



Update on the Global Spatial dynamics Archival Tagging project -2006

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Abstract

As part of the CCSBT SRP, Australia initiated a Global Spatial Dynamics project involving the archival tagging of juvenile (3–4 year old) SBT throughout their range (i.e. from South Africa to New Zealand) with the objective of estimating movement and mixing rates, and periods of residency in different parts of this range. The project has been implemented as a collaborative project between New Zealand (NZ), Taiwan and Australia. Attempt to expand the collaboration to other CCSBT members has been unsuccessful to date, but would be welcomed. The early results of this program are described, with archival tags having been released in NZ, Australian and central Indian Ocean waters. 88 tags were released in 2004, 104 in 2005 and 114 so far in 2006¹. Out of the 88 released in 2004, 16 have been recaptured so far including the first recoveries ever from archival tags released in the central Indian Ocean. From the 2005 releases, one tag has been recovered so far. It is planned to extend archival tagging operations to other parts of the Indian Ocean during the remainder of 2006 and the extent of releases in 2007 will depend upon the tagging success during the remainder of 2006.

Introduction

As part of the CCSBT SRP, Australia initiated a Global Spatial Dynamics project involving the archival tagging of juvenile (3–4 year old) SBT throughout their range (i.e. from South Africa to New Zealand). The primary objective of the project is the estimation of movement and mixing rates, and periods of residency in different parts of this range. The project has been implemented as a collaborative project between New Zealand (NZ), Taiwan and Australia. This paper presents a summary on activities undertaken in the archival tagging project and planned activities in 2006–2007.

Global Spatial Dynamics Project - Overview

CCSBT-ESC/0309/Info04 provided an overview of the global spatial dynamics project for juvenile SBT. The project is a multi-year, large-scale project that CSIRO has initiated to improve our understanding of the global spatial dynamics of juvenile southern bluefin tuna (SBT). The project aims to archival-tag 150 to 200 juvenile SBT per year for 3 years throughout the range of habitats in which they are exploited. The project aims to provide improved knowledge of, the basis for and an understanding of the implications of incorporating spatial dynamics and habitat utilization information directly into the analyses of conventional tag return data, CPUE standardizations using habitat-based approaches, the SBT stock assessments, and the management advice. The data collected in this spatial dynamics project will be useful in estimating mixing-rates and should help to provide a robust basis for interpreting the conventional tagging results. The project is intended to be complementary to the current conventional tagging program under the CCSBT Scientific Research Program, and to take advantage of this program through recovery programs and deployment opportunities. This project also builds upon previous and concurrently running archival and conventional tagging projects.

The project seeks to collaborate with other CCSBT members in all aspects of the work, including tag deployment, recovery and analysis of results. In the first year of the project,

¹ These years refers to the fishing season December to November.

collaborative arrangements were developed with New Zealand and Taiwan for tag deployments and future analytical collaboration when data becomes available from returned tags. These arrangements continued and were expanded during the second and third year of the project. We have attempted to extend this collaboration to other CCSBT members and a detailed proposal for this has been provided previously to the CCSBT Scientific Committee (Polacheck et al. 2004). To date, this has not occurred. Collaboration with other members would still be welcomed. 2006 was the last year in which this project had intended to release archival tag. While the release period may be extended somewhat because of problems in availability of suitable size fish for tagging, the opportunity for extending collaboration within the framework of this project are diminishing.

Archival tag releases

In 2006, archival tags were released in 4 locations in collaboration with this project:

1. in high seas in the central Indian Ocean
2. off the south of West Australia (WA)
3. in the Great Australian Bight (SA)
4. off New Zealand

A summary of archival tag releases including those for previous years is shown in Table 1, together with recaptures to date.

Table 1. Numbers of archival-tagged SBT by area and year, together with recapture numbers. The number of recaptures is as of August 14, 2006.

Year	Data	Indian Ocean	WA	SA	Tasman Sea	Total
2004	No. released	37	22*	23	6	88
	No. recaptured	5	4	8	1	18
2005	No. released	48	15	40	1	104
	No. recaptured	2	-	1		3
2006	No. released	25	39	35	15	114
	No. recaptured			1		1

