（CCSBT-CC/0610/12）

INTERNATIONAL OBSERVER PROGRAMME

Abstract

The full implementation of a centrally administered satellite-linked VMS system would require all CCSBT Member and cooperating Non-Member licensed vessels, engaged in fishing activity in the Indian, South Atlantic and South Pacific Oceans, to be equipped with a satellite-linked vessel monitoring device.

漁船監視制度 (VMS)

中央管理による衛生でリンクされた VMS 制度を全面的に導入するためには、インド洋、南大西洋及び南太平洋でミナミマグロ漁業に従事するすべての CCSBT のメンバー及び協力的ノン・メンバーの許可船が衛星でリンクされた漁船監視装置を設置することが必要とされる。

Discussion

1. In late 2002, a set of standards for observer programme (refer attached *CCSBT Observer Standards - Attachment F from SC8*) were agreed but several years on it seems that some Members are still having trouble with meeting these standards and hence delivery on the key components of our scientific research programme. This is certainly not doing anything to build trust in our data.
2. The observer programmes are not cheap, but given the importance and high value of the SBT stock, this is an appropriate cost to be met by the Commission.
3. In setting standards for the CCSBT observer programme, an exchange of observers between countries on a regular basis should be encouraged. The standards support the use of some observers from Non-Member nations and Australia has already undertaken this, whereby in 2006, observer duties in the purse seine fleet were conducted by a South African observer.
4. Given the ongoing problems with some of the CCSBT members meeting the observer standards, Members and Non-Members should support an IOP, drawn from a common register and funded under the SRP. The IOP will be coordinated by the CCSBT Secretariat. The data collected by the IOP will be freely available to members of the CCSBT Extended Commission.
5. Supplementary to a CCSBT-run at-sea observer programme, a CCSBT-run port monitoring programme will be developed for key ports (especially in Japan) to ensure that the CCSBT is provided with accurate catch landing data.

Background

CCSBT12[1]

6. At CCSBT12, Australia proposed that an international observer programme (IOP) was required to provide transparency and to demonstrate that the data are accurate and a true reflection of what is happening in the fishery.
7. Australia advised that similar systems were operated by the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), the Secretariat of the Pacific Oceanic Fisheries Programme (SPC), Forum Fisheries Agency (FFA) and the Indian Ocean Tuna Commission (IOTC) also had an IOP for transhipping vessels.
8. Korea strongly supported the proposal for an IOP to provide greater confidence in the data provided by Members.
9. New Zealand was supportive of an IOP, but felt that scoping work was required before deciding on an IOP.
10. Taiwan noted it was difficult at this stage to have an IOP under the Extended Commission, considering the cultural and language barriers that may exist between Taiwanese crew and the assigned international observers.
11. Japan was not convinced on the need for an IOP within CCSBT and there was a need to consider cost effectiveness of an IOP and other enforcement measures. Japan noted that it was considering an observer programme for transhipment vessels.
12. The Extended Commission agreed that the Secretariat would prepare a discussion paper on the issues relevant to the establishment of an IOP for the CCSBT. This document would include:
    a) The necessity for an IOP;
    b) An analysis of other RFMO IOPs; and
    c) The logistics of implementing an IOP in CCSBT.

CCSBT11 (2004)

13. Members of the Extended Commission discussed the level of scientific observer coverage that they were achieving and the nature of difficulties being experienced in achieving the target level. For future national reports, the Extended Commission requested that Members report observer coverage levels in accordance with the Scientific Observer Standards so that performance against the target could be properly assessed[2]

CCSBT10 (2003)

14. At CCSBT10, the Extended Scientific Committee sought feedback from the Commission on the approval of the standards for the CCSBT Scientific Observer program that were finalised at the 2003 Extended Scientific Committee meeting[3].

[1] CCSBT12 Report, Para 91-95
[2] CCSBT11 Report, Para 24
[3] CCSBT10 Report, Para 34

15. Further, the Extended Commission approved the standards for the CCSBT Scientific Observer Program and noted that Taiwan and Korea stated they would have difficulties in achieving the target of 10% observer coverage. Japan urged those two members to implement a scientific observer program as soon as possible[4].

