

CATCH INFORMATION OF LONGTAIL TUNA, *THUNNUS TONGGOL*, IN JAPAN

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INTRODUCTION

Longtail tuna (*Thunnus tonggol*) is one of the commercially important species in the Southeast Asian and Arabian countries. The world catches in 1992 exceeded 110,000 tons (FAO, 1994). The biology and fishery of longtail tuna was reviewed by Yesaki (1994). The areas around Japan are considered the northeastern boundary of this species. Catch records of longtail tuna are rare, but have been reported in the western and southern part of Japan (Kishinoue, 1915; Kishinoue, 1923; Nakamura, 1969; Fukusho and Fujita, 1972), and are summarized in Table 1.

The Fisheries Agency of Japan has established a project to monitor landing quantities and collect biological samples of bluefin tuna caught around Japan since 1992. Along with this project, the information of longtail tuna catches have been reported from various Prefectural Fisheries Experimental Stations in much wider areas than previously known. Furthermore, the catch of small fish of 178-210 mm in fork length was also reported as the first record in Japan.

In this report, information on six catch records, summarized in Table 2 and Figure 1, are presented. Species identification was based on the characteristics described in the FAO Species Catalogue (1983): the prolonged caudal portion, the horizontally-oriented spotted rows on the lower sides and belly, the prolonged right liver lobe, the length of the pectoral fin relative to fork length (22-31%), and the number of gillrakers (19-27). The identification of the

small fish collected in Case 4 was confirmed with mtDNA analysis.

Otoliths for ageing, muscle for mtDNA analysis, and vertebrae were collected in most cases for further investigation.

Case 1. Pole and line catch in the East China Sea in 1992

It was reported that the *Miyazaki-maru*, a research vessel of Miyazaki Prefecture, caught longtail tuna by pole and line during 23-27 August 1992 in the area of 31-32°N, 126-127°E. Skipjack tuna (*Katsuwonus pelamis*), kawakawa (*Euthynnus affinis*) and bluefin tuna (*Thunnus thynnus*) were also caught along with the longtail tuna. Sea-surface temperature at the fishing ground was between 28.8 and 30.4°C. In total, 1,692 longtail tuna, about 3.9 tons in weight, were caught in seven operations. The average weight of the longtail tuna was around 1.6 to 2.2 kg. The modal length of the fish was about 46 cm in fork length (FL). Ten fish of 450-487 mm FL, 1.8-2.4 kg, were kept for further analysis.

Case 2. Purse-seine landing in the Nishinihon Fish Market

It was observed that 1,100 longtail tuna were landed at the Nishinihon Fish Market in Nagasaki Prefecture on 25 April 1994. These fish were caught on the same day at 33°N, 128°E by two purse seines. The size of fish ranged from 39 to 47 cm FL, with average and standard deviation of 43.51.96 cm. Average weight was about 1.5 kg.

According to the market's records, it was also found that an additional about 2,500 longtail tuna were landed on 24 April. These fish were also caught by purse seines at 30°N, 128°E on 23 April. The sum of these two days' landings was estimated to be about 5.4 tons.

Case 3. Historical catch records in the markets of northern Kyushu

From the observation in Case 2, we found that the longtail tuna was called '*shibi*' in the Nishinihon Fish Market. The same name, '*shibi*', is known to be used as a local name for either bluefin or yellowfin tuna in several areas of Japan. However, at least in the northern part of Kyushu, it was found that bluefin and yellowfin tunas were recognized by different names and '*shibi*' was not used for these species. Therefore, by assuming that the '*shibi*' in market records of northern Kyushu corresponded to longtail

Figure 1. Location and month of catch of longtail tuna, *thunnus tonggol*, around Japan. Figures indicate case number in text, catch month and quantity (in number of weight). K:kishinooue (1923), N. Nakamura (1969), F. Fukusyo and Fujita (1972).

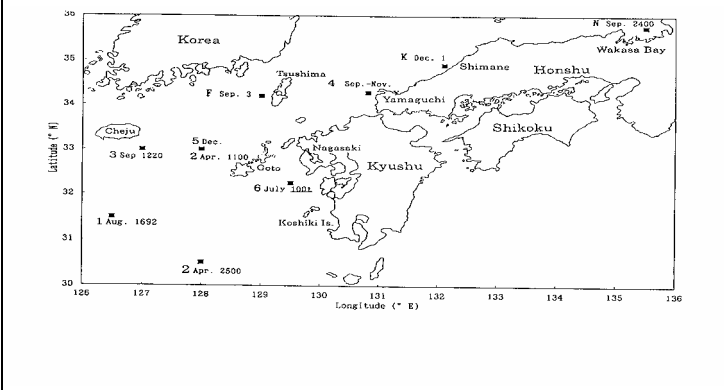


Table 1. Previous records of longtail tuna, *Thunnus tonggol*, in Japan.

