Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

Report of the Indonesian Catch Monitoring Review Workshop

10-11 April 2003
Queenstown, New Zealand

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Agenda Item 1. Opening of Meeting

1. The workshop was opened by Mr Penney, independent Chair of the CCSBT Scientific Committee and Chair of the Workshop, who welcomed participants. The workshop participants introduced themselves (see list of participants in **Attachment A**).
2. The Terms of Reference for the workshop, as agreed at CCSBT9, were to:
   - Assess the systems and methodologies currently used to provide data on the estimated total catch of SBT by Indonesia.
   - Where appropriate, provide recommendations for improving the current systems and methodologies used to monitor Indonesian SBT catch.
   - Where necessary, make recommendations on measures to coordinate CCSBT and IOTC monitoring programs to maximize compatibility between the IOTC and CCSBT programs.
   - Review available data on SBT exports from Indonesia and provide comment on possible sources of difference between Indonesian export data and exports documented by the TIS.
   - Provide an estimate of cost for any proposed improvements or additional monitoring.
3. The expected end products of the workshop are summarised in paper CCSBT-ICM/0304/04. The conclusions and recommendations of the workshop will be submitted to the 8th SC meeting for discussion and comment (September 2003), and then to CCSBT10 for consideration, approval and implementation (October 2003).

Agenda Item 2. Adoption of Agenda and Document list

4. The draft agenda for the workshop was adopted without modification, although noting that the sub-items would be discussed in varying order, and is shown in **Attachment B**. The draft list of workshop documents was modified to include an additional paper on the IOTC data collection activities in Indonesia, and adopted (see **Attachment C**). The Chair and the Executive Secretary offered to act as rapporteurs for the meeting.

Agenda Item 3. Description of Indonesian SBT Fisheries and Catch Monitoring Systems

5. During opening discussion it was noted and agreed that substantial improvements had occurred to Indonesian tuna catch monitoring systems over the past year as a result of the development and implementation of the IOTC coordinated catch monitoring system (which is a collaborative effort between IOTC, CSIRO, ACIAR, OFCF, RIMF and DGCF) in Indonesia. These have addressed many of the perceived unresolved issues with past catch monitoring systems, and it was agreed that the deliberations of the workshop should be structured to separately evaluate past data problems, and future monitoring requirements.

6. It was noted that the initial motivation for this review workshop had originated from concerns prompted by discrepancies between estimated Indonesian SBT exports from local sampling programs, exports indicated on TIS documentation submitted to the Secretariat, and Japanese import records. As background, the Secretariat presented CCSBT-ICM/0304/05 summarising all information reported on TIS documents from Indonesia since implementation of the TIS scheme in June 2000, including numbers of vessels and processors, quantities of SBT exports and proportions of various SBT export product categories.

3.1 Description of Indonesian Fisheries, Fleet Distributions, Catches and Landing Sites

3.2 Overview of Systems Used to Monitor Indonesian SBT Catches, Landings and Exports

3.3 Description of Changes that have Occurred in Indonesian Catch Monitoring Systems in Recent Years

7. It was noted that aspects of these three agenda sub-items were covered together in many of the remaining papers to be presented, and that discussion could better be structured in order of the presentation of papers. The remaining papers were presented in the following groups, and detailed discussion of the papers deferred to agenda item 4.

