



CCSBT-ESC/0309/10

## 6.4 CCSBT SCIENTIFIC RESEARCH PROGRAM TAGGING PROGRAM

### 1. Introduction

At CCSBT8 in October 2001 the Commission agreed to proceed with a tagging program as part of a Scientific Research Program. The structure agreed for the tagging program reflected the recommendations of a Tagging Program Workshop convened in early October 2001. There are three components to the program:-

- i. a program in the surface fishery in the waters off the south and western Australian coasts to managed by the CCSBT Secretariat
- ii. a longline pilot program to be conducted by Japan in the longline fishery in the western Indian Ocean
- iii. a longline pilot to be conducted by Australia in the east coast longline fishery

The Secretariat has been managing the first component of the tagging program and this paper reports on the second year of activity.

### 2. General

As designed at the Tagging Program Workshop this element had the following features:-

- tagging of 5-7,000 one year old SBT in Western Australia
- tagging of 8-10,000 two to four year old SBT in South Australia
- fish to be caught using pole and line techniques
- five year timescale

A total budget of \$614,000 was agreed for the second year of the program. \$52,000 was for coordination expenses and \$562,000 for tag deployment costs. Details of estimated expenditure are:

Vessel charter	\$324,650
Tag placement expenses	\$231,272
Tag purchase	\$26,100
Rewards	\$2,170
Administration expenses	<u>\$2,780</u>
Total expenditure	\$586,972

### 3. Results of tag deployment in surface tagging program

#### (1) Summary of Results

	Target Number of Tagged fish	Actual Number of Tagged Fish	Active Tagging Days	Tagging Dates	Number of charter boats
<b>Western Australia</b>	5-7,000	6,735	45	15 January- 12 March	1
<b>South Australia</b>	8-10,000	6,412	28	5 December- 20 December 27 March- 11 April	1
<b>Total</b>	10-15,000	13,136	73	-	2

#### (2) Western Australia

The charter period was for 45 days. Fieldwork commenced on 15 January 2003 and ended on 12 March 2003 when a total of 6,735 fish had been tagged, and all charter days had been used.

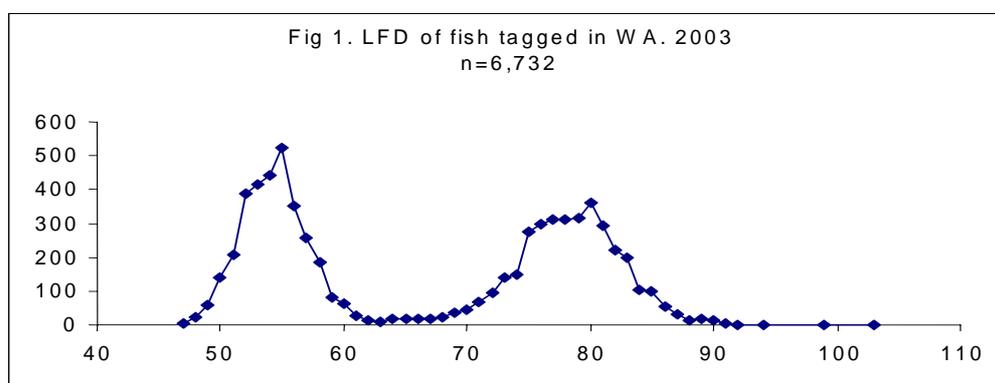
The charter started at Albany, and the inshore area between Albany and Esperance was covered to determine if fish were available for tagging in this area (fish were reported from this area in December and during a CSIRO field trip some 50 fish had been tagged for CCSBT). Apart from 8 scattered strikes on the troll lines, no signs of activity were found.

Following this the area between Esperance and the Great Australian Bight was examined, and as was the case last year, fish were only located to the east of this area, between Middle Island and Daw Island. Fish presence was patchy with the number tagged per day varied between zero and a high of 750, with the fish usually being available for 3 or 4 days in a row, after which activity died off. Stomachs were generally full of feed and it may be that after a few days of good weather when the fish surface they are satiated and are no longer interested in the fish chummed from the vessel.

Again no signs of activity were reported on the shelf edge. Inshore signs of activity were more pronounced than last year with more frequent sightings of patches of birds working the surface, and on occasion baitfish patches being large enough to be clearly visible on the echo sounder. A promising sign also was the increase in the number of troll strikes while searching for fish. Last year there were on average 4 troll strikes per day and this year 6 per day.