SC8 (2003)

16. The SC discussed the observer program as follows at the 8th meeting of the Scientific Committee in paragraphs 46-60 below:

6.3 Scientific observer program

6.3.1 Scientific observer program standards

46. The Executive Secretary presented the 7th draft of the Observer Program Standards (CCSBT-ESC/0309/09), noting the outstanding issues upon which agreement had not yet been reached. These issues were resolved in a smaller working group and the final Observer Program Standards (see **Attachment F**) were accepted by the ESC.

47. With regard to these final standards, the following comments were made:
- The Fishing Entity of Taiwan's view that the target for observer coverage of 10% is not feasible for them, and that 5% would be more reasonable, was noted.
- It was agreed that the reference to "significant by-catch" in Section 4 of the Standard should not be interpreted to read "any by-catch".
- It was noted that the documentation to be reported to the Extended Scientific Committee under the Standard's reporting provisions relating to the collection of data, would be important in evaluating the scientific aspects of the program and whether the underlying objectives were being met.

48. General data collection priorities were agreed to serve as a guideline for CCSBT observer programs. However, allocating observer effort among these tasks remains an important and fundamental issue. The Extended Scientific Committee noted that for the data collected by observers to be used in estimates of catch and catch rates of all catch components, careful documentation of the proportion of the catch/haul observed was essential.

6.3.2 Report on scientific observer programs in 2002-2003

49. Australia presented paper CCSBT-ESC/0309/33 describing their observer programs in 2002. Coverage of 11% of effort had been achieved in the surface fishery, deploying observers for 47 days and 19 days monitoring a tow cage operation. 13% coverage was attained for the east coast longline effort south of 30º S. Observers collected all data sought in the draft CCSBT observer's standards.

50. Japan presented the information on their observer program contained in their national report. 14 observers were deployed in 2002, of which 12 had substantial seagoing experience and 10 had experience working as SBT observers. 7% of the vessels active in areas 4, 7, 8 and 9 carried observers, who observed 3.5% of the

[4] CCSBT10 Report, Para 35

total efforts in those areas. Size-composition, biological data and otoliths were collected.
It was noted that cost and time required for deployment of observers was the main factor making it difficult to increase observer coverage levels.

51. New Zealand noted that their observer program had been operating for over 15 years, and attempted to characterize all aspects of the tuna longline fisheries. 100% coverage was obtained on the charter vessels in 2002, and 7% on the domestic fleet.
Size composition and biological data were collected for all tunas, billfishes and sharks, and tag recoveries monitored. Responding to a request, New Zealand stated that they would provide a written overview of their program as soon as possible.

52. Korea noted that they are developing their observer program, and current emphasis is on training of observers. Five observers were trained on the Hawaiian longline fishery training program in 2002, and further training will be undertaken in 2003.
No observer deployments have yet been conducted.

53. Taiwan trained 6 observers during 2002. Taiwan planned to deploy two observers on SBT vessels in 2002. However, problems with deployment / boarding of observers on vessels resulted in only one observer trip in 2002. Two observers have been deployed on SBT vessels since the middle of 2003. Observers collected most of the agreed fisheries data for SBT, and also collected otoliths.

54. Australia reported that a recent visit to Indonesia ascertained that they have been conducting an observer program on their vessels for a number of years, deploying observers on 40 - 50 vessels a month for 10 months each year, and observing 20 – 30 shots on each trip. It is expected that analyses of the resultant data will substantially improve understanding of Indonesian fishery behaviour, and results will be reported to the next ESC meeting.

55. Members were requested to provide written reports on their observer programs in the agreed format to the next ESC meeting.

6.3.3 Plans for scientific observer programs in 2003-2004

56. Australia will continue observer programs on their surface and longline fleets in 2004 along the same lines as in 2003. Efforts will be made to maintain at least 10% coverage of effort in both fisheries, and to spread observer effort more evenly across the fishing season and areas.

57. The Japanese observer program for the 2003/04 season has already started in the Tasman Sea, again with a planned coverage of 7% of vessels by 16 observers. Efforts will be made to increase actual coverage of fishing effort in 2003/04.

58. New Zealand has budgeted for 760 observer days on the domestic and charter fleet combined, and will again implement 100% observer coverage of the charter fleet. As fishing effort by the domestic fleet increases, New Zealand will attempt to achieve and maintain 10% coverage.

59. Korea plans to continue training of observers, with emphasis of developing a domestic training program to replace foreign training. However, it is not known

when actual deployment will commence. Initial efforts will be made to place a few trainees on purse seine vessels in the Pacific Ocean for training purposes.

