

Taiwanese otolith collection and otolith direct ageing

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Otolith collection

Scientific observers have been deployed on Taiwanese SBT longline vessels since 2002, but SBT otoliths commenced to be sampled in 2003. There were 1, 2, 5, 4 and 3 observation trips lasting for different duration conducted each year on SBT vessels during 2002 - 2006, respectively. In addition to collection of temporal and spatial operation information and otoliths, the observers also measured and recorded the processed weight (gilled and gutted) and fork length of most SBT catch.

In 2006, 3 observers collected otoliths from 56 SBT caught by Taiwanese longliners. Among the samples, 50 otoliths were collected in the central Indian Ocean (31°58S - 36°25S and 82°31E - 88°26E) and 6 otoliths were collected in the southwestern Indian Ocean (36°19S, 34°00E).

The numbers of sampled SBT for otoliths in 2006 were fewer than that in 2003 (n=102), 2004 (n=294) and 2005 (n=80). However, the mean fork length (137.9±13.7cm) and dressed weight (46.8±12.6kg) of sampled SBT were largest in 2006 (Fig 1) than the sampled SBT in 2003 (129.5±21.6cm; 34.5±17.0kg), 2004 (117.1±14.6cm; 26.7±10.8kg) and 2005 (111.1±11.3cm; 20.0±5.6kg) (Fig 2).

Compared with previous sampling locations (approximately 29°S - 33°S), most sampled SBTs in 2006 were collected in higher latitudes (approximately 33°S - 36°S) (Fig 3). Since SBT were usually larger in the higher latitudes, this phenomenon may

explain why the sampled SBTs in 2006 were larger than that collected in 2003 – 2005.

Direct ageing by otolith

Otolith preparation and age estimation followed the procedures and criteria given in the “Manual for age determination of southern bluefin tuna *Thunnus maccoyii* (CCSBT)”. The mean ages of 56 SBT collected in 2006 were 6.9 ± 3.5 years, ranging from 3 – 27 years. The mean ages of the SBT collected in 2006 (Fig 4) were larger than that collected in 2003 (5.5 ± 3.1 years), 2004 (5.9 ± 2.2 years) and 2005 (3.9 ± 0.8 years) (Fig 5). This result was consistent with the observation for fork length and dressed weight of the SBT collected among 2003 - 2006.

