



Update on the Global Spatial dynamics Archival Tagging project

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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. It is our hope that the collaborative efforts will be expanded to include collaborations with other CCSBT members. The early results of this program are described, with archival tags having been released in NZ, Australian and central Indian Ocean waters. 103 tags were released in 2004 and to date 89 have been released in 2005. Out of the 103 released in 2004, 9 have been recaptured so far including the first recoveries ever from archival tags released in the central Indian Ocean. It is planned to extend archival tagging operations to other parts of the Indian Ocean and possibly off the east coast of Australia depending upon the availability of suitable tagging platforms and availability of juvenile fish. This may result in a doubling of the number of fish tagged.

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 2005–2006.

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, 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 year of the project. We would welcome extending this collaboration to other CCSBT members and a proposal for this has been provided in a separate document (Polacheck et al. 2004).

Archival tag releases

In 2005, 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 2004 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.

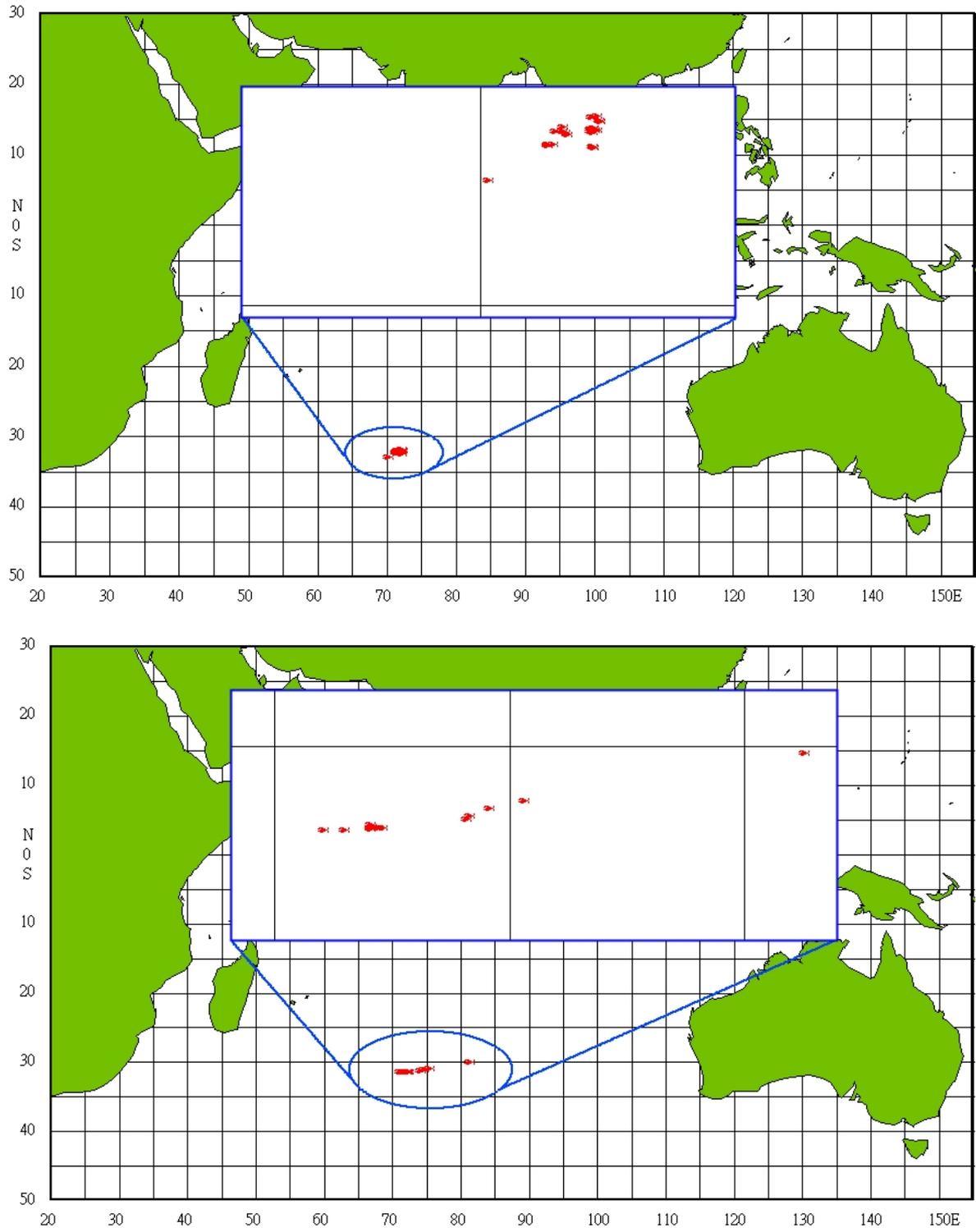
Year	Data	Indian Ocean	WA	SA	Tasman Sea	Total
2004	No. released	37	22*	38	6	103
	No. recaptured	3	2	5	-	10
2005	No. released	48	15	25	1	89
	No. recaptured	-	-	-	-	-

