea of Japan. With regard to purse seiners, they capture seed tuna from June to July in the western Sea of Japan<sup>151</sup>. Captured fry are transferred to taming cages until they adapt to the artificial environment and are able to eat bait steadily for 2 weeks to several months, after which they are again transferred to farming cages. While some juvenile tuna are raised near the taming cages they had been put in, other juveniles are shipped by live fish boats or barges to farming stations far away from taming cages<sup>152</sup>.

**Table 9: Production schedule**

Marino-Forum 21, “Maguro yosyoku ni okeru nichijo sagyo (Daily operation of tuna farming),” accessed February 15, 2015, <http://www.yosyokugyojyou.net/index4b.htm>.

<b>Capture of seed tuna</b>	July – October	Seed tuna are captured by troll, pole and line, and purse seine.
<b>Feeding of seeds in the taming cages</b>	2 weeks – several months	Seeds are tamed for them to eat bait steadily.
<b>Transfer to farming cages</b>	September – October	
<b>Farm-raising</b>	1.5 – 2 years (seeds caught by purse-seiners) 2.5 – 3 years (seeds caught by troll and pole-and-line; artificial seeds)	Juvenile tuna are raised until they grow to 30 – 60kg.

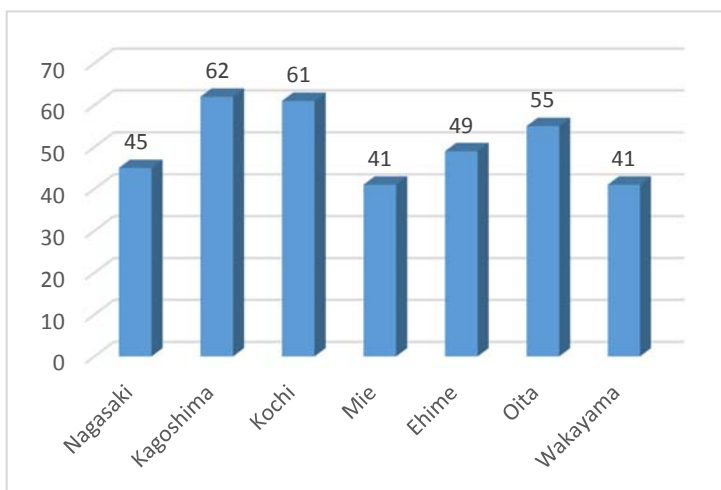
In the case of artificial tuna, freshly-hatched larva 2.8mm in length grow to 30 – 50mm in about one month, after which they are moved from onshore fish-breeding tanks to cages on the sea. This transference is called “*okidashi*,” in Japanese, or transport to the ocean. According to the performance of the Fisheries Laboratory of Kinki University, 96 – 99% of larval fish die before *okidashi* or in the onshore fish tanks, and 20 – 40% of tuna fry which

<sup>151</sup> Takashi Kusano and Kunio Shirasu, “Kuromaguro yosyoku jigyo no tenkai (Development of tuna farming business),” p. 114.

<sup>152</sup> Marino-Forum 21, “Maguro yosyoku ni okeru nichijo sagyo (Daily operation of tuna farming),” accessed February 15, 2015, <http://www.yosyokugyojyou.net/index4b.htm>.

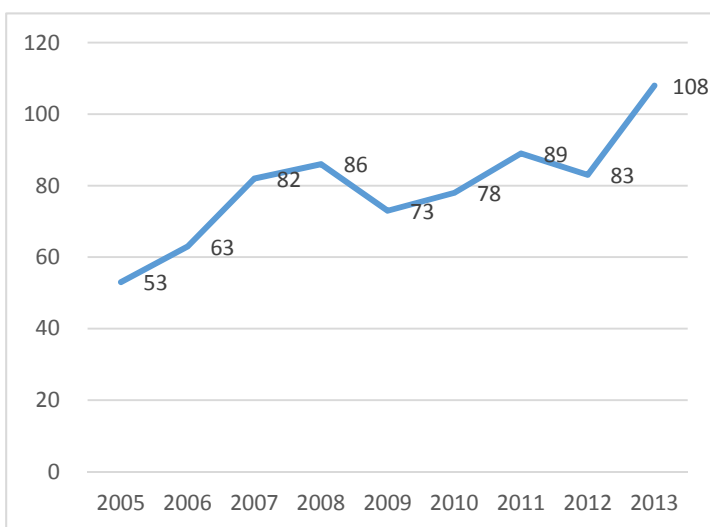
survived in the onshore tanks die from clashes with cages, skin injury due to friction with nets, and so on within 50 days after they hatched, with the result that only less than 1% of fry survives after the initial 50 days<sup>153</sup>.

After the transference to farming cages, juvenile tuna are raised for 1.5 – 3 years. As seeds captured by purse seiners (2 – 5kg) are larger than those captured by troll or pole-and-line vessels, it takes a shorter period (1.5 – 2 years) for them to grow to marketable size. As for juveniles caught by roll or pole-and-line as well as



**Figure 86: Average weight of PBF on shipping (kg)**

artificial seeds, it takes 2.5 – 3 years to raise them to 30 – 60kg. The speed of growth depends on the temperature and therefore it takes a shorter period of time (2.5 years) to raise tuna



**Figure 87: Average wholesale price of mackerel in Japan (JPY / Kg)** MAFF, Seisanbutsu ryuutsu tokei nenpo (Annual Statistics on Fishery and Aquaculture Production)

captured by troll or pole-and-line vessels in farming sites in the Amami Island of Kagoshima Prefecture, which is south from those in the main island of Japan (3 years)<sup>154</sup>. According to the official statistics, the average weight of shipped tuna in 2013 is 62kg in Kagoshima, 49kg in Ehime, 45kg in Nagasaki, and 41kg in Wakayama (see Figure 86)<sup>155</sup>. While farmed tuna grow ever larger, for instance it is estimated that cultured tuna

<sup>153</sup> Shigeru Miyashita, “Jizokuteki na maguro yosyokugyo e muketa kadai to chosen (Agendas and challenges toward sustainable tuna farming industry),” *Yosyoku (Aquaculture)*, Vol. 49, No. 3, pp. 46-50.

<sup>154</sup> Hajime Ishii, “Yosyoku maguro no genjo to sashimi maguro no jukyu (Current situation of tuna aquaculture and supply and demand of sashimi grade tuna),” *Suisan Shinko*, Vol. 538 (2012), p. 12.

<sup>155</sup> JFA, “Heisei 25 nendo ni okeru kokunai kuromaguro yoshoku jisseki ni tsuite (Figures of domestic bluefin tuna farming in 2013),” accessed February 20, <http://www.ifa.maff.go.jp/j/press/saibai/140331.html>.

raised in Amami Island grow up to be 114.6kg (173.8cm) in age-4, 222.0kg (240.9cm) in age-7, 495.3kg (252.8cm) in age-12<sup>156</sup>, and they are shipped at the weight of about 40 – 60kg. This is because feeding efficiency is high when tuna is small and the growth rate became lower when tuna grow up to be a certain size<sup>157</sup>.

**Table 10: Production and sales cost of farmed tuna (JPY / USD)**

Seiichiro Ono, Gyorui Yosyokugyo no Keizai Bunseki (Economic Analysis of Fish Aquaculture) (Tokyo: Norin Tokei Shuppan, 2013), p. 124. The figures inside the parentheses show the values of US dollar. All figures are converted at roughly 120 yen to a dollar to make calculation simple.

	Japan (2006)	Mediterranean (2005)	Australia (2005)	Mexico (2005)
Seeding cost	310 (3)	950 – 1,000 (8)	690-790 (6-7)	620-670 (5-6)
Feed cost	1,200 (10)	500 (4)	240 – 250 (2)	250 (2)
Other production costs (payroll, etc.)	1,100 (9)	500 (4)	440 – 450 (4)	400-410 (3)
Total production cost	2,610 (22)	2,000 (17)	1,500 (13)	1,300 (11)
Sales cost	360 (3)	1,280–1,340 (11)	690 – 900 (7 – 8)	490 – 580 (4 – 5)
Total cost	3,100 (26)	3,580 – 3,840 (30 – 32)	2,200 – 2,500 (18 – 21)	1,860 – 2,000 (16 – 17)
Sales price	3,200 – 3,400 (27 – 28)	3,200 – 3,400 (27 – 28)	2,200 – 2,700 (18 – 23)	2,000 – 2,500 (17 – 21)

In order to fatten 1kg of farmed tuna, 13 – 15kg of feed is required. The development of formula feed for tuna is still in its infancy and live prey such as sand lance, white bait, frozen mackerel, and squid are used as main feed<sup>158</sup>, of which frozen mackerel account for 80 – 90%<sup>159</sup>, which means that the price of these fish has an impact on the cost of farming. As Figure 87 shows, the price of mackerel increased from ¥53 (\$0.5) per one kilogram in 2005 to ¥108 (\$1) in 2013, contributing to the rising cost of production of tuna aquaculture<sup>160</sup>.

<sup>156</sup> Fisheries Research Agency, ed., *Maguro Shigen to Seibutsugaku (Tuna Resources and Biology)*, p. 240.

<sup>157</sup> Hajime Ishii, “Yosyoku maguro no genjo to sashimi maguro no jukyū (Current situation of tuna aquaculture and supply and demand of sashimi grade tuna),” *Suisan Shinko*, Vol. 538 (2012), p. 15.

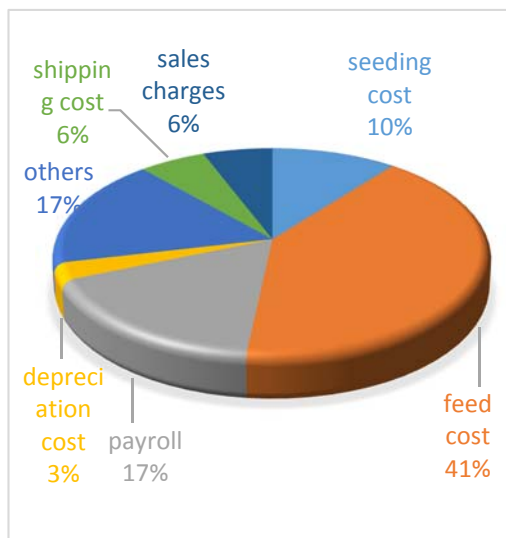
<sup>158</sup> Saichiro Yokoyama, “Maguro yosyoku no haigo shiryō kenkyū (Research on formula feed for tuna farming),” *Yosyoku Bijinesu (Aquaculture Business)*, Vol. 51, No. 12 (2014), p. 10.

<sup>159</sup> Seiichiro Ono, ed., *Yosyoku Maguro Bijinesu no Keizai Bunseki: Fudo Sisutemuron ni yoru Apurochi (Economic Analysis of Fish Farming Business: An approach from Food System Theory)*, (Tokyo: Seizando Syoten, 2008), p. 31.

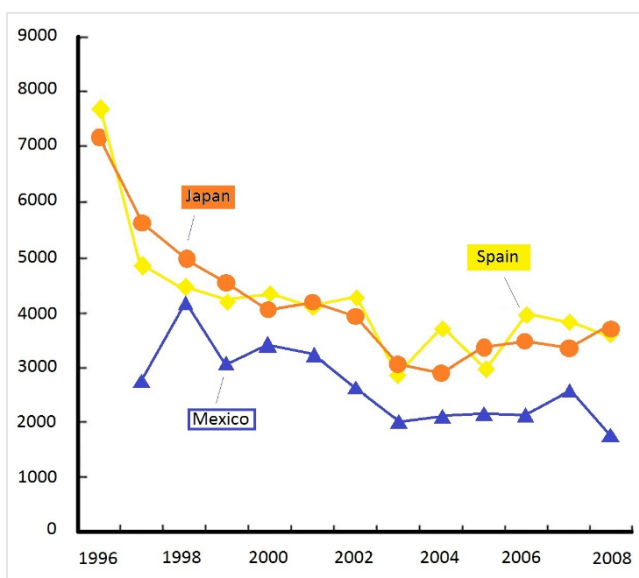
<sup>160</sup> See also, Takashi Torii, “Yosyoku maguro no seisanryō suii to ote shihon no doko (The transition on the production of farmed tuna and the recent trend of major companies),” *Yosyoku*, Vol. 45, No. 10, p. 27.



According to Ono (2013)<sup>161</sup>, feed cost accounts for the largest portion with over 40% of the ¥3,100 (\$26) total production and sales cost of tuna farming (see Figure 88). Payroll is the next largest cost with 17%, followed by seeding cost (10%). As Table 10 on the previous page also shows, Japanese tuna farming has to spend a lot of money compared with farmers in other countries because of the fact that Japanese-type farming necessitates raising tuna for longer periods of time than others. On the other hand, farming in the Mediterranean countries requires more money for transportation because of the distance between



**Figure 88: Rate of cost on PBF farming in Japan**



**Figure 89: Wholesale prices of farmed tuna at the Tokyo Tsukiji market**

Naotoshi Yamamoto, "Kyu kakudai wo togeru maguro yosyoku sanchi to jukyū sijo joken no henka (Burgeoning tuna farming areas and the change on the conditions of the supply and demand)," *Yosyoku*, Vol. 47, No. 10 (2010), p. 45.

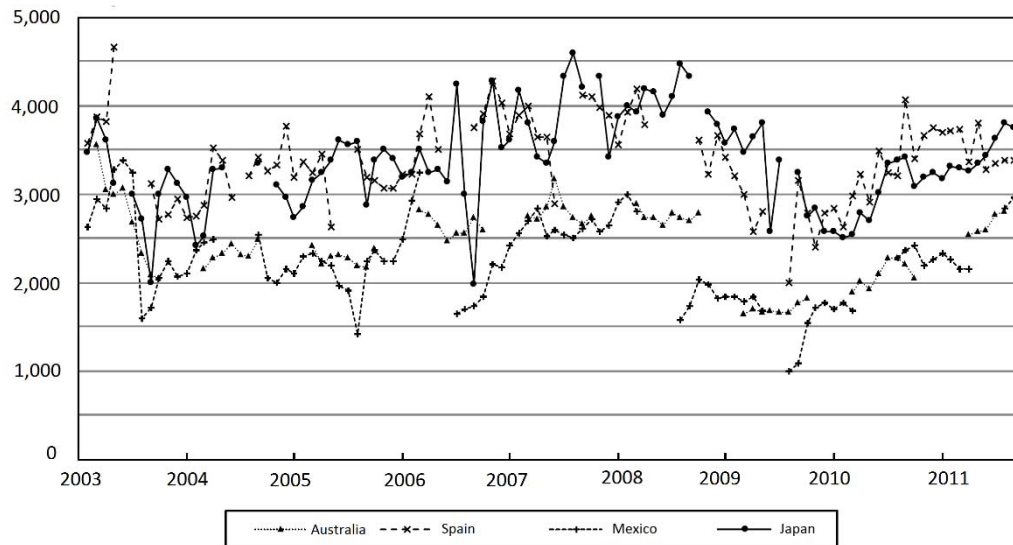
experiencing economic stagnation and the production and the amount of supply of farmed tuna has increased. The prices since the early 2000s are shown in Figure 90. While Japanese pacific bluefin and Atlantic bluefin continue to be on the pricy side with ¥2,500 – 4,000 (\$20 – 33) on average in recent years, Mexican pacific bluefin and Australian southern bluefin

Japan and these nations. Mexico has an upper hand with regard to shipping costs as Ensenada, the center of farming in this country, is close to the border with the United States and Los Angeles International Airport, where there are many regular direct flight to Tokyo (Narita International Airport).

Figure 89 gives the price of farmed tuna every December when the prices usually reach their peak since the late 1990s to mid-2000s. As the figure shows, the price has fallen from ¥7,000 – 8,000 (\$60 – 70) in 1996 to ¥3,000 – 4,000 (\$25 – 35) in the mid-2000s, 1990s as Japan has been

<sup>161</sup> Seiichiro Ono, *Gyorui Yosyokugyo no Keizai Bunseki (Economic Analysis of Fish Aquaculture)* (Tokyo: Norin Tokei Shuppan, 2013), p. 86.

comprise lower price range, costing ¥1,500 – 2,500 (\$13 – 20).



**Figure 90: Wholesale prices of farmed bluefin tuna at the Tokyo Tsukiji market**

Toru Nakajima, Takahiro Matsui, and Seiichiro Ono, "Yosyoku maguro no sanchi kan deno kakaku rendosei to daitai kankei: Tsukiji shijo ni okeru kunibetsu deta wo mochiite (Price linkage and substitutability of farmed bluefin tuna between countries of origin: A case of Tokyo Tsukiji market)," *Kokusai Gyogyo Kenkyu*, Vol. 12 (2014), p. 7.



## ***Conclusion***

As we have seen in Part I, one of the reasons of the development of PBF fisheries in Sakaiminato was the resource depletion of sardine and mackerel caused by overexploitation of these species and the need for alternative fish species for commercial harvesting, and second, development of PBF purse seine fisheries caused resource depletion of this species as evidenced by the decline of catches, average length, and weight of harvested PBF. Moreover, purse seine fisheries in the Sea of Japan are targeting spawning stocks, which may cause devastating effects on reproduction of PBF. We have also pointed out the effects which may be caused by massive overexploitation by touching on the situation of pole and line and longline PBF fisheries in the Iki Island of Nagasaki Prefecture and Katsuura, Wakayama Prefecture. Although some progress have been made internationally and domestically in Japan in order to restrict PBF fishing, they are not sufficient for the conservation and restoration of this species, as most of them merely let current fisheries remain untouched except for the reduction of catches of juvenile tuna. Stock status of PBF is getting worse to the point that collapse of PBF may be close at hand, and it is critically important to strengthen conservation measures by the WCPFC at the international level and by Japan itself. Without doing these regulations, trade restriction though the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) should be considered to be an important option.

In Part II of this part, we took up tuna farming business in Japan. Firstly, we overviewed bluefin tuna aquaculture in the world in general, then move on to PBF farming in Mexico, which has been the only country that does the business on a large scale beside Japan, touching upon its relationship with Japanese companies. Second, we took a look at the historical development of tuna farming in Japan, initiated by Kinki University and expanded by the university as well as major seafood companies such as Maruha Nichiro Corporation, then pointed out the reason of rapid development of the business, that is, (1) the need for change from existing fish farming such as red sea-bream and yellowtail to other species owing to price decline in reverse proportion to the amount of production of these farmed fish, in addition to the protracted slump of fishing business in general, (2) the need for seeking the source of supply of bluefin tuna domestically in Japan as the output of bluefin tuna was reduced because of the strengthening of regulation toward these species adopted by the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Commission

for the Conservation of Southern Bluefin Tuna (CCSBT). Thirdly, we examined Japanese farming business more in-depth, taking up major tuna farming sites by major prefecture and tuna farming companies. In doing so, we pointed out that (1) while the amount of artificial seed fry had been increasing, most of tuna farmers are still heavily dependent on natural seeds, thus this business is greatly affected by also has substantial impact on this species, (2) there has been a movement towards the oligopolization by major seafood and trading companies such as Maruha Nichiro, NISSUI, KYOKUYO, Mitsubishi, and Sojitz as setting up a tuna farming site requires large amount of money and involves substantial risks from natural disasters. Lastly, we took up production schedule, cost, and price of farmed tuna, comparing it with bluefin tuna farming in other countries.

## Appendix I: PBF landing in Japan (metric tons)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hokkaido	118	96	279	226	232	322	552	567	356	392	305	266	263	183	286	216
Aomori	106	97	147	202	212	357	442	622	576	794	765	719	552	641	761	783
Iwate	59	66	163	147	74	64	103	132	190	114	254	247	139	54	112	147
Miyagi	1,965	9,297	6,802	2,821	3,270	694	2,732	836	1,814	668	463	1,030	313	352	344	508
Yamagata	3															
Fukushima				30	43	4	25	29	69	65	4	7	14	0	0	0
Ibaraki				123	26	18	6	23								
Chiba	65	159	75	28	65	82	109	275	272	298	192	141	46	181	82	58
Kanagawa	94	9	47	106	29	5	11	70	32	77	72	27	33	41	138	6
Niigata	139	111	53	52	29	60	118	301	157	136	342	288	226	175	214	96
Toyama	46	109	226	164	87	70	132	141	173	222	371	180	163	204	126	80
Ishikawa													371	298	207	105
Shizuoka	88	447	423	465	59	52	36	188	67	312	101	31	64	58	28	9
Mie	20	27	26	22	9	20	12	162	46	209	24	54	17	41	12	18
Wakayama	492	332	225	161	232	251	330	555	186	244	141	84	48	53	59	143
Tottori	605	1,308	1,119	763	2,022	1,851	1,981	3,592	2,127	2,300	2,655	1,556	696	2,285	648	1,460
Shimane	529	757	1,633	1,339	626	992	659	1,157	521	646	818	1,094	172	358	213	67
Yamaguchi	90	116	253	195	27	98	230	132	60	213	579	231	349	168	113	98
Ehime	6	14	21	16	79	9	24	124	24	15	11	5	18	10	5	3
Kochi	159	51	85	289	199	101	194	327	231	300	199	29	126	114	17	28
Nagasaki	1,190	1,259	1,298	1,038	1,407	913	974	1,047	891	428	876	880	500	601	189	258
Miyazaki	340	257	192	161	193	223	198	318	125	80	58	32	38	89	39	19
Kagoshima	27	32	55	23	38	45	40	254	58	111	39	41	37	21	15	23
Okinawa	152	254	185	71	60	139	289	269	214	329	194	141	168	106	84	116
Total	6,291	14,798	13,309	8,440	9,018	6,371	9,194	11,121	8,185	7,952	8,463	7,082	4,354	6,032	3,694	4,240

Fisheries Research Agency, "Nihon syuhen kokusai gyorui sigen chosa houkokushyo," 2008-2011; Fisheries Research Agency, "Mizuagechi deno maguro kajiki tyosa kekka," 2012-2014.

## Appendix II: List of PBF purse seine vessels

Fisheries Agency, "Daichu makiami gyogyo: Taiheyo kuromaguro no gyokaku ni kakaru gyosen (Large- and medium-type purse seine fisheries: Vessels engaged in fishing of Pacific bluefin tuna)," July 2014, internal unpublished document (disclosed through the Act on Access to Information Held by Administrative Organs); WCPFC, "WCPFC Record of Fishing Vessels," accessed February 28, 2015, <https://www.wcpfc.int/record-fishing-vessel-database>.

Auth. No.	Vessel Name	Reg Port	Owner Name	Owner Address	Master Name	Cre w	Length	Tonnag e
the Pacific Ocean								
1098	SOHO MARU NO.63	Hachinohe	Fukushima Gyogyo	2-1, Himoteshiromori Samemachi, Hachinohe-shi, Aomori	TYUJI, ISOZAKI	25	51.2	279
1108	SOHO MARU NO.83	Hachinohe	Fukushima Gyogyo	2-1, Himoteshiromori Samemachi, Hachinohe-shi, Aomori	KAZUYOSHI, KAMEYAMA	24	55.99	329
1158	TAIYO MARU NO.21	Tokyo	TAIYO A&F	4-5, Toyomi-cho, Chuo-ku, Tokyo	KEN, HIROSAKI	25	37.71	135
1258	TENOH MARU NO.88	Ainan	Taiyu Gyogyo	770 Nakaura, Ainan, Minamiuwa District, Ehime Prefecture 798-4125	Katsuya Tomiyama	24	38.7	135
1468	HAMAHEI MARU	Heda	Hamahei Gyogyo	523-15, Heda, Numazu-shi, Shizuoka	MAKOTO, SATOH	28	38.7	135
1708	DAISHI MARU NO.8	Numazu	Daishi Maru (Yugengaisha Nagashima)	69-2 Heda, Numazu-shi, Shizuoka	HIKARU, SATOU	28	38.7	135
1718	DAISHI MARU NO.18	Heda	Daishi Maru (Yugengaisha Kanedai)	69-2 Heda, Numazu-shi, Shizuoka	SHIN, SUDA	26	38.7	135
1828	TENOH MARU NO.81	Ainan	Taiyu Gyogyo	770 Nakaura, Ainan, Minamiuwa District, Ehime Prefecture 798-4125	SOICHI, YOSHIOKA	22	38.7	199
1848	TAKOSHIMA MARU NO.3	Suzu	Hamada Gyogyo	Na-12 Takojimamachi, Suzu-shi, Ishikawa	TAKASHI, HIKAGE	27	32.5	110
*	SOHO MARU NO.88	Hachinohe	Fukushima Gyogyo	2-1, Himoteshiromori Samemachi, Hachinohe-shi, Aomori	HIRAKU, SUDA	24	53.1	300
*	SUWA MARU NO.1	Iwaki	Suya Shouten	4, Sakae-cho, Onahama, Iwaki-shi, Fukushima	KIYOJI, KAKEHATA	25	48.06	250
*	HOKUSHO MARU	Ishinomaki	Hokubu Makiami Gyogyo (Federation of North Pacific District Purse Seine Fisheries Co-operative Associations of Japan)	Sankaido bldg., 1-9-13, Akasaka, Minato-ku, Tokyo	MITSUMASA, KUMAGAI	23	63.26	300
*	NITTO MARU NO.31	Wakkanai	Nitto Suisan	5-6-28, Minato, Wakkanai-shi, Hokkaido	NOBORU, SATOU	25	55.93	325
*	SEISHO MARU NO.1	Minamiise	Seiyo Suisan	20 Nayaura, Minamiise, Watarai, Mie	KEN EZAKI	26	37	135
8001	WAKABA MARU NO.5	Matsue	Wakaba Gyogyo	1025, Shichirui, Mihonoseki-cho, Matsue-shi, Shimane	SYOTA, MIYAZAKI	8	34.99	85
8002	TAIKEI MARU No.1	Ishinomaki	Taikei Gyogyo	1-10-14, Haguro-cho, Ishinomaki-shi, Miyagi	KAORU KIMURA	23	56.84	1,096
8003	WAKABA MARU NO.6	Matsue	Wakaba Gyogyo	1025, Shichirui, Mihonoseki-cho, Matsue-shi, Shimane	NAOTO, MORIWAKI	6	34.98	85
8004	HAYABUSA MARU NO.75	Yaizu	TAIYO A&F	4-5, Toyomi-cho, Chuo-ku, Tokyo	Kawamura, Takashi	25	58.45	1,096
8005	HAYABUSA MARU NO.2	Yaizu	TAIYO A&F	4-5, Toyomi-cho, Chuo-ku, Tokyo	Sato, Hideki	26	57.65	1,096
8006	TAIYO MARU NO. 2	Tokyo	TAIYO A&F	4-5, Toyomi-cho, Chuo-ku, Tokyo	KAZUAKI NISHIMURA	29	64.88	1,350
	HAYABUSA MARU NO.2		TAIYO A&F	4-5, Toyomi-cho, Chuo-ku, Tokyo				

Auth No.	Vessel Name	Reg Port	Owner Name	Owner Address	Master Name	Crew	Length	Tonnage
8007	FUKUICHI MARU No.123	Yaizu	Fukuichi Gyogyo	5-9-25, Nakaminato, Yaizu-shi, Shizuoka	KUNIHURO UEKI	22	57.85	1,094
8009	FUKUICHI MARU	Yaizu	Fukuichi Gyogyo	5-9-25, Nakaminato, Yaizu-shi, Shizuoka	Sasaki,Shuji	24	57.84	1,093
8010	FUKUICHI MARU No.112	Yaizu	Fukuichi Gyogyo	5-9-25, Nakaminato, Yaizu-shi, Shizuoka	MINORU OMORI	22	57.85	1,093
8011	EISEI MARU	Numazu	Eisei Maru	559-1 Heda, Numazu-shi, Shizuoka	Sasayama,Yuki	23	58.45	1,096
8015	TOKIWA MARU No.28	Niigata	Ohkura Gyogyo	2-7, Bandaijima, Chuo-ku, Niigata-shi, Niigata	KAZUHIRO KIMURA	24	57.8	1,095
Japan Sea								
1098	SOHO MARU NO.63	(registered in the Pacific area)						
1118	KIYO MARU NO.18	Fukuoka	Ito Shoten	3-10-1,Tenjin,Chuo-ku,Fukuoka	SHIGEYOSHI IWASAKI	30	34.98	135
1138	WAKABA MARU NO.1	Matsue	Wakaba Gyogyo	1025, Shichirui, Mihonoseki-cho, Matsue-shi, Shimane	SHINICHI, OGURA	23	38	135
1158	TAIYO MARU NO.21	Tokyo	TAIYO A&F	4-5, Toyomi-cho, Chuo-ku, Tokyo	KEN, HIROSAKI	25	37.71	135
1228	KOYO MARU NO.8	Sakaiminato	Kyowa Suisan (Tokai Gyogyo)	65 Eimachi, Sakaiminato-shi, Tottori	KATSUNORI, TAKAHASHI	25	35.95	135
1258	TENOH MARU NO.88	(registered in the Pacific area)						
1298	GENPUKU MARU NO.1	Hirado	Toyo Gyogyo	2-7-18, Narutaki, Nagasaki-shi, Nagasaki	KOZO, NISHIZAWA	26	38	135
1458	KOYO MARU NO.28	Sakaiminato	Kyowa Suisan (Tokai Gyogyo)	65 Eimachi, Sakaiminato-shi, Tottori	KATSUSHI, HAMA	23	38	135
1668	WAJIMA MARU NO.18	Suzu	Wajima Gyogyo Seisankumiai	1-211-2 Wajimazaki-machi, Wajima-shi, Ishikawa	MASAHIRO, ISHIDA	21	33.06	110
1678	GENPUKU MARU NO.31	Hirado	Toyo Gyogyo	2-7-18, Narutaki, Nagasaki-shi, Nagasaki	KENJI, TANAKA	25	29.5	80
1758	TENOH MARU NO.58	Ainan	Taiyu Gyogyo	770 Nakaura, Ainan, Minamiuwa District, Ehime Prefecture 798-4125	MASATOSHI, KAWASAKI	26	29.5	80
1828	TENOH MARU NO.81	Ainan	Taiyu Gyogyo	770 Nakaura, Ainan, Minamiuwa District, Ehime Prefecture 798-4125	SOICHI, YOSHIOKA	22	38.7	199
1838	KOYO MARU NO.1	Sakaiminato	Kyowa Suisan	65 Eimachi, Sakaiminato-shi, Tottori	HIDEHIKO, SEKI	25	37.71	135
1848	TAKOSHIMA MARU NO.3	Suzu	Hamada Gyogyo	Na-12 Takojimamachi, Suzu-shi, Ishikawa	TAKASHI, HIKAGE	27	32.5	110
1858	EIKO MARU NO.1	Goto	Kaiko Suisan	1460, Hirazo-machi, Goto-shi, Nagasaki	KENICHI, KOCHI	25	29.5	80
1888	SHOTOKU MARU NO.81	Nagasaki	Shotoku Suisan	7-2, Kanaya-machi, Nagasaki-shi, Nagasaki	Nakiri,Katsumi	25	29.21	80
*	SUWA MARU NO.1	(registered in the Pacific area)						
*	HOKUSHO MARU	(registered in the Pacific area)						
East China Sea, Yellow Sea ,and West Kyusyu								
1118	KIYO MARU NO.18	(registered in the Japan Sea area)						
1138	WAKABA MARU NO.1	(registered in the Japan Sea area)						
1188	NOMURA MARU NO.28	Shinkamigoto	Nozomi Gyogyo	1-3 Manzaimachi, Nagasaki-shi, Nagasaki	HARUYOSHI, ODA	24	38.7	135
1208	SHOTOKU MARU NO.18	Nagasaki	Shotoku Suisan	7-2, Kanaya-machi, Nagasaki-shi, Nagasaki	MASAYUKI, FURUKAWA	28	38	135
1228	KOYO MARU NO.8	(registered in the Japan Sea area)						
1258	TENOH MARU NO.88	(registered in the Japan Sea area)						



Auth No.	Vessel Name	Reg Port	Owner Name	Owner Address	Master Name	Crew	Length	Tonnage
1268	DAIEI MARU NO.23	Hirado	Daiei Suisan	284-19, Tachiura, Ikitsuki-cho, Kitamatsuura-gun, Nagasaki	JUNICHI, MOTOGAWA	30	34.9	138
1278	DAIEI MARU NO.81	Hirado	Daiei Suisan	284-19, Tachiura, Ikitsuki-cho, Kitamatsuura-gun, Nagasaki	JUNICHI, MOTOGAWA	22	38.7	199
1298	GENPUKU MARU NO.1	(registered in the Japan Sea area)						
1428	SHOTOKU MARU NO.21	Nagasaki	Shotoku Suisan	7-2, Kanaya-machi, Nagasaki-shi, Nagasaki	SATOSHI, SHIGENO	29	37.1	135
1458	KOYO MARU NO.28	(registered in the Japan Sea area)						
1678	GENPUKU MARU NO.31	(registered in the Japan Sea area)						
1698	DAIKICHI MARU NO.8	Shinkamigoto	Marukawa Gyogyo	640-6, Narao-go, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki	KAZUYOSHI, URATA	25	36.5	135
1758	TENOH MARU NO.58	(registered in the Japan Sea area)						
1818	MARUSHIGE MARU NO.21	Nagasaki	Marufuku Gyogyo	7-11 Chikugo-machi, Nagasaki-shi, Nagasaki	SHIGETOSHI, KUROISHI	24	37	135
1828	TENOH MARU NO.81	(registered in the Japan Sea area)						
1838	KOYO MARU NO.1	(registered in the Japan Sea area)						
1858	EIKO MARU NO.1	(registered in the Japan Sea area)						
1878	YUKYU MARU NO.3	Karatsu	Yukyu Gyogyo Seisan Kumiai	2-54, Chinzei-machi, Karatsu-shi, Saga	TAKAYUKI, KITA	23	37	135
1888	SHOTOKU MARU NO.81	(registered in the Japan Sea area)						
1898	SHOTOKU MARU NO.31	Nagasaki	Shotoku Suisan	7-2, Kanaya-machi, Nagasaki-shi, Nagasaki	HIROMI, KAWASHIMO	23	38.7	135
*	GENPUKU MARU NO.11		Toyo Gyogyo	2-7-18, Narutaki, Nagasaki-shi, Nagasaki				135

\* Experimental operations

Fisheries Agency, "Daichu makiami gyogyo: Taiheyo kuromaguro no gyokaku ni kakaru gyosen (Large- and medium-type purse seine fisheries: Vessels engaged in fishing of Pacific bluefin tuna)," July 2014, internal unpublished document (disclosed through the Act on Access to Information Held by Administrative Organs); WCPFC, "WCPFC Record of Fishing Vessels," accessed February 28, 2015, <https://www.wcpfc.int/record-fishing-vessel-database>.