- *Descriptions of Past Data Collection Systems (CCSBT-ICM/0304/06, 09 and BGD01)*. These papers described the procedures used by the CSIRO/RIMF cooperative program to monitor the catch of SBT by longliners operating out of Bali from 1993 to the present, evaluated the precision, uncertainties and possible sources of bias in the resultant sampling data and possible problems with the raising procedures used during estimation of total catches and exports.
- *Description of Tuna Export Data Sources* (CCSBT-ICM/0304/07, 12)
  These papers provided estimates of species composition, product categories and destinations of tunas exported in 2001 from Bali estimated from packing list data, and considered potential errors resulting from incorrect classification of whole vs. loin tuna in the fresh and frozen categories in various data summaries. Related papers summarising tuna export data (CCSBT-ICM/0304/10, 11) were made available for background information, but not specifically presented.
- *Description of Indonesian Catch Monitoring Systems* (CCSBT-ICM/0304/08, 13)
  These papers describe the local Indonesian tuna catch monitoring systems, particularly the separate data collection systems administered by WASKI and the Dinas (regency/municipal) offices at the three main ports of Benoa, Muaru Baru and Cilacap. Potential problems resulting from reporting of aggregated tunas (not by species) and lack of validation or cross-referencing between these systems were identified, with some description given of initiatives by the new IOTC coordinated system cooperative program to address these problems. Related papers providing lists of registered Indonesian tuna fishing vessels and processing units (CCSBT-ICM/0304/14, 15) were made available for background information only, and not specifically presented.
- *Description of IOTC Catch Monitoring Activities and Data* (CCSBT-ICM/0304/17)
  This paper briefly describes developments resulting from efforts to coordinate and integrate IOTC, CSIRO, RIMF, OFCF and ACIAR initiatives to improve monitoring of Indonesian tuna catches at Benoa, Muaru Baru and Cilacap. The sampling design and data collection methods are described, with explanation of the raising and correction procedures used during catch estimation. Related paper CCSBT-

ICM/0304/16 explains how IOTC data were prepared in response to the request by the CCSBT Secretariat for use at this workshop. These data were made available in electronic format.

Agenda Item 4. Review of Indonesian Catch Monitoring Systems

4.1 Review of Possible Sources of Error, Bias, Over- or Under-Reporting in Existing Catch Monitoring Systems

8. Two main issues were identified as potential key contributors to errors or biases in estimates of SBT catch calculated from samples monitored at Benoa: Representativeness of samples; and raising factors and procedures. Analyses indicated that there was no substantive bias in the sampling of landings at individual processing sites. Discussion of potential problems with past data focussed on these issues.

4.1.1 Representativeness of Samples

9. Data collected by the CSIRO/RIMF program and most recently by the IOTC coordinated system program show that there is variability among processors in the % SBT landed within the catch. This introduces the potential for bias in the estimates of SBT catch when samples are collected from only a sub-sample of the range of processors.

10. Between 1993 and 1997, CSIRO-RIMF program covered a high proportion (>75%) of the processors, and achieved a sampling rate of 20-30% of the total SBT catch. This suggests that the likelihood of bias due to unrepresentative sampling was low for the specific processors monitored during this period of the program.

11. Between 1997 and 2002, the number of processors operating in Benoa increased progressively, to a total of 12 in 2002. Over this time, CSIRO-RIMF concentrated its sampling activities in two processing factories, at which 3 - 5 processors operated. The program maintained a sampling coverage at 25 - 50% of the available processing sites, and achieved a sampling rate of 10 - 20% of the total SBT catch. Sampling under the current IOTC coordinated program (which samples a random selection of landings) indicates that SBT proportions can differ significantly between processors, and can change over time, particular as vessels move between processors. However, it is not known how SBT proportions landed through other processors may have differed from the two processing sites sampled in the past.

- Proportion of SBT at Processors

  This is probably the most important potential source of bias and variability in representativeness of sampled processing sites, particularly after the number of processors started increasing after 1997. However, no information is available to actually determine if a bias exists and, if so, to determine its magnitude. The possible bias / variance for the recent period over which the IOTC program has operated could be evaluated by:

  – Randomly re-sampling the IOTC data (updated to incorporate entire SBT season from July 2002 – March 2003 if possible) to mimic the CSIRO/RIMF process as far as possible (for example, taking PSB vessel landings and a random selection of other processors to make up a 10% of the landings) and run this through the CSIRO/RIMF estimation procedure to evaluate variances and possible bias in SBT proportions.