<i>Author</i>	<i>Place</i>	<i>Year month</i>	<i>Fishing gear</i>	<i>Catch in number</i>	<i>Size of the fish</i>
Kishinouye (1915)	Nagasaki	n.a.	n.a.	n.a.	72 cm
Kishinouye (1923)	Shimane	1918 Dec.	picked at beach	1	n.a.
Nakamura (1969)	Wakasa Bay	1968 Sep.	Set net	2,400	48-52 cm
Fukusho & Fujita (1972)	Tsusima	1969 Sep.	Set net	3	28-30 cm

Table 2. Catch records of longtail tuna, *Thunnus tonggol*, in Japan.

<i>Case number</i>	<i>Date</i>	<i>Latitude</i> <i>Longitude</i>	<i>Place</i>	<i>Sea surface temperature</i>	<i>Fishing gear</i>	<i>Total catch in number</i>	<i>Size of the fish</i>	<i>Sample number</i>
1	1992/8/23-27	31-32°N, 126-127°E	East China Sea	28.8-30.4	Pole & line	1692 3.9 t	450-487 mm 1.8-2.4 kg	10
2	1994/4/23 1994/4/25	33°N,128°E 30°N,128°E	East China Sea	* 16 * 21-24	Purse seine Purse seine	2500 (3.8t) 1100 (1.6t)	39-47 cm	-
3	1992/9/17, 9/21	33°N,127°E	East China Sea	* 25-27	Purse seine	1220 8.7 t	5-10 kg (average:ca.7kg)	-
4	1994/9/19- 11/10	34°N,131°E	off Yamaguti in Japan Sea	* 26-21	Stick-held dip net	n.a.	179-258 mm	43
5	1994/12/21	33°N, 128°E	off Goto Islands	* 17	Trolling	n.a.	280-330 mm	3
6	1995/7/22-8/1	32-33°N, 128-130 °E	between Kosiki and Goto Islands	* 25-27	Pole & line	ca. 100 t	555-560 mm	2

Lengths are in fork length

* : Sea surface temperatures are estimated from the map published by Japan Fisheries Information Center

tuna, we examined the occurrence of ‘*shibi*’ in market records.

The market records for the period from July 1991 to December 1992 were examined. Six fish markets located in the northern Kyushu were covered, which included Nishinohon, Nagasaki, Fukuoka, Fukuoka-chuo, Genkai, and Karatsu. By covering these markets, it was expected to cover almost all landings by purse seiners operating in the East China Sea. As a result, a few records of ‘*shibi*’ landings were found. These records showed the catch was made by two purse seines in the area around 33°N, 127°E, to the east of Cheju Island, on 17 and 21 September, 1992. The size of the fish was around 5-10 kg and had its mode around 7 kg. The sum of these landings reached 8.7 tons.

Case 4. Catch of small longtail tuna by stick-held dipnet

Small longtail tuna were caught off the Tsunoshima, in Yamaguchi Prefecture, from September to November 1994 by stick-held dipnets targeting round herring and anchovy. Bluefin tuna of 32-36 cm FL were also caught on 11 October. Total catch was not recorded. Three samplings

were made on 19 September, 31 October and 10 November in 1994, and collected 43 fish.

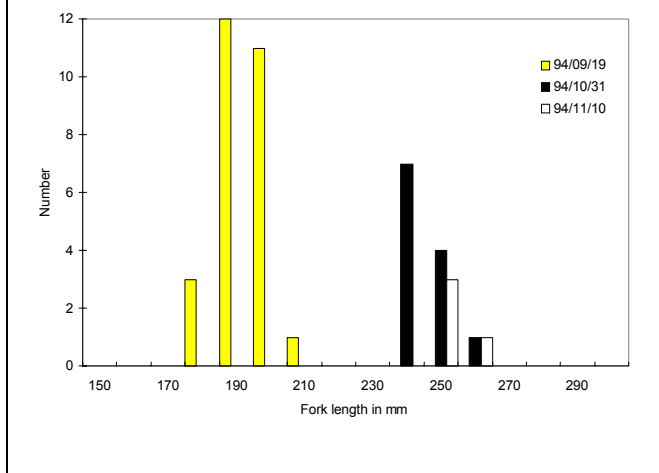
Case 5. Trolling catch off Goto

It was reported that longtail tuna was landed in the Goto Islands in Nagasaki Prefecture on 21 December 1994. The fish were caught by trolling in the area northwest of Goto on the same day. These fish were not sold through the market because their size was too small for commercial use. Therefore no records of total catch quantity were available. Three fish of 280-330 mm FL, 400-590 g, were kept as a sample.