60. Taiwan hopes to deploy at least two observers on SBT fishing vessels, following evaluation of experiences with the 2003 deployment. They noted that cost and difficulties in deployment of observers on distant water fishing vessels were also major factors limiting the number of deployments in their fishery, and that Taiwan had to divide observer effort between fisheries in a number of ocean areas.

Attachment

- *CCSBT Observer Standards* (Attachment F from SC8).

Attachment F

Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

CCSBT Scientific Observer Program
Standards

TABLE OF CONTENTS

LIST OF ATTACHMENTS

1. BACKGROUND

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) has adopted a Scientific Research Program (SRP) with an overall objective of improving the quality of the data and information used as input to the stock assessment for Southern Bluefin Tuna (SBT), contributing to the development of reliable indices to monitor future trends in SBT stock size and identifying directions for further scientific research.

At CCSBT7 in April 2001 the Commission adopted the report of the Fifth Meeting of Scientific Committee, which recommended a SRP incorporating a Scientific Observer Program as one of four priority elements. The Observer Program endorsed by the Commission comprised the following features:-

- an observer coverage of 10% for catch and effort as a target level
- the level of observer coverage for estimation of tag reporting rates will depend on the scale of the tagging program subsequently agreed by the Commission and the tag recapture rate.
- standards for training of observers, operation of observer programs and the data to be collected including the forms to be used will be prepared
- data collected would become part of the CCSBT database as subsequently agreed in CCSBT protocols
- member countries will be responsible for operation of observers in high seas and domestic EEZ fisheries on their flag vessels
- all fleet components should be observed and target levels of observer coverage should be the same for all fleet components
- an exchange of observers between countries on a regular basis should be encouraged to maintain consistency and increase mutual trust in the results of the observer program
- recruitment of some observers from non-member nations would be encouraged

To facilitate implementation, the 6th Scientific Committee agreed that:-

- there would be an exchange of data sheets and standards for longline fleets between member countries through the Secretariat
- Australia would develop proposed program standards and data forms for the surface fisheries, taking note of the characteristics of observer programs administered by other fisheries management organizations
- the information gathered would be exchanged through the Secretariat
- proposals on draft CCSBT observer program standards will be presented and finalized at the 7th Scientific Committee meeting in 2002

Dr. Ianelli of the Advisory Panel together with the SC chair developed an initial draft of proposed outline of a CCSBT scientific observer program at the 6th Scientific Committee to serve as a basis for further discussion (See the Attachment F of the 6th SC Report.).

CCSBT8 endorsed the 6th Scientific Committee's proposals in October 2001.

The standards set out in this document reflect these decisions of the Commission and were developed in consultation with national observer program coordinators. A target level of observer coverage to meet tag reporting rate objectives has not yet been determined. When determined, the standards will be updated.

In developing the standards, the Secretariat has prepared a generic document for both surface and longline fisheries. Where the natures of the two types of fishery are differentiated in terms of observer activity, this is identified.

The tasks and record keeping requirements have been formulated to gather only that information, which is relevant to the objectives of the SRP. Consideration was also given to the practical limitations on the ability of observers to complete tasks in the fishing environment they would be operating in.

In order to facilitate implementation of the standards, the term "member" in this document means any Member of the Extended Commission of the CCSBT.

Reference to the acronym CCSBT is inclusive of the Commission and Extended Commission.

2. OBJECTIVES

The standards set out below provide the framework for the operation of the CCSBT Scientific Observer Program by members.

The objectives of the standards are:

1. To provide a framework for the alignment of members' scientific observer programs with the objectives of the SRP.

2. To standardize scientific observer programs across fleets and fisheries among members.

3. To specify minimum standards for the development of a scientific observer program for members without a program.

All members are expected to adapt their respective programs taking into account the standards but recognizing that members may have additional requirements they wish to maintain in their respective programs.

3. RESPONSIBILITY FOR PROGRAM OPERATION

Responsibility for the operation of the CCSBT Scientific Observer Program on the high seas and in domestic EEZ fisheries will lie with the member whose flag is flown on the vessel.

Each member's Scientific Observer Program will be managed taking into account these standards.

Where there is an external observer exchanged under agreements concluded between members or an observer recruited from a non-member nation, that observer shall comply with the laws and regulations of the member which exercises jurisdiction over the vessel to which the observer is assigned.