In contrast to last year about half the fish tagged this year were 2+ (3,514 2+ and 3,218 1+) See Fig 1. The 2002 figures were 2,511 1+ and 341 2+. The reason for this is unclear. It could be that a good recruitment year is passing through Western Australia and these fish are responding first to chumming and crowding out the 1+ fish.

The vessel chartered and the crew used were the same as last year. A very satisfactory relationship has developed and the crew and vessel owner have provided excellent assistance. A minor problem has been that the vessel normally fishes commercially in March, and thus the owner would like the charter to finish in early March. However coupled with the fact that to obtain reasonable fishing weather for 45 days a period of about 60 days is required, for the past two years weather conditions have deteriorated after mid February, and as a result it has taken longer than anticipated to complete the charter. In 2004 tagging it is proposed to commence earlier in January than in 2003 to deal with this difficulty. Although the present starting date of approximately 15 January was carefully chosen as a balance between the general slow improvement of weather condition from early January onwards and the gradual increase of fish in the area after December, sufficient fish should be available in early January for tagging purposes.



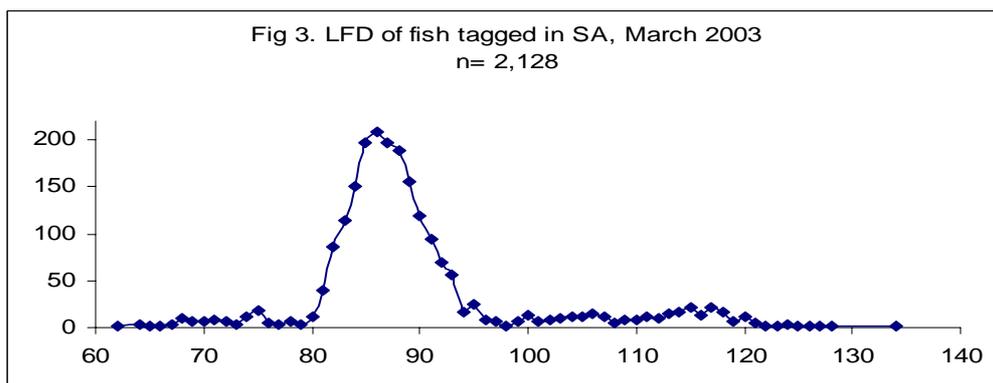
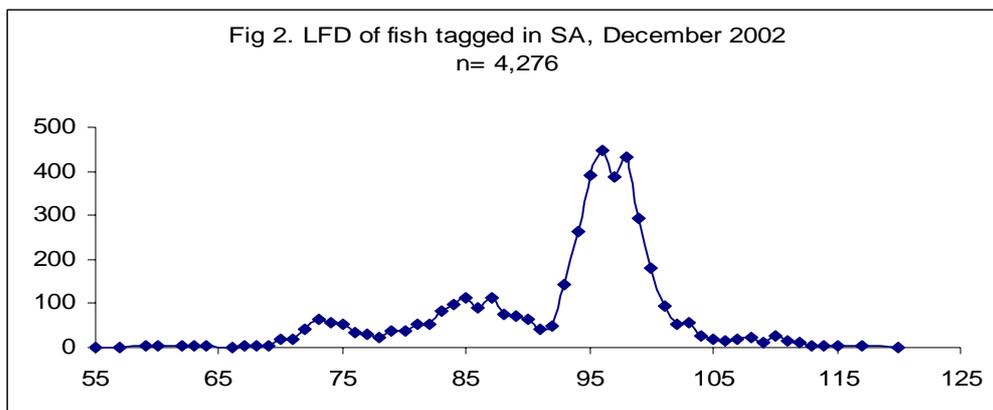
### (3) South Australia

The charter period was for 30 days. Because the charter vessel was not available during the fishing season tagging operations were carried out in two stages, pre fishing season in December 2002 and post fishing season in March 2003. A total of 6,412 fish were tagged, and 28 charter days were used.