## Appendix III: List of distant water tuna fishing vessels

Fisheries Agency, "Enyo katsuo maguro gyogyo (Distant water tuna fisheries)," July 2014, internal unpublished document (disclosed through the Act on Access to Information Held by Administrative Organs); Fisheries Agency, "Enyo katsuo maguro gyogyo (Distant water tuna fisheries)," January 2015, accessed February 28, 2015, <http://www.jfa.maff.go.jp/j/kikaku/site/pdf/enkama2015.pdf>; WCPFC, "WCPFC Record of Fishing Vessels," accessed February 28, 2015, <https://www.wcpfc.int/record-fishing-vessel-database>.

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Lengt h	Ton nag e
T1001	FUKUJIN MARU NO.68		Sato Gyogyo K.K.	10,Takasago-Cho, Touyako-Cho, Abuta-Gun, Hokkaido				199
T1002	KORYO MARU NO.63	Samani	Yagita Suisan Kabushiki Kaisha	2-46,Hon-Cho, Samani-Cho, Samani-Gun, Hokkaido, Japan	Tuna longliner	20	38.3	199
T1003	(TBD)							
T1004	KAIYO MARU NO.35	Hachinohe	Kaiyo Fishery Co., Ltd	21,Shimojo,Minato-Machi,Hachinohe-Shi,Aomori,Japan	Tuna longliner	25	48.03	379
T1005	SHOSHIN MARU NO.38	Hachinohe	Marukichi Co., Ltd	8-17-17,Konakano,Hachinohe-Shi,Aomori,Japan	Tuna longliner	23	49.32	439
T1006	SHOSHIN MARU NO.80	Hachinohe	Marukichi Co., Ltd	8-17-17,Konakano,Hachinohe-Shi,Aomori,Japan	Tuna longliner	23	49.39	379
T1007	SHOSHIN MARU NO.82	Hachinohe	Marukichi Co., Ltd	8-17-17,Konakano,Hachinohe-Shi,Aomori,Japan	Tuna longliner	23	49.32	419
T1008	SHOSHIN MARU NO.83	Hachinohe	Marukichi Co., Ltd	8-17-17,Konakano,Hachinohe-Shi,Aomori,Japan	Tuna longliner	23	49.99	431
T1009	KAIYO MARU NO.58	Hachinohe	Yugen Kaisha Yokei Suisan	13,Sotokubo,Niida,Hachinohe-Shi,Aomori, Japan	Tuna longliner	24	49.99	409
T1010	SHOUN MARU NO.51	Miyako	Kanazawa Gyogyo Co.,Ltd	4-69,Kami-machi, Kuwagasaki, Miyako-Shi, Iwate, Japan	Tuna longliner	21	43.88	319
T1011	SHOUN MARU NO.151	Miyako	Kanazawa Gyogyo Co.,Ltd	4-69,Kami-machi, Kuwagasaki, Miyako-Shi, Iwate, Japan	Tuna longliner	23	44.8	319
T1012	KINEI MARU NO.18	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	25	49.9	409
T1013	KINEI MARU NO.35	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	24	48.4	409
T1014	KINEI MARU NO.81	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	29	49.9	409
T1015	KINEI MARU NO.53	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	25	51.2	469
T1016	KINEI MARU NO.83	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	24	48.19	409
T1017	KINEI MARU NO.85	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	28	49.99	439
T1018	KINEI MARU NO.88	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	21	49.2	379
T1019	KINEI MARU NO.108	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	29	49.2	379
T1020	KINEI MARU NO.138	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	24	50.6	439
T1021	KINEI MARU NO. 158	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	25	50.8	439
T1022	SEIFUKU MARU NO.68	Miyako	Hamada Gyogyoubu Co.,Ltd	2-3-2,Atago,Miyako-Shi,Iwate,Japan	Tuna longliner	22	49.39	379
T1023	SEIFUKU MARU NO.78	Miyako	Hamada Gyogyoubu Co.,Ltd	2-3-2,Atago,Miyako-Shi,Iwate,Japan	Tuna longliner	24	49.39	379
T1024	SEIFUKU MARU NO.88	Miyako	Hamada Gyogyoubu Co.,Ltd	2-3-2,Atago,Miyako-Shi,Iwate,Japan	Tuna longliner	25	49.36	387
T1025	KAIGATA MARU NO.68	Kesennuma	Kaigata Suisan Co., Ltd.	12-11 Taya, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	49.39	379
T1026	KAIGATA MARU NO.128	Kesennuma	Kaigata Suisan Co., Ltd.	12-11 Taya, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	50.59	479
T1027	(TBD)							
T1028	KAIGATA MARU NO.86	Kesennuma	Kaigata Suisan Co., Ltd.	12-11 Taya, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.38	409
T1029	KAIGATA MARU NO.88	Kesennuma	Kaigata Suisan Co., Ltd.	12-11 Taya, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.9	409

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len ght	Ton nage
T1030	RYOYOSHI MARU NO.8	Kesennuma	Kanedai Co., Ltd.	2-2-15, Minamimachi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	49.2	379
T1031	KASHIMA MARU NO.18	Ishinomaki	Kashima Gyogyo Co., Ltd.	1-9-7 Shoyodai, Shiogama-Shi, Miyagi, Japan	Tuna longliner	20	32	198
T1032	SHOEI MARU No. 1	Kesennuma	Katsukura Gyogyo Co.,	4 Tanakamae, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.99	439
T1033	SHOEI MARU NO.7	Kesennuma	Katsukura Gyogyo Co.,	4 Tanakamae, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.99	410
T1034	SHOEI MARU NO.88	Kesennuma	Katsukura Gyogyo Co.,	4 Tanakamae, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	49.99	409
T1035	SHOEI MARU NO.123	Kesennuma	Katsukura Gyogyo Co.,	4 Tanakamae, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.99	439
T1036	SHOFUKU MARU NO.1	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	51.2	454
T1037	SHOFUKU MARU NO.8	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.2	409
T1038	SHOFUKU MARU NO.18	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.65	439
T1039	SHOFUKU MARU NO.38	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.9	418
T1040	SHOFUKU MARU NO.58	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.9	423
T1041	SHOFUKU MARU NO.78	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.2	395
T1042	SHOFUKU MARU NO.88	Kesennuma	Usufuku Honten Co., Lt	123-2, Akaiwaishikabuto, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	48.4	391
T1043	ANYO MARU NO.6	Ishinomaki	Shinko Gyogyo Co., Ltd.	254, Aza-Maeda, Ouri, Ishinomaki-Shi, Miyagi, Japan	Tuna longliner	19	38.1	199
T1044	DAIKICHI MARU NO.1	Shiogama	Maruyo Gyogyobu Co., Ltd.	4-7-6, Kitahama, Shiogama-Shi, Miyagi, Japan	Tuna longliner	24	49.9	439
T1045	YAHATA MARU NO.5	Kesennuma	Yahata Suisan Co., Ltd.	508-9, Minatomachi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.99	439
T1046	YAHATA MARU NO.18	Kesennuma	Yahata Suisan Co., Ltd.	508-9, Minatomachi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	47.8	409
T1047	KOSHIN MARU NO.7	Shiogama	Watarai Co., Ltd.	1-7-10, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	25	49.9	435
T1048	TATSU MARU NO.68	Shiogama	Kodama Gyogyo Co., Ltd	1-17-29, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	23	49.65	379
T1049	EIKYU MARU NO.1	Ishinomaki	Konno Suisan Co., Ltd.	2-2-19, Minatomachi, Ishinomaki-Shi, Miyagi, Japan	Tuna longliner	20	35.46	198
T1050	RYOAN MARU NO.5	Shiogama	Sato Gyogyo Co., Ltd.	2-5-40, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	25	50.8	439
T1051	RYOAN MARU NO.15	Shiogama	Sato Gyogyo Co., Ltd.	2-5-40, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	25	50.6	439
T1052	RYOAN MARU NO.85	Shiogama	Sato Gyogyo Co., Ltd.	2-5-40, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	25	50.8	439
T1053	GYOKURYU MARU	Shiogama	Sato Gyogyo Co., Ltd.	2-5-40, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	28	52	284
T1054	RYOEI MARU NO.18	Shichigahama	Shichigahama Gyogyo Co., Ltd.	1-17-29, Shinhama-Cho, Shiogama-Shi, Miyagi, Japan	Tuna longliner	18	37	199
T1055	MYOJIN MARU NO.1	Onagawa	Suzuko Gyogyo Co., Ltd.	81-136, Urashuku, Urashukuhama, Onagawa-Cho, Oshika-Gun, Miyagi, Japan	Tuna longliner	24	49.3	395
T1056	MYOJIN MARU NO.3	Onagawa	Suzuko Gyogyo Co., Ltd.	81-136, Urashuku, Urashukuhama, Onagawa-Cho, Oshika-Gun, Miyagi, Japan	Tuna longliner	23	48.87	379
T1057	MYOJIN MARU NO.8	Onagawa	Suzuko Gyogyo Co., Ltd.	81-136, Urashuku, Urashukuhama, Onagawa-Cho, Oshika-Gun, Miyagi, Japan	Tuna longliner	25	49.99	439
T1058	FUKUTOKU MARU NO.88	Kesennuma	Fukutoku Gyogyo Co., Ltd.	198-5, Kamikosaba, Karakuwa-Cho, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	49.3	398
T1059	FUKUTOKU MARU NO.37	Kesennuma	Fukutoku Gyogyo Co., Ltd.	198-5, Kamikosaba, Karakuwa-Cho, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	23	49.2	379

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len ght	Ton nag e
T1060	FUKUTOKU MARU NO.38	Kesennuma	Fukutoku Gyogyo Co., Ltd.	198-5, Kamikosaba, Karakuwa-Cho, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	23	49.2	379
T1061	FUKUYO MARU NO.17	Kesennuma	Fukuyo Suisan Co., Ltd.	502-1,Minato-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	15	32.56	148
T1062	FUKUYO MARU NO.7	Kesennuma	Fukuyo Suisan Co., Ltd.	502-1,Minato-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	50.59	436
T1063	FUKUYO MARU NO.68	Kesennuma	Fukuyo Suisan Co., Ltd.	502-1,Minato-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	22	49.2	379
T1064	TAIKO MARU NO.8	Kesennuma	Murata Gyogyo Co., Ltd.	2-3-15, Sakana-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	50.59	479
T1065	TAIKO MARU NO.17	Kesennuma	Murata Gyogyo Co., Ltd.	2-3-15, Sakana-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	23	49.98	465
T1066	SHOYO MARU	Kesennuma	Murata Gyogyo Co., Ltd.	2-3-15, Sakana-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	24	49.98	469
T1067	CHIYO MARU NO.28	Kesennuma	Yamashiro Suisan Co., Ltd.	2-2, Uoichibamae, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.99	409
T1068	CHIYO MARU NO.18	Kesennuma	Yamashiro Suisan Co., Ltd.	2-2, Uoichibamae, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	23	49.32	409
T1069	KOEI MARU NO.31	Kesennuma	Yugen Kaisha Kondo Gyogyobu	61-2, Aza-Wakamiya, Togura, Minamisanriku-Cho, Motoyoshi-Gun, Miyagi, Japan	Tuna longliner	16	30.22	149
T1070	SYORYO MARU NO.7	Kesennuma	Yugen Kaisha Syoryo Suisan	1-6-26, Hama-Cho, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	17	32.1	145
T1071	KOYO MARU NO.1	Kesennuma	Yugen Kaisha Tsurumoto Shoten	502-1, Minato-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	23	49.39	390
T1072	KOYO MARU NO.7	Kesennuma	Yugen Kaisha Tsurumoto Shoten	502-1, Minato-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	25	49.9	409
T1073	KOSHIN MARU NO.17	Kesennuma	Yugen Kaisha T&T Japan	1-6-9, Higashishinjo, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	15	31.42	147
T1074	SHOHO MARU NO.1	Kesennuma	Yugen Kaisha Nakayama Shoji	2-2-11, Naka-Machi, Kesennuma-Shi, Miyagi, Japan	Tuna longliner	21	42.02	289
T1075	TAIYO MARU NO.37	Iwaki	Yoshida Kiyoshi Shoten Co., Ltd.	Osada-12 Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	21	48.03	379
T1076	TAIYOU MARU NO.21	Iwaki	Yoshida Kiyoshi Shoten Co., Ltd.	Osada-12 Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	23	49.9	435
T1077	TAIYO MARU NO.5	Iwaki	Yoshida Kiyoshi Shoten Co., Ltd.	Osada-12 Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	23	49.99	432
T1078	TAIYOU MARU NO.11	Iwaki	Ichimaru Co., Ltd.	Osada-12 Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	22	48.4	379
T1079	CHOKYU MARU NO.23	Iwaki	Yugen Kaisha Chokyumaru	203, Aza-Oginosaku, Ena, Iwaki-Shi, Fukushima, Japan	Tuna longliner	20	32.52	182
T1080	CHOKYU MARU NO.1	Iwaki	Yugen Kaisha Chokyumaru	203, Aza-Oginosaku, Ena, Iwaki-Shi, Fukushima, Japan	Tuna longliner	23	48.4	379
T1082	RYOFUKU MARU NO.38	Iwaki	Yugenkaisha Honzo Shoten	12, Aza-Enokido, Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	25	49.99	439
T1083	RYOFUKU MARU NO.31	Iwaki	Yugenkaisha Honzo Shoten	12, Aza-Enokido, Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	20	32	165
T1084	GONEI MARU NO.31	Iwaki	Marunaka Gyogyo Yugen Kaisha	39, Kawagishi, Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	24	50.8	439
T1085	GONEI MARU NO.21	Iwaki	Marunaka Gyogyo Yugen Kaisha	39, Kawagishi, Nakanosaku, Iwaki-Shi, Fukushima, Japan	Tuna longliner	18	38.36	199
T1087	TATSUMI MARU NO.56	Iwaki	Tatsumi Suisan Co., Ltd.	50, Aza-Kita-Machi, Ena, Iwaki-Shi, Fukushima, Japan	Tuna longliner	25	47.2	379
T1088	TATSUMI MARU NO.57	Iwaki	Tatsumi Suisan Co., Ltd.	50, Aza-Kita-Machi, Ena, Iwaki-Shi, Fukushima, Japan	Tuna longliner	24	48.4	379
T1089	ISOMAE MARU NO.21	Hitachinaka	Kabushiki Kaisha Isomae Gyogyosho	4-5, Higashihon-Cho, Hitatinaka-Shi, Ibaraki, Japan	Tuna longliner	24	48.4	379
T1094	TAIKO MARU NO.58	Choshi	Kakuman Suisan Yugen Kaisha	1-44-16, Arai-Cho, Cyoshi-Shi, Chiba, Japan	Tuna longliner	17	32	144
T1095	KAIHO MARU NO.1	Tokyo	Kaiho Suisan Co., Ltd. (I)	2-1-2-1112, Saiwai, Ichikawa-Shi, Chiba, Japan	Tuna longliner	20	43.44	299
T1098	SHINRYU MARU NO.1	Tokyo	Shinryu Suisan Co., Ltd.	2-1-2-1112, Saiwai, Ichikawa-Shi, Chiba, Japan	Tuna longliner		48.2	379

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len gth	Ton nage
T1099	SHINRYU MARU NO.11	Tokyo	Shinryu Suisan Co., Ltd.	2-1-2-1112, Saiwai, Ichikawa-Shi, Chiba, Japan	Tuna longliner		48	379
T1100	SHINRYU MARU NO.21	Tokyo	Shinryu Suisan Co., Ltd.	2-1-2-1112, Saiwai, Ichikawa-Shi, Chiba, Japan	Tuna longliner		48	379
T1101	KUMANO MARU NO.36	Choshi	Kumano, Gentaro	2-1, Iinuma-Cho, Choshi-Shi, Chiba, Japan	Tuna longliner	20	36.5	184
T1102	KUMANO MARU NO.83	Choshi	Kumano, Gentaro	2-1, Iinuma-Cho, Choshi-Shi, Chiba, Japan	Tuna longliner	18	32.1	157
T1103	DEN MARU NO.37	Choshi	Tujino, Denjiro	5-9, Ohashi-Cho, Choshi-Shi, Chiba, Japan	Tuna longliner	18	33	167
T1104	FUDO MARU NO.8	Choshi	Horii, Takiko	1-4, Araoi-Cho, Choshi-Shi, Chiba, Japan	Tuna longliner	20	33.1	183
T1107	SHOSHIN MARU NO.38	Hachinohe	Marukichi Co., Ltd	8-17-17, Konakano, Hachinohe-Shi, Aomori, Japan	Tuna longliner	23	49.3	439
T1108	KAIHO MARU NO.68	Shiogama	Kaiho Fishery Co., Ltd.	7-7-8-704, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	22	48.4	379
T1109	KAIHO MARU NO.88	Shiogama	Kaiho Fishery Co., Ltd.	7-7-8-704, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	22	49.2	379
T1110	TAIHO MARU NO.8	Tokyo	Ocean Fisheries Yugen Kaisha	17-17, Nihonbashikodenma-Cho, Chuo-Ku, Tokyo, Japan	Tuna longliner	22	49.1	409
T1111	TAIHO MARU NO.35	Tokyo	Ocean Fisheries Yugen Kaisha	17-17, Nihonbashikodenma-Cho, Chuo-Ku, Tokyo, Japan	Tuna longliner	23	47.2	379
T1112	KAISHIN MARU NO.18	Tokyo	Ocean Fisheries Yugen Kaisha	17-17, Nihonbashikodenma-Cho, Chuo-Ku, Tokyo, Japan	Tuna longliner	21	49.9	379
T1113	TOYO MARU NO.28	Tokyo	Ocean Fisheries Yugen Kaisha	17-17, Nihonbashikodenma-Cho, Chuo-Ku, Tokyo, Japan	Tuna longliner	25	47.2	379
T1114	SHINSHU MARU NO.11	Tokyo	Shinshu Suisan Co., Ltd (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	21	48.2	379
T1115	SHINSHU MARU NO.22	Tokyo	Shinshu Suisan Co., Ltd (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	21	48.2	379
T1116	SHINSHU MARU NO.61	Tokyo	Shinshu Suisan Co., Ltd (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	21	48.2	379
T1117	SHINSHU MARU NO.62	Tokyo	Shinshu Suisan Co., Ltd (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	22	49.1	409
T1118	SHINSHU MARU NO.66	Tokyo	Shinshu Suisan Co., Ltd (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	23	49.9	439
T1119	SHINSHU MARU NO.111	Tokyo	Shinshu Suisan Co., Ltd (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner	23	49.1	409
T1120	TOKO MARU NO.8	Tokyo	Toko Gyogyo (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner		48	379
T1121	TOKO MARU NO.68	Tokyo	Toko Gyogyo (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner		48	379
T1122	TOKO MARU NO.78	Tokyo	Toko Gyogyo (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner		48.4	379
T1123	TOKO MARU NO.88	Tokyo	Toko Gyogyo (Nihon Food Supply Inc.)	3rd Fl., Cygnet Bldg, 4-12-2, Tsukiji, Chuo-Ku, Tokyo, Japan	Tuna longliner		48.4	379
T1124	DAITO MARU NO. 8	Tokyo	Taiyo A & F Co., Ltd.	4-5, Toyomi-Cho, Chuo-Ku, Tokyo, Japan	Tuna longliner	30	49.9	467
T1125	(TBD)				Tuna longliner			499
T1127	KAIHATSU MARU	Tokyo	Japan Tuna Fisheries Development Co., Ltd.	Eitai Bld, 2-31-1, Eitai, Koto-Ku, Tokyo, Japan	Tuna longliner	25	52.1	489
T1128	(TBD)				Tuna longliner			184
T1129	(TBD)				Tuna longliner			289
T1130	(TBD)				Tuna longliner			379

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Crew	Length	Tonnage
T1131	(TBD)				Tuna longliner			349
T1132	(TBD)				Tuna longliner			199
T1133	(TBD)				Tuna longliner			199
T1134	(TBD)				Tuna longliner			439
T1135	(TBD)				Tuna longliner			379
T1136	(TBD)				Tuna longliner			409
T1137	(TBD)				Tuna longliner			199
T1138	(TBD)				Tuna longliner			259
T1139	(TBD)				Tuna longliner			319
T1140	(TBD)				Tuna longliner			379
T1141	(TBD)				Tuna longliner			379
T1142	(TBD)				Tuna longliner			379
T1143	(TBD)				Tuna longliner			379
T1144	KOUEN MARU	Tokyo	Goudou Kaisha Kouen Gyogyo	1295-3,Kamiko-Machi, Omiya-Ku, Saitama-Shi, Saitama, Japan	Tuna longliner	23	49.76	439
T1145	KINEI MARU NO.128	Kamaishi	Hamako Suisan Co.,Ltd	3-11-2, Hama-Cho, Kamaishi-Shi, Iwate, Japan	Tuna longliner	25	50.52	439
T1146	(TBD)				Tuna longliner			379
T1148	(TBD)				Tuna longliner			285
T1149	(TBD)				Tuna longliner			409
T1150	(TBD)				Tuna longliner			499
T1151	(TBD)				Tuna longliner			409
T1152	(TBD)				Tuna longliner			259
T1153	(TBD)				Tuna longliner			409
T1154	(TBD)				Tuna longliner			409
T1155	(TBD)				Tuna longliner			379
T1156	(TBD)				Tuna longliner			349
T1157	(TBD)				Tuna longliner			409
T1158	(TBD)				Tuna longliner			409
T1159	(TBD)				Tuna longliner			379
T1160	SEIRYO MARU NO.8	Kesennuma	Nihon Maguro Shigen Kenkyusho Co., Ltd.	1-12-13, Tsukiji,Chuo-Ku, Tokyo, Japan	Tuna longliner	22	46.68	409
T1161	SEIRYO MARU NO.12	Kesennuma	Nihon Maguro Shigen Kenkyusho Co., Ltd.	1-12-13, Tsukiji,Chuo-Ku, Tokyo, Japan	Tuna longliner	22	49.39	379
T1162	KAISEI MARU NO.1	Tokyo	Marine Enterprise Co., Ltd.	17-17,Nihonbashikodenma-Cho,Chuo-Ku,Tokyo,Japan	Tuna longliner	22	49.3	379
T1163	KAISEI MARU NO.7	Tokyo	Marine Enterprise Co., Ltd.	17-17,Nihonbashikodenma-Cho,Chuo-Ku,Tokyo,Japan	Tuna longliner	22	48.4	379



Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Length	Tonnage
T1164	KAISEI MARU NO.8	Tokyo	Marine Enterprise Co., Ltd.	17-17,Nihonbashikodenma-Cho,Chuo-Ku,Tokyo,Japan	Tuna longliner	20	49.9	409
T1165	KOKEI MARU NO.8	Yokosuka	Kokei Gyogyo Co., Ltd.	Naganobiru 3F, 19, Ogawa-Cho, Yokosuka-Shi, Kanagawa, Japan	Tuna longliner	24	43.44	319
T1166	KOTOSHIRO MARU NO.7	Miura	Kotoshiro Gyogyo Co., Ltd.	3-10-11,Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	23	49.2	379
T1167	KOTOSHIRO MARU NO.8	Miura	Kotoshiro Gyogyo Co., Ltd.	3-10-11,Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	52.6	499
T1168	KOTOSHIRO MARU NO.18	Miura	Kotoshiro Gyogyo Co., Ltd.	3-10-11,Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	25	52.19	469
T1169	KOTOSHIRO MARU NO.58	Miura	Kotoshiro Gyogyo Co., Ltd.	3-10-11,Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	50.59	436
T1170	TOEI MARU NO.6	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	25	49.98	439
T1171	SUMIYOSHI MARU NO.81	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.4	499
T1172	SUMIYOSHI MARU NO.10	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.4	499
T1173	TOEI MARU NO.15	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	49.99	439
T1174	SEIKO MARU NO.52	Miura	Nanyo Suisan Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	25	51.4	499
T1175	TOEI MARU NO.8	Miura	Nanyo Suisan Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.4	439
T1176	KOYO MARU NO.31	Miura	Nanyo Suisan Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.2	439
T1177	SUMIYOSHI MARU NO.71	Miura	Nanyo Suisan Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	25	52.76	498
T1180	SUMIYOSHI MARU NO.75	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.4	499
T1181	KOYO MARU NO.6	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.2	439
T1182	KOTOSHIRO MARU NO.10	Miura	Kotoshiro Gyogyo Co., Ltd.	3-10-11,Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.2	469
T1183	KOTOSHIRO MARU NO.38	Miura	Kotoshiro Gyogyo Co., Ltd.	3-10-11,Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	22	52.6	469
T1184	SUMIYOSHI MARU NO.73	Miura	Sumiyoshi Gyogyo Co., Ltd.	3-8-7, Misaki, Miura-Shi, Kanagawa, Japan	Tuna longliner	24	51.05	469
T1185	KORYO MARU NO.1	Takaoka	Ogino,Seiichi ; Ogino Gyogyo Seisan Kumiai	430, Higashibo, Tonami-Shi, Toyama, Japan ; 13-16, Honmaru, Takaoka-Shi, Toyama, Japan	Tuna longliner	25	52.6	499
T1186	HOSHIN MARU NO.78	Nyuzen	Ikeda Suisan Co., Ltd.	370, Ashizaki, Nyuzen-Machi, Shimonikawa-Gun, Toyama, Japan	Tuna longliner	25	49.99	439
T1187	HOSHIN MARU NO.62	Nyuzen	Ikeda Suisan Co., Ltd.	370, Ashizaki, Nyuzen-Machi, Shimonikawa-Gun, Toyama, Japan	Tuna longliner	23	49.32	409
T1188	HOSHIN MARU NO.77	Nyuzen	Ikeda Suisan Co., Ltd.	370, Ashizaki, Nyuzen-Machi, Shimonikawa-Gun, Toyama, Japan	Tuna longliner	21	49.9	436
T1189	HOSHIN MARU NO.35	Nyuzen	Hoshin Maru Fishery Products Association	370, Ashizaki, Nyuzen-Machi, Shimonikawa-Gun, Toyama, Japan	Tuna longliner	20	38.58	199
T1190	HOUSEI MARU NO.8	Uozu	Ino Suisan Co., Ltd	480 Ashizaki, Nyuzen, Shimoniikawa District, Toyama, Japan	Tuna longliner	24	50.59	436
T1191	HOUSEI MARU NO.68	Nyuzen	Ino Suisan Co., Ltd	480 Ashizaki, Nyuzen, Shimoniikawa District, Toyama, Japan	Tuna longliner	25	49.99	409
T1192	HOUSEI MARU NO.88	Nyuzen	Ino Suisan Co., Ltd	480 Ashizaki, Nyuzen, Shimoniikawa District, Toyama, Japan	Tuna longliner		49.4	379
T1193	KORYO MARU NO.81	Takaoka	Ogino Gyogyo Seisankumiai	430, Higashibo, Tonami-Shi, Toyama, Japan ; 13-16, Honmaru, Takaoka-Shi, Toyama, Japan	Tuna longliner	25	52.6	499
T1194	KORYO MARU NO.15	Takaoka	Ogino, Seiichi	430, Higashibo, Tonami-Shi, Toyama, Japan ; 13-16, Honmaru, Takaoka-Shi, Toyama, Japan	Tuna longliner	25	52.6	499