4. COVERAGE

The CCSBT Scientific Observer Program will cover the fishing activity of CCSBT members and cooperating non-members wherever southern bluefin tuna are targeted or are a significant bycatch.

5. LEVELS OF SCIENTIFIC OBSERVER COVERAGE

The Program will have target observer coverage of 10% for catch and effort monitoring for each fishery.

Observer coverage should therefore be representative of different vessel-types in distinct areas and times.[1]

In order to approach 10% coverage in some strata (e.g., specific vessel-types in certain areas and times) it may be necessary to have higher than 10% coverage in other strata.[2]

The exact level of observer placement will require periodic assessment to determine if the target level of coverage is achieved.

6. ASSIGNMENT OF SCIENTIFIC OBSERVERS TO VESSELS

From the scientific perspective, it is important to ensure that the data collected through the scientific observer programs provide representative information and sampling for the entire fleet. Ideally, each individual operation should have an equal and independent probability of being observed. In practice, this ideal may not be possible to achieve. Nevertheless, the basic principle of representative sampling should underlie the assignment of scientific observers to vessels.

It is the responsibility of each member when implementing an observer program, to assign observers to its vessels and cruises based on a carefully considered and appropriately designed sampling scheme that has a high likelihood of ensuring reasonably representative coverage. The program should ensure that, within the main fishing areas and seasons and to the extent possible, all representative vessels, areas, and time periods have an approximately equal probability of being sampled.[3]

Each member should evaluate and analyse the sampling scheme used for the assignment of observers against the principles outlined above. Each member should document the scheme used for the observer assignments actually implemented and make this information and data collected available to the Commission in the manner described in Section 11 to enable review within the Commission of whether or not the standards are being met.

The placement of observers should also encompass arrangements to ensure the independence and

---

1 For the purpose of this standard, it is recognized that there are many ways in which catch and effort can be stratified including vessels, areas and times. This level of coverage is relative to actual fishing operations, which, if randomly distributed, should result in about 10% of the catch.

2 While it might be possible to observe 10% of the catch from a single vessel (if a hypothetical fleet consisted of 10 vessels with equal catch allocations), this would not achieve the objective of sampling fishing operations with approximately equal probability, particularly if the vessels fish in different areas using different techniques. Clearly there are logistical difficulties in achieving random observations of fishing operations.

3 To achieve a desired target coverage level may require a higher observer placement level. For example, it may take 150 observed vessel days out of a hypothetical 1,000 vessel-day year to achieve a target of 10% coverage for all important strata. In part, this may be due to to the fact that the ability of observers to transfer among vessels on the fishing grounds is limited. The factors affecting this include the heterogeneity of the fleet and fishing behaviour.

scientific integrity of the data.

7. TAGGING PROGRAM

Observer programs make a very valuable contribution to the direct recording of recaptured tags, and to the estimation of non-reporting rates. Failure to adequately quantify the uncertainty associated with estimates of tag reporting rates will substantially degrade the value of any resultant mortality estimates for use in stock assessments.

Observer plans and training programs should include specific provision for the role and responsibilities of observers for tag recapture reporting. A supplemental level of observer coverage may be required to take into account the results of the CCSBT tagging program.

8. RECRUITMENT AND TRAINING

Each member is responsible for the recruitment and training of observers for placement on their flagged vessels. Details of the processes maintained for this responsibility are for members to manage consistent with the domestic environment in which they operate.

Training schemes should be constructed to impart the skills necessary to adequately collect the scientific data and should take account of the following principles.

Qualifications of Observers

Scientific Observers for the program should have the following attributes:

- Technically trained or experienced personnel for the fleets concerned, with interests related to fisheries.
- Ability to work at sea in difficult conditions.
- Ability to work under stressful psychological and physical situations.
- Ability to work with a boat's crew on a cooperative and team basis over long and continuous periods at sea.
- Soundness of mind and body.

Independence / Integrity

Observers should not have current financial or beneficial interests in the fisheries in which they will be required to operate as observers.

Observers should not have been found guilty of a serious criminal offence for five years prior to appointment as an observer.

Scientific Observer Training

Members should establish and maintain a structured training program for the CCSBT Scientific Observer Program. Manuals should be developed for this purpose and courses operated, which would allow for observers to exchange approaches and experiences to improve the data collection process.