In December weather conditions were exceptionally good and during 16 days at sea only one day was spent at anchor because of bad weather. Plane assistance was available for most days, and the only fish sighted inshore were at one spot, the Nuyts Reefs area. Apart from 4 days steaming to and from Port Lincoln, all fishing days were spent in this area and 4,284 fish were tagged. There were a sufficient number of fish patches to enable tagging in a different small localised spot each day and thus not re-fish a patch and consequently recapture numbers of previously tagged fish. The size of fish tagged was larger than expected. See Fig 2. Attempts to locate patches of smaller younger fish were not successful.

In March the weather was again reasonable and it was possible to fish for 12 days during the 14-day period that the vessel was at sea. Again plane support was available for most days. No fish at all were spotted when the plane was inshore, and the only sightings were from a small area of the shelf edge where the commercial fleet had fished. 2,128 fish were tagged before the weather changed and after this all sign of any fish activity disappeared. As in December patches of small fish were not found, and some of the fish tagged were very large, in excess of 115cm. See Fig 3. As happened last year, this charter period after the end of the commercial fishery is too late in the season and on both occasions fish have departed the area for the winter-feeding grounds before charter days had been used up.

To avoid attempting to tag fish at the very end of the season, it would appear better to commence the pre season charter section earlier than the start this year of 5 December 2002 , about one week earlier, and attempt to use up the bulk of the charter days in this pre season period. Dangers would be the possible lack of fish so early in the season, and the possible capture of large numbers of any fish tagged during the consequent fishing season. But on balance an early start appears to be the only feasible way of possibly increasing the number of fish tagged each year.



#### 4. Results of Tag Recovery

A total of 54 fish have been recaptured from the surface fishery tagging program<sup>1</sup>. As would be expected, most (37) of these fish were recovered from the sea cages in Port Lincoln tuna farms. Fifteen fish were recaptured from the wild, but 12 of these were recaptured while conducting tagging. The tags from two other fish were found on beaches in Western Australia.

Attachment A provides a picture of the tag release and recapture pattern for the surface fishery tagging program.

Summary information on tag releases and recaptures are set out in Attachment B. The information in Attachment B includes details of all CCSBT tags recaptured including those

<sup>1</sup> These are fish that had been reported to the Secretariat as at 23 July 2003. However, it is believed that there are about another 25 fish that have been recaptured at Port Lincoln which have recently been recaptured, but for which the details have yet to reach the Secretariat.

released in the surface fishery, the two long line pilots and some other minor releases. This information is available to members from the CCSBT Database Manager.

Considerable effort was made in 2003 in support of tag recovery. These included:

- arranging for a private contractor at Port Lincoln to act on behalf of the CCSBT in promoting the return of tags; the collection of data on tag recapture details; and providing the information with the recovered tags to the Secretariat
- maintaining a recovery mechanism with Taiwanese representatives in Cape Town and Mauritius
- using members' fishing authorities to advertise the tag recovery program with vessels at sea
- using recreational fishing associations in Australia to publicise tag recovery by their members
- providing rewards and feedback (usually in the form of recapture certificates that provides a history of the recaptured fish) to people who reported the capture of tagged fish

## **5. Japan/Australia Recruitment Monitoring Program (RMP)**

The Steering Committee of the RMP agreed to the transfer of 2001 RMP tagging data to the CCSBT. The Steering Committee also agreed to the transfer of 1991-1997 tagging data to the CCSBT on the condition that a satisfactory use of data agreement is established between the RMP and CCSBT. With the transfer of the RMP data, the CCSBT will supply its rewards for future recaptures of fish tagged in the RMP program.

The RMP tagging database was provided to the Secretariat in late June 2003 and the Secretariat is currently developing routines to amalgamate these data with the CCSBT tagging database. After this has been completed, the Secretariat will receive regular updates of the RMP tagging database from CSIRO who are maintaining the master copy of the RMP data.

The Secretariat will be able to provide RMP tagging data to members of the Extended CCSBT under the same conditions that the CCSBT tagging data is provided, but with the additional condition that Clause 3 ("Use of Data") of the RMP data sharing agreement would apply to the RMP data. The RMP Data sharing agreement is provided in Attachment C.

## **6. The 2004 Program**

The 2004 program will be conducted along the lines of the activity in 2003 unless the Scientific Committee considers an amendment is required. 13,136 fish were tagged in the 2002/03 season, but we would still target around 15,000 fish for the 2003/04 season with the same distribution between South Australia and Western Australia.