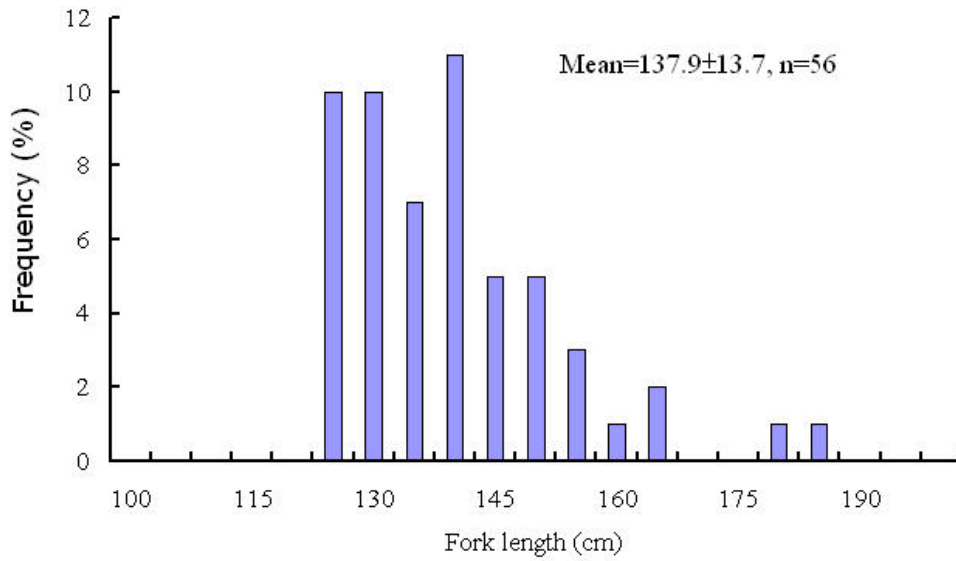


Fig 1. Length frequency distribution of the SBT sampled for otolith in 2006

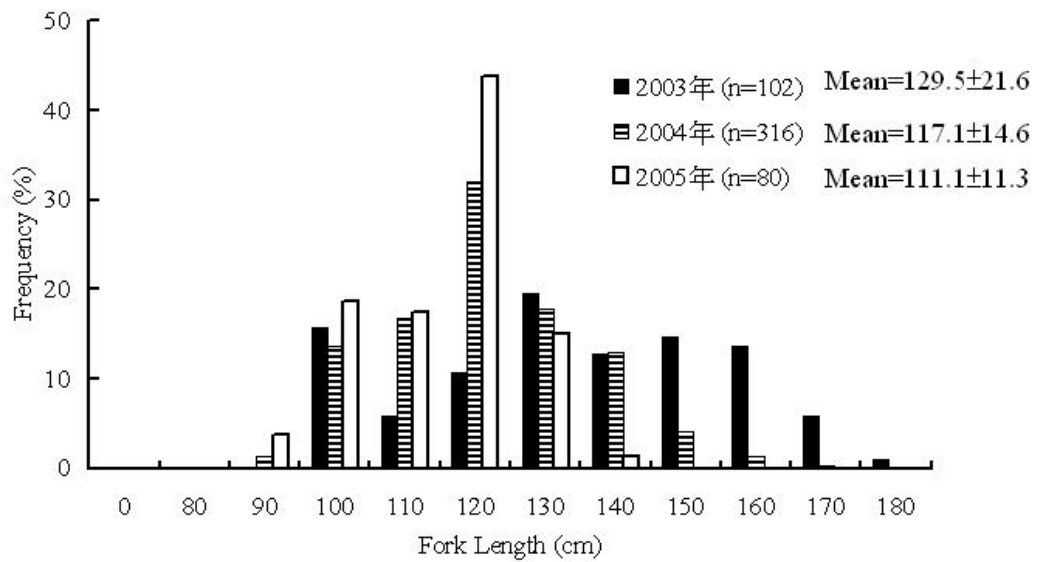


Fig 2. Comparison of length frequency distribution of the SBT sampled for otolith during 2003-2005

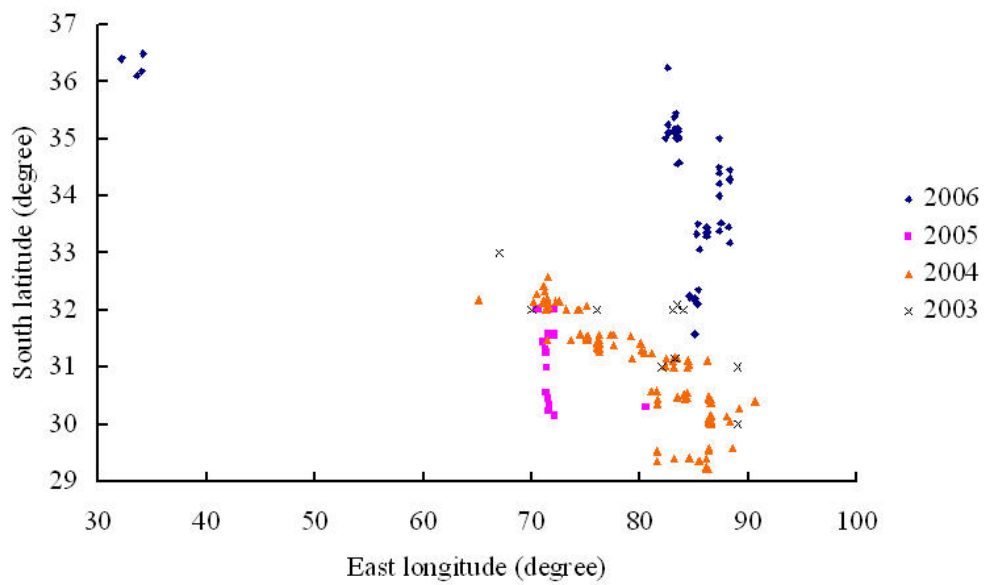


Fig 3. Comparison of catch positions of the SBT sampled for otolith during 2003-2006