A Scientific Observer Training program of each Member should include, at least, the following items.

- Briefing on the CCSBT SRP, particularly the CCSBT Scientific Observer and Tagging Program elements to promote a full understanding of the rationale for the Programs.
- Fishery management and biological field collection programs including species identification, data collection and sampling procedures.
- Monitoring tag recovery.
- Training on safety at sea and first aid.
- Protocols for dealing with difficult situations (personal conflicts and physical hazards).
- Preparation of cruise/trip reports
- De-briefing with observers to provide feedback on improvement.
- Any additional technical training required for special project such as tagging fish, when necessary

Recruitment of Observers

Scientific observers could be recruited from a variety of related fishery sectors to widen the knowledge and experience base of the observer cohort.

Exchange of observers between members and recruiting some observers from non-members should be encouraged to improve consistency and transparency in the program. Responsibility for implementing observer exchanges would reside with members and the exchanges would be organised between relevant members and non-members as appropriate

9. THE OBSERVED VESSEL

Any vessel selected for an observation should be capable of meeting the minimum requirements for accommodation, sanitary facilities, meals, equipments and communication systems equivalent to those of the crew (junior officer when possible) so that the observer's duties are not compromised.

A selected vessel should be advised of its responsibility for the observer while they are on board.

10. INFORMATION AND DATA

Scientific data to be collected should include the following categories of information:

A. Details of the observed vessel, including its size, capacity and equipment.

B. Summary of the observed trip, which will include information such as the observer name, dates of embarkation and disembarkation.

C. Comprehensive catch, effort and environmental information for each set that occurred while the observer was on-board the vessel, regardless of whether the set/haul was actually observed. This includes the target species, location fished and quantity of gear used.

D. Observed catch information for each period of observation, including the time at start and end of observation, the number of hooks observed, the observed catch in number and weight for SBT and all other species caught to the extent possible.

E. Biological measurements taken of individual SBT, as much as possible, including its condition, length, weight, sex and details of samples (otoliths, scales, gonads, etc.) that were taken from the SBT for later analysis.

F. SBT tag recovery information, including, both tag numbers (actual tags also to be provided), date, location, length, weight, sex, details of samples taken (e.g. otoliths), and whether or not the tags were spotted during a period of fishing that was being observed.

Most of the above categories of information are related to each other in a hierarchical relationship. So, the biological details of a fish (E) relates to a particular observed period (D) from a specific set (C) for a trip (B) on a particular vessel (A).

A detailed description of the proposed information to be collected for each of the above categories is provided in Attachment 1. Hierarchies for prioritising the collection of data by species caught and SBT data are at Annex 1.

11. REPORTING

Each member should provide a report to the Extended Scientific Committee on the sampling scheme and arrangements for collecting data of its observer program as a separate section in the member's annual fishery report. Attachment 2 documents the information that should be provided.

12. CONFIDENTIALITY OF DATA AND INFORMATION

All data and information obtained through an observer program belongs to the flag country of the observed vessel. An observer should not disclose any information without the permission of the flag country.

Attachment 1

Type and Format of Scientific Observer Data

A) Details of the observed vessel and gear
The vessel details are recorded only once for an entire trip

All fishing:

- Vessel's Name
- Vessel's Call-sign
- Vessel's Flag Country
- Name of the Captain
- Name of the fishing master
- Year vessel built
- Engine brake power (kw/hp)
- Overall length (metres)
- Gross tonnage (tonnes)
- Number of people in crew (all staff, excluding observers)
- Total freezer capacity (cubic metres)
- Fuel capacity (tonnes)
- Instrumentation and electronic fishing equipment

Instrumentation	Yes/No (or code)
NNSS	
GPS	
Omega	
Radio direction finder	
Radar	
Weather Fax	
Track plotter	
NOAA receiver	
Sounder (1=colour monitor, 2=monochrome monitor, 3=printer)	
Sonar (1=scanning, 2=PPI)	
Doppler current monitor	
Sea surface temperature recorder	
Bathy-thermograph	
Bird radar	

Longliners only:

- Material of mainlines (Nylon, Cotton thread, Other)
- Material of branchlines (Nylon, Cotton thread, Other)
- Material of buoylines (Nylon, Cotton thread, Other)
- Tori Pole used (Y/N)
- Bait thrower/line shooter used (Y/N)

Purse seiners only:

- Capacity of power block
- Capacity of purse winch
- Lengths and depths of all nets on board including expanded figure
- Mesh sizes of nets on board
- Number of net skiffs on board

B) Summary of the observed trip

- Observer's name
- Observer's organisation
- Date observer embarked (translatable to 24 hour clock, UTC to the day)

- Date observer disembarked (translatable to 24 hour clock, UTC to the day)

C) Comprehensive catch, effort and environmental information for each set
This information is recorded for each set while the observer is on-board a vessel, regardless of whether the set/haul was actually observed.