On the basis of the 2003 experience, it is proposed to bring forward tagging in South Australia to commence in late November/ early December. Because of vessel availability in March in South Australia, tagging is pushed out to the end of March and fish availability is compromised. This proposal should help to increase the number of fish tagged closer to the minimum target of 8,000 in South Australia. However, if this does not improve the catch rate of SBT, then, based on our current daily catch rates, an additional 5 days of charter would be required to reach the minimum target.

If the Scientific Committee believes more fish should be tagged in South Australia during the 2003/04 season, it would be difficult to achieve with the current vessel arrangements. The two vessels used are close to the limit of their availability. Consideration would have to be given to hiring additional vessels and other tag application teams. The cost is approximately \$10,500 per day in South Australia and \$6,500 per day in Western Australia.

Continued emphasis will be devoted to tag recovery mechanisms in 2004. The draft budget for coordination activities also provides for new design work for the reward system in 2004, which will be used for rewards and publicity material. It is intended to begin advertising in fishing magazines in member countries prior to the commencement of the 2004 fishing seasons.

Effort will be made to have the monitoring programs in Indonesia adapted to tag recovery. Indonesian observers will be present at SC8 and CCSBT10 and they will be approached to assist in this process.

A budget for 2004 is at Attachment D. The draft budget provides for a significant increase in expenditure and footnotes provide explanations for the increases.

The budget for 2004 is a matter for decision by the Extended Commission and will be influenced by revenue estimates and carryovers from 2003. However, in the event that a reduction is required, the Extended Scientific Committee should provide advice on where savings might be made which would have the minimal effect on the program's integrity.