- Proportion of all Tuna Graded for Export

– It was recognised that there is higher consistency between processors in this factor than in the proportion of SBT handled, and so potential biases would be expected to be less. This could be evaluated using same procedure as above, but looking at the proportion exported.

It was noted that the results of this re-sampling exercise could not be applied retrospectively to correct historic data.

4.2 Review of Existing Data Conversion and Raising Procedures

12. Two main issues could contribute to problems with estimation of raised total catch from export data: Quality of export data and how to interpret and use these data; and the raising procedures / factors.

4.2.1 Quality of Export Data

13. Following a number of recent investigations, it has been noted that the coverage and quality of available export data records (primarily packing list data) is potentially a serious problem with trying to determine total tuna and SBT exports. Comparison of the CSIRO and RIMF compilations of the 2001 and 2002 packing list data showed that there were mismatches in categories at the monthly level and mismatches in annual totals in the frozen tuna components. Dr Davis reported that a preliminary examination of one year of Kotamardya data (collected for tax purposes) suggested that existing raising factors do not appear to overestimate catch. However, substantial uncertainties regarding these data indicate that the data and interpretation thereof need to be examined more closely.

14. It was concluded that total export data used in estimating existing raising factors appear not to be overestimated, but that data are not readily available to allow estimates of past exports to be validated. However, it was noted that copies of some of the original data may be available at RIMF for the early years of the program. It was proposed to query RIMF on the availability of photocopies of 1995-1997 packing list data.

15. Should these data be available, consideration could be given to using them to re-evaluate export data used in developing raising factors for this period. This might indicate whether some change has occurred between then and now. However, it was noted that this process could take substantial time and resources, and was not considered to be a high priority.

4.2.2 Raising Factors and Procedures

16. Possible errors resulting from raising using available export data result primarily from possible errors in classification of whole tuna versus tuna loins and steaks in the frozen tuna export category, and possibly to some extent in the fresh tuna export category as well. The frozen export category appears to contain large proportions of tuna loins, particularly in exports to the USA and Europe. It was agreed that three different approaches could be used to estimate raising factors:

- Use Dinas estimates of total whole tuna exported (the previous method).
- Use Dinas estimated of fresh whole tuna exports.
- Determine fresh and frozen exports by excluding exports to U.S.A. and Europe, as reflected in DINAS data (tabulated by year month, fresh/frozen, and exported to Japan / U.S.A. / others).

17. These three approaches should provide three series of catch estimates which would give an indication of the range of uncertainty in using the export statistics as a raising factor.

4.2.3 Integration of SBT Proportion and Raising Procedure Issues

18. In order to integrate evaluation of potential biases across these two issues, for each of the export data set raising methods above, the following analyses should be compared:

    - Run available IOTC data (preferably from July 2002 to March 2003) through the CSIRO/RIMF estimation procedure with a coverage level comparable to the CSIRO sampling program.
    - Run through CSIRO/RIMF estimation procedure with the full IOTC coordinated data set.
    - Run the IOTC estimation procedures with the full IOTC data set.

4.3 Review of Possible Reasons for Differences between Indonesian Export Estimates and TIS Data

19. The workshop noted the discrepancies between estimated SBT exports from the past and present Indonesian sampling programs, and those reflected in the TIS documentation system. However, the reasons for these discrepancies are not clear, and a review of problems with the TIS system was beyond the scope of the workshop. The results of the analyses proposed by the workshop would possibly improve estimates of exports, but would not address questions regarding import data. However, it was concluded that current Japanese import data should not be used to estimate total Indonesian SBT catch from monitored landings.