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len ght	Ton nag e
T1195	KORYO MARU NO.51	Takaoka	Ogino, Seiichi	430, Higashibo, Tonami-Shi, Toyama, Japan ; 13-16, Honmaru, Takaoka-Shi, Toyama, Japan	Tuna longliner	24	52.6	469
T1196	KORYO MARU NO.68	Takaoka	Ogino, Seiichi	430, Higashibo, Tonami-Shi, Toyama, Japan ; 13-16, Honmaru, Takaoka-Shi, Toyama, Japan	Tuna longliner	25	52.6	499
T1197	KORYO MARU NO.38	Takaoka	Toyama Suisan Co., Ltd.	13-16, Honmaru-Machi, Takaoka-Shi, Toyama, Japan	Tuna longliner	25	52.6	499
T1198	HAKUYO MARU NO.8	Nyuzen	Hakuyo Gyogyo Co., Ltd.	381, Takabatake, Nyuzen-Machi, Shimoniikawa-Gun, Toyama, Japan	Tuna longliner	24	49.3	422
T1199	EBISU MARU NO.1	Uozu	Marunaka Suisan Co., Ltd.	330, Aza-Shimoura, Ikujiashizaki, Kurobe-Shi, Toyama, Japan	Tuna longliner	20	38.58	199
T1200	KOTOSHIRO MARU NO.18	Yaizu	Kotoshiro Maru Co., Ltd.	3-12-10, Hamatoume, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	47.8	393
T1201	KOTOSHIRO MARU NO.58	Yaizu	Kotoshiro Maru Co., Ltd.	3-12-10, Hamatoume, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	47.8	379
T1202	FUKUSEKI MARU NO. 3	Yaizu	Kabushiki Kaisha Fukuseki Maru	3-6-22, Nakaminato, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	49.99	439
T1203	FUKUSEKI MARU NO.7	Yaizu	Kabushiki Kaisha Fukuseki Maru	3-6-22, Nakaminato, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	23	49.39	379
T1204	FUKUSEKI MARU NO.15	Yaizu	Kabushiki Kaisha Fukuseki Maru	3-6-22, Nakaminato, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	24	49.99	439
T1205	(TBD)				Tuna longliner			379
T1206	FUKUSEKI MARU NO.31	Yaizu	Kabushiki Kaisha Fukuseki Maru	3-6-22, Nakaminato, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	23	49.99	379
T1207	FUKUSEKI MARU NO.35	Yaizu	Kabushiki Kaisha Fukuseki Maru	3-6-22, Nakaminato, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	49.99	439
T1209	KENYO MARU NO.1	Shizuoka	Kenyo Gyogyo Co., Ltd.	173-8, Simazaki-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	20	41.06	289
T1210	KENYO MARU NO.2	Shizuoka	Kenyo Gyogyo Co., Ltd.	173-8, Simazaki-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	23	44.75	349
T1211	KOKEI MARU NO.18	Yokosuka	Kokei Gyogyo Co., Ltd.	Naganobiru 3F, 19, Ogawa-Cho, Yokosuka-Shi, Kanagawa, Japan	Tuna longliner	23	49.39	379
T1212	(TBD)				Tuna longliner			379
T1213	HINODE MARU NO.38	Yaizu	Hinode Gyogyo Co., Ltd.	4-16-5, Hon-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	49.52	439
T1214	FUKUJU MARU NO.7	Shizuoka	Fukujukigyo Co., Ltd.	5-9, Asahi-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	25	51.4	498
T1215	FUKUJU MARU NO.75	Shizuoka	Fukujukigyo Co., Ltd.	5-9, Asahi-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	25	50.59	409
T1216	FUKUJU MARU NO.78	Shizuoka	Fukujukigyo Co., Ltd.	5-9, Asahi-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	25	49.99	439
T1217	FUKUKYU MARU NO. 8	Yaizu	Fukukyu Gyogyo Co., Ltd.	2-8-19, Sakae-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	23	49.9	424
T1218	FUKUKYU MARU NO.32	Yaizu	Fukukyu Gyogyo Co., Ltd.	2-8-19, Sakae-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	23	49.9	409
T1219	FUKUKYU MARU NO.38	Yaizu	Fukukyu Gyogyo Co., Ltd.	2-8-19, Sakae-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	23	49.9	409
T1220	FUKUKYU MARU NO.51	Yaizu	Fukukyu Gyogyo Co., Ltd.	2-8-19, Sakae-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	23	51.2	439
T1221	FUKURYU MARU NO.21	Yaizu	Fukukyu Gyogyo Co., Ltd.	2-8-19, Sakae-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	49.9	409
T1222	FUKUSEKI MARU NO.1	Yaizu	Fukuwa Suisan Co., Ltd.	3-6-22, Nakaminato, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	24	49.3	398
T1223	FUKUKYU MARU NO.7	Yaizu	Fukukyu Gyogyo Co., Ltd.	2-8-19, Sakae-Machi, Yaizu-Shi, Shizuoka, Japan	Tuna longliner	25	49.9	409
T1224	TAIYO MARU NO.38	Shizuoka	Miho Maguro Gyogyo Co., Ltd.	3533-1, Miho Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	25	49.3	408
T1225	TAIYO MARU NO.58	Shizuoka	Miho Maguro Gyogyo Co., Ltd.	3533-1, Miho Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	23	48.4	379
T1226	SENFUKU MARU NO.1	Shizuoka	Senfuku Suisan (Nihon)	3F Kaiomaru Bldg, 173-8, Shimazaki-C	Tuna longliner	23	48.03	390



Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Length	Tonnage
T1227	SENFUKU MARU NO.11	Shizuoka	Senfuku Suisan (Nihon	3F Kaiomaru Bldg, 173-8, Shimazaki-C	Tuna longliner	20	48.19	409
T1228	SENFUKU MARU NO.22	Shizuoka	Senfuku Suisan (Nihon	3F Kaiomaru Bldg, 173-8, Shimazaki-C	Tuna longliner	21	49.39	379
T1229	SENFUKU MARU NO.61	Shizuoka	Senfuku Suisan (Nihon	3F Kaiomaru Bldg, 173-8, Shimazaki-C	Tuna longliner	22	49.19	409
T1230	SENFUKU MARU NO.62	Shizuoka	Senfuku Suisan (Nihon	3F Kaiomaru Bldg, 173-8, Shimazaki-C	Tuna longliner	22	49.9	409
T1231	SENFUKU MARU NO.66	Shizuoka	Senfuku Suisan (Nihon	3F Kaiomaru Bldg, 173-8, Shimazaki-C	Tuna longliner	21	47.2	379
T1236	KAIO MARU NO.81	Minamiise	Kaio Maru Gyogyo Co., Ltd.	127,Sazaraura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Tuna longliner	24	50.59	436
T1237	CHOKYU MARU NO.1	Owase	Chokyu Maru Co., Ltd.	333-12, Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	25	49.3	392
T1238	CHOKYU MARU NO.11	Owase	Chokyu Maru Co., Ltd.	333-12, Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	25	52.61	469
T1239	CHOKYU MARU NO.12	Owase	Chokyu Maru Co., Ltd.	333-12, Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	25	52.6	499
T1240	CHOKYU MARU NO.21	Owase	Chokyu Maru Co., Ltd.	333-12, Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	25	52.6	499
T1241	CHOKYU MARU NO.111	Owase	Chokyu Maru Co., Ltd.	333-12, Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	22	52.6	469
T1243	SHINCHO MARU NO.1	Shizuoka	Shinshicho Kabushiki Kaisha	1001, Roman Kan, 2-10-1, Minato-Cho, Shimizu-Ku, Shizuoka-Sh i,Shizuoka, Japan	Tuna longliner	25	49.2	427
T1244	CHOKYU MARU NO.35	Owase	Chokyu Maru Co., Ltd.	333-12, Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	25	49.99	471
T1245	KAIO MARU NO.108	Ise	Nakamura, Masateru	2-13-27, Okamoto, Ise-Shi, Mie, Japan	Tuna longliner	21	50.59	409
T1246	SENSHU MARU NO.1	Minamiise	Yamamoto, Hiroki	620, Syukuura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Tuna longliner	24	52.61	495
T1247	SENSHU MARU NO.3	Minamiise	Yamamoto, Hiroki	620, Syukuura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Tuna longliner	25	51.2	466
T1249	CHOKYU MARU NO.8	Muroto	Kabushiki Kaisha Chokyu	14-2, Ukitsu, Muroto-Shi, Kochi, Japan	Tuna longliner	25	56.05	499
T1250	CHOKYU MARU NO.18	Muroto	Kabushiki Kaisha Chokyu	14-2, Ukitsu, Muroto-Shi, Kochi, Japan	Tuna longliner	25	49.9	432
T1251	CHOKYU MARU NO.58		Yugenkaisha Chokyu	2666-2 Murotsu, Muroto-Shi, Kochi, Japan	Tuna longliner		56	741
T1252	CHOKYU MARU NO.68	Muroto	Kabushiki Kaisha Chokyu	14-2, Ukitsu, Muroto-Shi, Kochi, Japan	Tuna longliner	25	48.19	408
T1253	CHOKYU MARU NO.78	Muroto	Tokusansuisan Kabushiki Kaisha	174-1, Shimazaki-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka, Japan	Tuna longliner	25	48.19	379
T1254	GOEI MARU NO.38	Muroto	Kabushiki Kaisha Goei Maru	2666-1, Murotsu, Muroto-Shi, Kochi, Japan	Tuna longliner	22	49.2	409
T1255	GOEI MARU NO.68	Muroto	Kabushiki Kaisha Goei Maru	2666-1, Murotsu, Muroto-Shi, Kochi, Japan	Tuna longliner	25	49.2	437
T1256	TAKATOYO MARU NO.38	Muroto	Yamamoto, Iwao; Yamamoto, Toshiko	158, 3Ban-Cyo, Ukitsu, Muroto-Shi, Kochi, Japan	Tuna longliner	25	48.19	434
T1257	HOMARE MARU NO.29	Muroto	Inoue,Hiroataka	11-3,Moto-Kou, Muroto-Shi, Kochi, Japan	Tuna longliner	20	48.19	379
T1258	GOEI MARU NO.8	Muroto	Kabushiki Kaisha Goei Maru	2666-1, Murotsu, Muroto-Shi, Kochi, Japan	Tuna longliner	25	49.2	398
T1259	TAIWA MARU NO.8	Tosashimizu	Kabushiki Kaisha Taiwa	736-2,Usa, Usa-Cho, Tosa-Shi, Kochi, Japan	Tuna longliner	21	49.2	379
T1260	TAIWA MARU NO.78	Tosashimizu	Kabushiki Kaisha Taiwa	736-2,Usa, Usa-Cho, Tosa-Shi, Kochi, Japan	Tuna longliner	25	50.6	438
T1261	TAIWA MARU NO.88	Tosashimizu	Kabushiki Kaisha Taiwa	736-2,Usa, Usa-Cho, Tosa-Shi, Kochi, Japan	Tuna longliner	25	49.9	409
T1262	CHOKYU MARU NO.2	Nango	Ookado, Choei	333-12,Mikiura-Cho, Owase-Shi, Mie, Japan	Tuna longliner	20	37.2	199
T1263	KIFUKU MARU NO.35	Nango	Kawabata Suisan Inc	4788, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Tuna longliner	20	38.1	227

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T1264	KIFUKU MARU NO.36	Nango	Kawabata Suisan Inc	4788, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Tuna longliner	20	38.1	239
T1265	KIFUKU MARU NO.51	Nango	Kifuku Suisan Kabushiki Kaisha	2615-11, Nakamura-Kou, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Tuna longliner	15	31.25	149
T1267	FUKU MARU NO.72	Nango	Fukumaru Suisan Inc	4878-1, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Tuna longliner	25	49.6	379
T1268	CHIHO MARU NO.18	Ichikikushikino	Kabushiki Kaisha Ushio	119, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.99	439
T1269	WAKASHIO MARU NO.58	Ichikikushikino	Kabushiki Kaisha Ushio	119, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	47.8	388
T1270	WAKASHIO MARU NO.68	Ichikikushikino	Kabushiki Kaisha Ushio	119, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	47.5	398
T1271	WAKASHIO MARU NO.88	Ichikikushikino	Kabushiki Kaisha Ushio	119, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	47.8	379
T1272	KOEI MARU NO.1	Ichikikushikino	Kanzaki Suisan Co., Ltd.	14, Minato-Machi, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.3	399
T1273	KOEI MARU NO.78	Ichikikushikino	Kanzaki Suisan Co., Ltd.	14, Minato-Machi, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	50.59	436
T1274	KOEI MARU NO.88	Ichikikushikino	Kanzaki Suisan Co., Ltd.	14, Minato-Machi, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	49.3	395
T1275	KOEI MARU NO.108	Ichikikushikino	Kanzaki Suisan Co., Ltd.	14, Minato-Machi, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.2	395
T1276	SANEI MARU NO.8	Ichikikushikino	Kyoei Suisan Yugen Kaisha	209, Motohama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	49.3	379
T1277	SANEI MARU NO.1	Ichikikushikino	Kyoei Suisan Yugen Kaisha	209, Motohama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	22	48.19	379
T1278	SANEI MARU NO.51	Ichikikushikino	Kyoei Suisan Yugen Kaisha	209, Motohama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.99	439
T1279	KOTOKU MARU NO.3	Ichikikushikino	Komatsu Suisan Yugen Kaisha	29, Kitahama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	48.19	439
T1280	MATSUEI MARU NO.2	Ichikikushikino	Shimabira Daiichi Gyogyo Seisan Kumiai	632, Higashishimabira-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	21	46.89	379
T1281	MATSUEI MARU NO.5	Ichikikushikino	Shimabira Daiichi Gyogyo Seisan Kumiai	632, Higashishimabira-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	22	49.32	409
T1282	MATSUEI MARU NO.3	Ichikikushikino	Shimabira Daiichi Gyogyo Seisan Kumiai	632, Higashishimabira-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	22	49.32	409
T1283	MATSUEI MARU NO.28	Ichikikushikino	Shimabira Daiichi Gyogyo Seisan Kumiai	632, Higashishimabira-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	22	50.97	439
T1284	TOKUEI MARU NO.1	Shizuoka	Kaneyama Suisan Co., Ltd.	174-1, Shimazaki-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka-Ken, Japan	Tuna longliner	23	49.3	379
T1285	TOKUEI MARU NO.2	Shizuoka	Kaneyama Suisan Co., Ltd.	174-1, Shimazaki-Cho, Shimizu-Ku, Shizuoka-Shi, Shizuoka-Ken, Japan	Tuna longliner	23	48.19	379
T1286	KATSUEI MARU NO.8	Ichikikushikino	Haneda Suisan Yugen Kaisha	172-5, Urawa-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	50.69	439
T1287	KATSUEI MARU NO.78	Ichikikushikino	Haneda Suisan Yugen Kaisha	172-5, Urawa-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	22	48.25	379
T1288	KATSUEI MARU NO.88	Ichikikushikino	Haneda Suisan Yugen Kaisha	172-5, Urawa-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	49.99	409
T1289	TAIYO MARU NO.8	Ichikikushikino	Hamasaki Suisan Yugen Kaisha	72, Moto-Machi, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	49.3	379
T1290	TAIYO MARU NO.28	Ichikikushikino	Hamasaki Suisan Yugen Kaisha	72, Moto-Machi, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	23	43.7	367

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len ght	Ton nag e
T1291	KYOSHIN MARU NO.1	Ichikikushikino	Hamada Suisan Co., Ltd.	3021, Osato, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	49.2	390
T1292	KYOSHIN MARU NO.20	Ichikikushikino	Hamada Suisan Co., Ltd.	3021, Osato, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	51.2	439
T1293	KYOSHIN MARU NO.31	Ichikikushikino	Hamada Suisan Co., Ltd.	3021, Osato, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.2	386
T1294	KINSAI MARU NO.38	Ichikikushikino	Hayasaki Suisan Yugen Kaisha	6676-6, Ebisu-Cho, Ichikikushikino-Shi, Kogoshima, Japan	Tuna longliner	22	48.48	379
T1295	KINSAI MARU NO.58	Ichikikushikino	Hayasaki Suisan Yugen Kaisha	6676-6, Ebisu-Cho, Ichikikushikino-Shi, Kogoshima, Japan	Tuna longliner	24	48.48	379
T1296	KINSAI MARU NO.68	Ichikikushikino	Kushikino Maguro Kabushiki Kaisha ; Hayasaki Suisan Yugen Kaisha	116, Minatomachi, Ichikikushikino-Shi, Kagoshima ; 6676-6, Ebisu-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	21	49.2	396
T1297	FUKUEI MARU NO.8	Ichikikushikino	Maegata Suisan Yugen Kaisha	141, Motohana-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	23	49.2	379
T1298	FUKUEI MARU NO. 58	Ichikikushikino	Maegata Suisan Yugen Kaisha	141, Motohana-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	50.59	436
T1298	FUKUEI MARU NO.38	Ichikikushikino	Maegata Suisan Yugen Kaisha	141, Motohana-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	21	47.2	379
T1299	MATSUEI MARU NO.11	Ichikikushikino	Matsuei Suisan Yugen Kaisha	174-6, Urawa-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	48.19	379
T1300	MATSUEI MARU NO.58	Ichikikushikino	Matsuei Suisan Yugen Kaisha	174-6, Urawa-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	46.9	397
T1301	MATSUEI MARU NO.88	Ichikikushikino	Matsuei Suisan Yugen Kaisha	174-6, Urawa-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.14	409
T1302	MATSUFUKU MARU NO.58	Ichikikushikino	Matsufuku Suisan Yugen Kaisha	77-4, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	22	48.25	379
T1303	MATSUFUKU MARU NO.68	Ichikikushikino	Matsufuku Suisan Yugen Kaisha	77-4, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	24	48.19	379
T1304	WAKASHIO MARU NO.82	Ichikikushikino	Maruwaka Suisan Co., Ltd.	92, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.9	409
T1305	WAKASHIO MARU NO.83	Ichikikushikino	Maruwaka Suisan Co., Ltd.	92, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.9	409
T1306	WAKASHIO MARU NO.118	Ichikikushikino	Maruwaka Suisan Co., Ltd.	92, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	54.8	499
T1307	WAKASHIO MARU NO.128	Ichikikushikino	Maruwaka Suisan Co., Ltd.	92, Nishihama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	49.99	439
T1308	RYUSEI MARU NO.2	Ichikikushikino	Ryusei Suisan Yugen Kaisha	183, Kitahama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	47.8	379
T1309	RYUSEI MARU NO.8	Ichikikushikino	Ryusei Suisan Yugen Kaisha	183, Kitahama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	23	47.2	379
T1310	WAKASHIO MARU NO.8	Ichikikushikino	Wakashio Suisan Co., Ltd.	237, Motohama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	54.8	499
T1311	WAKASHIO MARU NO.108	Ichikikushikino	Wakashio Suisan Co., Ltd.	237, Motohama-Cho, Ichikikushikino-Shi, Kagoshima, Japan	Tuna longliner	25	54.8	499
B2001	KIYO MARU NO.18	Kesennuma	Kabushiki Kaisha Kaneshimeichi ; Koyama,Syuii	2-3-31, Nishiki-Cho, Kesenuma-Shi, Miyagi, Japan ; 1-6-4, Sakana-Cho, Kesenuma-Shi, Miyagi, Japan	Pole and line	30	52.65	455
B2002	KIYO MARU NO.28	Kesennuma	Kabushiki Kaisha Kaneshimeichi ; Koyama,Syuii	2-3-31, Nishiki-Cho, Kesenuma-Shi, Miyagi, Japan ; 1-6-4, Sakana-Cho, Kesenuma-Shi, Miyagi, Japan	Pole and line	30	47.71	385

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len gth	Ton nage
B2003	HOEI MARU	Ishinomaki	Tsuda Kaiun Co., Ltd.	2-3-7, Kadonowaki-Cho, Ishinomaki-Shi, Miyagi, Japan	Pole and line	33	56.87	499
B2004	MIYA MARU NO.18	Onagawa	Miyamaru Gyogyo Co., Ltd.	132, Aza-Takamori, Ishihama, Onagawa-Cho, Oshika-Gun, Miyagi, Japan	Pole and line	30	64.37	499
B2005	INARI MARU NO.83	Kamisu-Shi	Hiroya Suisan Co., Ltd.	9547, Hasaki, Kamisu-Shi, Ibaraki, Japan	Pole and line	32	56.99	499
B2006	INARI MARU NO.85	Kamisu-Shi	Hiroya Suisan Co., Ltd.	9547, Hasaki, Kamisu-Shi, Ibaraki, Japan	Pole and line	32	56.99	499
B2007	EISEI MARU NO.8	Numazu	Eisei Maru Co., Ltd.	559-1, Heda, Numazu-Shi, Shizuoka, Japan	Pole and line	31	56.3	499
B2009	(TBD)							659
B2011	SHOEI MARU NO.18	Yaizu	Kabushiki Kaisha Shoei	1344-3, Tajiri, Yaizu-Shi, Shizuoka, Japan	Pole and line	30	52.4	463
B2012	SHOEI MARU NO.8	Yaizu	Kabushiki Kaisha Shoei	1344-3, Tajiri, Yaizu-Shi, Shizuoka, Japan	Pole and line	33	56.87	499
B2013	NIKKO MARU NO.1	Omaezaki	Nikko Suisan Co., Ltd.	35, Omaezaki, Omaezaki-Shi, Shizuoka, Japan	Pole and line	30	53.35	495
B2014	NIKKO MARU NO.21	Shizuoka	Nikko Suisan Co., Ltd.	35, Omaezaki, Omaezaki-Shi, Shizuoka, Japan	Pole and line	33	56.87	499
B2015	NIKKO MARU NO.31	Omaezaki	Nikko Suisan Co., Ltd.	35, Omaezaki, Omaezaki-Shi, Shizuoka, Japan	Pole and line	30	56.87	499
B2016	HINODE MARU NO.18	Yaizu	Hinode Gyogyo Co., Ltd.	4-16-5, Hon-Machi, Yaizu-Shi, Shizuoka, Japan	Pole and line	24	48.72	359
B2017	TOYOKUNI MARU NO.8	Yaizu	Toyokunimaru Gyogyo Seisankumiai	2-8, Ishizuminato-Cho, Yaizu-Shi, Shizuoka, Japan	Pole and line	30	62.78	483
B2018	TOKUEI MARU NO.17	Owase	Okinaka, Hiroki	1-9, Nakamura-Cho, Owase-Shi, Mie, Japan	Pole and line	35	56.2	498
B2019	OTOSHIRO MARU NO.1	Minamiise	Otoshiro Gyogyo Co., L	3952, Tasoura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Pole and line	35	53.34	499
B2020	OTOSHIRO MARU NO.3	Minamiise	Otoshiro Gyogyo Co., L	3952, Tasoura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Pole and line	32	56.87	499
B2021	OTOSHIRO MARU NO.7	Minamiise	Otoshiro Gyogyo Co., L	3952, Tasoura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Pole and line	31	56.87	499
B2022	SEISYU MARU NO.8	Minamiise	Otoshiro Gyogyo Co., L	3952, Tasoura, Minamiise-Cho, Watarai-Gun, Mie, Japan	Pole and line	35	56.3	499
B2023	SANKO MARU	Kihoku	Ishikura, Yoshikazu; Ishikura, Takafumi	1251, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie, Japan ; 1195-53, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie, Japan	Pole and line	25	33.2	153
B2024	KOEI MARU	Kihoku	Hashimoto, Mikio; Hashimoto, Kouhi	2022-35, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie, Japan ; 2160-6, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie, Japan	Pole and line	24	34.27	158
B2025	SENSHO MARU NO.1	Kihoku	Takemura, Norihiro	1066, Nagashima, Kiinagashima-Ku, Kitamuro-Gun, Mie, Japan	Pole and line	23	29.7	120
B2026	YASUICHI MARU	Shima	Yugengaisha Yasuichimaru	1849, Wagu, Shima-Cho, Shima-Shi, Mie, Japan	Pole and line	22	29.7	120
B2027	GENKICHI MARU NO.27	Shima	Yugen Gaisha Genkichi Maru Gyogyo	1794, Wagu, Shima-Cho, Shima-Shi, Mie, Japan	Pole and line	25	34.9	149
B2028	KORYO MARU NO.68	Nahari	Daiei Suisan Co., Ltd.	105, Ko, Nahari-Cho, Aki-Gun, Kochi, Japan	Pole and line	23	32.2	122
B2029	(TBD)							659
B2030	(TBD)							659
B2031	SAGAMYOJIN MARU NO.123	Kuroshio	Kabushiki Kaisha Shoei	1344-3, Tajiri, Yaizu-Shi, Shizuoka, Japan	Pole and line	28	38.4	224
B2032	SAGAMYOJIN MARU NO.183	Saga	Myojin Suisan Co., Ltd.	763, Saga, Kuroshio-Cho, Hata-Gun, Kochi, Japan	Pole and line	25	34.9	168
B2033	SAGAMYOJIN MARU NO.83	Kuroshio	Myojin Suisan Co., Ltd.	763, Saga, Kuroshio-Cho, Hata-Gun, Kochi, Japan	Pole and line	25	33.2	149
B2034	SAGAKATSU MARU NO.63	Kuroshio	Saga Katsu Maru Inc	765, Saga, Kuroshio-Cho, Hata-Gun, Kochi, Japan	Pole and line	23	29.7	122

Auth No.	Vessel Name	Reg Port		Owner Address	Vessel Type	Cre w	Len ght	Ton nag e
B2035	(TBD)							149
B2036	SHINSEI MARU NO.36	Tosashimizu	Yugen Kaisha Matsushita Shinsei Maru Gyogyo	7-4, Koe-Cho, Tosashimizu-Shi, Kochi, Japan	Pole and line	27		143
B2037	MYOJIN MARU NO.151	Saga	Yugen Kaisha Myojin Maru	783-1, Saga, Kuroshio-Cho, Hata-Gun, Kochi, Japan	Pole and line	25	34.9	167
B2038	KIYO MARU NO.8	Nichinan	Yugen Kaisha Kiyo Maru Suisan	2208-1, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Pole and line	24	33.2	151
B2039	SHINKAI MARU NO.73	Nichinan	Yugen Kaisha Nakano Suisan	2561, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Pole and line	25	34.28	157
B2040	OOTORI MARU NO.28	Nakatosa	Hoyo Suisan Inc	6413, Kure, Nakatosa-Cho, Takaoka,-Gun Kochi, Japan	Pole and line	25	29	137
B2041	YOSHI MARU NO.81	Nango	Yugen Kaisha Yoshimaru Suisan	5126,Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki, Japan	Pole and line	25	34.28	158
B2042	ASAHI MARU NO.8	Makurazaki	Asahi Gyogyo Co., Ltd.	126, Origuchi-Cho, Makurazaki-Shi, Kagoshima, Japan	Pole and line	33	56.87	499
B2043	ASAHI MARU NO.11	Makurazaki	Asahi Gyogyo Co., Ltd.	126, Origuchi-Cho, Makurazaki-Shi, Kagoshima, Japan	Pole and line	33	56.87	499
B2044	MEIHO MARU NO.22	Shiogama	Meiho Gyogyo Co., Ltd.	2-9-34,Shinhama-Cho, Shiogama-Shi, Miaygi, Japan	Pole and line	32	56.2	499
B2045	KYOYO MARU NO.3	Makurazaki	Makurazakishi Gyogyo Kyodo Kumiai	66, Orikuchi-Cho, Makurazaki-Shi, Kagoshima, Japan	Pole and line	32	56.87	499
B2046	NIKKO MARU NO.11	Omaezaki	Nikko Suisan Co., Ltd.	35, Omaezaki, Omaezaki-Shi, Shizuoka, Japan	Pole and line	33	56.2	499

## Appendix IV: List of offshore tuna fishing vessels

Fisheries Agency, "Kinkai katsuo maguro gyogyo (Offshore tuna fisheries)," July 2014, internal unpublished document (disclosed through the Act on Access to Information Held by Administrative Organs); Fisheries Agency, "Enyo katsuo maguro gyogyo (Offshore tuna fisheries)," January 2015, accessed February 28, 2015, <http://www.jfa.maff.go.jp/j/kikaku/sitei/pdf/kinkama2015.pdf>; WCPFC, "WCPFC Record of Fishing Vessels," accessed February 28, 2015, <https://www.wcpfc.int/record-fishing-vessel-database>.

Auth No	Vessel Name	Reg Port	Owner Name	Owner Address	Vessel Type	Cre w	Length	Tonnage
3001	SEIRYO MARU NO.55	Shiriuchi	Yugen Kaisha Obara Gyogyobu	24, Aza-Motomachi, Shiriuchi-Cho, Kamiiso-Gun, Hokkaido	Tuna longliner	15	31.5	119
3002	KUROSAKI MARU NO.28	Rikuzentakata	Murakami,Mitsuo	12-3, Aza-Kurosaki, Hirota-Cho, Rikuzentakata-Shi, Iwate	Tuna longliner	12	20.71	50
3003	TOYO MARU NO.1	Kesennuma	Sato,Azuma	131-13, Akaiwaishikabuto, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.6	119
3004	SHINEI MARU NO.17	Kesennuma	Yugen Kaisha Shinei Suisan	15-3, Kamishibitachi, Karakuwa-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	32.56	119
3005	OSAKI MARU NO.18	Kesennuma	Yugen Kaisha Marui Suisan	13-1, Sakihama, Karakuwa-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	31	119
3006	SHINTOKU MARU NO.28	Kesennuma	Yugen Kaisha Shintoku Maru Gyogyo	204-5, Naka, Karakuwa-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.5	119
3007	YAHATA MARU NO.11	Kesennuma	Kabushiki Kaisha Yahata Suisan	156, Shibitachi, Karakuwa-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.5	119
3008	YAMATO MARU NO.36	Kesennuma	Daiichi Gyogyo Yugen Kaisha	1-4-31, Naka-Machi, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.5	119
3009	YUKI MARU NO.17	Kesennuma	Marukita Shoten Inc	1-7-4, Benten-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	29.8	119
3010	YUKI MARU NO.77	Kesennuma	Marukita Shoten Inc	1-7-4, Benten-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.5	119
3011	SEIRYO MARU NO.2	Kesennuma	Yugen Kaisha Iwai Shoten	502-1, Minato-Machi, Kesennuma-Shi, Miyagi	Tuna longliner	16	31.6	119
3012	CHIYO MARU NO.27	Kesennuma	Wayama Suisan Co., Ltd.	505-4, Minato-Machi, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.5	119
3013	FUKUYO MARU NO.8	Kesennuma	Fukuyo Suisan Co., Ltd.	508-4, Minato-Machi, Kesennuma-Shi, Miyagi	Tuna longliner	15	31.5	119
3014	KINEI MARU NO.37	Kesennuma	Yugen Kaisha Kineimaru	177, Konagane, Karakuwa-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	29.98	119
3015	TAIKI MARU NO.81	Kesennuma	Taiki Suisan Yugen Kaisha	199-1, Konagane, Karakuwa-Cho, Kesennuma-Shi, Miyagi	Tuna longliner	15	29.98	119
3016	MATSUEI MARU NO.58	Choshi	Yugen Kaisha Yashiro Gyogyo	10818, Nagasaki-Cho, Choshi-Shi, Chiba	Tuna longliner	10	24.5	81
3018	JINTOKU MARU NO.11	Sagara	Oguri Gyogyo Co., Ltd. ;	2121, Shinsho, Makinohara-Shi, Shizuoka	Pole and line	22	29.7	119
3019	KAIEN MARU NO.28	Naha	Umazume,Osamu	3F-1-25-25, Ameku, Hana-Shi, Okinawa	Tuna longliner	8	16.24	19.99
3020	FUKUEI MARU NO.11	Omaezaki	Fukueimaru Gyogyo Co., Ltd.	29-1, Shinsho, Makinohara-Shi, Shizuoka	Pole and line	20	29.7	110
3021	CHOKYU MARU NO.23	Owase	Chokyu Maru Co.,Ltd	333-12, Mikiura-Cho, Owase-Shi, Mie	Pole and line	24	31	119
3011	SHINPO MARU	Kihoku	Higashi,Satoru	1248, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Pole and line	25	27.82	96
3024	(TBD)				Pole and line			119
3025	SEIFUKU MARU NO.18	Kihoku	Mizutani,Ko	1356-3, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Pole and line	24	31	119
3026	JINICHI MARU	Shima	Yugen Kaisha Jinichi Maru Gyogyo	873-3, Wagu, Shima-Cho, Shima-Shi, Mie	Pole and line	25	29.7	118
3027	HASSYU MARU	Kihoku	Yugenkaisha Hassyu Maru	2160-8, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	18.95	19
3028	SHIGEYOSHI MARU	Hagi	Miyauchi,Hiromasa	6407, Oaza-Chinto, Hagi-Shi, Yamaguchi	Tuna longliner	10	21	65