**Prepared by the Secretariat**

ATTACHMENT A

Figure 1: Distribution of tagging in the surface fishery tagging program

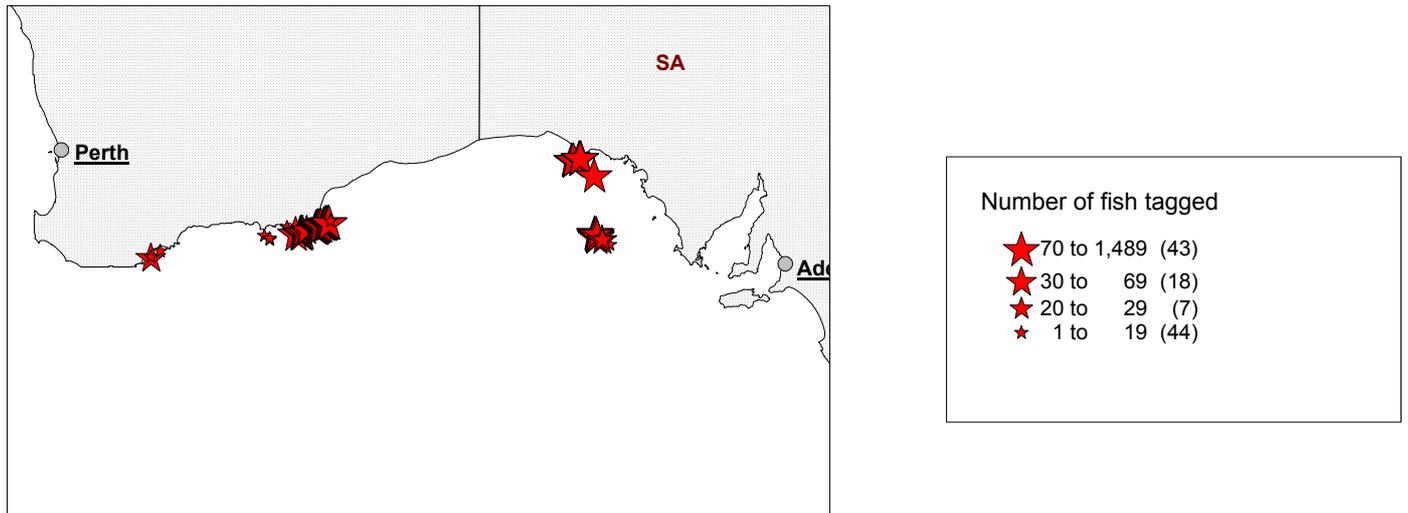


Figure 2: Distribution of recaptures from the surface fishery tagging program

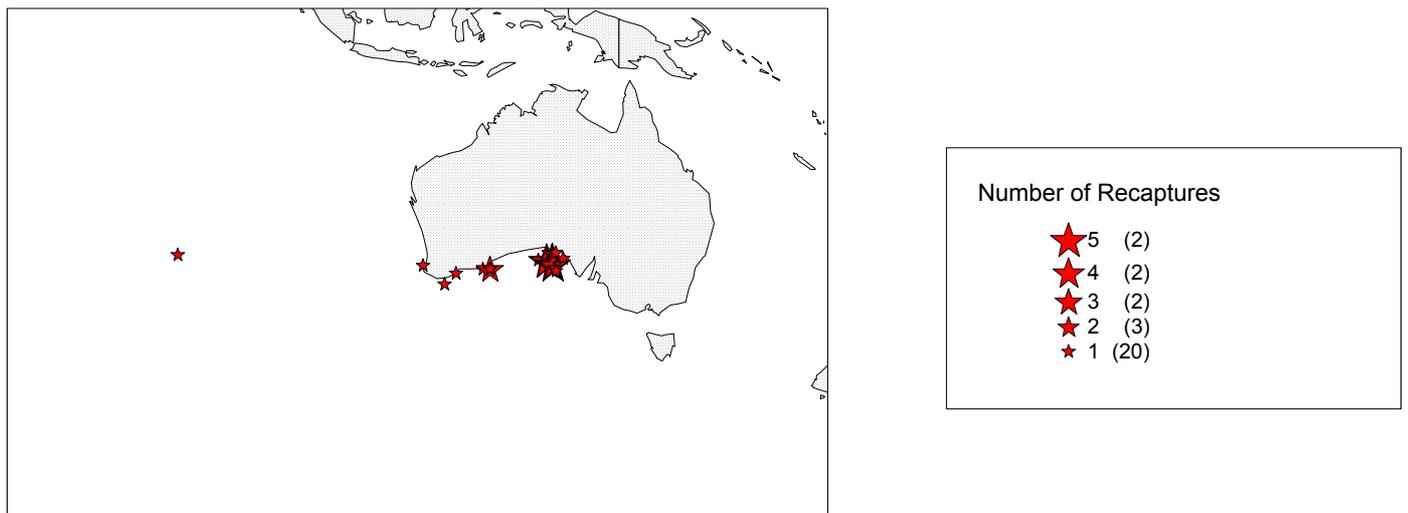


Figure 3: Movement of recaptured fish that were tagged in the surface fishery tagging program



### Summary of Releases and Recaptures

The following table summarises the number of fish tagged and subsequent recaptures in the surface fishery tagging program and the two pilot longline tagging programs. Please note that this table refers to the number of recaptures, not the number of different fish recaptured. Therefore, multiple recaptures of a single fish are reported multiple times in the table below. There is only one occurrence of this, which is for a single fish that was caught and reported from a farm on two separate occasions.

Project Code <sup>2</sup>	Calendar Year of Release	Month of Release	Total Number of Fish Tagged	Total Number of Recaptures	Commercial Fishing Recaptures	Research Fishing Recaptures	Amateur Fishing Recaptures	Fish Farming Recaptures	Other Recaptures
SRP_TAG	2002	1	522	1	0	0	0	0	1
SRP_TAG	2002	2	1655	7	1	1	0	5	0
SRP_TAG	2002	3	678	1	0	1	0	0	0
SRP_TAG	2002	4	464	2	0	2	0	0	0
SRP_TAG	2002	12	4335	36	1	2	0	33	0
SRP_TAG	2003	1	1760	3	0	2	0	0	1
SRP_TAG	2003	2	3310	4	0	4	0	0	0
SRP_TAG	2003	3	3542	1	1	0	0	0	0
SRP_TAG	2003	4	200	0	0	0	0	0	0
SRP_TAGA	2002	7	159	2	1	1	0	0	0
SRP_TAGA	2002	8	59	0	0	0	0	0	0
SRP_TAGJ	2001	11	119	2	2	0	0	0	0
SRP_TAGJ	2001	12	251	1	1	0	0	0	0
SRP_TAGJ	2002	1	11	0	0	0	0	0	0
SRP_TAGJ	2002	10	36	0	0	0	0	0	0
SRP_TAGJ	2002	11	79	0	0	0	0	0	0
SRP_TAGJ	2002	12	206	0	0	0	0	0	0
SRP_TAGJ	2002	1	4	0	0	0	0	0	0
SRP_TAGJ	2002	2	29	0	0	0	0	0	0

<sup>2</sup> The project codes have the following meanings: “SRP\_TAG” is the surface fishery tagging program conducted in southern Australia by the CCSBT; “SRP\_TAGA” is the longline tagging pilot being conducted by Australia on the east coast of Australia; “SRP\_TAGJ” is the longline tagging pilot being conducted by Japan in the Indian Ocean.