Case 6. Pole-and-line catch in the East China Sea in 1995

Longtail tuna landings were reported at Makurazaki in Kagoshima Prefecture during 22 July-1 August 1995. The fish were caught by pole and line targeting skipjack tuna in the area between Koshiki and Goto Islands. The longtail tuna was caught as a bycatch of skipjack tuna, accounting for about 20% of the total catch. In total, landings of 60.2 tons of longtail tuna by 20 ships were recorded. However,

Figure 2. Change of size distribution of juvenile longtail tuna collected from off Yamaguchi (case 2) at the three different time.



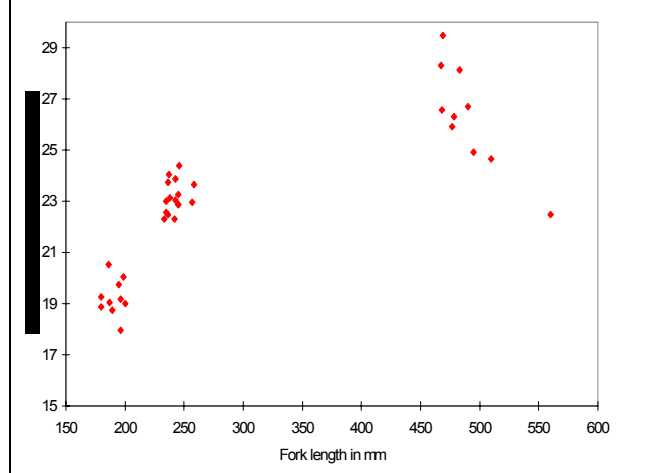
it was noted that about 30 % of total catch was sent to another market at this time. Therefore, the total landing of longtail tuna was estimated at about 100 tons. Two fish, of 555 mm FL, 3.4 kg, and 560 mm, 3.5 kg, were kept as a sample.

QUICK SPECULATION ON THE BIOLOGY OF LONGTAIL TUNA

Small juvenile longtail tuna were collected from the same sampling site at three different times, September 19, October 31 and November 10, 1994, as described in Case 4. The range (average \pm standard deviation) of fish size in FL changed from 179-210 mm (190.2 \pm 7.37 mm) on September 19 to 233-257 mm (240.2 \pm 6.43 mm) on October 31 and 243-258 mm (248.0 \pm 5.87 mm) on November 10. The size frequency of fish by sampling time is shown in Figure 2. Apparently, the size of the fish shifted toward the larger size as time progressed. Provided that these fish came from the same school, the estimated growth during one month was around 50-60 mm, which was comparable to but slightly lower than the growth reported by Yesaki (1989). Daily growth increments of otoliths collected from these fish will be examined in future.

Some of the characteristics for identification of these small juveniles were not as obvious as those of bigger fish. It was noted that the relative size of several characteristics changed according to the size of fish. One example was the relative length of the caudal portion and the other was the relative length of the pectoral fin (Figure 3). The relative length of pectoral fin to fork length was around 19% for fish of 180-210 mm FL and increased as the fish grew. The relative pectoral fin length was about 25-29% for fish of 468-509 mm FL.

Figure 3. The length of pectoral fin relative to fork length of longtail tuna corresponding to their size.



It seems that the occurrence of longtail tuna around Japan is much more common than previously thought, especially in the East China Sea and the southern part of the Japan Sea. In most fish markets examined in this study, the longtail tuna was recognized and treated differently from the other tuna species by the markets as well as by fishermen. However, since the price is much lower than for the other tunas and landings seem to occur sporadically, people do not pay much attention to longtail tuna. This may be the reason that catch records of longtail tuna have not been accumulated in the fishery statistics of Japan.

The sea-surface temperature at the reported fishing areas ranged from 16 to 30°C, although most temperature information was retrieved from oceanographic maps of the corresponding time and area. The timing of catch also varied from April to December, covering almost all the year. This may suggest that longtail tuna is distributed throughout the year, at least in the East China Sea. The occurrence of small juveniles of 200 mm FL may also suggest the potential of spawning activity in the same area.

In any case, further collection of catch information as well as further analysis of collected samples will reveal the biology and fishery of this species in this area.

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