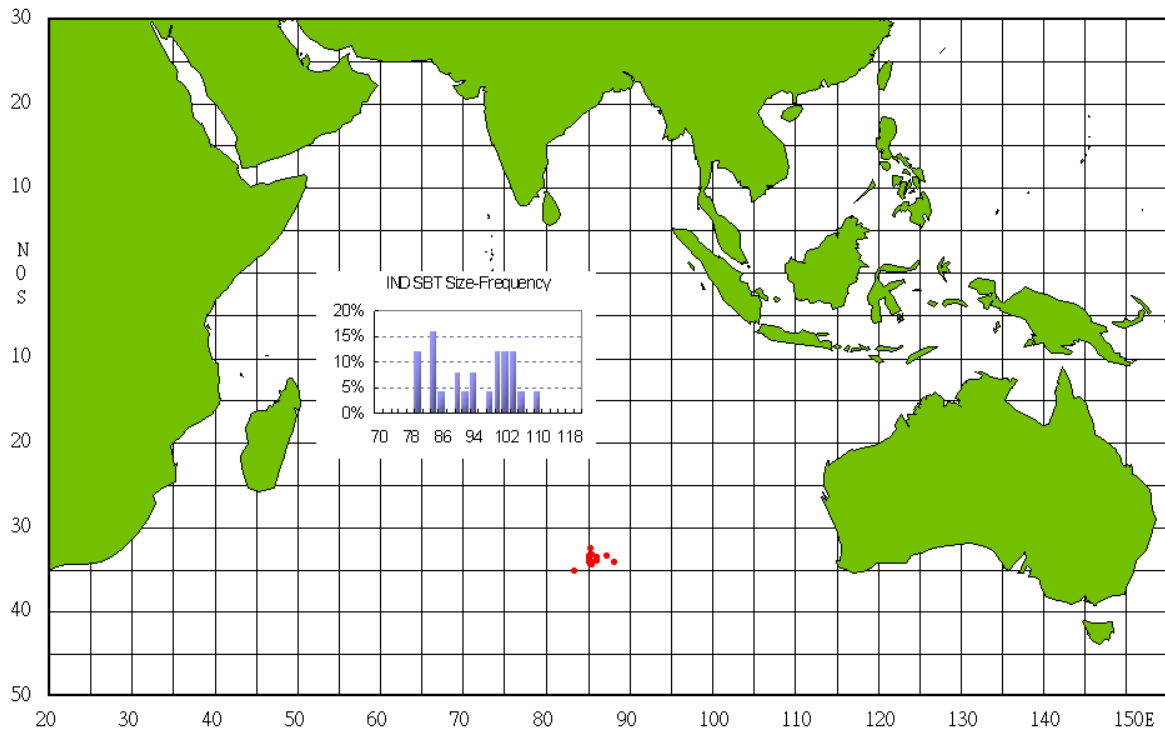
* Deployed as part of the RMP tagging.

A scarcity of suitable fish in New Zealand has so far severely restricted the tagging of any juvenile SBT from this area within this project. Somewhat better success was achieved in 2006 than in previous years and New Zealand will be providing additional information on the tagging activities in NZ waters.

In the central Indian Ocean, 37 SBT were tagged in 2004 and 48 SBT in 2005. In 2006, 25 archival tags have been released so far (as of July 26) and tagging activities are still continuing. Figure 1 provides the location and size distribution of the 2006 releases to date in the the Indian Ocean. Tagging was done by Taiwanese observers trained in archival tagging

techniques. In 2005 and 2006 all tagging was done in the course of their normal commercial activities and vessels were compensated for the release of tagged fish. To date, no SRP/RMA mortalities were attributable to these or any of the other releases so far during 2005/2006.

Figure 1. Distribution of archival tag releases made by Taiwanese observers in the Indian Ocean so far in 2006.



Recaptures

As shown in Table 1, a total of 22 tags have been recaptured to date (as of August 14, 2006). As expected, most of these are from the releases in 2004. It is too early to have had significant number of returns from the 2005 and 2006 releases (fish in the farms from the 2005/06 fishing season in South Australia are still being harvested). From the 118 releases in 2004, 18 or ~20% have been recovered to date. These include 5 from releases in the central Indian Ocean, 4 from releases in Western Australia, 8 from releases in South Australia and 1 from releases in the Tasman Sea (New Zealand). The recoveries from the releases in the Indian Ocean and New Zealand are the first recoveries of archival tags from releases in these two areas.

All together seven recaptures have been made from fish tagged by Taiwanese observers in the central Indian Ocean in July–August 2004 and 2005 (5 out of 37 from the 2004 releases and 2 out of 48 from the 2006 releases). These results combined with the recapture of 1 out of 6 releases by observers in New Zealand in 2004 demonstrate the feasibility and viability of conducting archival tagging from longline vessels and using trained observed to do the tagging.

The movement patterns of the archival tags returned to date differs from those seen from the archival tagged fish released during the 1990s in the extent of their eastward movements. Thus, none of the recaptured fish from tags released in Western Australia or South Australia have moved into the Tasman Sea. Polacheck et al (2006) examine this in more detail.

Archival tag training

Training in archival tag insertion was carried out in Taiwan for a second year. Training took place in Taiwan between March 26-28, 2006 at the Deep Sea Fishery Research and Development Center (fisheries training center) in Kaohsiung. A total of twelve observers participated in the training, including the one continuing observer who tagged fish last year. A number of the trainees also participated in training in 2005, and continue to improve their technique.

Plans for 2005–2006

Australia, Taiwan and New Zealand plan to continue release of archival tags under this Global Spatial Dynamics project during the remainder of 2006 and early 2007. The extent of tagging in latter 2007 will depend upon the success in releasing tags during the last part of 2006. Archival tagging effort will be undertaken in the GAB, WA, NZ waters and on the high seas in the Indian Ocean.

References

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