All fishing:
- Date and time at start of Set (translatable to 24 hour clock, UTC)
- Date and time at end of Set (translatable to 24 hour clock, UTC)
- Date and time at start of Retrieval (translatable to 24 hour clock, UTC)
- Date and time at end of Retrieval (translatable to 24 hour clock, UTC)
- Location at start of Set (latitude+N/S and longitude+E/W to a minute of accuracy)
- Wind speed (with unit) and direction (N, NNE, NE, etc.) of the operation
- At the period of the wind measured for operation (e.g. Noon, start of set etc.)
- Sea surface temperature (degrees Celsius, to 1 decimal place) at start of Set
- Intended target species[4]

Longlining:
- Location at end of Set (latitude+N/S and longitude+E/W to a minute of accuracy)
- Direction of line set (eg straight, curved)[5]
- Wind speed (with unit) and direction (N, NNE, NE, etc.)
- (Comment: It is enough to collect the temperature at the start of set) At the period of the location and wind are measured for the operation (e.g. noon, start of set etc.)
- Direction of line set (straight,curved)
- Actually used mainline length (km)
- Actually used branchline length (m)
- Actually used buoyline length (m)
- Intended depth of the shallowest hook (m)
- Intended depth of the deepest hook (m)
- Number of hooks
- Number of baskets

Distance between baskets, beacons, buoys, or floats as is appropriate to the operation (m)
- Percentage of bait by bait categories that were Fish, Squid, Artificial, and Other
- Bait status (live or dead)
- Total number by species[4] of SBT, and other tuna and tuna-like species caught, retained or discarded.
- Total processed weight (kg) and Processed State[6] by species[4] of SBT, and other species caught. (i.e. all fish, birds, turtles etc.)

Purse Seining:
- Spotter plane used (Y/N). If used:
    - Time (translatable to 24 hour clock, UTC) and location aircraft began search
    - Time (translatable to 24 hour clock, UTC) and location aircraft ended search
    - Number, location of schools spotted by aircraft
    - Estimated size of each school spotted by the aircraft
    - Total searched distance
- Bird Radar used (Y/N)
- Logbook number and type
- Start and end Time spent for searching (from xx:xx to yy:yy translatable to 24 hour clock, UTC), location and total searched distance
- School finder (plane/vessel)
- Chumming boat used (yes/no)
- Chum status (Alive/Dead)

---

[4] All species should be reported with FAO species codes, or using National codes and providing a translation table to FAO species codes.

[5] Codes will be used to describe the type of line set, eg. S=straight, C=curved, U=u-shaped.

[6] RD=round/whole, GG=gilled and Gutted, DR=dressed etc., as per TIS codes.

- Amount of chum used
- Start and end time for chumming (translatable to 24 hour clock, UTC)
- Start and end time for net shooting (translatable to 24 hour clock, UTC)
- Start and end time for net hauling (translatable to 24 hour clock, UTC)
- Start and end location for net shooting
- Start and end location for net hauling
- Light attraction used (yes/no)
- Total of wattage of lights used
- Start and end time for light attraction
- School type (e.g., shoaling/surface, FAD/debris associated)
- Length (m) of net set
- Height (m) of the net
- Number of net skiffs used
- Date and time that transfer to tow cage commenced
- Identification number of the tow cage to which the SBT were transferred
- Name of Carrier Boat that received the fish
- Estimated catch per set, species composition
- Estimated weight (kg) and/or number by species of SBT and other species caught
- Estimated weight of SBT caught alive
- Estimated weight and/or number of SBT dead during operation

