

Releases and discards of small Southern Bluefin Tuna in the Japanese longline fishery

日本延縄漁業におけるミナミマグロ小型魚放流

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要約

RTMPによる漁業者からの報告に基づくと、日本延縄漁船からは2009年に9811尾、2010年に4244尾のミナミマグロが放流・投棄された。目測による放流魚の重量データによると、2009年には放流魚の80.3%が、2010年には放流魚の51.0%が20kg未満（4歳魚以下）であった。漁獲時に元気であった個体は放流しても生存すると仮定した場合、放流魚の75%は生残すると考えられた。

Summary

Based on the RTMP data, Japanese longline vessels released and discarded 9811 and 4244 SBT in 2009 and 2010 calendar year, respectively. According to the visual measurement by the fishermen, 80.3% and 51.0% of them were <20 kg (correspond to age ≤ 4) in 2009 and 2010, respectively. If “Vigorous condition” fishes when they were captured could survive after release, it was estimated that the 75% of the released small-sized SBT would be still alive.

1.背景 Background

2006 年以降、日本のミナミマグロ延縄漁業には、小型魚の漁獲が多く見られるようになった (CCSBT-ESC/1107/SBT Fisheries/Japan)。これは、日本延縄漁業だけではなく、NZ 近海の延縄漁業にも見られており (CCSBT-ESC/1107/SBT Fisheries - New Zealand)、ミナミマグロの加入の向上を反映したと考えられる。日本延縄漁業では 2006 年以降に IQ 制が導入された後、漁獲枠の超過を防ぐため、小型魚を船に取り込まずに放流する事例が増えたと考えられている。2009 年漁期からは、日本の延縄漁船からの放流・投棄尾数は、RTMP により報告されている。その際、漁業者は目測により、放流・投棄魚の魚体サイズを 3つの体重階級 (20kg 未満、20-40kg、および 40kg 以上) に区分することが求められている。この文書では、2009 年漁期、2010 年漁期に漁業者から報告された放流・投棄尾数、オブザーバの観察放流・投棄尾数、および、魚体の生残可能性について検討した。

Since 2006, small-sized Southern Bluefin Tuna (SBT) has been remarkably caught by Japanese longline vessels (CCSBT-ESC/1107/SBT Fisheries - Japan). A similar trend has been observed in the size composition data of New Zealand fishery, which would reflect the increased abundance of small SBT (CCSBT-ESC/1107/SBT Fisheries - New Zealand). At the same time, Japan implemented the individual quota (IQ) system for the Japanese SBT longline fishery, and Japanese vessels began the release of small SBT to prevent the over quota. The amount of release (and discard) has been reported by fishermen using the RTMP since 2009 fishing season. Then, fishermen were required to divide the fish size of releases and discards into the three categories (<20 kg, 20-40 kg, and ≥40 kg) by the visual measurement. In this document, we summarized the following information: 1) release and discard number of SBT based on the RTMP report, 2) release and discard number of SBT based on the scientific observer report, and 3) fish conditions (dead or alive) when SBT were released (or discarded).

2. RTMP による放流報告値 Releases and discards reported by RTMP

RTMP による漁業者からの報告に基づくと、日本延縄漁船からは 2009 年に 9811 尾、2010 年に 4244 尾のミナミマグロが放流・投棄された (いずれもカレンダー年)。総漁獲尾数に対する放流尾数の割合は、2009 年に 14.8%、2010 年に 7.8%であった。2009 年、2010 年の両年ともに、放流尾数が最も多かったのは 8 海区であった。また、総漁獲尾数に対し放流尾数の割合が高い海区は、2009 年には 2 海区 (36.2%)、2010 年には 2 海区 (38.7%) および 14 海区 (45.0%) であった (Table 1)。

漁業者からは目測による放流魚の重量が併せて報告された (Fig. 1)。それによると、2009 年には放流魚の 80.3%が 20kg 未満、19.5%が 20-40kg、0.2%が 40kg 以上であった。また、2010 年には放流魚の 51.0%が 20kg 未満、45.0%が 20-40kg、4.0%が 40kg 以上であった。これらの魚体サイズは、20kg 未満が 4 歳魚以下、20-40kg が 4-7 歳魚、40kg 以上が 7 歳魚以上に相当する。

Based on the RTMP data, Japanese longline vessels released and discarded 9811 and 4244 SBT in 2009 and 2010 calendar year, respectively (Table 1). The percentage of the release and discard fish of total catch was 14.8% and 7.8% in 2009 and 2010, respectively. In both 2009 and 2010, the number of release and discard were larger in area 8. The rates of the release and discard with respect to total catch were higher in area 2 (36.2 % in 2009, 38.7% in 2010) and area 14 (45.0% in 2010).