Auth No	Vessel Name	Reg Port	Owner Name	Owner Address	Vessel Type	Cre w	Length	Tonnage
3029	SHINSEI MARU NO.21	SHISHIKUI	Ebisu Suisan Inc	13-1, Aza-Takegasima, Shishikuiura, Kaiyou-Cho, Kaifu-Gun, Tokushima	Tuna longliner	10	24.5	79
3030	SHINSEI MARU NO.71	SHISHIKUI	Ebisu Suisan Inc	13-1, Aza-Takegasima, Shishikuiura, Kaiyou-Cho, Kaifu-Gun, Tokushima	Tuna longliner	10	22	72
3031	DAIKI MARU NO.8	SHISHIKUI	Yugen Kaisha Daiki Gyogyo	28-26, Aza-Takegasima, Shishikuiura, Kaiyo-Cho, Kaifu-Gun, Tokushima	Tuna longliner	9	23	66
3032	SUEHIRO MARU	SHISHIKUI	Yugen Kaisha Suehiro Suisan	6-3, Aza-Takegasima, Shishikuiura, Kaiyo-Cho, Kaifu-Gun, Tokushima	Tuna longliner	10	16.58	19
3033	KATSU MARU NO.38	SHISHIKUI	Katsu Maru Co.,Ltd	21-1, Aza-Takegasima, Shishikuiura, Kaiyo-Cho, Kaifu-Gun, Tokushima	Tuna longliner	11	25.3	93
3034	KATSU MARU NO.58	Tokushima	Katsu Maru Co.,Ltd	21-1, Aza-Takegasima, Shishikuiura, Kaiyo-Cho, Kaifu-Gun, Tokushima	Tuna longliner	10	18.93	19
3035	(TBD)				Tuna longliner			19
3036	KAIEN MARU NO.77	(unknown)	(Unknown)	(Unknown)	Tuna longliner	(unknown)	(unknown)	19
3037	YUJIN MARU NO.58	Susaki	Umazume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	10	16.84	19
3038	KATU MARU NO.31	Tosashimizu	Yugen Kaisha Daisankatamaru	2465-2, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	17.85	19
3039	KAISEI MARU NO.1	Tosashimizu	Kaiyo Bussan Co., Ltd.	821-2, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	12	27	99
3040	SHINKASUGA MARU	Tosashimizu	Kanehira,Toshiyasu	5-1, Tsuro, Tosashimizu-Shi, Kochi	Tuna longliner	11	24.58	69.85
3041	(TBD)							19
3042	YUJIN MARU NO.51	Susaki	Umadume Shipyard Co., Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	9	16.27	19
3043	EIYU MARU NO.28	Muroto	Eiyu Maru Suisan Co.,Ltd	2075-9, Moto-Kou, Muroto-Shi, Kochi	Tuna longliner	10	19.81	19
3044	KAISEI MARU NO.8	Miura	Sirius Ocean Co., Ltd.	14-6, Ginza, 4-Chome, Chuo-Ku, Tokyo	Tuna longliner	10	15.61	19
3045	EIKICHI MARU	Kuroshio	Konpira Suisan Co., Ltd.	578-1, Kamikawaguchi, Kuroshio-Cho, Hata-Gun, Kochi	Pole and line	22	29.7	113
3046	KORYO MARU NO.33	Nahari	Daiei Suisan Co., Ltd.	105, Nahari-Cho-Kou, Aki-Gun, Kochi	Pole and line	20	27.4	92
3047	SAGAMYOJIN MARU NO.11	Kuroshio	Myojin Suisan Co., Ltd.	763, Saga, Kuroshio-Cho, Hata-Gun, Kochi	Pole and line	15	22.19	49
3048	MIA MARU NO.38	Muroto	Takemura,Masahito	2071-16, Moto-Kou, Muroto-Shi, Kochi	Tuna longliner	10	19.03	19
3049	GENKAI MARU NO.8	Kochi	Kogen Gyogyo Co., Ltd.	4-4-24, Kazurashima, Kochi-Shi, Kochi	Pole and line	19	28.05	115
3050	OOTORI MARU NO.28	Nakatosa	Yugen Kaisha Hoyo Suisan	6413, Kure, Nakatosa-Cho, Takaoka-Gun, Kochi	Pole and line	23	29	118
3051	(TBD)				Pole and line			119
3052	JUNYO MARU	Nakatosa	Yugen Kaisha Jyunyomaru	6302, Kure, Nakatosa-Cho, Takaoka-Gun, Kochi	Pole and line	22	29.18	113
3053	SHINYOSHI MARU NO.53	Kuroshio	Yugen Kaisha Shinyoshi	390-2, Saga, Kuroshio-Cho, Hata-Gun, Kochi	Pole and line	25	29	116
3054	NISSHO MARU NO.8	Kochi	Yugen Kaisha Nissho	440-6, Otsu-Otsu, Kochi-Shi, Kochi	Pole and line	22	28.8	113
3055	SHINSEI MARU NO.26	Tosashimizu	Yugen Kaisha Matsushita Shinsei Maru Gvogyo	7-4, Koe-Cho, Tosashimizu-Shi, Kochi	Pole and line	23	32.39	119

Auth No	Vessel Name	Reg Port	Owner Name	Owner Address	Vessel Type	Cre w	Length	Tonnage
3056	FUKUYOSHI MARU	Kochi	Yugen Kaisha Marusan Suisan	167-1, Ooaza-Kashinoura, Ootsuki-Cho, Hata-Gun, Kochi	Pole and line	24	29.12	99
3057	MYOJIN SEIHO MARU	Kuroshio	Yugen Kaisha Myojin Sei	401-3, Saga, Kuroshio-Cho, Hata-Gun, Kochi	Pole and line	25	28.28	115
3058	MIA MARU NO.58	Muroto	Takemura,Masahito	2071-16, Moto-Kou, Muroto-Shi, Kochi	Tuna longliner	10	19.81	19
3059	HOEI MARU NO.1	Tsukumi	Okawa,Asatoshi	34-2, Ooaza-Hotojima, Tsukumi-Shii, Oita	Tuna longliner	10	24.5	80
3060	HOEI MARU NO.81	Tsukumi	Okawa,Asatoshi	34-2, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	25.75	87
3061	YASUEI MARU	Tsukumi	Kiyota,Yasushi	41, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	22	71
3062	HOYO MARU NO.18	Tsukumi	Takatsuka,Tokio	1126-2, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	24.25	76.81
3063	SHOFUKU MARU NO.8	Tsukumi	Nimura,Tadayuki ; Nishida,Masaru	754-68, Ooaza-Hotojima, Tsukumi-Shi, Oita ; 754-10, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	24.25	74.99
3064	SHINKO MARU NO.78	Tsukumi	Yugen Kaisha Shinko Suisan ; Nimura,Tadayuki	754-10, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	12	25.75	89
3065	KOSHIN MARU NO.8	Tsukumi	Nakashima,Tadayuki	978, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	11	22	70
3066	KAIO MARU NO.78	Tsukumi	Nishida,Koji	983, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	22	70
3067	TOSHIEI MARU NO.8	Tsukumi	Nishida,Toshiyasu	880-6, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	23	63.61
3068	HEISEI MARU NO.1	Tsukumi	Nishida,Norio	1484-2, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	22	69
3069	KAZU MARU NO.18	Tsukumi	Noguchi,Hiromitsu	1141, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	24.25	76.57
3070	SEIKO MARU	Tsukumi	Nomura,Kiypnori	1511-3, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	24.25	75.82
3071	SHINRYOU MARU NO.28	Nichinan	Kanmura Suisan Co., Ltd	4-4-13, Oodoutsu, Nichinan-Shi, Miyazaki	Pole and line	13	19.84	19
3072	(TBD)				Pole and line			19
3073	EISHOU MARU	Kawaminami	Hashimoto Suisan Co., Ltd.	5047-6, Oaza-Heda, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	8	17.15	17
3074	HOURYOU MARU NO.3	Nichinan	Hamaue Suisan Co., Ltd	4-4-32, Oodoutsu, Nishinan-Shi, Miyazaki	Pole and line	13	19.35	19
3076	MANRYO MARU NO.8	Nichinan	Hidaka Suisan	4-4-25, Odotsu, Nichinan-Shi, Miyazaki	Pole and line	23	24.53	70.79
3077	ANSEI MARU	Nango	Ansei Suisan Inc	82-1, Katagami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	24	29.7	108
3078	MANRYO MARU NO.5	Nichinan	Hidaka Suisan	4-4-25, Odotsu, Nichinan-Shi, Miyazaki	Pole and line			71
3079	RYOMEI MARU NO.11	Nichinan	Kanegawasuisan Inc	4-9-18, Odotsu, Nichinan-Shi, Miyazaki	Pole and line	18	24.53	71.51
3080	SEIRYO MARU	Tsuno	Yuugengaisha Seiryomaru	3375-14, Oaza-Kawakita, Tsuno-Cho, Koyu-Gun, Miyazaki	Tuna longliner	6	14.08	14
3081	TOMIYAMA TENSYO MARU	Hyuga	Yugen Kaisha Tomiyama Kosei Maru	62-15, Huruta-Cho, Oaza-Hichiya, Hyuga-Shi, Miyazaki	Tuna longliner	8	16.62	19
3082	FUKUTOKU MARU NO.88	Nichinan	Fukutoku Suisan Inc	134-34, Katagami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	25	29.7	119
3083	FUKUTOKU MARU NO.78	Nichinan	Fukutoku Suisan Inc	134-34, Katagami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	23	29.7	119
3084	WAKAICHI MARU	Nango	Wakaichi Suisan Inc	4681, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	FISHING VESSEL NOT SPECIFIED	24	29.2	108
3085	RYOFUKU MARU NO.55	Nango	Yokoo,Kenihi	3293-7, Nienami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	21	27.82	101
3086	MIYO MARU NO.8	Nango	Iwakiri Suisan Inc	4728, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	24	29.7	119



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3087	KASUGA MARU NO.18	Nango	Kasuga Suisan Inc	4654, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	23	29.7	115
3088	ATAGO MARU NO.21	Nango	Sugimoto Suisan Inc	2573, Nakamura-Otu, Nango-Shi, Nichinan-Shi, Miyazaki	Pole and line	24	31	119
3089	SEIRYU MARU NO.18	Nango	Seiryu Suisan Inc	2426, Nakamura-Otu, Nango-Shi, Nichinan-Shi, Miyazaki	Pole and line	24	31	119
3091	MASA MARU NO.88	Nango	Sakamoto Suisan Inc	4096, Nakamura-Otu, Nango-Shi, Nichinan-Shi, Miyazaki	Pole and line	24	31	119
3092	CHIYO MARU NO.11	Nango	Yugen Kaisha Anraku Suisan	3262, Nienami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	22	25.5	64.43
3093	ANTOKU MARU NO.5	Nango	Antoku Suisan Inc	29-53, Nienami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	22	27.5	100
3094	KAITOKU MARU NO.23	Nango	Kaitoku Suisan Inc	3262-33, Nienami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	22	28.7	111
3095	KOHYOH MARU NO.58	Nango	Kohyoh Suisan Inc	130, Katagami, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	20	29	109
3096	TATSUYOSHI MARU	Nango	Takamaru Suisan Inc	4871-2, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	23	29.7	116
3097	KOTOSHIRO MARU NO.15	Nango	Kotoshiro Suisan Inc	4804-Ro, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	22	31	119
3098	KOTOSHIRO MARU NO.18	Nango	Kotoshiro Suisan Inc	4804-Ro, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	23	29.7	118
3099	(TBD)				Pole and line			119
3101	SHOUTOKU MARU NO.5	Nichinan	Matsushita Suisan Inc	4-4-24, Oodotsu, Nichinan-Shi, Miyazaki	Pole and line	15	19.42	19
3102	JINTOKU MARU NO.3	Nichinan	Jintoku Suisan Inc	4-20-40, Odotsu, Nichinan-Shi, Miyazaki	Pole and line	25	29.7	119
3103	SEIRYU MARU NO.5	Nango	Asano Suisan Inc	2380, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	24	31	119
3104	ICHI MARU NO.28	Nango	Watanabe Suisan Inc	4746, Nakamura-Otu, Nango-Cho, Nichinan-Shi, Miyazaki	Pole and line	23	29.7	117
3105	RYOTOKU MARU NO.11	Nichinan	Hirasumi Suisan Inc	4-3-10, Odotsu, Nichinan-Shi, Miyazaki	Pole and line	20	24.53	63.47
4001	(TBD)				Pole and line			
4002	OOTORI MARU NO.18	Kesenuma	Miura,Hideaki	116, Tsumoto, Karakuwa-Cho, Kesenuma-Shi, Miyagi	Tuna longliner	7	17.59	19
4003	DAIEI MARU NO.28	Kesenuma	Mori,Yoshimitsu	47-1, Nagaisohama, Kesenuma-Shi, Miyagi	Tuna longliner	9	18.4	19
4004	YOSHI MARU NO.18	Shiogama	Murakami Shoji Inc	2-12-9, Minato-Machi, Shiogama-Shi, Miyagi	Tuna longliner	9	16.87	19
4005	YOSHI MARU NO.55	Shiogama	Murakami Shoji Inc	2-12-9, Minato-Machi, Shiogama, Miyagi	Tuna longliner	10	18.31	19
4006	FUKUSHO MARU NO.15	Choshi	Shoji,Tadayuki	217-29, Ueno-Cho, Choshi-Shi, Chiba	Tuna longliner	8	21	19.5
4007	KAISEI MARU NO.5				Tuna longliner		14.9	19
4008	DAIKI MARU NO.7				Tuna longliner		16.24	19
4009	NO.18 KAIYO MARU	Miura	Rrg Suisan Co.,Ltd	118-1, Mito, Uchiura, Numazu-Shi, Shizuoka	Tuna longliner	8	16	19.88
4010	YUSEI MARU	Kihoku	Kabushikigaisha Yusei	2020-71, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	9	16.8	19
4011	KINEI MARU NO.18	Kihoku	Ishikura,Tadashi	2157-3, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	16.3	19.98
4012	SHUHO MARU NO.18	Owase	Ide,Tadahiro	3-41, Shinden-Cho, Owase-Shi, Mie, Japan	Tuna longliner	8	16.83	19
4013	KAIYU MARU NO.21	Kihoku	Okuchi,Hiraku	385-8, Nagasima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	8	16.5	19
4014	KORYU MARU	Kihoku	Okumura,Ko	616-48, Hikimotoura, Miyama-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	18.92	19

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4015	KAISHO MARU	Kihoku	Kitaguchi,Yoshiya	521, Hikimotoura, Miyama-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	17.48	19
4016	YUKI MARU NO.11	Kihoku	Higashi,Kazuya	2028-16, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	16.33	19.83
4017	YUKO MARU NO.5	Kihoku	Higashi,Yuki	2146, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	18.68	19
4018	HASSYU MARU NO.38	Kihoku	Yugen Kaisha Hassyu Maru	2160-8, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	17.8	19
4019	ICHIEI MARU NO.8	Minamiise	Yugengaisha Ichieimaru	210-1, Sazaurau, Minamiise-Cho, Watarai-Gun, Mie	Tuna longliner	7	16.22	19.86
4020	MITSU MARU NO.11	Kihoku	Waki,Koichi	388-9, Nagashima, Kiinagashima-Ku, Kihoku-Cho, Kitamuro-Gun, Mie	Tuna longliner	10	17.12	19
4021	ICHIFUKU MARU NO.11	Tanabe	Kawabata,Nobuhiro	2-8-15, Hayamatsubara, Tanabe-Shi, Wakayama	Tuna longliner	6	11.99	13
4022	TATSU MARU	Kushimoto	Tatsumaru Gyogyo Seisan Kumiai	347-12, Kushimoto, Kushimoto-Cho, Higashimuro-Gun, Wakayama	Tuna longliner	5	14.99	19.77
4023	SUMITA MARU NO.15	Yura	Tanbo,Satosi	147, Ooaza-Kamiya, Yura-Cho, Hidaka-Gun, Wakayama	Tuna longliner	7	16.18	19.82
4024	AYA MARU NO.58	Naha	Yamaguchi,Yoshiaki	3-8-4, Kanagusuku, Naha-Shi, Okinawa	Tuna longliner	8	16.48	19
4026	KOUEI MARU	Taiji	Yugen Kaisha Bansyou Suisan ; Amazawa,Shinichi	4044, Ooaza-Taiji, Taiji-Cho, Higashimuro-Gun, Wakayama	Tuna longliner	7	14.96	19
4027	CHOEI MARU NO.8	Minabe	Yukawa,Choichi	472-4, Sakai, Minabe-Cho, Hidaka-Gun, Wakayama	Tuna longliner	6	14.95	14.95
4028	KATSU MARU NO.28	SHISHIKUI	Katsu Maru Co.,Ltd	21-1, Aza-Takegasima, Oaza-Shishikuiura, Kaiyo-Cho, Kaifu-Gun, Tokushima	Tuna longliner	9	16.65	19
4029	KATSURA MARU NO.11	SHISHIKUI	Takagi,Tsukasa	243-77, Aza-Itadori, Kubo, Kaiyo-Cho, Kaifu-Gun, Tokushima	Tuna longliner	8	16.22	19
4030	YUJIN MARU NO.25	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	6	14.96	18
4031	TOSHI MARU NO.18	Tosashimizu	Kabushiki Kaisha Hatakenaka Gyogou	1-25, Echizen-Cho, Tosasimizu-Shi, Kochi	Tuna longliner	8	15.98	19
4032	TAKE MARU	Toyo	Takebayashi,Seiji ; Komatsu,Eisuke	74-7, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi ; 107, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	8	15.63	19
4033	(TBD)				Tuna longliner			19
4034	KAIO MARU	Naha	Umadume,Takeshi	1-802, Freebell Tomori, 1-7-4 Tomori, Naha-Shi, Okinawa	Tuna longliner	8	14.97	19
4035	FUKU MARU NO.5	Naha	Umadume,Takeshi	1-802, Freebell Tomori, 1-7-4 Tomori, Naha-Shi, Okinawa	Tuna longliner	8	15.31	19.96
4036	YUJIN MARU NO.20	Susaki	Umadume,Masahito	15-12, Yamate-Cho, Susaki-Shi, Kochi	Tuna longliner	9	16.59	19
4037	KAIEN MARU NO.33	Susaki	Umadume,Masahito	15-12, Yamate-Cho, Susaki-Shi, Kochi	Tuna longliner	10	16.12	19
4038	KAIEN MARU NO.50	Susaki	Masahito Umadume	15-12, Yamate-Cho, Susaki-Shi, Kochi	Tuna longliner	10	16.77	19
4039	TAKA MARU NO.23	Susaki	Umazume,Yoshinobu	15-12, Yamate-Cho, Susaki-Shi, Kochi	Tuna longliner	10	16.85	19
4040	KAIEN MARU NO.23	Naha	Umazume,Osamu	3F,1-25-25, Ameku, Naha-Shi, Okinawa	Tuna longliner	10	15.63	19
4041	EBISU MARU	Toyo	Ebisu,Toyokazu	272, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	8	14.97	19
4042	TAKAEI MARU	Toyo	Emoto,Takaaki	21-1, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	10	15.57	19

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4043	DAI MARU NO.15	Kochi	Oguro,Kunihiro	25-2, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	6	14.8	12
4044	AKEBONO MARU NO.53	Tosashimizu	Kaiyo Busan Co., Ltd.	821-2, Usa, Usa-Cho, Tosa-Chi, Kochi	Tuna longliner	9	18.94	19
4045	WAKASHIO MARU NO.31	Tosashimizu	Kaiyo Busan Co., Ltd.	821-2, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	9	18.97	19
4046	WAKASHIO MARU NO.33	Tosashimizu	Kaiyo Busan Co., Ltd.	821-2, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	9	18.99	19
4047	YUJIN MARU	Susaki	Umadume Shipyard Co., Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	10	18.96	19
4048	YUJIN MARU NO.2	Susaki	Umazume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	7	18.53	19
4049	YUJIN MARU NO.5	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	9	16.7	19
4050	YUJIN MARU NO.21	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Koch	Tuna longliner	8	14.94	17
4051	YUJIN MARU NO.27	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	10	14.9	19.98
4052	NO.28 YUJIN MARU	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	9	15.62	19
4053	NO.1 YUJIN MARU	Susaki	Umazume Zousen Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	9	16.56	19
4055	EIYU MARU NO.18	Muroto	Eiyumaru Suisan Co.,Ltd	2075-9, Moto-Ko, Muroto-Shi, Kochi	Tuna longliner	8	16.57	19
4056	EIYU MARU NO.21	Muroto	Eiyu Maru Suisan Co.,Ltd	2075-9, Moto-Ko, Muroto-Shi, Kochi	Tuna longliner	10	19.5	19
4057	SACHI MARU NO.5	Susaki			Tuna longliner			19
4058	KAIEN MARU NO.57	Susaki	Tosayo Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	10	17.09	19
4059	NAOEI MARU NO.8	Kochi	Naoei Maru Co.,Ltd	712-3, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	16.6	19
4060	HASHIMURATERU MARU	Kochi	Hashimura Co.,Ltd	2477-1, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	9	16.63	19
4063	RYUSHO MARU	Nakatosa	Kurohara,Takamori	6778, Kure, Nakatosa-Cho, Takaoka-Gun, Kochi	Tuna longliner	5	14.85	14
4064	KOSHIN MARU NO.28	Muroto	Takeda,Takemitsu	5814-4, Murotomisaki-Cho, Muroto-Shi, Kochi	Tuna longliner	8	16.61	19
4065	SATO MARU	Toyo	Takebayashi,Kazuhi to	71-1, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	8	14.89	14
4066	TAKE MARU NO.8	Toyo	Takebayashi,Masahiro	127, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	10	19.43	19
4067	OHTORI MARU NO.8	Muroto	Takemura,Kazuya	2237, Moto-Ko, Muroto-Shi, Kochi	Tuna longliner	10	16.53	19
4068	ETSU MARU	Tokushima	Koube,Etsuo	137-5, Aza-Higashi-Machi, Tomoura, Kaiyou-Cho, Kaifu-Gun, Tokushima	Tuna longliner	10	12.56	10
4069	SEIRYO MARU NO.7	Muroto	Tanaka,Tadatoshi	2181-1, Murotsu, Muroto-Shi, Kochi	Tuna longliner	10	16.65	19
4070	SEIRYO MARU NO.18	Muroto	Tanaka,Tadatoshi	2181-1, Murotsu, Muroto-Shi, Kochi	Tuna longliner	10	18.96	19
4071	TAKA MARU	Toyo	Tokuyama,Shujiro	613-2, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	7	14.88	14
4072	(TBD)				Tuna longliner			19
4073	MASA MARU NO.18	Muroto	Nonami,Hiroyuki	422, Ukitsu, Muroto-Shi, Kochi	Tuna longliner	7	16.45	19
4074	RYUKI MARU NO.21	Muroto	Hashimoto,Kazutsu gi	5814-3, Murotomisaki-Cho, Muroto-Shi, Kochi	Tuna longliner	10	15.65	19
4075	RYUKI MARU NO.18	Muroto	Godokaisha Hashimoto Suisan	5814-3, Murotomisaki-Cho, Muroto-Shi, Kochi	Tuna longliner	10	16.26	19
4076	KOWA MARU NO.5	Muroto	Hasegawa,Masayasu	15, Ukitsu, Moroto-Shi, Kochi	Tuna longliner	10	18.94	19

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4077	YUJIN MARU NO.55	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	10	17.12	19
4078	KAISEI MARU NO.27	Muroto	Fukuoka,Masaru	4858, Murotomisak-Choi, Muroto-Shi, Kochi	Tuna longliner	10	16.21	19
4079	RINA MARU	Tosashimizu	Fukushima,Kiyoshi	Toppuwan Shikoku,4-110-1108, Kutanda, Kochi-Shi, Kochi	Tuna longliner	8	14.95	19.55
4080	FUJITAFUJI MARU	Tosashimizu	Fujita,Hiromichi	1698-2, Kubotsu, Tosashimizu-Shi, Kochi	Tuna longliner	10	16.68	19
4081	MASU MARU	Toyo	Matsushima,Masataka	131, Ooaza-Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	10	18.9	19
4082	TSUKASA MARU NO.18	Tosashimizu	Murata,Katunori	585-4, Iburi, Tosashimizu-Shi, Kochi	Tuna longliner	8	16.75	18
4083	(TBD)				Tuna longliner			19
4084	TATSUEI MARU NO.3	Muroto	Yamasaki,Hideki	2301-3, Moto-Kou, Muroto-Shi, Kochi	Tuna longliner	10	15.7	19
4085	KOUYUU MARU NO.18	Muroto	Yamasaki,Mitsunori	2102-2, Moto-Kou, Muroto-Shi, Kochi	Tuna longliner	10	16.24	19
4086	SHUNKO MARU NO.11	Muroto	Yamanaka,Syuntaro	4117-7, Murotomisaki-Cho, Muroto-Shi, Kochi	Tuna longliner	8	14.96	19
4087	OOGUROKOEI MARU	Tosashimizu	Yugengaisha Oogurosuisan	7-11, Sakane-Machi, Tosashimizu-Shi, Kochi	Tuna longliner	8	14.95	19.99
4088	KAIEN MARU NO.71	Susaki	Tosayo Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kochi	Tuna longliner	9	16.64	19
4089	DAIRIKI MARU NO.31	Kochi	Yugengaisha Dairikimaru	1552-5, Teiyama, Yasu-Cho, Konan-Shi, Kochi	Tuna longliner	8	16.21	19
4090	TAIRYO MARU NO.31	Sukumo	Yugengaisha Tairyo Suisan	5342-27, Sukumo, Sukumi-Shi, Kochi	Tuna longliner	8	16.65	19
4091	TAIKO MARU	Muroto	Yugen Kaisha Takenaka Suisan	2075-9, Moto-Ko, Muroto-Shi, Kochi	Tuna longliner	8	16.5	19
4092	SEIJU MARU NO.18	KOROSHIO	Tsuno Suisan Inc	1233-39, Kamikawaguchi, Kuroshio-Cho, Hata-Gun, Kochi	Tuna longliner	12	18.95	19
4093	SEIJYU MARU NO.21	Kuroshio	Tsuno Suisan Co.,Ltd	1233-39, Kamikawaguchi, Kuroshio-Cho, Hata-Gun, Kochi	Tuna longliner	10	18.95	19
4094	TERU MARU NO.8	Kochi	Yugen Kaisha Teru Maru Suisan	2464, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	18.93	19
4095	TERU MARU NO.11	Kochi	Yugen Kaisha Teru Maru Suisan	2464, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	18.94	19
4096	SHUHO MARU	Kochi	Yugen Kaisha Tochika Suisan	2457-4, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	16.65	19
4097	SHUHO MARU NO.13	Kochi	Yugen Kaisha Tochika Suisan	2457-4, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	18.97	19
4098	RYOYU MARU NO.1	Kochi	Yugen Kaisha Nakamura Gyogyo	451-1, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	18.92	19
4099	NAKAMURARYOU YU MARU	Kochi	Nakamura Gyogyo Co.,Ltd	451-1, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	10	18.91	19
4100	RYOYU MARU NO22	Naha	Tokujin Yamauchi	4-91-20, Torihori-Cho, Shuri, Naha-Shi, Okinawa	Tuna longliner	9	18.15	19
4101	MASAMI MARU	Aki	Yugengaisha Masami Maru	11-5, Chitose-Cho, Aki-Shi, Kochi	FISHING VESSEL NOT SPECIFIED	10	17.7	19
4102	MATSU MARU NO.11	Kochi	Yugen Kaisha Matsu Maru Suisan	1668-2, Usa, Usa-Cho, Tosa-Shi, Kochi	Tuna longliner	9	16.36	19
4103	ICHI EI MARU NO.11	Muroto	Yumoto,Toshimitsu	2232, Moto-Ko, Muroto-Shi, Kochi	Tuna longliner	8	16.76	19
4104	KAZU MARU	Toyo	Wada,Tomoyosi	11-4, Ooaza-Kannoura, Toyo-Cho Aki-Gun Kochi	Tuna longliner	6	14.95	14
4105	KINRYO MARU	Toyo	Wada,Yuusaku	305, Ooaza- Kannoura, Toyo-Cho, Aki-Gun, Kochi	Tuna longliner	8	14.89	18

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4106	EISHIN MARU NO.8	Ushibuka	Eishin Maru Suisan Inc	3420-26, Ushibuka-Machi, Amakusa-Shi, Kumamoto	Tuna longliner	8	16.2	19.93
4107	MATSU MARU NO.8	Tsukumi	Ishida,Tetsuhisa	1446, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	8	16.46	19
4108	SEIRYO MARU	Tsukumi	Eguchi,Kazuhiro	151, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	10	16.48	19
4109	KOSHO MARU	Tsukumi	Yoshioka,Kimiyoshi ; Yoshioka,Hatsuyuki	58, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	6	16.48	19
4110	YUSEI MARU NO.1	Tsukumi	Tsukasa,Kaneyasu	1135-4, Ooaza-Hotojima, Tsukumi, Oita	Tuna longliner	8	14.95	19
4111	HISATOSHI MARU	Tsukumi	Nishida Hisayuki	1493-1, Ooaza-Hotojima, Tsukumi-Shi, Oita-Ken	Tuna longliner	8	16.26	19.97
4112	HISATOSHI MARU NO.8	Tsukumi	Nishida,Hisayuki	1493-1, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	8	14.97	19.82
4113	SHINSEI MARU NO.21	Susaki	Shimizu ,Kaoru	8-46, Nishizaki-Cho, Susaki-Shi, Kochi	Tuna longliner	8	14.95	19
4114	KOURYO MARU NO.5	Tsukumi	Hirose,Takahisa	1474-2, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	6	14.95	19.66
4115	TOYO MARU	Tsukumi	Matsuki,Shigenori	987-1, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	8	14.99	19
4116	HORYU MARU NO.1	Tsukumi	Minobe,Yasuaki ; Minobe Satoshi	1517-16, Ooaza-Hotojima, Tsukumi-Shi, Oita	Tuna longliner	7	16.5	19
4117	RYOUAN MARU	Tsuno	Ohashi,Tetsuya	3689-10, Ooaza-Kawakita, Tsuno-Cho, Koyu-Gun, Miyazaki	Tuna longliner	10	14.96	19
4118	KUNI MARU NO.8	Hyuga	Kunimaru Suisan Inc	3-28-2, Sone-Cho, Hyuga-Shi, Miyazaki	Tuna longliner	6	14.03	14
4119	HIRO MARU NO.8	Hyuga	Daihachi Hiro Maru Inc	628-2, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	8	14.57	17
4120	MEITOKU MARU	Nango	Kawakami Suisan Inc	2554, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	10	16.3	19
4121	YUEI MARU	Hyuga	Kiura,Sumie	583, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	6	11.97	13
4122	KENYOU MARU	Nobeoka	Kidu,Kenji	6-5, Shimauro-Cho, Nobeoka-Si, Miyazaki	Tuna longliner	3	11.89	12
4123	FUKI MARU	Nobeoka	Kidu,Fukio	649-1, Shimauro-Cho, Nobeoka-Si, Miyazaki	Tuna longliner	3	13.38	14
4124	IKUSHIN MARU	Nobeoka	Ikushinmaru Llc	785, Shimauro-Cho, Nobeoka-Shi, Miyazaki	Tuna longliner	5	14.96	18
4125	KAZUYO MARU	Nobeoka	Kazuyoumaru Llc	44-12, Shimauro-Cho, Nobeoka-Si, Miyazaki	Tuna longliner	6	14.29	14
4126	TOA MARU	Kagoshima	Anzai,Takumi	5-16, Ichibayamoto-Cho, Tsurumi-Ku, Yokohama-City, Kanagawa	Tuna longliner	10	16.4	19
4127	(TBD)				Tuna longliner			19
4129	JINSHOU MARU NO.36	Miyazaki	Jinshou Suisan Inc	247-3, Tashiro-Cho, Miyazaki-Shi, Miyazaki	Tuna longliner	8	16.61	19
4130	SEIYOU MARU	Kawaminami	Seiyou Maru Inc	23093-6, Ooaza-Kawaminami, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	6	13.86	14
4131	DAIYU MARU	Hyuga	Daiyu Suisan Inc	1-67, Kamezakihigashi, Hyuga-Shi, Miyazaki	Tuna longliner	10	18.89	19
4132	NAOKI MARU	Kawaminami	Yugen Kaisha Naoki Suisan	17440-27, Ooaza-Kawaminami, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	7	15.56	19
4133	SEIYOSHI MARU	Kawaminami	Seiyoshi Maru Inc	5627-5, Ooaza-Heda, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	5	14.88	19
4134	KICHIEBISU MARU	Hyuga	Kichiebisu Maru Inc.	959, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	5	14.23	17
4135	FUKUEI MARU	Hyuga	Fukueimaru Inc	3-46-5, Sone-Cho, Hyuga-Shi, Miyazaki	Tuna longliner	6	13.24	14
4136	SHINEI MARU NO.1	Nichinan	Inoue,Choujiro	8-6-42, Obi, Nichinan-Shi, Miyazaki	Tuna longliner	7	14.97	19.85



