

Proposal for the recruitment monitoring survey in 2007/2008

2007/2008 年の加入量調査のプロポーザル

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Summary

Recruitment surveys for age one SBT in 2007/2008 is proposed. As well as in 2006 and 2007, the trolling survey and the acoustic tagging survey will be conducted off the south and west coasts of Western Australia between December 2007 and January 2008. SBT caught will be tagged and released with the CCSBT tags. Because the increase of the research scale and archival tagging are important to obtain more reliable indices, budget support from the CCSBT is requested.

要約

2007/2008 年のミナミマグロ 1 歳魚加入量調査を提案する。2006 年、2007 年と同様に、2007 年 12 月から 2008 年 1 月に西オーストラリア南岸沖または南岸及び西岸沖において、曳縄による調査、音響タグ調査を実施する。採取したミナミマグロには CCSBT 標識を装着して放流する。調査指標の信頼性を高めるには、調査規模の拡大、アーカイバルタグ放流が重要であることから、CCSBT に対し、調査予算の拠出を要求する。

Introduction

It becomes clear that abundances of the 2000 and 2001 year classes of southern bluefin tuna (SBT), and presumably the 1999 year class also, are very low level. The acoustic survey that Japan had been carried out for more than ten years predicted the decrease, but the survey ceased after the final survey in 2006. It is an essential and urgent task to establish an alternative way to monitor the recruitment level as early as possible in SBT life stage for the appropriate stock management of the species in the CCSBT.

The only one survey for recruitment monitoring on age one SBT at present is the trolling survey that Japan has been conducting since 2006. We propose here to conduct its third year survey. Because there is also a time-series trolling index obtained from the acoustic survey since 1996, the next survey provide a series of 13-years index (Itoh 2007).

It should be noted the accuracy and precision of the recruitment index derived from the trolling survey to the whole age one SBT stock is still under debate. It needs to be further examined by comparison with other information, such as the CPUE trends of longline fishing to which the recruitment completed at age 4 ,i.e. three years after the trolling survey.

Whether the index from the survey is rough or detail reflection of the whole recruitment stock, we should continue to conduct the trolling surveys so far.

Furthermore, there are several concerns in distribution of SBT schools in the research area, such as a fact that the distribution on the continental shelf differ by year or a possibility that only a part of SBT distributed off west of Western Australia moved to the research area (Kawabe et al. 2007, Hobday et al. 2007). In order to make the index reflect the whole recruitment stock more accurately, it is also important that expanding the research survey scale and accumulate data for dynamics of SBT distribution in and around the research area.

Objectives

Obtain the index of the recruitment level of age one SBT (2007 year class) that distributed off the south coast of Western Australia. In addition, collect data for dynamics of SBT distribution within the research area, as well as to the research area from off the west coast of Western Australia.

Methods

The surveys will be conducted off the south and west coasts of Western Australia from around December 2007 to January 2008 for the age one SBT.

1. Trolling survey

A research vessel that chartered in Australia cruises in the research area and detect SBT with trolling catch. When SBT are caught, time and location are recorded and measured SBT length. If SBT are in good condition, SBT are tagged and released with two conventional tags per individual following the CCSBT tagging procedure. If SBT are not appropriate for tagging, otoliths, muscle tissue and stomach contents are collected.

2. Acoustic tagging survey

The objectives of this survey are to collect detail and quantitative data for dynamics of SBT distribution on shore areas of Western Australia. Age one SBT that caught by polling or trolling is released with a sonic tag. Its acoustic signals are detected by hydrophones deployed off the south coast of Western Australia.

3. Archival tagging survey

The objectives of this survey is to collect data of large scale movement of age one SBT. Age one SBT that caught by polling or trolling is released with an archival tag.

Budget and survey scale

For the trolling survey, the cost of vessel charter is A\$3500/day. The number of days for the trolling survey is increased to 14 days, five days research will be available for an additional survey line (e.g. off Albany) with reducing the survey days off Bremer Bay to five days. Remaining four days are needed for the transfer of the vessel but conducting trolling a part of the days. Then, $A\$3500 \times 14 = A\$49,000$ is required for the vessel charter. Another A\$20,000 is also required for the fishing gear, transport of research equipments and travel and accommodation for researchers. In total, A\$69,000 is required for the survey.

For the acoustic survey, the cost of vessel charter is A\$3500/day for twenty days, then A\$70,000. A\$52,000 is required for 130 acoustic tags. Another A\$8,000 is also required for transport of research equipments and travel and accommodation for researchers. In total, A\$130,000 is required for the survey.

For the archival tagging, in order to obtain at least three recoveries, 30 tags should be released (around 10% was the recapture rate for the CCSBT tagging from Western Australia in 2003). Then the cost is $A\$2800 \times 30 = A\$84,000$. No budget is required for deployment because it will be released in the other two surveys.

In the grand total, A\$283,000 is required for the surveys in 2007/2008. Fisheries Agency of Japan would bear some part of the expense. However, considering the importance of the recruitment surveys for the CCSBT, we ask CCSBT to bear large part of the expense to conduct the survey in sufficient scales.

Report of the results

Results will be submitted to the next CCSBT-SC in documents with detail analyses. Mortality of SBT by the survey will be also reported to the next CCSBT-SC.

References

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