* Deployed as part of the RMP tagging.

A scarcity of suitable fish this year in New Zealand has so far severely restricted the tagging of any juvenile SBT from this area. New Zealand will be providing additional information on their tagging activities.

In the Indian Ocean, 37 SBT were tagged in 2004. In 2005 during July–August 48 SBT were tagged (Figure 1). Tagging was done by observers trained in archival tagging techniques in the course of normal commercial activities. Vessels were compensated for the release of tags. No SRP/RMA mortalities were attributable to these or any of the other releases so far during 2004–2005.

Figure 1. Distribution of archival tag releases made by two Taiwanese observers in the Indian Ocean in 2005.



Recaptures

Three recaptures have been made from the 37 fish tagged by Taiwanese observers in July–August 2004. One fish, 93cm fork length (FL), was recaptured on the fishing grounds within 2 weeks but the other two (93 & 95cm FL) were recaptured in SA in Jan–Feb 2005, having departed the central Indian Ocean in late October, reaching SA by early December.

The two recaptures from the WA releases were made in SA in Feb 2005. One fish (56 cm FL) was tagged in February 2003. It stayed in WA/SA for 1.5y, departing for the Indian Ocean in late June 2004. It reached as far west as 60°E by October, before commencing the return trip to SA in early November and reaching SA by early December 2004. The other recapture was tagged in January 2004 as a 76cm fish. It moved to SA where it stayed until early July, when it commenced the trip to the Indian Ocean. It reached as far west as 83° in mid-September, before commencing the return trip, reaching SA in early November 2004.

All of the five recaptures from the SA tagging were from fish tagged in April 2004; their release sizes were very similar (87–90cm FL). Three of the fish stayed in the Australian region, moving to WA in June–July and reaching Cape Leeuwin-longitudes by September. In October 2004 they started the return trip to SA. One of the fish that moved west at the same time as the others, kept heading west and reached 75°E by Sep 2004. It commenced the return trip to SA in early November. The fifth tag has yet to be returned to CSIRO.

Archival tag training

Follow up training in archival tag insertion was carried out in both New Zealand and Taiwan this year. In New Zealand a training course was run in early April, and 6 observers can now be considered trained to implant tags. In Taiwan training in late April was provided to a group of eight observers including two who released tagged fish last year. Improved tagging kits and mattresses were delivered, along with 50 archival tags.

Plans for 2005–2006

Australia, Taiwan and New Zealand plan to continue release of archival tags under this Global Spatial Dynamics project in 2005–06. Archival tagging effort will again be undertaken in the GAB, WA, NZ waters and on the high seas in the Indian Ocean. We are also planning to extend archival tagging operations to other parts of the Indian Ocean and possibly off the east coast of Australia depending upon the availability of suitable tagging platforms and availability of juvenile fish. This hopefully will see a doubling of the number of fish tagged.

References

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