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4139	SHINPUKU MARU	Kawaminami	Mizoguchi,Shinichi	5606-6, Ooaza-Heda, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	6	14.93	18
4140	MITUEI MARU NO.8	Kadogawa	Kurogi,Mitsutoshi	5-209, Iorigawanishi, Kadogawa-Cho, Higashiusuki-Gun, Miyazaki	Tuna longliner	6	14.38	19
4141	SHICHIFUKUZIN MARU	Kawaminami	Kurogi,Akio	3429-18, Ooaza-Heda, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	6	14.93	18
4143	OOTORI MARU	Nango	Ichimoto,Yoshiaki	30-1, Katagami, Nango-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	8	14.9	19.86
4144	TOBESHIMA MARU NO.10	Miyazaki	Tobeshima Maru Suisan Inc	1016, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	7	16.7	19
4145	KOUSHO MARU NO.23	Hyuga	Koresawa,Takayuki	2437-20, Ooaza-Hichiya, Hyuga-Shi, Miyazaki	Tuna longliner	6	14.04	16
4146	KOTOBUKI MARU NO.15	Nichinan	Tsukamoto Suisan Inc	4-5-10, Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	8	16.66	19
4147	KOUEI MARU NO.28	Kushima	Ooyama,Minoru	8989-14, Ooaza-Ichiki, Kushima-Shi, Miyazaki	Tuna longliner	6	13.82	19
4148	FUKUJUKAI MARU	Nango	Nakamura,Haruyoshi	2560, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	6	14.85	18
4149	MANYOSHI MARU	Hyuga	Asakura,Akiyoshi	667-53, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	6	14.12	14
4150	KOUTOKU MARU NO.18	Hyuga	Hirasaka,Toshiyuki	3-89, Nakahori-Cyo, Hyuga-Shi, Miyazaki	Tuna longliner	6	11.92	13
4151	TOKUSHIN MARU	Nichinan	Satou Suisan Inc	2-28, Otohime-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	8	15.95	19
4152	DAIKOKU MARU	Miyazaki	Daikokumar Suisan Inc	78-2, Takasu-Cho, Miyazaki-Shi, Miyazaki	Tuna longliner	10	17.84	19
4153	TOBESHIMA MARU NO.18	Hyuga	Tobeshima Maru Suisan Inc	1016, Oaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	8	16.79	19
4154	HANEI MARU NO.36	Nichinan	Hanei Inc	3-11-21, Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	10	17.86	19
4155	HANEI MARU NO.58	Nichinan	Hanei Inc.	3-11-21, Aburatsu, Nichinab-Shi, Miyazaki-Ken	Tuna longliner	8	15.72	15
4156	NO.28 YACHIYO MARU	Kumano	Yamamoto, Susumu	1-5704, Sakai, Nakatane-Cho, Kumage-Gun, Kochi	Tuna longliner	9	17.54	17
4157	HANEI MARU NO.188	Nichinan	Hanei Inc	3-11-21, Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	10	19.87	19
4158	JINSHOU MARU NO.68	Miyazaki	Jinshou Suisan Inc	247-3, Tashiro-Cyou, Miyazaki-Shi, Miyazaki	Tuna longliner	10	18.95	19
4159	KATUTOKU MARU NO.22	Kawaminami	Yugen Kaisha Katu Suisan	17535-6, Ooaza-Kawaminami, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	8	15.68	19
4160	KAZU MARU NO.3	Nichinan	Minato Suisan Inc	4-5-17, Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	10	16.22	19
4161	KONPIRA MARU NO.18	Tsuno	Itimasa Suisan Inc.	3735-2, Ooaza-Kawakita, Tsuno-Cho, Koyu-Gun, Miyazaki	Tuna longliner	8	14.94	19
4162	EIKO MARU	Hyuga	Eiko Maru Inc	222-3, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	10	14.97	19
4163	KAISHIN MARU NO.1	Kawaminami	Yugen Kaisha Kaishin Maru	5103-9, Ooaza-Heda, Kawaminami-Cho, Koyu-Gun, Miyazaki	Tuna longliner	6	14.95	19
4164	YOSHIEI MARU	Hyuga	Yoshiei Maru Inc	3-61, Hama-Cho, Hyuga-Shi, Miyazaki	Tuna longliner	10	18.92	19
4165	CYOHKYU MARU NO.11	Kadogawa	Kubosaki Suisan Inc	1-14, Sugasaki, Kadogawa-Cho, Higashiusuki-Gun, Miyazaki	Tuna longliner	6	11.95	14
4166	RYOFUKU MARU NO.21	Miyazaki	Ryofukumar Suisan Inc	5865-1, Ooaza-Utiumi, Miyazaki-Shi, Miyazaki	Tuna longliner	8	16.76	19
4167	RYOFUKU MARU NO.22	Miyazaki	Ryofukumar Suisan Inc	5865-1, Ooaza-Utiumi, Miyazaki-Shi, Miyazaki	Tuna longliner	8	18.7	19
4168	RYOYU MARU NO.18	Miyazaki	Yugen Kaisha Ryoyumar Suisan	5527-3, Ooaza-Utiumi, Miyazaki-Shi, Miyazaki	Tuna longliner	8	14.9	18
4170	MIHOKO MARU	Hyuga	Mihokomaru Suisan Inc	250, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	7	14.92	18

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4171	KOUTOKU MARU NO.38	Nango	Koutoku Suisan Inc	4129-34, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	8	14.83	19
4172	RYOSEI MARU NO.21				Tuna longliner			19
4173	SHIHO MARU	Kawaminami	Satou Suisan Inc	17455-2, Ooaza-Kawaminami, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	8	14.95	19
4174	KYOSHIN MARU NO.8	Kadogawa	Kodama Suisan Inc	2-119, Sugasaki, Kadogawa-Cho, Higashiusuki-Gun, Miyazaki	Tuna longliner	8	14.95	19.82
4175	HOUSYU MARU	Kawaminami	Kodama Suisan Inc	17492-12, Ooaza-Kawaminami, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	8	14.94	18
4176	KATSUFUKUSHIN MARU	Kawaminami	Katsufuku Suisan Inc	5103-12, Ooaza-Heda, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	7	14.98	19
4177	SHINYO MARU NO.8	Hyuga	Shinyo Maru Inc	681, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	8	14.9	19
4178	KOTOBUKI MARU NO.11	Nichinan	Tsukamotokotobuki suisan Inc	4-3-27 Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	9	17.03	19
4179	KOSHIN MARU NO.18	Nango	Nakamura Suisan Inc	96-2, Katagami, Nango-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	10	18.4	19
4180	CYOHKYU MARU NO.8	Kadogawa	(Yc)Cyohkyumaru	5-226, Iorigawanishi, Kadogawa-Cho, Higashiusuki-Gun, Miyazaki	Tuna longliner	7	14.95	19
4181	CHOFUKU MARU NO.35	Kawaminami	Yugen Kaisha Chofuku Suisan	17495-11, Ooaza-Kawaminami, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	7	16.76	19
4182	KOURYO MARU NO.3	Nichinan	Tsuji Suisan Inc	1-7-6, Nishi-Machi, Nichinan-Shi, Miyazaki	Tuna longliner	10	18.97	19
4183	(TBD)				Tuna longliner			19
4184	YUJIN MARU NO.53	Susaki	Umadume Shipyard Co.,Ltd	1978, Aza-Mukaiyama, Susaki, Susaki-Shi, Kouchi	Tuna longliner	8	18.3	19
4185	HINODE MARU	Hyuga	Hinode Maru Inc	1013, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	10	17.86	19
4186	KOUHOU MARU	Kawaminami	Tawara Suisan Inc	5627-13, Ooaza-Heda, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	6	13.99	14
4187	KOUHOU MARU 58	Kawaminami	Tawara Suisan Inc	5627-13, Ooaza-Heda, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	9	17.79	19
4188	TOMI MARU NO.38	Hyuga	Tomi Maru Suisan Inc	802-1, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	10	18.94	19
4189	TOMI MARU NO.58	Hyuga	Tomi Maru Suisan Inc	802-1, Ooaza-Hososhima, Hyuga-Shi, Miyazaki	Tuna longliner	10	18.96	19
4190	TOMIYAMA KOSEI MARU	Hyuga	Yugen Kaisha Tomiyama Koseei Maru	62-15, Furuta-Cho, Ooaza-Hichiya, Hyuga-Shi, Miyazaki	Tuna longliner	8	14.81	17
4191	CHIYO MARU NO.13	Nango	Hirabara Suisan Inc	7051-554, Nakamura-Otsu, Nango-Cho, Nichinan-Shi, Miyazaki	Tuna longliner	10	19.08	19
4192	HOUSIN MARU NO.15	Kawaminami	Housin Maru Inc	17374-1, Ooaza-Kawaminami, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	6	14.95	18
4193	SHUNYOU MARU NO.1	Nichinan	Hondousuisan Inc	2-5-4, Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	10	19.83	19
4194	SHUNYOU MARU NO.8	Nichinan	Hondousuisan Inc	2-5-4, Aburatsu, Nichinan-Shi, Miyazaki	Tuna longliner	10	19.97	19
4195	RYUKI MARU	Kawaminami	Ryuki Suisan Inc	5592-9, Ooaza-Heda, Kawaminami-Chou, Koyu-Gun, Miyazaki	Tuna longliner	7	14.96	19
4196	KOEI MARU NO.8	Nichinan	Koei Suisan Inc	3-8-24, Kiyama, Nichinan-Shi, Miyazaki	Tuna longliner	10	14.07	18
4197	SHINTOKU MARU	Kagoshima	Shimosako,Shunichi	2203-3 Chuzan-Cho, Kagoshima-Shi, Kagoshima	Tuna longliner	8	16.47	19
4198	RYOUEI MARU	Tokushima	Owasebussan Co.,Ltd	1-33, Hayashi-Machi, Owase-Shi, Mie	Tuna longliner	10	19.8	19

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4199	YACHIYO MARU	Nakatane	Yamamoto,Shinichi	5704-1, Sakai, Nakatane-Cho, Kumage-Gun, Kagoshima	Tuna longliner	10	14.82	19
4200	YACHIYO MARU NO.18	Kagoshima	Yamamoto,Shinichi	5704-1, Sakai, Nakatane-Cho, Kumage-Gun, Kagoshima	Tuna longliner	10	19.93	19
4201	KAZUTOKU MARU NO.1	Naha	Kameya,Choei ; Itokazu Katsuhiko	3-22-7, Wakasa, Naha-Shi, Okinawa ; 2-9-5, Jicchaku, Urasoe-Shi, Okinawa	Tuna longliner	6	14.49	18
4202	SEIHOU MARU NO.8	Naha	Yamada,Yuji	402, Shatore Shiko, 2-23-7, Akebono, Hama-Shi, Okinawa	Tuna longliner	8	14.78	19.98
4203	SHINKAI ICHIGO	Ie-son	Arakaki,Kazunobu	339, Aza-Kawahira, Ie-Son, Kunigashira-Gun, Okinawa	Tuna longliner	6	14.95	18
4204	FUKUJU MARU NO.8	Naha	Ishihara,Kazuhiro	Kyoeihantagawa Mansion C-1,3-1-37, Hantagawa, Naha-Shi, Okinawa	Tuna longliner	8	14.86	19
4205	YOKO MARU NO.35	Naha	Uema,Yoshitoyo	332-18, Aza-Miyahira, Haebaru-Cho, Shimajiri-Gun, Okinawa	Tuna longliner	8	15.65	19
4206	FUKUJU MARU NO.21	Naha	Umazume,Kiyoshi	1111-1-1-25 , Omoromachi, Naha-Shi, Okinawa	Tuna longliner	8	14.95	19.85
4207	KOKUSHIN MARU NO.38	Naha	Kuniyoshi,Masahiko	1-18-36, Akebono, Naha-Shi, Okinawa	Tuna longliner	9	17.79	19
4208	GEN MARU NO.8	Okinawa	Zaha,Kouji	50-2-203, Shinei-Tyoun, Ishigaki-City, Okinawa	Tuna longliner	5	13.98	17
4209	SHINTOKU MARU NO.3	Naha	Maezato,Shinya	20-16, Yamashita-Cho, Naha-Shi, Okinawa	Tuna longliner	8	16.48	19
4210	SEIKICHI MARU NO.1	Naha	Miyagi,Masahiro	620-21, Aza-Aja, Naha-Shi, Okinawa	Tuna longliner	6	15.62	18
4211	TOKUSHO MARU NO.32	Naha	Yamauchi,Tokushin	3-120-21, Sueyoshi-Cho, Shuri, Naha-Shi, Okinawa	Tuna longliner	9	16.46	19
4212	TOKUSHO MARU NO.33	Naha	Yamauchi,Tokushin	3-120-21, Sueyoshi-Cho, Shuri, Naha-Shi, Okinawa	Tuna longliner	9	16.29	19
4213	ZENRIKI MARU NO.21	Naha	Yamauchi,Tokushin	3-120-21, Sueyoshi-Cho, Shuri, Naha-Shi, Okinawa	Tuna longliner	7	14.95	14
4214	RYOYU MARU NO.8	Naha	Yamauchi,Tokujin	4-91-20, Torihori-Cho, Shuri, Naha-Shi, Okinawa	Tuna longliner	6	14.95	14
4215	EIYU MARU NO.88	Naha	Yamauchi,Tokujin	4-91-20, Torihori-Cho, Syuri, Naha-Shi, Okinawa	Tuna longliner	9	17.78	19
4216	AOI MARU NO.1	Tomari	Yamashiro,Hisayoshi	18-26-604, Yamashitabunjojutaku, Yamashita-Cho, Naha-Shi, Okinawa	Tuna longliner	6	14.54	18
4217	HIRONA MARU NO.1	Naha	Yamashiro,Hiroyuki	620-66, Aza-Ajya, Naha-Shi, Okinawa	Tuna longliner	6	12.84	12
4218	SHOKI MARU NO.8	Okinawa	Irei,Masakatsu	15-47, Aza-Minato, Chatan-Cho, Nakagami-Gun, Okinawa	Tuna longliner	10	16.17	19
4219	YUSEI MARU NO.5	Naha	Shimazato,Ikuo	1476-6, Aza-Oroku, Naha-Shi, Okinawa	Tuna longliner	10	14.9	19.97
4220	YUSEI MARU NO.8	Naha	Shimozato,Ikuo	1476-6, Aza-Oroku, Naha-Shi, Okinawa	Tuna longliner	8	14.99	19.98
4221	TOMO MARU NO.3	Naha	Ganeko,Kiyoshi	2013-16, Aza-Inamine, Ozato, Nanjyo-Shi, Okinawa	Tuna longliner	8	14.97	19.74
4222	TAIKEI MARU NO.1	Itoman	Kabushiki Kaisha Taikeimaru Suisan	65-5, Aza-Ueta, Tomigusuku-Shi, Okinawa	Tuna longliner	7	14.93	19
4223	TAIKEI MARU	Itoman	Kabushiki Kaisha Taikeimaru Suisan	65-5, Aza-Ueta, Tomigusuku-Shi, Okinawa	Tuna longliner	8	18.45	19
4224	NANKAI MARU NO.18	Naha	Gima,Shinsho	1-17-26, Akebono, Naha-Shi, Okinawa	Tuna longliner	8	14.95	19.94
4225	HIRO MARU	Naha	Kinjo,Kazuhiko	1-32-21, Yogi, Okinawa-Shi, Okinawa	Tuna longliner	6	14.63	19
4226	RYUSEI MARU NO.8	Naha	Kinjo,Koken	2-198-23, Ishimine-Cho, Shuri, Naha-Shi, Okinawa	Tuna longliner	10	14.95	19.93
4229	IROHA MARU	Naha	Sanko Bussan Co.,Ltd	4-17-10, Nishizaki-Cho, Itoman-Shi, Okinawa	Tuna longliner	10	15.32	19.98
4230	FUKUJU MARU NO.18	Naha	Sanko Bussan Co.,Ltd	4-17-10, Nishizaki-Cho, Itoman-Shi, Okinawa	Tuna longliner	13	16	19.98
4231	FUKU MARU NO.3	Naha	Sanko Bussan Co.,Ltd	4-17-10, Nishizaki-Cho, Itoman-Shi, Okinawa	Tuna longliner	8	14.95	19.94



Auth No	Vessel Name	Reg Port	Owner Name	Owner Address	Vessel Type	Cre w	Length	Tonnag e
4232	AYA MARU NO.18	Naha	Yamaguchi,Yoshiaki	3-8-4, Kanagusuku, Naha-Shi, Okinawa	Tuna longliner	8	16.46	19
4233	TOYO MARU	Naha	Yamaguchi,Yoshiaki	3-8-4, Kanagusuku, Naha-Shi, Okinawa	Tuna longliner	8	14.99	19.94
4234	AYA MARU	Naha	Yamaguchi,Yoshiaki	3-8-4, Kanagusuku, Naha-Shi, Okinawa	Tuna longliner	8	14.95	19.81
4235	GYOTOKU MARU NO.1	Naha	Yamashiro,Kazunori	784-6, Aza-Miyahira, Haebaru-Cho, Shimajiri-Gun, Okinawa	Tuna longliner	8	14.95	19.99
4236	MATSUICHI MARU NO.8	Naha	Matsuda,Tetsuyuki	1-8-12, Gushi, Naha-Shi, Okinawa	Tuna longliner	8	14.95	19.76
4237	TAIKEI MARU NO.8	Itoman	Taikeimaru Suisan Co.,Ltd	65-5, Aza-Ueta, Tomigusuku-Shi, Okinawa	Tuna longliner	8	14.75	19
4238	HATSUEI MARU NO.6	Naha	Uechi,Genko	462-8, Aza-Tonoshiro, Ishigaki-Shi, Okinawa	Tuna longliner	8	15.61	19
4239	KAIHO MARU NO.8	Muroto	Niimura,Akira	Nagata Haitsu F,1-16-17-202, Nagata, Naha-Shi, Okinawa	Tuna longliner	8	15.62	16
4240	TAKE MARU NO.55	Naha	Shinzato,Naoto	2-702, Madanbashi Juutaku,299-1 Aza-Madanbashi, Tomigusuku-Shi, Okinawa	Tuna longliner	10	14.95	19.84
4241	KIKU MARU NO.2	Okinawa	Nishime,Megumi	240-1, Aza-Umino, Chinen, Nanjo-Shi, Okinawa	Tuna longliner	8	17.24	18
4242	KIEI MARU	Naha	Nishime,Yuho	485-8, Aza- Itarashiki, Yunabaru-Cho, Shimajiri-Gun, Okinawa	Tuna longliner	6	14.97	19
4243	WAKAMIYA MARU NO.21	Naha	Nishizato,Hiraku	107-12, Aza-Yone, Tomigusuku-Shi, Okinawa	Tuna longliner	7	15.61	19
4244	TAKASHIRO MARU NO.38	Naha	Nishizato,Fumio	Dai 6-503, Raionzu Manshon Tomari, 1-2-7, Tomari, Naha-Shi, Okinawa	Tuna longliner	8	15.58	19
4245	KINSEI MARU NO.3	Naha	Maekawa,Hokin	162-15, Aza-Samashita, Ginowan-Shi, Okinawa	Tuna longliner	8	14.99	19
4246	TOSHIMA MARU NO.21	Naha	Maedomari,Jinsho	Tomiharaengei-Mansion,1-18-18-103, Mihara, Naha-City, Okinawa	Tuna longliner	8	16.26	19
4247	KATSU MARU NO.28	Naha	Maezato,Sadaki	569-13, Aza-Tomigusuku, Tomigusuku-Shi, Okinawa	Tuna longliner	8	14.96	19.89
4248	WAKA MARU	Naha	Oshiro,Terusada	218-1, Aza-Ou, Tamagusuku, Nanjou-Shi, Okinawa	Tuna longliner	6	14.95	19.65
4250	HOTOKU MARU	Naha	Nakama,Shigemitsu	2-36-25, Mihara, Naha-Shi, Okinawa	Tuna longliner	8	14.98	19.94
4251	TOKUEI MARU NO.21	Yonabaru	Nakazato,Zenho	745, Aza-Itarashiki, Yonabaru-Cho, Shimajiri-Gun, Okinawa	Tuna longliner	6	16.7	19
4252	MIE MARU NO.3	Naha	Nagamine,Shigeo	So-Wapia Kohagura 201,1-31-15, Kohagura, Naha-Shi, Okinawa	Tuna longliner	8	14.86	19
4253	KEIHO MARU NO.8	Naha	Tokeshi,Kiyoshi	2-22-5, Agebono, Naha-Shi, Okinawa	Tuna longliner	8	14.95	19.87
4254	SHIMA MARU NO.1	Naha	Shimabukuro,Seiji	Koupo Hide,1-12-2-301, Serikyaku, Urazae-Shi, Okinawa	Tuna longliner	8	14.88	19
4255	KAIO MARU NO.3	Naha	Umazume,Kiyoshi	1111-1-1-25, Omoromachi, Naha-Shi, Okinawa	Tuna longliner	6	14.23	17
4256	YUKI MARU NO.7	Naha	Higa,Tadashi	Kohatsu Danchi B-88,803-64, Aza-Kohatsu, Nishihara-Cho, Nakagami-Gun, Okinawa	Tuna longliner	6	14.97	19.75
4257	TOKUHO MARU NO.21	Naha	Higa,Toshio	Raionzu Manshon Maejima Dai2-302,2-11-15, Maejima, Naha-Shi, Okinawa	Tuna longliner	7	14.97	19.77
4258	RYOSHO MARU NO.7	Naha	Higa,Takashi	2127-251 R-3, Aza-Inamine, Ozato, Nanjyo-Shi, Okinawa	Tuna longliner	8	14.49	18
4259	IROHA MARU NO.5	Naha	Umazume,Osamu	1-25-25, Ameku, Naha-Shi, Okinawa	Tuna longliner	6	14.19	18
4260	SUE MARU NO.8	Naha	Suematsu,Hidenobu	Suematsu Building 301, 3-18-9, Akebono, Naha-Shi, Okinawa	Tuna longliner	6	14.24	19.62
4261	MANEI MARU NO.38	Naha	Manna,Toshiyuki	2-14-12, Furujima, Naha-Shi, Okinawa	Tuna longliner	8	14.93	19
4262	TAIKO MARU	Naha	Tomoi,Koyo	Guriin Haitsu,862-107, Aza-Maeda, Urasoe-Shi, Okinawa	Tuna longliner	8	15.94	19

Auth No	Vessel Name	Reg Port	Owner Name	Owner Address	Vessel Type	Crew	Length	Tonnage
4263	NORI MARU	Naha	Izumi,Yoin	2-4-15, Hamasaki-Cho, Ishigaki-Shi, Okinawa	Tuna longliner	6	14.95	19.74
4265	SEIHO MARU NO.28	Naha	Toyama,Kiyotaka	1755, Aza-Maezato, Itoman-Shi, Okinawa	Tuna longliner	8	14.95	19.51
4267	RYOFUKU MARU NO.1	Naha	Fukuzato,Akira	1935, Itoman, Itoman-Shi, Okinawa	Tuna longliner	6	14.93	19

## Appendix V: Purse-seine vessels landed PBF at Sakaiminato in 2014

	Date of Landing	Amount (t)	Vessel Name	Reg Port	Owner	Parent Company
1	2-Jun	15.9	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
2	2-Jun	72.5	Wajuma Maru No. 18	Suzu	Wajima Gyogyo	
3	6-Jun	89.3	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
4	6-Jun	4.7	Koyo Maru No. 28	Sakaiminato	Kyowa Suisan	NISSUI
5	6-Jun	123.8	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
6	7-Jun	26.5	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
7	8-Jun	112	Koyo Maru No. 28	Sakaiminato	Kyowa Suisan	NISSUI
8	9-Jun	32.5	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
9	12-Jun	20	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
10	13-Jun	20.6	Koyo Maru No. 28	Sakaiminato	Kyowa Suisan	NISSUI
11	17-Jun	55.6	Koyo Maru No. 28	Sakaiminato	Kyowa Suisan	NISSUI
12	18-Jun	62.1	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
13	20-Jun	17.2	Wajuma Maru No. 18	Suzu	Wajima Gyogyo	
14	20-Jun	46.3	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
15	21-Jun	78.8	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
16	22-Jun	94.8	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
17	22-Jun	134.4	Wajuma Maru No. 18	Suzu	Wajima Gyogyo	
18	25-Jun	49.8	Koyo Maru No. 28	Sakaiminato	Kyowa Suisan	NISSUI
19	27-Jun	106.3	Wajuma Maru No. 18	Suzu	Wajima Gyogyo	
20	29-Jun	7	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
21	29-Jun	31.3	Genpuku Maru No. 1	Hirado	Toyo Gyogyo Co., Ltd.	NISSUI
22	30-Jun	36.8	Wakaba Maru No. 1	Matsue	Wakaba Gyogyo	
23	2-Jul	16.3	Wakaba Maru No. 1	Matsue	Wakaba Gyogyo	
24	2-Jul	12.4	Genpuku Maru No. 1	Hirado	Toyo Gyogyo Co., Ltd.	NISSUI
25	2-Jul	67.9	Wajuma Maru No. 18	Suzu	Wajima Gyogyo	
26	8-Jul	12.3	Genpuku Maru No. 1	Hirado	Toyo Gyogyo Co., Ltd.	
27	8-Jul	23.9	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro
28	9-Jul	56.4	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
29	10-Jul	42.6	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
30	16-Jul	1.9	Koyo Maru No. 1	Sakaiminato	Kyowa Suisan	NISSUI
31	18-Jul	32.2	Wajuma Maru No. 18	Suzu	Wajima Gyogyo	
32	22-Jul	1.3	Koyo Maru No. 28	Sakaiminato	Kyowa Suisan	NISSUI
33	25-Jul	25.6	Genpuku Maru No. 1	Hirado	Toyo Gyogyo Co., Ltd.	
34	28-Jul	33.4	Taiyo Maru No. 21	Tokyo	TAIYO A&F	Maruha Nichiro

**AppendixVI: Amount, average price, and total value of fresh and fozen PBF in landing areas**

**Fresh tuna**

	amount	average price	total value (million yen)
2003	1,571	2,062	3,239
2004	5,331	1,325	7,064
2005	4,764	1,349	6,427
2006	3,382	1,806	6,108
2007	3,406	1,605	5,467
2008	2,715	1,649	4,477
2009	2,212	1,533	3,391
2010	2,263	2,162	4,893
2011	3,498	1,843	6,447
2012	2,712	2,180	5,912
2013	3,577	1,792	6,410

**Frozen tuna**

	amount	average price	total value (million yen)
2003	3,002	1,985	5,959
2004	2,373	2,077	4,929
2005	2,037	2,053	4,182
2006	1,946	2,210	4,301
2007	931	2,746	2,557
2008	1,011	2,822	2,853
2009	678	1,686	1,143
2010	1,600	2,009	3,214
2011	1,719	2,451	4,213
2012	1,467	2,499	3,666
2013	1,362	2,241	3,052

### Appendix VII: Stockpile of frozen tuna other than albacore, bigeye, and yellowfin (metric tons)

	Total	Sapporo	Sendao	Chiba	Funabashi	Tokyo	Yokohama	Kawasaki	Nagoya	Kyoto	Osaka	Kobe	Hiroshima	Kitakyushu	Fukuoka	Osaka	Aomori	Hachinohe	Kamatsuri	Ishinomaki	Shogana	Kesanmura	Iwaki	Hirachina	
Jan-05	17,487	55,840	287	29	6	13	561	5,944	2,462	159	71	7	221	11	362	15	1			16	21	65	40	18	
Feb-05	18,863	57,246	264	23	6	13	569	7,219	2,271	154	53	6	217	10	352	12	1			17	17	70	40	20	
Mar-05	19,961	58,573	269	22	3	12	565	8,272	1,930	151	44	6	176	10	350	11	0			15	16	82	36	21	
Apr-05	18,968	57,411	302	25	4	13	604	7,656	1,651	159	50	5	197	11	379	21	1			2	15	16	80	39	19
May-05	18,414	56,887	276	23	3	13	595	7,352	1,470	151	3	38	203	9	388	35	3			11	18	82	35	16	
Jun-05	17,864	56,363	281	21	3	24	585	7,352	1,233	152	28	5	204	8	379	38	1			2	16	104	28	13	
Jul-05	18,135	56,669	303	21	1	23	617	7,609	1,093	156	33	5	202	8	338	34	0			7	44	102	29	13	
Aug-05	15,990	54,555	330	21	1	28	595	6,515	955	158	4	35	188	14	349	32	0			8	33	105	28	14	
Sep-05	17,992	56,888	329	24	0	28	571	7,090	1,831	158	4	31	158	4	254	32	0			7	28	106	31	13	
Oct-05	18,955	57,579	374	22	0	27	597	7,329	2,480	183	29	4	191	36	254	37	0			5	36	102	29	10	
Nov-05	17,827	56,482	382	27	0	28	655	6,570	2,514	186	34	5	190	37	236	34	0			6	47	92	26	12	
Dec-05	15,557	54,242	389	35	3	26	613	5,150	2,919	188	41	5	222	31	191	25	0			8	43	93	27	10	
Jan-06	16,562	56,278	318	29	3	24	550	4,915	2,388	185	29	4	219	22	213	24	0			5	43	93	27	10	
Feb-06	18,079	58,828	311	19	3	24	561	5,790	2,333	181	1	30	178	19	232	16	0			7	31	125	28	11	
Mar-06	20,405	59,183	282	26	6	23	583	7,043	2,213	172	23	4	145	20	199	6	0			4	29	141	35	10	
Apr-06	19,614	58,422	301	28	6	24	569	7,043	2,012	187	1	35	6	127	16	200	1			3	30	95	38	9	
May-06	18,377	57,215	274	27	4	23	517	5,997	1,925	190	25	6	184	12	198	4	0			4	28	128	49	9	
Jun-06	18,084	56,952	288	35	2	24	458	5,239	1,675	192	26	4	165	8	203	4	0			137	60	170	42	10	
Jul-06	17,891	56,790	312	35	2	24	432	6,005	1,444	198	28	4	134	9	238	2	0			65	23	206	38	12	
Aug-06	17,546	56,476	291	35	2	24	418	5,728	1,878	160	29	4	169	9	259	1	0			70	40	204	33	10	
Sep-06	17,742	56,703	283	36	2	23	408	6,537	1,921	147	25	3	146	7	235	3	0			46	45	194	31	11	
Oct-06	17,661	56,652	301	32	2	23	378	6,192	1,780	154	25	3	133	8	291	4	1			45	49	181	30	14	
Nov-06	16,719	55,741	325	39	2	80	406	5,324	1,903	151	25	4	138	18	266	4	1			38	71	188	28	17	
Dec-06	17,077	56,129	378	42	1	76	433	5,551	2,061	171	37	7	138	14	219	8	3			34	58	175	25	18	
Jan-07	17,216	56,299	332	43	3	52	427	5,852	1,839	152	25	5	163	11	260	7	2			33	48	132	21	16	
Feb-07	18,984	58,098	313	30	1	51	409	7,562	1,696	144	19	6	137	9	257	4	1			33	54	127	23	17	
Mar-07	21,165	60,907	288	24	1	36	496	8,663	1,828	141	19	5	140	11	258	5	1			31	30	131	24	16	
Apr-07	19,764	58,937	326	31	1	26	441	7,669	1,631	147	21	4	96	21	254	6	0			29	144	22	22	14	
May-07	16,914	56,148	306	26	1	25	405	6,653	1,141	141	24	3	142	16	243	3	0			30	29	142	21	12	
Jun-07	15,773	55,338	272	21	1	62	347	6,306	1,033	141	31	2	177	21	228	3	0			29	35	159	19	12	
Jul-07	15,773	55,068	272	22	2	145	306	5,715	1,518	137	24	2	173	9	247	2	2			29	39	137	19	11	
Aug-07	17,819	57,145	271	26	2	96	259	6,836	1,432	134	21	3	161	12	225	4	1			29	37	124	20	8	
Sep-07	16,820	56,176	321	25	2	113	284	5,833	1,446	137	19	4	121	11	227	5	0			29	29	116	22	7	
Oct-07	17,379	56,766	423	26	2	126	346	5,642	1,408	149	21	4	152	12	152	5	0			30	59	108	25	9	
Nov-07	16,597	56,014	441	30	0	62	346	5,642	1,280	148	25	7	157	6	124	11	2			26	91	111	29	9	
Dec-07	17,923	57,371	353	23	1	34	157	6,859	1,236	141	161	5	139	5	112	5	1			26	67	111	29	8	
Jan-08	19,505	58,984	326	19	1	89	157	7,876	1,094	135	130	5	132	3	148	5	2			25	51	51	28	9	
Feb-08	22,910	62,418	325	21	1	193	159	9,248	986	132	107	3	128	3	177	3	2			25	51	51	28	9	
Mar-08	21,682	61,221	337	18	1	49	161	8,664	1,153	136	126	4	95	4	203	3	1			25	44	25	28	10	
Apr-08	20,531	60,200	347	15	1	36	159	7,906	1,024	132	115	1	178	5	203	7	0			25	25	65	28	10	
May-08	20,000	59,600	328	16	1	34	127	7,554	979	134	109	4	191	11	239	7	1			26	40	61	30	11	
Jun-08	19,827	59,457	349	16	1	28	161	7,823	903	131	122	3	186	5	198	5	1			26	38	65	33	11	
Jul-08	19,732	59,393	333	22	1	35	143	7,780	906	131	139	3	163	20	254	6	1			30	32	133	32	11	
Aug-08	22,799	62,791	344	20	1	64	196	9,189	934	132	115	2	137	8	201	7	1			30	31	133	32	12	
Sep-08	22,671	62,393	381	20	1	31	210	8,551	1,263	135	2	193	3	136	10	201	12	2		30	26	138	34	15	
Oct-08	21,783	61,536	398	30	0	55	151	8,226	1,217	136	221	6	138	16	182	14	1			30	36	122	33	15	
Nov-08	20,005	59,788	363	19	1	42	151	7,437	1,197	144	308	7	140	16	107	15	0			30	23	122	30	13	
Dec-08	19,817	59,531	334	27	1	28	159	7,267	1,200	141	276	3	125	14	155	14	1			30	13	118	31	13	
Jan-09	24,311	64,156	277	17	1	40	121	10,278	1,699	147	277	3	107	14	180	11	0			32	12	90	31	13	
Feb-09	24,556	64,429	277	16	1	50	104	10,271	1,557	147	3	323	4	91	14	197	6	1		31	11	77	30	16	
Mar-09	24,345	64,249	284	19	1	58	113	10,201	1,327	170	306	5	67	14	176	7	0			28	10	71	31	15	
Apr-09	24,190	64,124	278	10	1	49	105	9,877	1,839	161	383	7	115	15	159	5	2			10	9	67	40	15	
May-09	23,696	63,661	232	13	1	40	111	9,545	1,147	164	313	3	88	10	172	7	0			10	9	67	40	14	
Jun-09	24,443	64,437	240	16	1	47	97	10,189	1,103	175	314	4	4	5	164	6	0			10	16	62	40	14	
Jul-09	24,106	64,131	219	15	1	51	112	9,615	1,431	170	310	4	3	7	165	4	1			13	22	58	46	14	
Aug-09	24,582	64,639	214	19	1	50	114	9,713	1,372	170	367	5	1	6	194	3	2			13	26	61	44	14	
Sep-09	24,407	64,493	256	30	0	82	82	8,939	1,340	169	377	9	1	6	187	4	1			12	22	56	44	16	
Oct-09	23,673	63,793	273	82	0	56	112	8,291	1,016	197	413	11	1	6	192	6	1			8	12	56	44	19	
Nov-09	20,737	60,885	255	86	0	82	94	7,616	914	204	354	8	1	4	149	15	1			2	15	58	37	18	

\* Bluefin and southern bluefin tuna are classified as "other tuna (tuna other than albacore, bigeye, and yellowfin)" in the statistics by the MAF until 2009.