**ATTACHMENT C**

**Data Sharing Agreement for the Recruitment Monitoring Program**

**Arrangement for handling data and publications arising from the Australia/Japan  
Southern Bluefin Tuna Recruitment Monitoring  
Co-operative Research Program (RMP)**

## **1. Objective and nature of this arrangement**

With regard to article 8.4 and other related articles of the MOU signed by CSIRO and NRIFSF, 29 October 1998, this arrangement stipulates the principles and procedure for handling of data collected in research projects conducted under the MOU, and other relevant research projects when agreed. The objective is to promote a sound collaborative relationship between the parties and promote collaborative studies. However, it should be noted that the Collaborative Japan/Australia Recruitment Monitoring Program (RMP) for juvenile Southern Bluefin Tuna (SBT) was originally developed following recommendations from the trilateral scientific meeting in the late 1980s and endorsed by the Scientific Committee of the CCSBT. Therefore, it also should be noted that in a general sense, this arrangement should be consistent with the scientific activity under the CCSBT.

The arrangement covers the following research activities:

- a) Projects under the 1<sup>st</sup> MOU ('93-'97) and 2<sup>nd</sup> MOU ('98-) will be the primary elements of this arrangement;
- b) Acoustic surveys starting from 1994 but considered on a case by case basis; and
- c) Tagging prior to 1<sup>st</sup> MOU but considered on a case by case basis.

## **2. Procedure**

### **2.1 Data to be exchanged**

In principle, the data collected under the activities identified above (a, b, c) to be shared between the collaborative parties will include:

- Conventional tag release and recovery data collected under the MOU's;
- Archival tag data release and recovery data, archived data retrieved from tags;
- Aerial survey sighting and effort data; and
- Other related data identified on a case by case basis and agreed to exchange by the relevant parties.

The relevant researchers from each party will discuss and agree on the specific details of the data to be exchanged on a case by case basis. If there are issues that cannot be resolved by the researchers they will be resolved by the Steering Committee of the RMP.

## **2.2 Timing of data exchange**

The RMP data obtained from the activities during a research year should be exchanged and where appropriate updates of previously exchanged data no later than 1 May, which allows adequate time for the preparation of reports to the annual Workshop and Steering Committee of the RMP. For data obtained from tagging and related activities prior to the 1<sup>st</sup> MOU ('93-'97) and data obtained from acoustic surveys, interested researchers will develop procedures including specific dates for the exchange of the data.

## **3. Use of data**

### **3.1 General**

Utilization of the exchanged data will be limited to analyses which directly relate to SBT recruitment monitoring or the optimum utilization and conservation of SBT stock. When a researcher wishes to develop new analyses using exchanged data, he or she shall notify the Institute who collected the data of the intention, with a brief description of intended analyses and provide an invitation to collaborate in analysing them. The development of collaborative studies are strongly encouraged.

### **3.2 Publication**

The intention to produce technical reports and publications arising from the use of data provided under this arrangement shall be notified to the other party well in advance. The Institute who collected the data will be invited to supply appropriate co authors to be included in the list of authors. A list of authors, the schedule for publication and an outline of the content will be provided. The draft paper will be provided to the other party for comment. In all cases, the source of the data shall be stated clearly in the published paper. Co-operative studies with accompanying joint publications are strongly encouraged.

**CCSBT TAGGING PROGRAM  
2004 BUDGET**

The following table outlines the proposed budget for 2004 together with a comparison with outlays in 2001 and 2003.