<u>Cage Towing:</u>

- Name of carrier boat
- Tow cage identification number
- Cage depth (metres)
- Cage ring diameter (metres)
- Cage mesh size (in centimetres)
- Cage has second or predator net (Y/N)
- Number of divers used
- Chute fitted in cage (Y/N)
- Effective tow speed (km/hour)
- If the catch was received from fishing operations, then for each catcher boat from which SBT were transferred, record:
    - Name of catcher boat
    - Call sign of catcher boat
    - Date and time (translatable to24 hour clock , UTC) transfer started
    - Estimated weight of SBT transferred (tonnes)/dead SBT before transfer
- If the catch was received from another tow cage, then, record:
    - Name of the carrier boat from which the SBT came
    - Identification number of the tow cage from which the SBT came
    - Date and time (translatable to 24 hour clock, UTC) transfer started.
    - Estimated weight of SBT transferred (tonnes)/dead SBT before transfer
- Date and time (translatable to 24 hour clock, UTC) and place that tow finished
- Total weight of SBT mortalities per day from commencement of towing to end of transfer to farm
- Total number of SBT mortalities per day from commencement of towing to end of transfer to farm

D) Observed catch information

This relates to that part of the catch that was actually observed by the observer during the hauling process. All information recorded here relates only to the period(s) that were observed. Annex 1 provides hierarchies for the collection of data. Observers should use these hierarchies to prioritorise data collection as circumstances prevail on the observed vessel.

<u>Longlining:</u>

- Date and time at the start of the observation period (translatable to 24 hour clock, UTC)
- Date and time at the end of the observation period (translatable to 24 hour clock, UTC)
- Number of hooks observed
- Total number by species[4] of caught and retrieved retained during the observed period
- Total processed weight (kg) by species[4] and Processed State[6] of all species caught and retained during the observed period
- Total number and weight when possible (whole weight, in kilograms) by species[4] caught but discarded during the observed period and life status.

Purse Seining:
The entire purse seining shooting and hauling operation should be observed

- Date and time at the start of the observation period (translatable to 24 hour clock, UTC)
- Date and time at the end of the observation period (translatable to 24 hour clock, UTC)
- Estimated % of school caught
- Estimated weight (tonnes for SBT, kg for all other species) and/or number by species of SBT, and other species caught, retained or discarded including life status
- Weight of SBT mortalities from commencement of fishing to end of transfer to cage
- Number of SBT mortalities from commencement of fishing to end of transfer to cage
- Number of species identified as escaped from commencement of fishing to end of transfer to cage
- Number by species identified as discarded from commencement of fishing to end of net hauling

Cage Towing:
The observer must observe or conduct each mortality count during the period of the tow.

- Date and time at the start of the observation period (translatable to 24 hour clock, UTC)
- Date and time at the end of the observation period (translatable to 24 hour clock, UTC)
- Total weight of SBT mortalities per day from commencement of towing to end of transfer to farm
- Total number of SBT mortalities per day from commencement of towing to end of transfer to farm

E) Biological measurements of individual fish. Biological measurements are only required for SBT, but where possible, effort should be made to measure other species.

For the purposes of SBT analyses, accurate size measurements of SBT are required. SBT should be selected in a manner to ensure within strata randomness. For example, for large numbers of fish caught in a single operation (e.g., a purse seine vessel) a systematic sampling may be appropriate

The actual number of fish should be spread throughout as many separate fishing operations as possible. For example, it is nearly always the case that sampling 20 fish (randomly) from 10 operations is much better than sampling 200 fish from every 10th operation. The required actual number of samples should be re-evaluated from time to time and as needs change.

- Species[4]
- Life status category[7]
- Length (for SBT, fork length measured on straight length, rounded up to the centimetre[8])
- Length unit
- Length code (fork length, eye fork, etc.)
- Length, lower jaw-fork length

[7] The observer program will, as a minimum, distinguish the following life status categories: dead and damaged; dead and undamaged; alive and vigorous; and unknown.
[8] Length should be rounded (not truncated) to the nearest centimeter. For example, 62.4cm becomes 63cm and 62.5cm becomes 63cm (63 cm for both cases).

- Whole weight (kg), if possible. This is the measured weight before processing as opposed to a calculated whole weight.
- Processed weight (kg)
- Processed State[6]
- Sex (F=female, M=male, I=indeterminate, D= not examined)
- Samples taken, specifying:
    - A unique identification number given to the sample,
    - The type of samples taking, including: whole specimen, or samples of otoliths, scales, vertebrae, stomach, muscle, tissue, gonads, etc.)