Japanese longline fishermen reported the sizes of the released and discarded fish by processed weight, which was based on their visual measurement (Fig. 1). According to their reports, 80.3% of fishes were <20 kg, 19.5% of fishes were 20-40 kg, 0.2% of fishes were ≥40 kg, in 2009. And 51.0% of fishes were <20 kg, 45.0% of fishes were 20-40 kg, 4.0% of fishes were ≥40 kg, in 2010. These fish sizes correspond to age ≤4 (<20 kg fish), age 4-7 (20-40 kg fish), and age ≥7 (≥40 kg fish).

3. オブザーバによる報告 Releases and discards reported by scientific observers

科学オブザーバが乗船中に観察したミナミマグロの放流・投棄は、2009年に8.9%、2010年には3.8%であった。なお、ここでの放流・投棄魚尾数には、魚がラインを切って逃げた場合を含む。

2009・2010年にオブザーバが観察した放流・投棄ミナミマグロ341尾のうち、223尾(65.4%)は生きた状態で放流された。残り118尾(34.6%)のうち104尾は「サメ食い」「シャチ食い」により死んだ状態で漁獲され、投棄された。

Released and discarded fish which was observed by scientific observers were 8.9% in 2009 and 3.8% in 2010. In this case, total number of released and discarded fishes includes the escaped fish by cutting the branch line beside the ship.

During 2009-2010, a total of 341 SBT released and discarded were observed by the scientific observers, and 65.4% (223 SBT) were released alive. The other 34.6% (118 SBT) were discarded, and those of 104 SBT had been already dead and damaged by the whale and shark depredation when they were hauled on board.

4. 年齢別の漁獲時の生死 Fish condition by age

漁業者に聞き取りを行ったところ、生きている魚体のみを放流し、「サメ食い」「シャチ食い」の魚体以外は死亡個体を投棄することは無いようである。オブザーバが観察した漁獲時の魚体のコンディションを Fig. 2 に示す。これは2009年および2010年の科学オブザーバの観察データに基づく。漁獲時の1-4歳魚は19.4%が「死亡」、5.3%が「衰弱」、75.3%が「元気」であった。漁獲時に元気であった個体は放流しても生存すると仮定した場合、仮に漁業者が生死を問わずミナミマグロを放流したとしても、75%は生残するであろう。

According to the hearing from fishermen, Japanese longline vessels tend to release only the lived condition SBT except for the depredated fish by whale or shark. Fig. 2 shows the fish condition when they were captured. These data was based on the scientific observer data in 2009 and 2010. This result shows that most of the SBT which was caught by Japanese longline were alive (“Sluggish” or “Vigorous” condition) when they were captured (75-86%). For the age 1-4 SBT, “Dead” was 19.4%, “Sluggish” was 5.3%, and “Vigorous” was 75.3%. Even if Japanese fishermen release the SBT without regard to the fish condition (dead or alive), under the assumption that “Vigorous” fish could survive after release, it was estimated that the 75% of the released small-sized SBT would be still alive.

Reference

Sakai O., T. Itoh, T. Kawashima 2011 Review of Japanese SBT Fisheries in 2010.
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Table 1. Releases and discards SBT which was reported by RTMP. The rate of release or discard number were percentage of the total catch (retain + release + discard).

| Area | 2009 (Calendar year) | | | 2010 (Calendar year) | | |
|-------|----------------------|-----------------------------------|---------------------------------|----------------------|-----------------------------------|---------------------------------|
| | Retain (Number) | Release or Discard (Number) | Release or Discard (Rate) | Retain (Number) | Release or Discard (Number) | Release or Discard (Rate) |
| 1 | 42 | | 0.0% | 186 | | 0.0% |
| 2 | 90 | 51 | 36.2% | 1292 | 817 | 38.7% |
| 4 | 7683 | 323 | 4.0% | 4482 | 279 | 5.9% |
| 5 | 163 | | 0.0% | 1 | | 0.0% |
| 6 | 3281 | | 0.0% | 3758 | | 0.0% |
| 7 | 4495 | 57 | 1.3% | 9220 | 361 | 3.8% |
| 8 | 20303 | 4992 | 19.7% | 5763 | 1952 | 25.3% |
| 9 | 20186 | 4379 | 17.8% | 25158 | 754 | 2.9% |
| 10 | 5 | | 0.0% | 27 | | 0.0% |
| 12 | 5 | | 0.0% | 2 | | 0.0% |
| 13 | | | | 2 | | 0.0% |
| 14 | 67 | 9 | 11.8% | 99 | 81 | 45.0% |
| Total | 56320 | 9811 | 14.8% | 49990 | 4244 | 7.8% |