<b>Expenditure Type</b>	<b>2002 Expenditure \$</b>	<b>2003 Expenditure \$</b>	<b>2004 Estimate \$</b>
<b>Coordination Expenses</b>			
- Tag purchase	39,500	26,100	35,000 <sup>3</sup>
- Tag rewards	32,196	5,000	30,000 <sup>4</sup>
- Advertising material	18,258	-	4,500 <sup>5</sup>
- Promotion expenses	-	-	5,000 <sup>6</sup>
- General administration	2,556	2,780	9,000 <sup>7</sup>
<b>Total Coordination Expenses</b>	<b>96,678</b>	<b>33,880</b>	<b>83,500</b>
<b>Tag Deployment Expenses</b>			
- Tag placement contract	202,695	231,272	253,000 <sup>8</sup>
- Vessel charter	179,200	324,650	356,000 <sup>9</sup>
<b>Total Deployment Expenses</b>	<b>381,895</b>	<b>555,922</b>	<b>609,000</b>
<b>Total Expenditure</b>	<b>478,573</b>	<b>589,802</b>	<b>692,500</b>

<sup>3</sup> Budget will allow purchase about 27,500 tags which will increase tag holdings at June 2004 to an estimated 40,000 tags.

<sup>4</sup> (1)The program is expecting a tag recapture around 10%. The estimate is based on progress towards this target at an average reward price of \$20. It also provides for the cost of ordering some new reward material with different artwork.

(2)By 2004 about 75,000 tags will have been released. The estimate assumes a 2% tag recovery rate at a cost of \$20 per tag.

<sup>5</sup> New advertising material will be developed and provided to fishers and other sectors of the industry. Costs reflect the experience of the original printing of publicity material.

<sup>6</sup> This budget is for the placement of advertisements in fishing industry publications in member countries.

<sup>7</sup> The budgeted amount includes provision for freight and mailing costs for reward materials. It also includes provision for design costs for new artwork. In 2002 these costs were included in advertising material expenses.

<sup>8</sup> Represents an 8% increase to cover price increases and some additional materials for the tag deployment activity.

<sup>9</sup> Calculated on the basis of the number of charter days and vessel hire rates in 2003 plus an 8% provision for cost increases. Charter rates achieved in 2003 are unlikely to be repeated in 2004 as at least one new vessel will have to be located.

### Update of Summary of Tag Releases and Recaptures

The following table updates Attachment B of paper CCSBT-ESC/0309/10 for the number of tag recaptures received by the Secretariat as at 22 August 2003. Tags from 72 fish were received too late to be fully processed for this update and some of the details for these fish are listed as “to be advised” in the summary below. Please note that this table refers to the number of recaptures, not the number of different fish recaptured. Therefore, multiple recaptures of a single fish are reported multiple times in the table below. There is only one occurrence of this, which is for a single fish that was caught and reported from a farm on two separate occasions.

Project Code <sup>1</sup>	Calendar Year of Release	Month of Release	Total Number of Fish Tagged	Total Number of Recaptures	Commercial Fishing Recaptures	Research Fishing Recaptures	Amateur Fishing Recaptures	Fish Farming Recaptures	Other Recaptures
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SRP_TAG	2002	2	1655	11	1	1	0	9	0
SRP_TAG	2002	3	678	2	0	1	0	1	0
SRP_TAG	2002	4	464	5	0	2	0	3	0
SRP_TAG	2002	12	4335	109	1	2	1	104	1
SRP_TAG	2003	1	1760	3	0	2	0	0	1
SRP_TAG	2003	2	3310	4	0	4	0	0	0
SRP_TAG	2003	3	3542	3	2	0	0	0	1
SRP_TAG	2003	4	200	0	0	0	0	0	0
SRP_TAG	to be advised	to be advised	to be advised	72	0	0	0	72	0
SRP_TAGA	2002	7	159	2	1	1	0	0	0
SRP_TAGA	2002	8	59	0	0	0	0	0	0
SRP_TAGJ	2001	11	119	2	2	0	0	0	0
SRP_TAGJ	2001	12	251	1	1	0	0	0	0
SRP_TAGJ	2002	1	11	0	0	0	0	0	0
SRP_TAGJ	2002	10	36	0	0	0	0	0	0
SRP_TAGJ	2002	11	79	0	0	0	0	0	0
SRP_TAGJ	2002	12	206	0	0	0	0	0	0
SRP_TAGJ	2003	1	4	0	0	0	0	0	0
SRP_TAGJ	2003	2	29	0	0	0	0	0	0

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