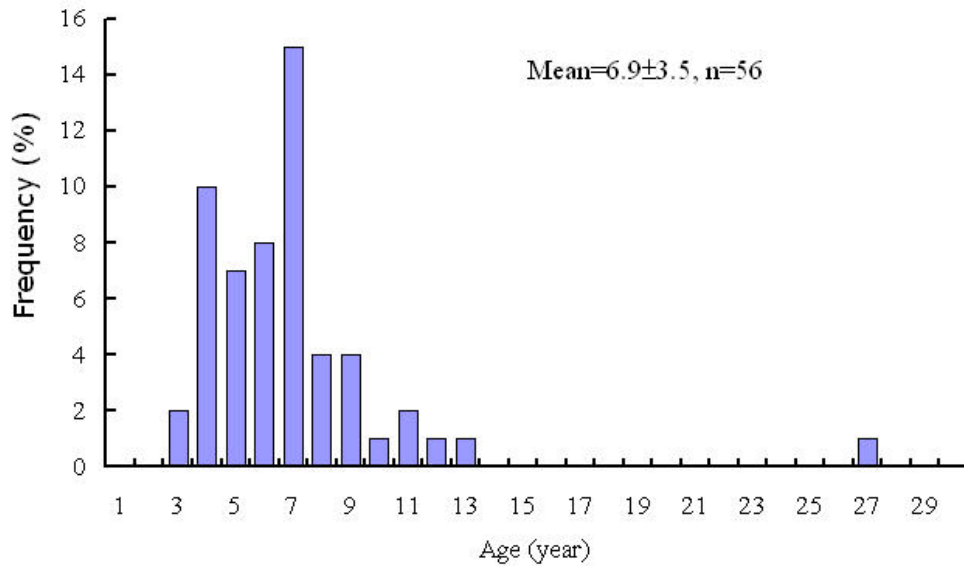


Fig 4. The results of direct ageing by otolith samples in 2006

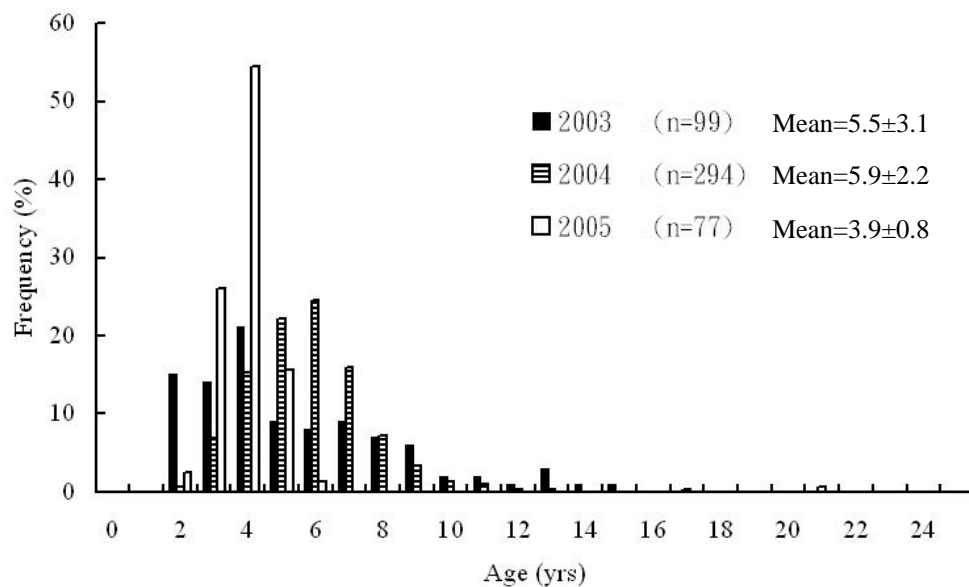


Fig 5. Comparison of the results of direct ageing by otolith samples during 2003-2005