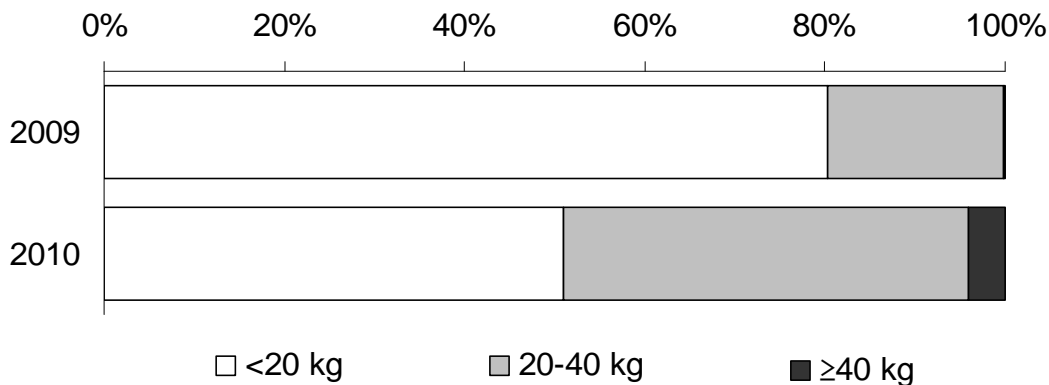


Fig. 1. Reported size of the released and discarded fish by RTMP. Fish size was estimated using the processed weight, which was based on the visual measurement by the fishermen.

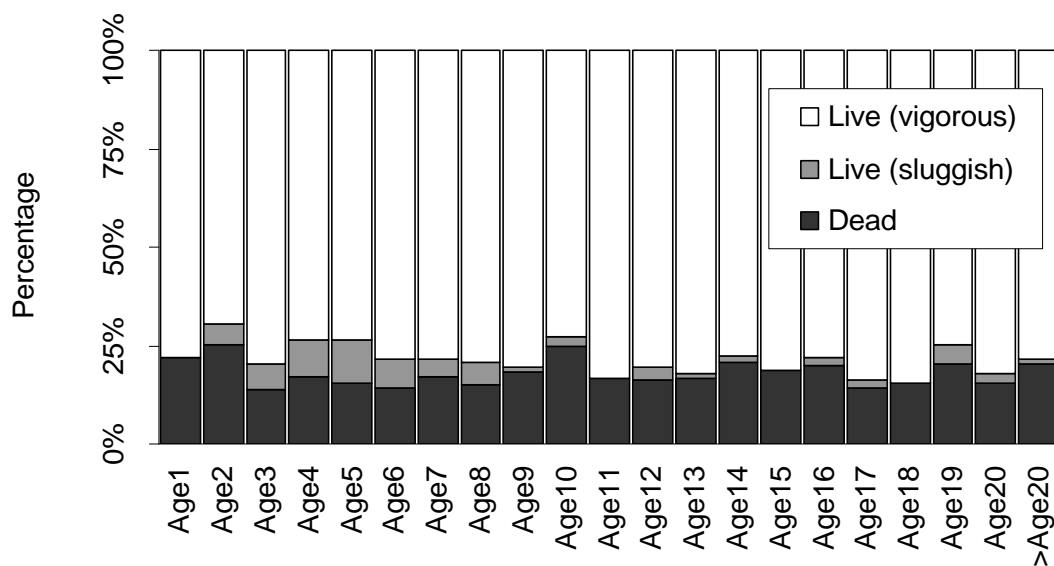


Fig. 2 Condition of each age SBT when captured. This data was based on the scientific observer data in 2009 and 2010. All observers judged the fish condition on a scale of “Dead”, “Sluggish” and “Vigorous” (n=5446).