JFA, "Keizo sushimbutsu ryutsu iyosa (Survey on distribution of refrigerated fishery products)", [http://www.mafr.go.jp/#!/tokei/keizyou/sushan\\_ryutsu/renzou\\_ryutsu/index.html](http://www.mafr.go.jp/#!/tokei/keizyou/sushan_ryutsu/renzou_ryutsu/index.html).

	Choshi	Miura	Numazu	Shizuoka	Yazu	Olga	Kanazawa	Sakamina to	Shimonos eki	Karatsu	Nagasaki	Kagoshim a	Makuraza ki	Yamakaw a	Ibusuki
Jan-05	3	90	11	4,891	915	915	23	35	51	1	21	32	45	142	
Feb-05	6	99	12	4,672	850	1,581	22	34	64	1	13	19	28	123	
Mar-05	8	116	11	4,467	774	2,320	18	33	56	1	11	17	55	79	
Apr-05	58	132	10	3,720	858	2,664	33	33	72	1	9	16	18	93	
May-05	45	114	9	3,987	776	2,467	26	33	60	1	6	8	85	70	
Jun-05	149	135	8	3,842	742	2,220	22	33	72	1	4	6	106	51	
Jul-05	367	126	9	3,887	756	2,109	19	33	65	1	2	14	71	33	
Aug-05	62	131	8	3,459	750	1,895	21	33	79	1	3	16	79	35	
Sep-05	6	131	7	3,820	949	2,036	25	32	93	1	2	17	64	32	
Oct-05	0	124	5	3,859	1,065	1,784	23	33	80	1	2	17	121	91	
Nov-05	13	149	8	3,410	1,219	1,543	23	32	97	1	4	16	16	125	
Dec-05	2	150	8	3,021	866	1,426	23	32	92	1	3	16	123	139	
Jan-06	3	190	6	3,898	1,318	1,440	20	32	114	1	2	13	203	164	
Feb-06	6	179	5	4,500	1,223	1,880	19	32	106	1	4	11	166	119	
Mar-06	9	174	6	4,145	1,287	2,786	12	32	97	1	3	8	116	214	
Apr-06	35	139	7	4,096	1,078	3,121	13	32	62	1	3	17	95	51	
May-06	33	141	4	4,414	1,109	2,743	16	32	75	1	5	13	50	137	
Jun-06	41	145	3	5,347	1,137	2,359	22	32	71	2	3	20	26	128	
Jul-06	97	139	2	4,537	1,702	1,973	18	32	64	1	2	34	35	41	
Aug-06	625	134	4	3,838	1,619	1,721	16	33	86	1	1	25	43	33	
Sep-06	155	145	3	3,629	1,666	1,808	16	32	74	1	4	22	30	51	
Oct-06	155	134	3	3,966	1,667	1,825	15	61	67	1	6	28	30	55	
Nov-06	144	138	3	3,619	1,954	1,594	18	31	64	1	4	18	42	58	
Dec-06	105	112	2	3,319	1,904	1,787	30	30	61	2	1	11	133	128	
Jan-07	148	132	3	3,459	1,856	1,881	19	30	60	1	4	9	53	138	
Feb-07	146	121	2	3,551	1,735	2,245	12	30	29	1	8	9	39	159	
Mar-07	142	128	2	3,986	1,843	3,277	10	30	22	1	11	7	68	108	
Apr-07	151	143	1	3,651	1,602	3,065	16	30	16	1	9	30	27	106	
May-07	56	137	2	3,448	1,403	2,534	17	32	34	1	10	12	22	73	
Jun-07	348	128	1	3,051	1,550	2,534	17	32	34	1	14	20	29	79	
Jul-07	174	121	2	3,002	1,495	2,360	18	36	63	1	9	29	17	40	
Aug-07	40	125	4	2,633	1,403	2,586	20	36	60	1	5	9	7	33	
Sep-07	42	124	3	2,367	1,442	3,940	12	36	51	1	6	6	44	20	
Oct-07	2	133	4	2,119	1,567	4,022	13	39	29	1	6	6	44	20	
Nov-07	11	133	4	2,290	1,480	4,560	15	39	27	2	9	34	16	81	
Dec-07	4	134	4	2,065	1,371	4,233	34	38	15	1	13	21	39	76	
Jan-08	7	107	2	2,580	1,228	4,325	28	38	20	2	11	15	34	52	
Feb-08	134	120	4	2,951	958	4,788	18	38	24	1	14	13	29	43	
Mar-08	122	113	3	3,156	1,368	6,379	14	38	33	1	20	8	50	53	
Apr-08	139	131	7	2,975	1,172	5,934	16	38	9	1	21	10	42	122	
May-08	108	134	4	3,181	1,068	5,617	17	28	6	1	19	15	35	116	
Jun-08	86	124	4	3,325	1,123	5,197	15	28	4	1	19	40	27	103	
Jul-08	55	115	2	3,330	1,364	4,654	13	31	5	2	18	33	-	99	
Aug-08	184	140	1	3,285	1,297	4,461	12	31	7	1	18	34	-	74	
Sep-08	60	141	2	3,966	1,464	5,387	10	30	12	1	17	32	-	75	
Oct-08	37	156	8	4,280	1,418	5,187	10	30	14	1	17	16	13	108	
Nov-08	65	132	7	4,297	1,405	4,523	11	30	24	1	17	28	12	184	
Dec-08	81	100	3	4,017	1,279	4,127	17	30	28	1	16	12	16	109	
Jan-09	80	92	2	4,339	5,054	-	13	29	23	1	16	9	19	188	
Feb-09	108	92	2	5,193	5,283	-	9	29	20	1	16	12	15	179	
Mar-09	99	53	4	4,357	6,010	-	8	29	21	1	16	11	60	164	
Apr-09	128	56	3	4,821	6,010	-	13	29	24	1	16	13	89	166	
May-09	81	44	2	4,622	5,982	-	13	29	23	1	16	26	59	174	
Jun-09	209	43	2	5,163	6,006	-	12	29	34	1	16	16	36	159	
Jul-09	428	41	2	5,997	5,122	-	14	30	35	1	16	42	38	149	
Aug-09	218	39	3	6,532	4,810	-	17	30	32	1	16	42	52	48	
Sep-09	119	37	3	6,095	5,663	-	19	30	27	1	16	42	65	72	
Oct-09	26	36	2	7,450	5,039	-	17	29	21	1	15	29	59	70	
Nov-09	17	44	3	7,592	4,965	-	16	29	21	1	15	33	55	87	
Dec-09	17	39	3	6,891	3,649	-	29	28	7	1	20	16	49	69	

\* Bluefin and southern bluefin tuna are classified as "other tuna (tuna other than albacore, bigeye, and yellowfin)" in the statistics by the MAF until 2009.  
JFA, "Keizo susanbutsu ryutsu tyosa (Survey on distribution of refrigerated fishery products)", [http://www.maff.go.jp/j/tyokei/kouhyou/susan\\_ryutsu/renzou\\_ryutsu/index.html](http://www.maff.go.jp/j/tyokei/kouhyou/susan_ryutsu/renzou_ryutsu/index.html).

## Appendix VIII: Stockpile of frozen bluefin tuna (metric tons)

	Shizuoka (Shizuoka Pref.)	Yaizu (Shizuoka Pref.)	Kawasaki (Kanagawa Pref.)	Fukuoka (Fukuoka Pref.)	Iwaki (Fukushima Pref.)	Nagoya (Aichi Pref.)	Kanazawa (Ishikawa Pref.)	Miura (Kanagawa Pref.)	Aomori (Aomori Pref.)	Others	Total
Jan-10	2,745	495	594	121	27	18	10	4	-	8	4,022
Feb-10	2,916	567	566	120	27	18	10	1	-	11	4,236
Mar-10	3,347	518	725	98	28	20	9	1	1	11	4,758
Apr-10	3,467	572	518	90	31	28	8	1	5	13	4,733
May-10	3,257	555	534	85	30	9	8	2	3	11	4,494
Jun-10	3,136	504	505	93	31	12	7	3	3	7	4,301
Jul-10	2,856	375	497	99	30	9	8	2	3	5	3,884
Aug-10	2,625	297	466	89	30	12	8	2	2	5	3,536
Sep-10	2,445	1,138	542	91	28	11	8	3	2	5	4,273
Oct-10	2,095	990	527	84	34	14	8	2	2	5	3,761
Nov-10	1,947	911	510	128	34	15	7	4	1	4	3,561
Dec-10	1,685	1,418	240	104	32	12	13	3	1	4	3,512
Jan-11	1,615	1,457	343	140	33	8	8	2	1	3	3,610
Feb-11	3,225	1,637	294	141	31	9	5	3	1	3	5,349
Mar-11	3,155	1,636	365	149	31	8	4	4	1	2	5,355
Apr-11	3,134	1,613	533	108	30	8	8	3	1	2	5,440
May-11	2,894	1,516	448	99	33	9	9	3	1	1	5,013
Jun-11	2,775	1,440	390	86	34	9	12	2	-	1	4,749
Jul-11	2,696	1,358	353	95	35	9	10	1	1	13	4,571
Aug-11	2,569	1,321	291	102	36	9	8	1	1	1	4,339
Sep-11	2,408	1,266	318	116	35	10	8	1	1	1	4,164
Oct-11	2,199	1,294	269	74	31	11	8	1	1	1	3,889
Nov-11	1,920	1,138	334	108	35	12	8	1	2	3	3,561
Dec-11	1,702	936	345	89	32	14	10	1	1	1	3,131
Jan-12	1,723	925	365	123	29	10	6	3	2	1	3,187
Feb-12	1,834	908	179	191	27	11	4	2	2	1	3,159
Mar-12	1,607	933	335	193	27	8	2	4	1	1	3,111
Apr-12	1,725	802	423	133	25	13	3	4	2	1	3,131
May-12	1,665	795	437	164	25	11	2	1	1	1	3,102
Jun-12	1,564	812	379	142	23	12	3	2	1	1	2,939
Jul-12	1,472	781	363	120	23	12	2	4	1	1	2,779
Aug-12	1,360	840	322	134	25	11	5	4	1	2	2,704
Sep-12	1,271	940	298	136	27	10	6	-	2	1	2,691
Oct-12	1,142	911	231	126	25	15	2	-	2	1	2,455
Nov-12	963	845	134	116	27	25	3	-	3	2	2,118
Dec-12	635	833	94	83	27	21	3	-	1	1	1,698
Jan-13	782	795	4	105	29	16	2	-	1	1	1,735
Feb-13	714	737	3	121	28	18	1	-	1	1	1,624
Mar-13	765	687	17	144	26	11	1	-	1	1	1,653
Apr-13	675	718	13	120	25	14	1	-	1	0	1,567
May-13	704	773	11	113	26	13	1	-	2	0	1,643
Jun-13	593	802	9	117	23	15	1	-	1	0	1,561
Jul-13	493	720	17	131	27	16	2	-	1	0	1,407
Aug-13	394	611	25	127	30	14	1	-	1	0	1,203
Sep-13	343	617	21	144	31	15	1	-	1	0	1,173
Oct-13	274	607	7	102	30	18	2	-	2	0	1,042
Nov-13	154	581	5	99	31	19	1	-	3	0	893
Dec-13	1,133	554	12	80	28	13	3	-	1	0	1,824
Jan-14	1,373	548	8	103	28	10			2	1	2,073
Feb-14	1,374	1,004	6	79	25	14			2	1	2,505
Mar-14	1,573	1,022	6	69	22	13	1			1	2,707
Apr-14	1,482	1,138	8	72	24	14	1			1	2,740
May-14	1,343	1,082	7	126	26	11	1			0	2,596
Jun-14	1,303	1,039	9	126	26	17	1			1	2,522
Jul-14	1,194	914	14	119	26	15	1			1	2,284
Aug-14	1,033	797	32	113	26	10	1			1	2,013
Sep-14	894	730	17	93	23	12				0	1,769
Oct-14	736	723	15	53	22	17				0	1,566
Nov-14	545	788	23	73	22	23				0	1,474
Dec-14	324	677	24	75	20	18	1			0	1,139

Japan Fisheries Information Service Center (JAFIC), *Suisanbutsu ryutsu tyosa (Survey on distribution of fisheries products)*, <http://www.market.jafic.or.jp/suisan/fKoukaiMain.aspx>.

**Appendix IX: Stockpile of frozen southern bluefin tuna (metric tons)**

	Kawasaki (Kanagawa Pref.)	Fukuoka (Fukuoka Pref.)	Iwaki (Fukushima Pref.)	Shizuoka (Shizuoka Pref.)	Yaizu (Shizuoka Pref.)	Others	Total
Jan-10	177	25	7	1,348	1,007	6	2,570
Feb-10	145	24	15	1,176	857	6	2,223
Mar-10	62	19	14	987	1,122	3	2,207
Apr-10	52	13	13	916	940	3	1,937
May-10	45	33	13	987	1,360	3	2,441
Jun-10	39	13	13	856	1,296	3	2,220
Jul-10	45	14	13	895	1,272	3	2,242
Aug-10	50	10	10	845	1,430	2	2,347
Sep-10	38	5	7	1,154	1,372	3	2,579
Oct-10	38	13	11	1,135	1,317	2	2,516
Nov-10	40	5	10	1,287	1,195	4	2,541
Dec-10	40	9	9	986	1,201	2	2,247
Jan-11	30	10	10	856	999	3	1,908
Feb-11	30	10	9	857	871	2	1,779
Mar-11	47	4	9	736	801	2	1,599
Apr-11	24	4	9	545	1,222	2	1,806
May-11	11	5	8	406	1,193	2	1,625
Jun-11	17	11	7	295	998	2	1,330
Jul-11	15	3	6	304	1,034	2	1,364
Aug-11	8	12	6	525	1,463	2	2,016
Sep-11	110	11	8	556	1,641	2	2,328
Oct-11	113	10	7	766	1,674	2	2,572
Nov-11	102	5	7	625	1,964	2	2,705
Dec-11	77	3	6	425	829	2	1,342
Jan-12	40	32	6	495	801	2	1,376
Feb-12	71	9	5	716	1,027	2	1,830
Mar-12	69	9	5	565	1,035	1	1,684
Apr-12	76	18	4	376	1,322	2	1,798
May-12	58	10	4	335	1,212	2	1,621
Jun-12	48	11	4	315	1,102	2	1,482
Jul-12	34	22	4	294	1,057	2	1,413
Aug-12	28	12	3	184	1,062	5	1,294
Sep-12	32	13	3	239	1,891	3	2,181
Oct-12	10	28	3	233	1,823	4	2,101
Nov-12	10	9	3	194	1,618	5	1,839
Dec-12	16	43	3	567	1,796	6	2,431
Jan-13	5	17	3	536	1,719	6	2,286
Feb-13	14	9	3	548	1,581	5	2,160
Mar-13	14	4	3	407	1,425	5	1,858
Apr-13	17	33	2	318	1,410	4	1,784
May-13	9	41	2	235	1,130	3	1,420
Jun-13	8	37	2	193	929	3	1,172
Jul-13	6	14	1	151	740	3	915
Aug-13	7	10	2	233	754	3	1,009
Sep-13	10	6	2	695	2,278	3	2,994
Oct-13	8	42	2	928	1,892	3	2,875
Nov-13	6	18	2	834	1,598	3	2,461
Dec-13	14	5	6	638	1,343	3	2,009
Jan-14	9	2	6	557	1,218	1	1,793
Feb-14	8	7	5	576	1,259	0	1,855
Mar-14	8	6	7	405	1,085	2	1,513
Apr-14	7	6	8	385	1,025	2	1,433
May-14	8	11	5	308	981	2	1,315
Jun-14	8	11	6	276	940	1	1,242
Jul-14	13	10	7	217	1,103	1	1,351
Aug-14	13	27	7	686	1,340	1	2,074
Sep-14	14	23	7	1,178	2,897	1	4,120
Oct-14	5	19	10	1,407	2,949	1	4,391
Nov-14	3	22	9	1,517	2,778	2	4,331
Dec-14	1	22	17	1,295	2,567	3	3,905

Japan Fisheries Information Service Center (JAFIC), *Suisanbutsu ryutsu tyosa (Survey on distribution of fisheries products)*,  
<http://www.market.jafic.or.jp/suisan/fkokuaiMain.aspx>.





## Appendix XI: The amount of Pacific, Atlantic and southern bluefin tuna imported to Japan (metric tons)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Republic of Korea	3,354	878	1,559	1,143	1,314	2,130	2,220	1,889	951	2,216	1,024	2,076
China	76	23	43	44	83	49	0	36	33	29	31	33
Taiwan	1,171	1,443	849	885	586	584	731	984	459	310	612	390
Thailand	12		1							0		
Singapore			509									
Philippines	45	85	45	7	64	45	58	38	39	40	39	40
Indonesia	50	24	24			10	43	229	331	347	429	560
Israel	2	1										
Armenia								2				
Iceland										2		17
Norway				1				0				
Ireland	0	2									0	
France	159	208	76	58	360	147	285	195	206	116	93	132
Portugal	4	2					18	26	81	79	166	109
Spain	4,315	4,253	4,422	3,672	3,341	3,902	2,077	1,676	1,536	1,880	2,346	1,704
Italy	1,237	584	1,118	2,682	2,818	1,827	985	562	29	327	52	145
Malta	713	1,729	2,175	4,550	2,239	4,461	3,035	2,716	2,848	1,849	4,337	2,208
Albania							24	4				
Greece	84	44	440	793	436	405	407	574	188	122	170	55
Cyprus	10	280	668	1071	755	679	750		9	0	3	2
Turkey	1576	2805	2827	3217	3383	2310	3506	1161	1533	1461	1584	1393
Croatia	2666	3632	2479	4687	3966	1282	3688	1885	2328	1912	1480	1902
Canada	303	277	267	360	249	325	327	337	322	326	322	293
USA	586	244	250	93	91	145	239	342	330	327	135	191
Mexico	1912	3849	4106	3286	2619	2390	2757	1527	3518	1282	3620	5415
Honduras	212	933	68									
Panama	3323	4018	1145	146				223				
Chile		0										
Morocco	419	296	994	1318	1514	1170	1531	931	780	754	686	566
Algeria						8	147	9	10			
Tunisia	459	793	1337	1706	1813	1811	2279	1131	1010	632	1315	1249
Libya	458	703	313	130	203	190	56	43	9	2	20	120
Guinea					12							
South Africa	5	1		3	8	4	1	12	8	11	2	1
Australia	6384	9756	8745	8616	8735	7024	8189	6523	7079	6930	7877	8893
Papua New Guinea		2				1						
New Zealand	268	246	154	120	149	103	171	258	313	457	488	504
Cook Islands		0	2									0
Tokelau	2											
Vanuatu	0				0							
Fiji									0	5		
Tonga												0
Pitcairn Islands									0			
Marshall Islands												0
Palau		0		1		1	1			1	2	

Ministry of Finance, "Zaimusyo Boeki Tokei (Trade Statistics of Japan)," accessed May 1, 2015, <http://www.customs.go.jp/toukei/info/>

## Appendix XII: Retail price of PBF

Item	production area	price (JPY/100g)	selling area	date
fresh BF	Mie	1580	Sapporo	01/15/14
fresh BF	Kagoshima	995	Sapporo	01/15/14
fresh BF	Nagasaki	1280	Tokyo	01/11/14
fresh BF	Nagasaki	980	Tokyo	01/11/14
fresh BF	Nagasaki	1180	Tokyo	01/04/14
fresh BF	Nagasaki	980	Tokyo	01/04/14
BF	Nagasaki	980	Osaka	02/28/14
fresh BF	Nagasaki	1180	Tokyo	02/22/14
fresh BF	Nagasaki	1280	Tokyo	02/08/14
fresh BF	Nagasaki	980	Tokyo	02/08/14
fresh BF	Nagasaki	1380	Tokyo	02/08/14
fresh BF	Nagasaki	1380	Tokyo	02/01/14
fresh BF	Nagasaki	980	Tokyo	02/01/14
fresh BF	Nagasaki	1280	Tokyo	02/01/14
fresh BF	Nagasaki	943	Tokyo	03/29/14
fresh BF	Nagasaki	1220	Tokyo	03/29/14
fresh BF	Nagasaki	1315	Tokyo	03/29/14
fresh BF	Yamaguchi	1280	Sapporo	03/17/14
BF	Oita	1280	Tokyo	03/09/14
BF	Kagoshima	1280	Sapporo	03/05/14
fresh BF	Nagasaki	1220	Tokyo	04/26/14
fresh BF	Kagoshima	1217	Sapporo	04/23/14
fresh BF	Kagoshima	1219	Sapporo	04/16/14
fresh BF	Nagasaki	1009	Tokyo	04/12/14
fresh BF	Nagasaki	1318	Tokyo	04/12/14
fresh BF	Nagasaki	1420	Tokyo	04/12/14
fresh BF	Kagoshima	1501	Sapporo	04/09/14
fresh BF	Kagoshima	948	Sapporo	04/09/14
fresh BF	Nagasaki	934	Tokyo	04/05/14
fresh BF	Nagasaki	1220	Tokyo	04/05/14
fresh BF	Kagoshima	948	Sapporo	04/01/14
fresh BF	Nagasaki	1080	Tokyo	05/24/14
fresh BF	Nagasaki	1410	Sapporo	05/21/14
fresh BF	Nagasaki	1250	Sapporo	05/14/14
fresh BF	Nagasaki	1180	Tokyo	05/10/14
fresh BF	Nagasaki	1080	Tokyo	05/10/14
fresh BF	Nagasaki	934	Tokyo	05/03/14
fresh BF	Nagasaki	980	Tokyo	06/28/14
fresh BF	Nagasaki	1280	Tokyo	06/28/14
fresh BF	Tottori	598	Osaka	06/27/14
fresh BF	Kagoshima	1250	Sapporo	06/25/14
BF	Nagasaki	1380	Tokyo	06/22/14
BF	Nagasaki	1280	Tokyo	06/22/14
fresh BF	Tottori	499	Osaka	06/20/14
fresh BF	Nagasaki	1219	Sapporo	06/18/14
fresh BF	Nagasaki	1120	Tokyo	06/14/14
fresh BF	Nagasaki	1320	Tokyo	06/14/14
fresh BF	Tottori	598	Osaka	06/13/14
fresh BF	North Pacific	398	Sapporo	06/11/14
fresh BF	North Pacific	498	Sapporo	06/11/14
fresh BF	Nagasaki	980	Tokyo	06/07/14
fresh BF	Nagasaki	1380	Tokyo	06/07/14
fresh BF	Nagasaki	1280	Tokyo	06/07/14
fresh BF	Tottori	499	Osaka	06/06/14
fresh BF	Nagasaki	950	Sapporo	07/29/14
BF	Nagasaki	1120	Tokyo	07/27/14
BF	Kagoshima	1250	Sapporo	07/23/14
fresh BF	Nagasaki	980	Tokyo	07/19/14
fresh BF	Nagasaki	1280	Tokyo	07/19/14

Item	country of origin	price (JPY/100g)	selling area	date
fresh BF	Mexico	780	Tokyo	01/25/14
fresh BF	Mexico	980	Tokyo	01/18/14
fresh BF	Mexico	800	Tokyo	01/18/14
fresh BF	Mexico	980	Tokyo	02/22/14
fresh BF	Mexico	880	Tokyo	02/22/14
fresh BF	Mexico	880	Tokyo	02/15/14
fresh BF	Mexico	1280	Tokyo	02/15/14
BF	Mexico	934	Tokyo	04/19/14
BF	Mexico	934	Tokyo	05/24/14
BF	Mexico	958	Tokyo	05/17/14
BF	Mexico	934	Tokyo	06/22/14
BF	Mexico	934	Tokyo	06/14/14
BF	Mexico	934	Tokyo	06/07/14
BF	Mexico	980	Tokyo	07/19/14
BF	Mexico	980	Tokyo	07/05/14
BF	Mexico	980	Tokyo	08/23/14
BF	Mexico	980	Tokyo	08/03/14
BF	Mexico	980	Tokyo	09/27/14
BF	Mexico	980	Tokyo	09/21/14
fresh BF	Mexico	980	Tokyo	10/25/14
fresh BF	Mexico	980	Tokyo	10/19/14
BF	Mexico	980	Tokyo	10/04/14
BF	Mexico	980	Tokyo	11/15/14
BF	Mexico	980	Tokyo	11/08/14
BF	Mexico	980	Tokyo	11/01/14
BF	Mexico	798	Osaka	12/19/14
BF	Mexico	798	Osaka	12/05/14

Item	country of origin	price (JPY/100g)	selling area	date
SBF	Indonesia	580	Sapporo	02/12/14
SBF	Indonesia	580	Sapporo	02/02/14
SBF	Indonesia	580	Sapporo	03/05/14
SBF	Indonesia	580	Sapporo	04/16/14
fresh tuna	Indonesia	580	Sapporo	05/21/14
fresh tuna	Indonesia	580	Sapporo	07/16/14
fresh tuna	Indonesia	495	Sapporo	10/15/14
fresh tuna	Indonesia	580	Sapporo	11/19/14
fresh tuna	Indonesia	495	Sapporo	11/05/14

Item	country of origin	price (JPY/100g)	selling area	date
BF	Malta	980	Tokyo	01/18/14
fresh BF	Malta	980	Tokyo	02/22/14
fresh BF	Malta	980	Tokyo	02/15/14
BF	Malta	980	Tokyo	02/08/14
BF	Malta	980	Tokyo	03/16/14
BF	Malta	980	Tokyo	03/09/14
BF	Malta	980	Tokyo	04/26/14
BF	Malta	934	Tokyo	04/05/14
BF	Tunisia	680	Tokyo	07/27/14
BF	Malta	980	Tokyo	07/12/14
BF	Malta	998	Osaka	08/15/14
BF	Croatia	1180	Tokyo	12/20/14
BF	Croatia	1180	Tokyo	12/13/14

Item	production area	price (JPY/100g)	selling area	date
fresh BF	Kagoshima	1250	Sapporo	07/16/14
fresh BF	Nagasaki	1280	Tokyo	07/12/14
fresh BF	Nagasaki	1280	Tokyo	07/05/14
fresh BF	Nagasaki	1380	Tokyo	07/05/14
fresh BF	Tottori	399	Osaka	07/04/14
fresh BF	Kagoshima	1250	Sapporo	07/03/14
fresh BF	Nagasaki	980	Tokyo	08/31/14
fresh BF	Nagasaki	880	Tokyo	08/31/14
fresh BF	Nagasaki	934	Tokyo	08/23/14
fresh BF	Nagasaki	1120	Tokyo	08/23/14
fresh BF	Nagasaki	1250	Sapporo	08/18/14
fresh BF	Nagasaki	950	Sapporo	08/18/14
fresh BF	Nagasaki	1280	Tokyo	08/17/14
fresh BF	Nagasaki	980	Tokyo	08/17/14
fresh BF	Nagasaki	1280	Tokyo	08/03/14
fresh BF	Nagasaki	1380	Tokyo	08/03/14
fresh BF	Nagasaki	880	Tokyo	09/27/14
fresh BF	Nagasaki	980	Tokyo	09/27/14
fresh BF	Nagasaki	1380	Tokyo	09/13/14
fresh BF	Nagasaki	1280	Tokyo	09/13/14
BF	Nagasaki	980	Tokyo	09/07/14
fresh BF	Kagoshima	1350	Sapporo	09/03/14
fresh BF	Nagasaki	980	Tokyo	10/25/14
fresh BF	Nagasaki	880	Tokyo	10/25/14
fresh BF	Nagasaki	1280	Tokyo	10/19/14
fresh BF	Kagoshima	1350	Sapporo	10/15/14
fresh BF	Nagasaki	1280	Tokyo	10/11/14
fresh BF	Nagasaki	980	Tokyo	10/04/14
fresh BF	Nagasaki	1280	Tokyo	10/04/14
fresh BF	Kagoshima	998	Sapporo	10/01/14
fresh BF	Nagasaki	980	Tokyo	11/29/14
fresh BF	Nagasaki	880	Tokyo	11/29/14
fresh BF	Nagasaki	980	Tokyo	11/22/14
fresh BF	Nagasaki	1280	Tokyo	11/22/14
fresh BF	Nagasaki	880	Tokyo	11/22/14
fresh BF	Kagoshima	1550	Sapporo	11/19/14
fresh BF	Nagasaki	1380	Tokyo	11/15/14
fresh BF	Nagasaki	1280	Tokyo	11/15/14
fresh BF	Kagoshima	1350	Sapporo	11/11/14
fresh BF	Nagasaki	880	Tokyo	11/08/14
fresh BF	Nagasaki	980	Tokyo	11/08/14
fresh BF	Nagasaki	980	Tokyo	11/01/14
fresh BF	Nagasaki	980	Tokyo	12/20/14
fresh BF	Nagasaki	1280	Tokyo	12/20/14
fresh BF	Kagoshima	1350	Sapporo	12/17/14
fresh BF	Kagoshima	1350	Sapporo	12/10/14
fresh BF	Nagasaki	1280	Tokyo	12/06/14
fresh BF	Nagasaki	880	Tokyo	12/06/14
fresh BF	Nagasaki	980	Tokyo	12/06/14

Japan Fisheries Information Center, *Osakana Hiroba*, <http://osakana-hiroba.jafic.jp/index.html>

**Appendix XIII: Estimates of relative amount of recruitment, relative amount of seed tuna put into farming cages, relative amount of catch of juveniles, and CPUE by monitoring vessels off western Kyusyu**

	estimates of relative amount of recruitment*	relative amount of seed tuna put into farming cages*	relative amount of catch of juveniles*	CPUE by monitoring troll vessels off the coast of western Kyusyu (November - February)**
2000	1.463		3.117	
2001	1.641		2.38	
2002	1.254		1.028	
2003	0.909		0.502	
2004	2.445		2.552	
2005	1.201		1.299	
2006	0.945		0.775	
2007	2.177		2.186	
2008	1.59	1.518	1.705	
2009	0.636	0.631	0.812	
2010	1.297	1.411	1.208	
2011	0.857	0.996	0.865	0.933
2012	0.62	0.443	0.41	0.802
2013		0.649	1.06	2.05
2014		0.152	0.126	0.346

\* The value of 2008 – 2012 average level is set at 1.