F) SBT Tag recovery information

Some of the data recorded here duplicates data that already exists in the previous categories of information. This is necessary because tag recovery information may be sent separately to other observer data.

- Observer's name
- Vessel's name
- Vessel's call sign
- Vessel flag
- Collect and provide the actual tags
- Tag colour
- Tag numbers (The tag number is to be provided for all tags when multiple tags were attached to one fish. If only one tag was recorded, a statement is required that specifies whether or not the other tag was missing)
- Date and time of capture (UTC)
- Location of capture (latitude+N/S and longitude+E/W to 1 minute of accuracy)
- Length (fork length, rounded up to the nearest centimetre[8])
- Processed Weight (kg.)
- Processed State[6]
- Details of samples taken, specifying:
    - A unique identification number given to the sample,
    - The type of samples taking, including: whole specimen, or samples of otoliths, scales, vertebrae, stomach, muscle, tissue, gonads, etc.)
- Sex (F=female, M=male, I=indeterminate, D=not examined)
- Condition of recaptured fish and their life status
- Whether the tags were found during a period of fishing that was being observed (Y/N)
- Reward information (e.g., name and address where to send reward)

HIERARCHIES FOR DATA COLLECTED BY SPECIES AND SBT DATA

This annex provides a guideline for the collection of data by observers to enable prioritising of observer activities.
The flow of the main data collection activities are:

Fishing operation information

- All vessel and shot information

Monitoring of hauls

- Record time and species caught
- Record whether the specimen was retained or discarded (with life status)

Biological sampling

- Collect data on length and whole and/or processed weight (including processed state)
- Check for presence of tags
- Record sex
- Collect biological samples
- Take photos

Both the monitoring of hauls and the biological sampling procedures should be prioritised among species groups as follows:

Species	Priority (1 is the highest)
SBT	1
Other tunas, billfishes, Gasterochisma, and sharks	2
All other species	3

"tunas" means all *Thunnus* species except SBT

The allocation of observer effort among these activities will depend on the type of operation and setting. The size of sub-samples relative to unobserved quantities (e.g., number of hooks examined for species composition relative to the number of hooks set) should be explicitly recorded under the guidance of member country observer programs.

Attachment 2

FORMAT OF NATIONAL REPORT SECTIONS ON DEVELOPMENT AND IMPLEMENTATION OF SCIENTIFIC OBSERVER PROGRAMS

REPORT COMPONENTS

The observer program implementation report should form a component of the annual National Reports submitted by members to the Scientific Committee. This report should provide a brief overview of observer programs for SBT fisheries, and is not intended to replace submitted papers containing proper analyses of collected observer data. This observer program report should include the following sections:

A. Observer Training

An overview of observer training conducted, including:

- Overview of training program provided to scientific observers.
- Number of observers trained.
- Summary of qualifications / training and years of experience of the observers deployed in SBT fisheries during the past year.
- A copy of the latest version of relevant manuals in their original language for reference

B. Scientific Observer Program Design and Coverage

Details of the design of the observer program, including:

- Which fleets, fleet components or fishery components were covered by the program.
- How vessels were selected to carry observers within the above fleets or components.
- How was observer coverage stratified: By fleets, fisheries components, vessel types, vessel sizes, vessel ages, fishing areas and seasons.

Details of observer coverage of the above fleets, including:

- Components, areas, seasons and proportion of total SBT catch, specifying units used to determine coverage.
- Total number of observer employment days, and number of actual days deployed on observation work.

C. Observer Data Collected

List of observer data collected against the agreed range of data set out in Attachment 1. In broad structure this would include:-

- Effort data: and — Amount of effort observed (vessel days, sets, hooks, etc), by area season and % observed out of total by area and seasons
- Catch data: — Amount of catch observed of SBT and other species (if collected), by area and season, and % observed out of total estimated SBT catch by area and seasons
- Length frequency data: — Number of fish measured per species, by area and season.
- Biological data: — Type and quantity of other biological data or samples (otoliths, sex, maturity, Gonosomatic index, etc) collected per species.
- The size of sub-samples relative to unobserved quantities.

D. Tag Return Monitoring

Number of tags returns observed, by fish size class and area.

E. Problems Experienced

- Summary of problems encountered by observers and observer managers that could affect the CCSBT Observer Program Standards and/or each member's national observer program developed in the light of the Standards.