\*\* The value of 2011-2014 average level is set at 1.

The National Research Institute of Far Seas Fisheries, FRA, "Taiheyo kuromaguro 2014 umare kanyuryo monitaringu sokuho (Preliminary results on the monitoring of the recruitment of Pacific bluefin tuna in 2014)," May 2015, accessed August 1, 2015

<http://www.jfa.maff.go.jp/j/press/sigen/pdf/201505kuromaguro.pdf>;

JFA, "'Taiheiyō kuromaguro 2014 umare kanyuryō monitaringu sokuho' ni teiji sareta gurafu (Figure shown in 'Preliminary results on the monitoring of the recruitment of Pacific bluefin tuna in 2014')" (obtained through the Information Disclosure Act).

## Appendix XIV: List of bluefin tuna farming sites in Japan

Source: Fisheries Agency, "Kuromaguro yosyokujo oyobi kuromagura yosyokugyosha ichiran (Directory of bluefin tuna farming sites and farmers)," December 1, 2014, accessed May 1, 2015, [http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro\\_itiran\\_10.pdf](http://www.jfa.maff.go.jp/j/tuna/pdf/kuromaguro_itiran_10.pdf).

No+ A3: A3: G12	Pref.	Operator	Address of Operator	Farming Cage	Area (m <sup>2</sup> )	Address of Cage
1	Mie	Marukyo Suisan	2647-77 Togu , Minamiise-cho, Watarai-gun, Mie	4 (circle, 60m across) 2 (circle, 50m across)	15,237	Yadoura, Minamiise-cho, Watarai-gun, Mie pref.
2	Mie	Seiyo Suisan	Nayaura 20, Minamiise-cho, Watarai-gun, Mie	4 (circle, 50m across)	19,164	Nayaura, Minamiise-cho, Watarai-gun, Mie pref.
		Marukyo Suisan	2647-77 Togu, Minamiise-cho, Watarai-gun, Mie	4 (circle, 60m across)		
3	Mie	Bluefin Mie	109-6 Kouch, Minamiise-cho, Watarai-gun, Mie	18 (circle, 50m across)	35,343	Kamisaki ura, Minamiise-cho, Watarai-gun, Mie pref.
4	Mie	OWASEBUSSAN	1-33 Hayashi-machi, Owase-shi, Mie	12 (regular octagon, 5.5m on a side)	1,753	Kamisaki ura, Minamiise-cho, Watarai-gun, Mie pref.
5	Mie	OWASEBUSSAN	1-33 Hayashi-machi, Owase-shi, Mie	12 (regular octagon, 5.5m on a side)	1,753	Koikeminami, Sugari-cho, Owase-shi, Mie
6	Mie	OWASEBUSSAN	1-33 Hayashi-machi, Owase-shi, Mie	6 (regular octagon, 5.5m on a side)	877	Ohsonoura Owase-shi, Mie
7	Mie	Kumano Yogyo (Maruha Nichiro Corporation)	300 Hobo-cho, Kumano-shi, Mie	10 (rectangle, 52m x 26m)	38,400	Hobo-cho, Kumano-shi, Mie
8	Mie	Kumano Yogyo (Maruha Nichiro Corporation)	300 Hobo-cho, Kumano-shi, Mie	8 (rectangle, 52m x 26m)	10,816	Hobo-cho, Kumano-shi, Mie
9	Kyoto	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	3 (circle, 40m across) 1 (octagon, 48m x 46m)	5,976	Aza-Kameshima, Ine-cho, Yosa- gun, Kyoto
10	Wakaya ma	Kushimoto Syokuhin	1557 Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama	11 (circle, 30m across) 5 (circle, 37m across) 80 (circle, 20m across) 5 (circle, 18m across) 1 (circle, 17m across) 5 (circle, 15.7m across) 6 (regular	42,208	Minamibohatei Tottan, Kushimoto-ko, Kushimoto, Kushimoto-cho, Higashimuro- gun, Wakayama
		Maruhachi Suisan	1794-9 Ohshima, Kushimoto-cho, Higashimuro-gun, Wakayama			Minamibohatei Tottan, Kushimoto-ko, Kushimoto, Kushimoto-cho, Higashimuro- gun, Wakayama
		Marutou Corporation	1794-13 Ohshima, Kushimoto- cho, Higashimuro-gun, Wakayama			Ohshima, Kushimoto, Kushimoto-cho, Higashimuro- gun, Wakayama
		A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro- gun, Wakayama			Ohshima, Kushimoto, Kushimoto-cho, Higashimuro- gun, Wakayama
		Nanki Kushimoto Suisan (Toyo Reizo Co.,Ltd)	1801 Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama			Ohshima, Kushimoto, Kushimoto-cho, Higashimuro- gun, Wakayama

				hexagon, 16m on a side)		Ohshima, Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama
						Minamibohatei, Kushimoto-ko, Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama
11	Wakayama	A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro-gun, Wakayama	66 (circle, 30m across)	110,783	Izumo, Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama
		Nanki Kushimoto Suisan (Toyo Reizo Co.,Ltd)	1801 Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama	4 (circle, 20m across) 16 (rectangle, 80m x 48m)		
		Kushimoto Marine Farm (Maruha Nichiro Corporation)	1884 Kushimoto, Kushimoto-cho, Higashimuro-gun, Wakayama	2 (square, 27m on a side)		
12	Wakayama	A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro-gun, Wakayama	10 (square, 12m on a side, artificial seeds only)	1,440	Kogaura, Shirahama-cho, Nishimuro-gun, Wakayama
13	Wakayama	A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro-gun, Wakayama	50 (square, 12m on a side, artificial seeds only)	7,200	Uragami, Nachikatsuura-cho, Higashimuro-gun, Wakayama
14	Shimane	Urago Suisan	358 Urago, Nishinoshima-cho, Oki-gun, Shimane	2 (regular octagon, 19.5m on a side)	3,672	Setoshishigahana, Mita, Nishinoshima-cho, Oki-gun, Shimane
15	Yamaguchi	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	12 (octagon, 17.5m on a side) 3 (circle, 30m on a side)	19,869	Yuyamukatsukushimo, Nagato-shi, Yamaguchi
16	Tokushima	(individual: unspecified)		(unspecified, artificial seeds only)		Ohsu, Kitanada-cho, Naruto-shi, Tokushima
17	Tokushima	(individual: unspecified)		(unspecified, artificial seeds only)		Orino, Kitanada-cho, Naruto-shi, Tokushima
18	Tokushima	Nakasuji Suisan	228 Orinoazayashiki, Kitanada-cho, Naruto-shi, Tokushima	(unspecified, artificial seeds only)		Orino, Kitanada-cho, Naruto-shi, Tokushima
19	Tokushima	Hamano Suisan	12 Syukumodani, Shukumodani, Kitanada-cho, Natuto-shi	(unspecified, artificial seeds only)		Orino, Kitanada-cho, Naruto-shi, Tokushima
		Kaiei Suisan	48-4, Higashiura, Ohura, Kitanada-cho, Naruto-shi, Tosushima			
20	Tokushima	(individual: unspecified)		(unspecified, artificial seeds only)		Ohura, Kitanada-cho, Naruto-shi, Tokushima
21	Tokushima	Yamani Sangyo	13-3 Higashibouji, Awata, Kitanada-cho, Naruto-shi, Tokushima	(unspecified, artificial seeds only)		Awata, Kitanada-cho, Naruto-shi, Tokushima



22	Tokushima	Yamani Sangyo	13-3 Higashibouji, Awata, Kitanada-cho, Naruto-shi, Tokushima	(unspecified, artificial seeds only)		Kushiki, Kitanada-cho, Naruto-shi, Tokushima
23	Ehime	(individual: unspecified)		4 (circle, 20m across)	1,257	Okuura, Yoshida-cho, Uwajima-shi, Ehime
24	Ehime	(individual: unspecified)		3 (circle, 34m across)	2,724	Tojima, Uwajima-shi, Ehime
25	Ehime	(individual: unspecified)		6 (circle, 34m across)	5,448	Tojima, Uwajima-shi, Ehime
26	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		6 (circle, 34m across)	9,080	Tojima, Uwajima-shi, Ehime
27	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		5 (circle, 40m across) 2 (circle, 25m across)	7,265	Tojima, Uwajima-shi, Ehime
28	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		3 (circle, 40m across)	3,770	Tojima, Uwajima-shi, Ehime
29	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		1 (rectangle, 17m x 14m) 8 (circle, 20m across) 2 (circle, 30m across)	4,165	Hiburishima, Uwajima-shi, Ehime
30	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		9 (circle 50m across)	17,672	Hiburishima, Uwajima-shi, Ehime
31	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		9 (circle, 40m across) 9 (circle, 50m across)	28,982	Hiburishima, Uwajima-shi, Ehime
32	Ehime	(individual: member of the Uwaumi Fishermen's Production Association)		4 (circle, 20m across)	1,257	Kashiwazaki, Ainan-cho, Minamiuwa-gun, Ehime
33	Ehime	(individual: unspecified)		5 (square, 30m on a side) 1 (circle, 25m across)	4,991	Sarunagi, Ainan-cho, Minamiuwa-gun, Ehime
34	Ehime	(individual: unspecified)		5 (oval, 24m x 14m)	1,320	Sarunagi, Ainan-cho, Minamiuwa-gun, Ehime

35	Ehime	KYOKUYO MARINE EHIME CO., LTD. (KYOKUYO CO., LTD.)	392-2 Hisayoshi, Ainan-Chou, Minamiuwa-gun Ehime	(unspecified, artificial seeds only)		Sarunagi, Ainan-cho, Minamiuwa-gun, Ehime
36	Ehime	KYOKUYO MARINE EHIME CO., LTD. (KYOKUYO CO., LTD.)	392-2 Hisayoshi, Ainan-Chou, Minamiuwa-gun Ehime	4 (square, 50m on a side) 2 (circle, 50m across)	13,927	Hisayoshi, Ainan-cho, Minamiuwa-gun, Ehime
37	Ehime	(individual: unspecified)		(unspecified, artificial seeds only)		Hisayoshi, Ainan-cho, Minamiuwa-gun, Ehime
38	Ehime	(individual: unspecified)		4 (square, 10m on a side)	400	Hisayoshi, Ainan-cho, Minamiuwa-gun, Ehime
39	Ehime	(individual: unspecified)		(unspecified, artificial seeds only)		Hisayoshi, Ainan-cho, Minamiuwa-gun, Ehime
40	Kochi	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	2 (circle, 30m across) 3 (circle, 50m across) 2 (regular hexagon, 16m on a side) 5 (regular octagon, 24m on a side) 4 (octagon, 24.5 and 51.5m on a side)	40,460	Kashiwajima, Otsuki-cho, Hata-gun, Kochi
41	Kochi	(individual: unspecified)		6 (circle, 25m across, artificial seeds only)	2,944	Issai, Otsuki-cho, Hata-gun, Kochi
42	Kochi	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	3 (circle, 50m across, artificial seeds only)	5,888	Issai, Otsuki-cho, Hata-gun, Kochi
43	Kochi	Kyokuyo Marine Farm (KYOKUYO CO., LTD.) Kaneke Sangyo (Nippon Suisan Kaisha, Ltd.) DOHSUINAKATANI SUISAN Co.,Ltd. (Dohsui) Marine Japan	2198-4 Ohfukaura, Sukumo-shi, Kochi 1-8 Nakanosedori, Karatsu-shi, Saga 475-12 Shiinourayama, Tachibanaura, Otsuki-cho, Hata-gun, Kochi 2198-1 Ohfukaura, Sukumo-shi, Kochi	1 (circle, 18m across) 4 (circle, 40m across) 1 (circle, 50m across) 5 (circle, 60m across) 4 (square, 13m on a side) 3 (square, 60m on a side)	32,847	Amaji, Otsuki-cho, Hata-gun, Kochi
44	Kochi	Kyokuyo Marine Farm (KYOKUYO CO., LTD.)	2198-4 Ohfukaura, Sukumo-shi, Kochi	3 (circle 60m across)	8,478	Amaji, Otsuki-cho, Hata-gun, Kochi
45	Kochi	DOHSUINAKATANI SUISAN Co.,Ltd. (Dohsui) MATSUOKA	475-12 Shiinourayama, Tachibanaura, Otsuki-cho, Hata-gun, Kochi 1-10-12 Higashi-yamatomachi, Shimonoseki-shi, Yamaguchi	21 (circle, 30m across, artificial seeds only) 20 (circle, 60m across, artificial seeds only)	71,357	Tachibanaura, Otsuki-cho, Hata-gun, Kochi

46	Kochi	MATSUOKA	1-10-12 Higashi-yamatomachi, Shimonoseki-shi, Yamaguchi	20 (circle, 30m across)	14,130	Tachibanaura, Otsuki-cho, Hata-gun, Kochi
47	Saga	Genkai Yogyo (Maruha Nichiro Corporation)	1351-17 Nagoya, Chinzei-machi, Karatsu-shi, Saga	1 (circle, 30m across) 3 (regular octagon, 30m on a side)	2,826	Nagoya, Chinzei-machi, Karatsu-shi, Saga
48	Nagasaki	Kayaki (SAKATASUISAN Co.,Ltd.)	13-15 Harumidai-machi, Nagasaki-shi, Nagasaki	5 (circle, 40m across) 4 (circle, 30m across) 12 (circle, 20m across) 5 (circle, 20m across, artificial seeds only)	14,446	Kuroshima, Kayakimachi, Nagasaki-shi, Nagasaki
49	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	5263 Kuroshima-cho, Sasebo-shi, Nagasaki	5 (square, 30m on a side)	4,500	Satogaura Kuroshima-cho, Sasebo-shi, Nagasaki
50	Nagasaki	(individual: unspecified)		4 (square, 30m on a side)	3,600	Todobira, Kuroshima-cho, Sasebo-shi, Nagasaki
51	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	5263 Kuroshima-cho, Sasebo-shi, Nagasaki	8 (square, 30m on a side) 3 (rectangle, 45m x 50m) 6 (rectangle, 45m x 70m)	32,850	Kushinohama, Kuroshima-cho, Sasebo-shi, Nagasaki
52	Nagasaki	Sojitz Tuna Farm Takashima (Sojitz Corporation)	801-4 Ohuramen, Takashima-cho, Matsuura-shi, Nagasaki	30 (circle, 40m across) 4 (circle, 40m across, artificial seeds only)	42,704	Satomen, Takashima-cho, Matsuura-shi, Nagasaki
53	Nagasaki	Kuga Suisan	105 Shimodamen, Hoshika-cho, Matsuura-shi, Nagasaki	8 (circle, 20m across) 6 (circle, 15m across)	3,574	Shiroyama, Takezakimen, Hoshika-cho, Matsuura-shi, Nagasaki
54	Nagasaki	Tsujikawa Suisan	1015 Aoshimamen, Hoshika-cho, Matsuura-shi, Nagasaki	3 (circle, 15m across)	531	Aoshimamen, Hoshika-cho, Matsuura-shi, Nagasaki
55	Nagasaki	Tsujikawa Suisan	1015 Aoshimamen, Hoshika-cho, Matsuura-shi, Nagasaki	1 (circle, 15m across)	177	Hanejima, Aoshimamen, Hoshika-cho, Matsuura-shi, Nagasaki
56	Nagasaki	Tsujikawa Suisan	1015 Aoshimamen, Hoshika-cho, Matsuura-shi, Nagasaki	8 (circle, 20m across)	2,512	Ogonoshima, Aoshimamen, Hoshika-cho, Matsuura-shi, Nagasaki
57	Nagasaki	Nagasaki Farm	2-2-13 Shiohama Koto-ku, Tokyo	12 (circle, 20m across)	3,768	Ohse, Furue-cho, Hirado-shi, Nagasaki
58	Nagasaki	(individual: unspecified)		3 (square, 10m on a side) 6 (regular hexagon, 10m on a side)	1,860	Maegatago, Ojika-cho, Kitamatsuura-gun, Nagasaki
59	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	877-13 Ikedahigashifure, Ishida-cho, Iki-shi, Nagasaki	2 (rectangle, 25m x 30m) 2 (rectangle, 30m x 35m) 4 (rectangle, 35m x 40m)	9,200	Ikedanakafure, Ishida-cho, Iki-shi, Nagasaki

60	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	405-12 Gonoura, Gonoura-cho, Iki-shi, Nagasaki	3 (rectangle, 25m x 35m) 3 (rectangle, 25m x 55m) 6 (square, 50m on a side)	21,750	Eboshisaki, Wataraura, Gonoura-cho, Iki-shi, Nagasaki
61	Nagasaki	HASHIGUCHI SUISAN CO., LTD.	40 Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki	8 (circle, 30m across)	5,656	Oganoura, Nishikonourago, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
62	Nagasaki	(individual: unspecified)		2 (circle, 25m across, artificial seeds only)	1,100	Bongaura, Nishikonourago, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
63	Nagasaki	HASHIGUCHI SUISAN CO., LTD.	40 Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki	4 (circle, 25m across) 4 (circle, 20m across)	3,220	Hikoura Yadonoura, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
64	Nagasaki	HASHIGUCHI SUISAN CO., LTD.	40 Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki	12 (circle, 25m across) 8 (circle, 20m across)	8,404	Kaminakashima, Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-shi, Nagasaki
65	Nagasaki	Yoshihide Suisan	528-2 Kirifurusatogo, Shinkamigoto-cho, Minaminatsuura-gun, Nagasaki	8 (circle, 20m across)	2,512	Fukaura, Kirifurusatogo, Shinkamigoto-cho, Minaminatsuura-gun, Nagasaki
66	Nagasaki	HASHIGUCHI SUISAN CO., LTD.	40 Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki	12 (circle, 25m across) 1 (circle, 25m across, artificial seeds only)	6,383	Kasenoura, Yadonourago, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
67	Nagasaki	Tokumaru	769-29 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki	28 (circle, 20m across)	8,792	Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki
		Syoei Suisan	621-26 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki			
		Zyunyo	583-9 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki			
68	Nagasaki	Tokumaru	769-29 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki	12 (circle, 20m across)	3,768	Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki
69	Nagasaki	(individual: unspecified)		4 (circle, 20m across)	1,256	Wakamatsugo, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki
70	Nagasaki	HOSEI CO., LTD.	835-5 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki	9 (circle, 20m across) 4 (square, 12m across)	3,402	Shinshirozaki, Sakakinourago, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
71	Nagasaki	HOSEI CO., LTD.	835-5 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki	10 (circle, 20m across)	3,140	Ohsaki, Sakakinourago, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
72	Nagasaki	Matsuzono Suisan	262 Hinoshimago, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki	1 (circle, 20m across)	314	Hinoshimago, Shinkamigoto- cho, Minamimatsuura-gun, Nagasaki

73	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	1853-2 Okuura-cho, Goto-shi, Nagasaki	3 (square, 12m on a side)	6,908	Ryoseurago, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki
		HOSEI CO., LTD.	835-5 Wakamatsugo, Shinkamigoto-cho, Minamimatsuura-gun, Nagasaki	22 (circle, 20m across)		
74	Nagasaki	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	2 (circle, 40m across) 2 (circle, 50m across) 4 (rectangle, 65m x 40m)	16,838	Kumatata, Naru-machi, Goto- shi, Nagasaki
75	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	1853-2 Okuura-cho, Goto-shi, Nagasaki	2 ( square, 25m on a side) 2 (rectangle, 30m x 50m) 4 (rectangle, 37m x 50m)	11,650	Hamatomari, Hirazo-cho, Goto- shi, Nagasaki
76	Nagasaki	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	9 (regular octagon, 17.5m on a side) 2 (regular hexagon, 16m on a side)	14,643	Hamatomari, Hirazo-cho, Goto- shi, Nagasaki
77	Nagasaki	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	1 (regular hexagon, 16m on a side) 3 (circle, 50m across) 6 (rectangle, 85m x 65 m)	39,705	Ohtomari, Hirazo-cho, Goto-shi, Nagasaki
78	Nagasaki	Tuna Dream Goto (Toyota Tsusyo Corporation)	129-26 Arakawa, Tamanoura- machi, Goto-shi, Nagasaki	7 (circle, 30m across, artificial seeds only) 5 (circle, 20m across, artificial seeds only)	7,600	Arakawakawaraura, Tamanoura-cho, Goto-shi, Nagasaki
79	Nagasaki	Mitsushima Suisan (Toyo Reizo Co.,Ltd.)		8 (circle, 50m across) 2 (circle, 30m across)	17,118	Shiroishizaki, Arakawa, Tamanoura-machi, Goto-shi, Nagasaki
80	Nagasaki	Tuna Dream Goto (Toyota Tsusyo Corporation)	129-26 Arakawa, Tamanoura- machi, Goto-shi, Nagasaki	14 (circle, 30m across, artificial seeds only) 2 (circle, 20m across, artificial seeds only)	11,900	Hirunegaura, Shimayamajima, Tamanoura, Tamanoura-machi, Goto-shi, Nagasaki
81	Nagasaki	Erimaru Suisan	150-3 Tamanoura, Tamanoura- machi, Goto-shi, Nagasaki	16 (circle, 20m across)	9,420	Yamaura, Tamanoura, Tamanoura-machi, Goto-shi, Nagasaki
		Shinkai Yogyo	407-21 Tamanoura, Tamanoura- machi, Goto-shi, Nagasaki	14 (circle, 20m across, artificial seeds only)		
82	Nagasaki	Mitsushima Suisan (Toyo Reizo Co.,Ltd.)	130-7 Arakawa, Tamanoura- machi, Goto-shi, Nagasaki	3 (circle, 50m across) 15 (circle, 30m across)	16,494	Yamanoura, Arakawa, Tamanoura-machi, Goto-shi, Nagasaki

83	Nagasaki	Mitsushima Suisan (Toyo Reizo Co.,Ltd.)	130-7 Arakawa, Tamanoura-machi, Goto-shi, Nagasaki	2 (circle, 50m across, artificial seeds only) 2 (circle, 20m across, artificial seeds only)	9,050	Shiraishizaki, Arakawa, Tamanoura-machi, Goto-shi, Nagasaki
84	Nagasaki	Mitsushima Suisan (Toyo Reizo Co.,Ltd.)	130-7 Arakawa, Tamanoura-machi, Goto-shi, Nagasaki	3 (circle, 50m across, artificial seeds only) 4 (circle, 30m across, artificial seeds only)	9,000	Yamanoura, Arakawa, Tamanoura-machi, Goto-shi, Nagasaki
85	Nagasaki	Tsushima Kaiyo Bokuzyo	711-8 Kusubo, Mitsushima-machi, Tsushima-shi, Nagasaki	7 (circle, 30m across)	4,949	Nakanoshima, Komachizuna, Toyotama-machi, Tsushima-shi, Nagasaki
86	Nagasaki	Michimaru Suisan	560-2 Saga, Toyotama-machi, Tsushima-shi, Nagasaki	3 (circle, 40m across)	10,208	Karasu, Toyotama-machi, Tsushima-shi, Nagasaki
		Tsushima Kaiyo Bokuzyo	711-8 Kusubo, Mitsushima-machi, Tsushima-shi, Nagasaki	6 (circle, 30m across) 7 (circle, 20m across)		
87	Nagasaki	Tsushima Kaiyo Bokuzyo	711-8 Kusubo, Mitsushima-machi, Tsushima-shi, Nagasaki	1 (circle, 20m across)	314	Myokenura, Karasu, Toyotama-machi, Tsushima-shi, Nagasaki
88	Nagasaki	Tsushima Kaiyo Bokuzyo	711-8 Kusubo, Mitsushima-machi, Tsushima-shi, Nagasaki	1 (circle, 20m across)	314	Nagasaki-bana, Karasu, Toyotama-machi, Tsushima-shi, Nagasaki
89	Nagasaki	(individual: unspecified)		10 (circle, 20m across)	3,140	Okinoshima, Kamoise, Mitsushima-machi, Tsushima-shi, Nagasaki
90	Nagasaki	Daibu Suisan	686 Ohfunakoshi, Mitsushima-machi, Tsushima-shi, Nagasaki	5 (circle, 20m across)	1,570	Bobbonnaura, Ohfunakoshi, Mitsushima-machi, Tsushima-shi, Nagasaki
91	Nagasaki	Mitsushima Suisan (Toyo Reizo Co.,Ltd.)	783-2 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	20 (circle, 30m across) 2 (square, 12m on a side) 1 (square, 10m on a side)	14,528	Hachinoshiri, Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki
92	Nagasaki	(individual: unspecified)		3 (circle, 20m across) 3 (circle, 15m across)	1,473	Shimanodanjima, Kamoise, Mitsushima-machi, Tsushima-shi, Nagasaki
93	Nagasaki	Kaneko Sangyo (Nippon Suisan Kaisha, Ltd.)	119-1 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	2 (square, 25m on a side) 2 (rectangle 25m x 35m) 4 (rectangle, 35m x 40m)	8,600	Chityorizaki, Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki
94	Nagasaki	Kaisei Suisan	343-10 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki		42,287	Osakigyoko Bohatei, Mitsushima-machi, Tsushima-shi, Nagasaki
		Nakao	135 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	3 (circle, 40m across)		
		Fuji Suisan	321-5 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	8 (circle, 30m across)		
		Takarabe Suisan	149 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	1 (circle, 35m across) 97 (circle, 20m across)		
		Nishiyama Sangyo	517-2 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	7 (circle, 15m		

		Tara Suisan	33 Osaki, Mitsushima-machi, Tsushima-shi, Nagasaki	across) 3 (square, 15m on a side)		
		Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima			
95	Nagasaki	(individual: unspecified)		7 (circle, 20m across) 2 (square, 10m on a side)	2,398	Motoinuboebana, Inuboe, Mitsushima-machi, Tsushima-shi, Nagasaki
96	Nagasaki	(individual: unspecified)		2 (circle, 25m across) 7 (circle, 20m across)	3,180	Yurigoshi, Takeshiki, Mitsushima-machi, Tsushima-shi, Nagasaki
97	Nagasaki	(individual: unspecified)		3 (circle, 25m across) 11 (circle, 20m across)	4,927	Shimayama, Mitsushima-machi, Tsushima-shi, Nagasaki
98	Nagasaki	(individual: unspecified)		8 (circle, 25m across) 10 (circle, 20m across)	7,068	Hiranoura, Shimayama, Mitsushima-machi, Tsushima-shi, Nagasaki
99	Nagasaki	(individual: unspecified)		3 (circle, 25m across) 9 (circle, 20m across)	4,299	Chidorijima, Takeshiki, Mitsushima-machi, Tsushima-shi, Nagasaki
100	Nagasaki	(individual: unspecified)		2 (circle, 25m across) 27 (circle, 20m across)	9,460	Ohiraoura, Hirugaura, Mitsushima-machi, Tsushima-shi, Nagasaki
101	Nagasaki	(individual: unspecified)		2 (circle, 25m across) 7 (circle, 20m across)	3,180	Yuran, Hirugaura, Mitsushima-machi, Tsushima-shi, Nagasaki
102	Nagasaki	(individual: unspecified)		1 (circle, 25m across) 21 (circle, 20m across) 1 (square, 18m on a side) 1 (square, 20m on a side)	7,809	Imozaki, Hirugaura, Mitsushima-machi, Tsushima-shi, Nagasaki
103	Nagasaki	(individual: unspecified)		3 (circle, 25m across) 16 (circle, 20m across) 5 (circle, 15m across)	7,382	Ohshima, Kashi, Mitsushima-machi, Tsushima-shi, Nagasaki
104	Nagasaki	(individual: unspecified)		4 (circle, 25m across) 4 (circle, 20m across)	3,220	Nezumijima, Takeshiki, Mitsushima-machi, Tsushima-shi, Nagasaki
105	Nagasaki	(individual: unspecified)		10 (circle, 20m across)	3,140	Korekizaki, Shimayama, Mitsushima-machi, Tsushima-shi, Nagasaki
106	Nagasaki	(individual: unspecified)		15 (circle, 20m across)	4,710	Rozakizaki, Kurose, Mitsushima-machi, Tsushima-shi, Nagasaki



107	Nagasaki	(individual: unspecified)		1 (circle, 25m across) 5 (circle, 20m across) 2 (circle, 15m across) 2 (square, 16m on a side)	2,926	Nezumijima, Takeshiki, Mitsushima-machi, Tsushima-shi, Nagasaki
108	Nagasaki	(individual: unspecified)		4 (circle, 20m across)	1,256	Koshikizaki, Takeshiki, Mitsushima-machi, Tsushima-shi, Nagasaki
109	Nagasaki	(individual: unspecified)		6 (circle, 20m across)	1,884	Shishimi, Kamiagata-machi, Tsushima-shi, Nagasaki
110	Kumamoto	Fukuyoshi Gyorui (burimy Corporation)	446 Kusuura-machi, Amakusa-shi, Kumamoto	18 (square, 40m on a side, artificial seeds only)	28,800	Ushibuka-machi, Amakusa-shi, Kumamoto
111	Kumamoto	Takuyo Co., Ltd.	1-35-5 Kengun, Higashi-ku, Kumamoto-shi, Kumamoto	52 (ellipse, 58m x 52m)	126,620	Shinwa-machi, Amakusa-shi, Kumamoto
112	Kumamoto	Takuyo Co., Ltd.	1-35-5 Kengun, Higashi-ku, Kumamoto-shi, Kumamoto	4 (circle, 50m across, artificial seeds only)	7,850	Sumoto-machi, Amakusa-shi, Kumamoto
113	Kumamoto	Takuyo Co., Ltd.	1-35-5 Kengun, Higashi-ku, Kumamoto-shi, Kumamoto	4 (circle, 50m across, artificial seeds only)	7,850	Sumoto-machi, Amakusa-shi, Kumamoto
114	Oita	Hyosoku (OUG Holdings Inc.)	3824-71 Takasu-machi, Tsukumi-shi, Oita	2 (rectangle, 30m x 40m) 8 (rectangle, 40m x 40m)	21,600	Youra, Tsukumi-shi, Oita
115	Oita	Hoyo Suisan	15-8 Kazuraminato, Saiki-shi, Oita	3 (circle, 30m across, artificial seeds only) 1 (circle, 20m across, artificial seeds only) 2 (rectangle, 80m x 40m, artificial seeds only) 2 (square, 10m on a side, artificial seeds)	9,034	Tanoura, Youra, Tsukumi-shi, Oita
116	Oita	Aqua Farm (Maruha Nichiro Corporation)	3620-7 Niinamemura, Kamiura, Saiki-shi, Oita	(unspecified, artificial seeds only)		Niinamemura, Kamiura, Saiki-shi, Oita
117	Oita	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	(unspecified, artificial seeds only)		Niinamemura, Kamiura, Saiki-shi, Oita
118	Oita	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	19 (rectangle, 77m x 42m)	61,446	Niinamemura, Kamiura, Saiki-shi, Oita
119	Oita	Rinkai Kenkyu Co. Ltd. (Nippon Suisan Kaisha, Ltd.)	508-8, Oaza Ariakeura, Saiki-shi, Oita	(unspecified, artificial seeds only)		Oaza Ariakeura, Saiki-shi, Oita

120	Oita	Matsusui	206-25 Tsurumijimatsuura, Saiki-shi, Oita	24 (circle, 25m across)	11,775	Tsurumi-ohshima, Saiki-shi, Oita
121	Oita	Matsusui	206-25 Tsurumijimatsuura, Saiki-shi, Oita	18 (square, 10m across)	1,800	Tsurumi-ohshima, Saiki-shi, Oita
122	Oita	Matsusui	206-25 Tsurumijimatsuura, Saiki-shi, Oita	(unspecified, artificial seeds only)		Tsurumi-ohshima, Saiki-shi, Oita
123	Oita	Matsusui	206-25 Tsurumijimatsuura, Saiki-shi, Oita	(unspecified, artificial seeds only)		Tsurumi-ohshima, Saiki-shi, Oita
124	Miyazaki	Hyosoku (OUG Holdings Inc.)	3824-71 Takasu-machi, Tsukumi-shi, Oita	4 (rectangle, 30m x 40m)	4,800	Shimaura-machi, Nobeoka-shi, Miyazaki
125	Kagoshima	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	40 (square, 8m on a side)	2,546	Kuratsuma, Nakakoshiki, Kamikoshiki-cho, Satsumasendai-shi, Kagoshima
126	Kagoshima	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	735 (square, 8m on a side)	46,998	Kuwanoura, Kamikoshiki-cho, Satsumasendai-shi, Kagoshima
127	Kagoshima	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	147 (square, 8m on a side, artificial seeds only)	9,408	Kuwanoura, Kamikoshiki-cho, Satsumasendai-shi, Kagoshima
128	Kagoshima	Miyomaru Suisan	16240-1 Kataura, Kasasa-cho, Minamisatsuma-shi, Kagoshima	60 (square, 8m on a side)	3,806	Nomaike, Kataura, Kasasa-cho, Minamisatsuma-shi, Kagoshima
129	Kagoshima	Shinyo Suisan	44-5 Botsunochotomari, Minamisatsuma-shi, Kagashima	195 (square, 8m on a side)	12,432	Marukizaki, Minamisatsuma-shi, Kagoshima
130	Kagoshima	Yoki Suisan	2813-1 Kiirenkumi-cho, Kagoshima-shi, Kagoshima	72 (square, 8m on a side)	4,546	Yonekura, Kiirenkumi-cho, Kagoshima-shi, Kagoshima
131	Kagoshima	Nihon Maguro Shigen Kenkyuzyo	1371 Nagara, Uken-son, Ohshima-gun, Kagoshima	63 (square, 8m on a side)	4,019	Ikenma-nagahama, Edatehisashi-jima, Uken-son, Ohshima-gun, Kagoshima
132	Kagoshima	Nihon Maguro Shigen Kenkyuzyo	1371 Nagara, Uken-son, Ohshima-gun, Kagoshima	287 (square, 8m on a side)	18,312	Ikenma-akasaki, Edatehisashi-jima, Uken-son, Ohshima-gun, Kagoshima
133	Kagoshima	Takuyo Co., Ltd.	1-35-5 Kengun, Higashi-ku, Kumamoto-shi, Kumamoto	500 (square, 8m on a side)	31,974	Ikegachinishi, Uken-son, Ohshima-gun, Kagoshima
134	Kagoshima	Takuyo Co., Ltd.	1-35-5 Kengun, Higashi-ku, Kumamoto-shi, Kumamoto	239 (square, 8m on a side)	15,281	Ijinsaki, Uken-son, Ohshima-gun, Kagoshima
135	Kagoshima	Nihon Maguro Shigen Kenkyuzyo	1371 Nagara, Uken-son, Ohshima-gun, Kagoshima	221 (square, 8m on a side)	14,130	Nagara-nagasaki, Uken-son, Ohshima-gun, Kagoshima
136	Kagoshima	A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro-gun, Wakayama	14 (square, 8m on a side, artificial seeds only)	896	Keten, Setouchi-cho, Ohshima-gun, Kagoshima
137	Kagoshima	A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro-gun, Wakayama	68 (square, 8m on a side, artificial seeds only)	4,352	Keten, Setouchi-cho, Ohshima-gun, Kagoshima
138	Kagoshima	A-marin Kindai Co.,Ltd.	1-5 Shirahama-cho, Nishimuro-gun, Wakayama	83 (square, 8m on a side)	5,298	Keten, Setouchi-cho, Ohshima-gun, Kagoshima
139	Kagoshima	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	135 (square, 8m on a side)	8,640	Kuji, Setouchi-cho, Ohshima-gun, Kagoshima

140	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	8 Kunetsu, Setouchi-cho, Ohshima-gun, Kagoshima	52 (square, 8m on a side, artificial seeds only)	3,328	Kuji, Setouchi-cho, Ohshima-gun, Kagoshima
141	Kagoshima	Seinan Suisan (Nippon Suisan Kaisha, Ltd.)	904-6 Tean, Setouchi-cho, Ohshima-gun, Kagoshima	243 (square, 8m on a side)	15,552	Shinokawa, Setouchi-cho, Ohshima-gun, Kagoshima
142	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	250-1Amurogama, Setouchi-cho, Ohshima-gun, Kagoshima	435 (square, 8m on a side)	27,840	Fukaura-ohhama, Shinokawawan, Setouchi-cho, Ohshima-gun, Kagoshima
143	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	250-1Amurogama, Setouchi-cho, Ohshima-gun, Kagoshima	68 (square, 8m on a side, artificial seeds only)	4,352	Fukaura-ohhama, Shinokawawan, Setouchi-cho, Ohshima-gun, Kagoshima
144	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	250-1Amurogama, Setouchi-cho, Ohshima-gun, Kagoshima	54 (square, 8m on a side, artificial seeds only)	3,456	Fukaura-ohhama, Shinokawawan, Setouchi-cho, Ohshima-gun, Kagoshima
145	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	8 Kunetsu, Setouchi-cho, Ohshima-gun, Kagoshima	147 (square, 8m on a side, artificial seeds only)	9,408	Kunetsu, Setouchi-cho, Ohshima-gun, Kagoshima
146	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	8 Kunetsu, Setouchi-cho, Ohshima-gun, Kagoshima	360 (square, 8m on a side)	23,040	Kumachikiyozaki, Setouchi-cho, Ohshima-gun, Kagoshima
147	Kagoshima	Amami Yogyo (Maruha Nichiro Corporation)	8 Kunetsu, Setouchi-cho, Ohshima-gun, Kagoshima	180 (square, 8m on a side, artificial seeds only)	11,520	Kumachikiyozaki, Setouchi-cho, Ohshima-gun, Kagoshima
148	Kagoshima	Amami Laboratory, Seikai National Fisheries Research Institute, Fisheries Research Agency	955-5 Sakiyamahara, Hyo, Setouchi-cho, Oshima-gun, Kagoshima	(unspecified)		Sakiyamahara, Hyo, Setouchi-cho, Oshima-gun, Kagoshima
149	Kagoshima	Kagoshima Prefectural Fisheries Technology and Development Center,	160-10, Azatakatazyou, Iwamoto, Ibusuki-shi, Kagoshima	(unspecified)		Bonotsucho Kushi, Minamisatsuma, Kagoshima
150	Okinawa	Japan Tuna Farming Ltd. (TAIYO A&F Co.,Ltd)	4-5, Toyomi-cho, Chuo-ku, Tokyo	2 (rectangle, 90m x 60m) 1 (rectangle, 80m x 40m) 3 (square, 60m on a side)	30,072	Ohama, Motobu-cho, Kunigami-gun, Okinawa

## Appendix XV: List of Associations, importers, buyers, wholesalers, and market middlemen

Associations			
Japan Fisheries Association	Sankaido BLDG. 8F, 1-9-13, Akasaka, Minato-ku, Tokyo 107-0052		81-3-3585-6683
Overseas Fishery Cooperation Foundation of Japan (OFCF)	Toranomon 30 Mori Bldg, 5th Floor 2-2, Toranomon 3, Minato-ku, Tokyo, 105-		81-3-6895-5381
National Ocean Tuna Fishery Associations	7th Floor, Co-Op Bldg, 1-1-12 Uchikanda, Chiyoda-ku Tokyo 101-8503		81-3-3294-9617
Japan Far Seas Purse Seine Fishing Association	14-10, Ginza 1-Chome, Chuo-ku, Tokyo, 104-0061		81-3-3564-2315
National Offshore Tuna Fisheries Association of Japan	Tohan No.3 Bldg. 1-3-1, Uchikanda, Chiyoda-ku, Tokyo		81-3-3295-3721
Japan Tuna Fisheries Co-operative Association	2-31-1Eidai, Koutou-ku, Tokyo		81-3-5646-2382
Japan Purse Seiner's Association	3-11-3 Nagahama Chuo-ku Fukuoka-shi, Fukuoka, 810-0072		81-92-711-6261
National Federation of Fisheries Cooperative Associations	1-1-12 Uchikanda, Chiyoda-ku, Tokyo 101-8503		
Japan Set-net Fisheries Association	1-9-13 Akasaka, Minato-ku, Tokyo		81-3-3584-6815
All Japan Purse Seine Fisheries Association	Okana No. 1 Bldg, 2-7-9 Toranomon, Minato-ku, Tokyo, 105-0001		81-3-3591-3731
National Large mesh Fishery Association	Fuji Bldg. 5F, 5-32-6 Shinbashi, Minato-ku Tokyo 105-0004		81-3-5401-0637
Organization for the Promotion of Responsible Tuna Fisheries	Sankaido Bldg. (9th Floor), 1-9-13 Akasaka, Minato-ku, Tokyo, 107-0052		81-3-3568-6388
Hokkaido Purse Seine Fisheries Association	Kushiro Suisan Center, 3-18, Hama-cho, Kushiro-shi, Hokkaido 085-0024		81-154-23-2708
Northern Pacific Purse Seine of Fisheries Cooperative Associations	1-9-13 Akasaka, Minato-ku, Tokyo		81-3-3585-7941
North Japan Sea Purse Seine Fisheries Association	4-5, Toyomi-cho, Chuo-ku, Tokyo, 104-0055		81-3-6220-1263
Central Japan Sea Purse Seine Association	3-1-38, Kitayasu, Kanazawa-shi, Ishikawa, 920-0022		81-762-34-8829
San-in Makiami Gyogyo Kyodo Kumiai (Sanin Purse Seine Fische	2-23, Showamachi, Sakaiminato-shi, Tottori		81-859-42-6381
Okinawa Tuna Fisheries Association	1-1-18, Minato-Machi, Naha-shi, Okinawa		81-98-951-3546
Nagasaki Purse Seiner's Association	3-3-1 Kyodomari, Nagasaki-shi, Nagasaki, 851-2211		81-95-850-4196
Shizuoka Purse Seine Fisheries Association	9-18 Otemachi, Aoi-ku, Shizuoka-shi, Shizuoka-ken 420-0853		81-542-52-5151
Aichi and Mie Large- and Medium Purse Seine Association	Haitsu New Hirakawa, 2-12-18, Hirakawacho, Chiyoda-ku, Tokyo, 102-0093		81-3-3234-6175
Ehime Purse Seine Fisheries Association	1682, Hiburishima, Uwajima-shi, Ehime, 798-0099		81-895-65-0321
Oita Purse Seine Fisheries Association	550-24 Tsurumi Oaza Jimatsura, Saiki, Oita Prefecture 876-1202		81-972-33-1595
Kagoshima Purse Seine Fisheries Cooperative Association	11-1 Kamokeshinmachi, Kagoshima, Kagoshima Prefecture 890-0064		81-99-256-7712
<b>Importers, wholesalers and market middlemen</b>			
KANESHIME Takahashi Suisan Co.,Ltd.	2-1-10, Nishi, Kita-12-jo. Chouo-ku, Sapporo-shi, Hokkaido, 060-8671		81-11-618-2111
Sapporo Chuuousuisan Co.,Ltd.	2-1-10, Nishi, Kita-12-jo. Chouo-ku, Sapporo-shi, Hokkaido, 060-8505		81-11-643-1234
Aomori Gyorui Co, Ltd.	1-1, Orosni-machi, Aomori-shi, Aomori, 030-0185		81-17-728-1200
Aomori Chuo Suisan Co., Ltd.	1-1, Orosni-machi, Aomori-shi, Aomori, 030-0183		81-17-738-1181
Morioka Suisan Co., Ltd.	10-100, Haba, Morioka-shi, Iwate, 020-0841		81-19-614-1600
Sendai Suisan Co., Ltd.	Oroshimachi, Wakabayashi Ward, Sendai, Miyagi, 984-8555		81-22-232-8281
Sento Gyorui C, Ltd.	Oroshimachi, Wakabayashi-ku Sendai-shi, Miyagi, 984-0015		81-22-237-8300

Niigata Reizo Co., Ltd.	711 Myogadani, Konan-ku, Niigata-shi, Niigata, 950-0114	81-25-257-6400
Yamatsu Suisan Co., Ltd.	711 Myogadani, Konan-ku, Niigata-shi, Niigata, 950-0114	81-25-257-6600
Chiba Gyorui Co., Ltd.	2-2-1 Takahama, Mihama-ku, Chiba-shi, Chiba, 261-0003	81-43-248-3087
Chiba Chuo Gyorui Co., Ltd.	2-2-1 Takahama, Mihama-ku, Chiba-shi, Chiba, 261-0003	81-43-248-3418
Funabashi Uoichi Co., Ltd.	1-8-1, Ichiba, Funabashi-shi, Chiba, 273-0001	81-47-421-6010
Kawasaki Maruuo, Co., Ltd.	1-1-1, Muzusawa, Miyamae-ku, Kawasaki-shi, Kanagawa	81-50-5541-6600
Yokohama Gyorui Co., Ltd. (NISSUI Group)	1, Yamauchi-cho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0054	81-45-459-3800
Yokohama Maruuo Co., Ltd.	1, Yamauchi-cho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0054	81-50-5541-1810
Sankyo Suisan Co., Ltd.	1-1, Ryutsu Center, Aoi-ku, Shizuoka-shi, Shizuoka	81-54-263-3205
Uoichi Shizuoka Uo Ichiba Co., Ltd.	1-1, Ryutsu Center, Aoi-ku, Shizuoka-shi, Shizuoka	81-54-263-3281
Daito Gyorui Co. Ltd. (Maruha Nichiro Group)	5-2-1, Tsukiji Chuo-ku, Tokyo	81-3-5565-8113
TOHTO SUISAN Co.,Ltd.	5-2-1, Tsukiji Chuo-ku, Tokyo	81-3-3541-1803
Daiichi Suisan Co.,Ltd.	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3543-7638
Sogo-Syokuhin Co., Ltd.	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3541-7041
CHUO GYORUI CO., LTD.	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3541-2500
TSUKUI UOICHIBA CO.,LTD	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3541-3368
CHIYODA SUISAN CO., Ltd.	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3546-2877
Tsukiji Market Association	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3541-2640
Wholesales Co-operative of Tokyo Fish Market	5-2-1, Tsukiji, Chuo-ku, Tokyo	81-3-3541-1122
Osaka Municipal Wholesale Market Honjo	1-1-86, Noda, Fukushima-ku, Osaka, 553-0005	81-6-6469-7955
OUG Holdings	5th floor, Uoichi Nissei Bldg. 2-13-5, Noda, Fukushima-ku, Osaka,	81-6-4804-3031
Uoichi Co., Ltd. (OUG Group)	1-1-86, Noda, Fukushima-ku, Osaka, 553-8555	81-6-6469-2001
Shokuryu Co., Ltd. (OUG Group)	1-22-25, Nipponbashi, Chuo-ku, Osaka, 542-0073	81-6-6647-6270
Daisui Co., Ltd. (NISSUI Group)	1-1-86, Noda, Fukushima-ku, Osaka, 553-8550	81-6-6469-3000
DATOH GYORUI Co.,Ltd. (Maruha Nichiro Group)	2-22, Kawanamicho, Atsuka-ku, Nagoya-shi, Aichi, 456-0072	81-52-683-3311
Meihoku Uoichiba Co., Ltd. (Maruho Nichiro Group)	107, Hattan, Toyoba, Toyoyama-cho, Nishikasugai-gun, Aichi, 480-0202	81-52-903-5200
Chubu Suisan Co., Ltd.	2-22, Kawanamicho, Atsuta-ku Nagoya-shi, Aichi, 456-0072	81-52-683-3000
Nagoya Kaisanshiyo Co.,Ltd.	2-22, Kawanamicho, Atsuta-ku Nagoya-shi, Aichi, 456-0072	81-52-683-3486
DAIKYO GYORUI Co.,Ltd. (Maruha Nichiro Group)	80 Sujakubunkicho, Shimogyo Ward, Kyoto, Kyoto Prefecture 600-8847	81-75-321-3100
Shinko Gyorui Co., Ltd. (Maruha Nichiro Group)	1-1-1, Nakanoshina, Hyogo-ku, Kobe-shi, Hyogo, 652-0844	81-78-672-7000
Sakaiminato Uo Ichiba Co., Ltd. (Maruha Nichiro Group)	9-7, Showa-machi, Sakaiminato-shi, Tottori, 684-0034	81-859-42-2131
Kitakyusyu Chuo Kaisan Ichiba Co.,Ltd.	1972, Shirakabe, Miyaki-cho Miyaki-gun, Saga, 849-0111	81-942-89-5777
KYUSHUUIOICHI Co.,Ltd (Maruha Nichiro Group)	94-9, Nishiminatomachi, Kokurakita-ku Kitakyushu-shi, Fukuoka, 803-0801	81-93-583-2488
Fukuoka Uoichiba Co., Ltd.	3-11-3, Nagahama, Chuo-ku Fukuoka-shi, Fukuoka, 810-0072	81-92-711-6000
Fukuoka Chuo Uoichiba Co., Ltd.	3-11-3-402, Nagahama, Chuo-ku Fukuoka-shi, Fukuoka, 810-0072	81-92-711-6128
Fukuokaken Uoichiba Co., Ltd.	3-11-3-1101, Nagahama, Chuo-ku Fukuoka-shi, Fukuoka, 810-0072	81-92-711-6688

Sasebo Uoichiba Co., Ltd.	1563, Ainoracho, Sasebo-shi, Nagasaki, 858-0918	81-120-58-0343
Kyushu Chuo Uoichi Co., Ltd. (Maruha Nichiro Group)	484, Tasakimachi, Nishi-ku Kumamoto-shi, Kumamoto, 860-0058	81-96-323-2204
Shimonoseki Fishery Co., Ltd. (Maruha Nichiro Group)	1-16-1, Yamato-Machi, Shimonoseki-shi, Yamaguchi	
Nippon-Maru (Maruha Nichiro Group)	4-27-1 Shinbashi, Minato-ku, Tokyo	
Kanai Fisheries Co., Ltd	3-25, Irifune 6-Chome, Kushiro-shi Hokkaido, 085-8550	81-154-41-9181
Sojitz Tuna-Farm Takashima Corp.	801-4 Takashimachoaouuramen, Matsuura-shi, Nagasaki	
Kyokuyo Suisan CO, Ltd	1441-1 Habuchi, Oigawa-cho, Shida-gun, Shizuoka 421-0213	81-54-622-5112
Kaneil and Co., Ltd.	Tokyo Suisan Bldg., 4-18 Toyomi-cho, Chuo-ku Tokyo	81-3-3533-2221
Senko Boueki	1-16-27 Otake, higashi-ku, Fukuoka-shi, Fukuoka	81-92-292-6663
Kanei Bussan Co., Ltd.	9-22, Daikoku-machi, Nagasaki	81-95-828-8692
Kinnanshyogi	1-1-10 Higashiyamato-machi, Shimonoseki-shi, Yamaguchi	81-83-267-7121
Nagasaki Fish Market	3-3-1 Kyodomari, Nagasaki-shi, Nagasaki, 851-2211	81-95-850-3600
West Japan Fish Market	695 Shimomen Tsukinokawa-cho, Matsuura-shi, Nagasaki 859-4536	81-956-72-0147

## Appendix XVI: Timeline

1950	Fisheries Act of Japan comes into force.
1968	Ultra cold freezing technologies for tuna is developed.
1970	Fisheries Agency begins tuna farming research in “Large-Scale Aquaculture Experiment Project on Useful Fish.”
1970	Maruha begins research on tuna farming.
1974	Kinki University begins to breed adult tuna.
1982	PBF caught by purse seining is landed in Sakaiminato Port for the first time.
1985	New Nippo Corporation (predecessor of TAIYO A&F) commences trial tuna farming in Kashiwajima (Otsuki, Kochi Prefecture).
1987	Amami Yogyo commences experimental operations for tuna seed production in Amami Islands, Kagoshima.
1990	New Nippo commences tuna farming in Motobu, Okinawa Prefecture.
1991	Maruha lends technical assistance about farming to and begins to buy from Australian tuna fishermen.
1996	Maruha commences a joint enterprise (Viver Atun Cartagena S.A.) on tuna farming in Spain.
1996	Taiyo A&F Company Limited is incorporated by New Nippo and two other firms.
1996	TAIYO A&F opens a new farming station in Goto Islands, Nagasaki.
1996	Act on Special Measures for Enhancement of the Conservation and Management of Tuna Resources (“The Tuna Act”) is passed in the Diet and comes into effect. The Act stipulates that the MAFF “shall establish a basic policy for enhancing the conservation and management of tuna resources” (Article 2). The Act also allows GOJ to implement trade embargo on tuna against countries which diminish the effectiveness of conservation measures in accordance with arrangements made at international organizations such as RFMOs (Article 6).
1997	Amami Yogyo suspends juvenile tuna seed production, commencing instead farming for sales of adult tuna.
1998	Japan imposes trade embargo on bluefin tuna against Panama.
2000	The Western and Central Pacific Fisheries Convention (WCPFC) is adopted and opened for signature.
2000	Sales of farmed tuna by Kumano Yogyo goes into full swing.
2002	Kinki University succeeds in completely farm-raised bluefin tuna.

2003	Kinki University establishes A-marine Kindai as a venture company.
2004	The WCPFC comes into effect.
2004	Maruha establishes Kumano Yogyo in Wakayama.
2004	TAIYO A&F opens a new farming station in Yamaguchi.
2004	Purse seine fishing begins to intensify in the Sea of Japan
2005	Japan joins the WCPFC.
2005	The WCPFC sets up the Northern Committee (NC) as a subsidiary body responsible for making recommendation about tuna species in the Northwest Pacific Ocean. Masanori Miyahara from the JFA is elected as chair of the NC.
2006	Maruha resumes experimental tuna seed production.
2006	TAIYO A&F launches a tuna farming station in Wakayama.
2006	NISSUI enters tuna farming business by acquiring ownership of Nakatani Suisan, which has operated tuna farming stations in Amami Island (Kagoshima), Tsushima Island (Nagasaki), Koshikijima Islands (Kagoshima), and Ine (Kyoto).
2007	Maruha consolidates Nichiro Corporation and alters its name to Maruha Nichiro.
2007	The JFA establishes the Panel on the Utilization of Bluefin Tuna Resources around Japan.
2007	At its Third Session the Northern Committee of the WCPFC advises its members not to increase the fishing mortality rate of PBF on a voluntary basis. (September)
2007	The Panel on the Utilization of Bluefin Tuna Resources around Japan releases an interim report, calling for collecting information about coastal and offshore PBF fisheries and PBF farming. (December)
2007	At the second Review Meeting on the Use of PBF Resource around Japanese Waters, JFA asks purse-seine fishing associations to take a voluntary measure not to catch PBF that are less than 2 kg. (December)
2007	NISSUI begins experimental project on artificial seed production.
2007	NISSUI begins raising tuna caught by purse seine vessels owned by its subsidiary Kyowa Suisan.
2007	Nakatani Suisan opens a new farming station in Ine, Kyoto Prefecture.
2008	The Fisheries Laboratory of Kinki University announces that it shipped 1,500 completely farm-raised third generation PBF fry to aquaculture companies for the first time. (January)
2008	Kaneko Fisheries Group starts to reconstruct its business under the Act on Special Measures Concerning Industrial Revitalization.
2008	The NC at its Fifth Session agrees, with reservation of Korea, to take measures not to increase total fishing effort for PBF in the North Pacific, strengthen data collection,



	review report submitted by CCMs, consider further measures if necessary, and communicate IATTC members whose fishing vessels engage in fishing for PBF (i.e. Mexico) to take similar measures. (September)
2008	The JFA holds meeting with about 80 tuna trading companies, requesting them not to increase import of fanned tuna from Mexico. (September)
2008	Sojitz Corporation establishes Sojitz Tuna Farm Takashima Corporation in Nagasaki. (September)
2008	The WCPFC fails to adopt the measure recommended by the NC and agrees not to increase the level of fishing mortality on PBF in 2009 on a voluntary basis only owing to the opposition from Korea. (December)
2008	Nakatani Suisan opens a new farming station in Saiki, Oita Prefecture.
2008	Toyo Reizo (TOREI), an affiliated company of Mitsubishi Corporation, enters the tuna farming business by establishing Mitsushima Suisan in Tsushima Islands, Nagasaki.
2009	The Federation of Japan Tuna Fisheries Co-operative Associations files for personal bankruptcy. The Tokyo District Court accepts this and announces the commencement of bankruptcy proceedings on March 25.
2009	The NC agrees the draft resolution which provides that the CCMs hold fishing effort to levels no greater than the 2002-2004 levels for 2010 and take account of the need to reduce fishing effort on juvenile to the 2002-2004 level. (September 2009)
2009	The WCPFC adopts the draft resolution forwarded by the NC. (December 2009)
2009	TAIYO A&F strengthens the capacity of tuna farming through setting up a new farming station in Goto Islands, Nagasaki.
2010	JFA issues administrative guidance not to increase the number of licenses of set-net for PBF to prefectural governments. (January)
2010	JFA starts mandatory reporting on import of PBF from Korea based on the Tuna Act. (January)
2010	The Fisheries Research Agency establishes the Bluefin Tuna Resources Division within the National Research Institute of Far Seas Fisheries. (April)
2010	JFA announces its intention to tighten PBF regulation by establishing a “Resource Recovery Plan” for purse seine, longline, troll, and other fisheries by the end of the year, and by introducing a mandatory registration and reporting system for PBF farming. (May)
2010	Japanese five associations such as the All Japan Fish Wholesaler’s Union makes a representation to the MAFF Minister, asking preventive measures to large purse seine vessels and prevention of overexploitation of juveniles and in spawning seasons in the Sea of Japan. (September)

2010	The NC adopts the resolution which stipulates that the CCM shall take measures that fishing effort shall stay below the 2002-2004 levels for juveniles (age 0-3) below the 2002-2004 levels in 2011 and 2012, while Korea expresses reservation. (September)
2010	The WCPFC amends the draft resolution submitted by the NC owing the objection from Korea and adopts the revised draft which provides that total fishing effort shall stay below the 2002-2004 levels for 2011 and 2012, except for artisanal fisheries. The resolution also provides for reducing catches of juveniles (age 0-3) below the 2002-2004 levels with the exception of Korea. (December)
2010	Maruha establishes Kushimoto Marine Farm in Kushimoto, Wakayama.
2010	Toyo Reizo (TOREI) expands its business by creating a Mitsushima Suisan Goto branch in Goto Islands, Nagasaki and by obtaining Nanki Kushimoto Suisan in Wakayama.
2010	Toyota Tsusho, a subsidiary of TOYOTA, establishes Tuna Dream Goto in Nagasaki.
2011.1 .27	Japan introduces mandatory registration system for PBF farming sites, asking fish farmers to submit reports on the performance of farming activities such as the numbers of pens.
2011	JFA starts mandatory reporting of PBF import from Mexico.(February)
2011	Japan introduces annual catch limit of 5,000 metric tons for juvenile tuna less than 30kg caught by purse seine vessels.
2011	Japan introduces a mandatory registration system for artisanal fisheries such as troll operating in Japan Sea and Eastern China Sea.
2011	Japanese purse seiner introduces voluntary catch limit of 2,000 metric tons during June – August in the Sea of Japan.
2011	KYOKUYO establishes the joint venture company Kyokuyo Nippai Marine Co., Ltd. with Nippon Formula Feed Manufacturing (NIPPAL) with the aim of full-life cycle aquaculture of bluefin tuna.
2012	The IATTC adopts catch limit of PBF for next two years at 10,000 metric tons. (June)
2012	JFA requests Korean government not to increase export of juvenile PBF. (July)
2012	JFA asks Japanese traders to refrain from importing PBF from Korea voluntarily. (July)
2012	The JFA holds the National Conference on the Pacific Bluefin Tuna Resources and Farming to explain to fishermen, PBF farmers, and members of seafood industry the current situation of PBF fisheries and the prospect of domestic regulations of PBF in Japan. (August)
2012	The NC agrees to continue the conservation measures adopted in 2010 (effort limit for PBF fisheries in 2002-2004 levels, catch limit for juvenile PBF in 2002-2004 levels) for 2013. (September)
2012	The MAFF minister instructs to prefectural governors not to increase the capacity of

	aquaculture facilities which would cause the growth of the number of input from natural fry above the 2011 levels. (October)
2012	TAIYO A&F closed a farming site in Wakayama due to the damage caused by a typhoon.
2013	The IATTC at its 85th session adopts PBF catch limit of 5,000 metric tons for 2014 season. (June)
2013	The ISC warns that the population of PBF is near historically low level and that the risk of spawning stock biomass falling below the historically lowest level would increase under the current conditions. (August)
2013	The JFA holds the Second National Conference on the Pacific Bluefin Tuna Resources and Farming. (August)
2013	The NC adopts a recommendation for conservation measures for 2014 on PBF providing for limiting fishing efforts at 2002-2004 levels, reducing catches by 15 per cents below 2002-2004 annual average levels. (September)
2013	The WCPFC at its tenth session adopts the conservation measures on PBF submitted by the NC. (December)
2014	Masanori Miyahara, chair of the NC, retires from the JFA and assumes office as President of the Japan's Fisheries Research Agency.
2014	The ISC warns that the current PBF biomass level is near historically low levels and experiencing high exploitation rates, advising that only the strictest scenario (a 50% reduction of juvenile catches from the 2002-2004 levels and total fishing mortality no greater than 2002-2004 levels) considered by the ISC would result in an increase in spawning stock biomass. (June)
2014	Toyota Tsusyo announces that it plans to set up tuna farming facilities by September 2015 in Okinawa. (July)
2014	The JFA holds the Third National Conference on the Pacific Bluefin Tuna Resources and Farming, where the JFA explained to fishermen that it would reduce catches of juvenile PBF less than 30kg to 4,007 metric tons, which is half of 2002 – 2004 average levels. (August)
2014	The NC adopts a recommendation on PBF conservation measure for 2015 which stipulate that all catches of PBF less than 30kg be reduced to 50% of the 2002 – 2004 annual average levels and that total fishing effort be below the 2002 – 2004 average levels. (September)
2014	KYOKUYO announces that it had succeeded in transferring fully cultured bluefin fries into farming cages and is planning to sell farmed bluefin tuna within three years. (September)
2014	The IATTC adopts conservation measures for PBF calling for reduction of the catch to 6,600 metric tons during 2015 and 2016. (October)

2014	The IUCN adds the Pacific Bluefin tuna (PBF) to its Red List of Threatened Species as "Vulnerable." (November)
2014	The WCPFC adopts the conservation measure recommended by the NC. (December)



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Published by Organization for Regional and Inter-regional Studies, Waseda University  
Floor 3, Bldg.No.120-4  
Waseda Campus, Waseda University  
513 Waseda Tsurumaki-cho, Shinjuku-ku, Tokyo, 162-0041 JAPAN

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Printed in Japan.

First published in 2015

ISBN: 978-4-9908584-0-7

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