4.4 Development of Revised Estimates of Past Indonesian SBT Catches

20. Considering the need to first conduct exploratory analyses of the possible sources of bias and/or variability identified above, it was not considered feasible to develop revised estimates of past Indonesian catches at this workshop. Indeed, many of the potential sources of bias are not well understood, and past data do not exist to allow them to be adequately quantified. It may therefore prove to be impossible to objectively revise past estimates. However, additional calculations may provide further insight into the range of uncertainty associated with past estimates. The possibility of improving estimates of uncertainty around past estimates will be considered again at the 2003 Stock Assessment Group (SAG) and Extended Scientific Committee (ESC) meetings, following review of the results of the exploratory analyses proposed by this workshop.

21. It was noted by the workshop that the recent results of the IOTC coordinated program suggest an SBT catch in 2002/03 of the same order as those estimated by the old CSIRO/RIMF system for previous years and that, on this basis, it seems unlikely that previous catch estimates were in error by orders of magnitude.

Agenda Item 5. Recommendations for Improvements to Indonesian Catch Monitoring Systems

22. Recent development of the IOTC coordinated catch monitoring system has substantially improved monitoring of Indonesian catches, and addressed a number of the past concerns regarding possible sources of bias. The current program has extended monitoring to the important industrial ports of Muaru Baru and Cilacap to improve estimates of total tuna catches. The program in Benoa (where almost all SBT are landed) currently consists of 6 IOTC enumerators monitoring tuna at the randomly selected processors, and a further sampler (both funded by CSIRO/AFFA/ACIAR) conducting length measurements and collecting otoliths (1000 per year) for direct ageing. This monitoring program in Benoa currently costs of the order of AU$115 000 to AU$120 000 per year (including supervisory visits from the coordinating agencies).

23. However, CSIRO/AFFA/ACIAR funding for Benoa activities is due to terminate soon. It was recognised that the information being generated by the IOTC monitoring program is critical for estimation of SBT catch, both on the spawning ground and globally, and that the information on age distribution of the spawning stock is used as one of the stock indicators within the CCSBT assessment process. Every effort should be made to continue this program, and to maintain the planned coverage level of 30% of landings. Efforts to improve the WASKI direct landings records to document all tuna landings by species were also strongly encouraged. With adequate notice, OFCF funding may be obtained to support the 6 enumerators in Benoa, although this funding would initially be budgeted for further two years.

24. With specific regard to SBT monitoring and development of fishery indicators for this fishery, the workshop considered it essential that the length frequency and otolith sampling in Benoa continue. This issue will be considered again at the 2003 ESC meeting.

Agenda Item 6. Proposed Work Schedule, Timetable and Budgetary Implications for Implementation of Recommended Improvements to Indonesian Catch Monitoring Systems

25. It was recognised that CSIRO had conducted most of the past Indonesian catch estimations and analyses emanating from the CSIRO / RIMF monitoring program. However, CSIRO noted that specific provision had not been made for additional analyses recommended by this workshop. It was further noted that all participants should be encouraged to obtain the data and conduct comparative analyses for evaluation at the next SAG / ESC meetings. It was agreed that all the necessary data for the analyses recommended by the Workshop will be exchanged, and results of analyses discussed inter-sessionally.

26. To allow for results of the above recommended exploratory analyses to be reviewed at the forthcoming SAG / ESC meetings in August / September 2003, the following work schedule and time table was proposed:

- Data required for the above analyses need to be obtained / exchanges by the end of May. IOTC data for the period to the end of March (the SBT season) should be available by then. Data on SBT export destinations, extracted from Dinas records by Japan, should already be available, with the permission of Dinas. With regard to these data, it was specifically noted that confidentiality of vessel and processor information will need to be ensured.
- The recommended exploratory analyses of these data will need to be conducted, and results / reports exchanged for initial review, by the end of June 2003.
- Following inter-sessional review, final analyses and reports should be prepared for submission to the 2003 ESC meeting, and made available by the end of July.
- These analyses and reports will need to be reviewed by the September ESC meeting to evaluate options for improving past estimates of Indonesian catch, or at least improving estimates of uncertainty in past catch estimates. The ESC meeting may also conduct further discussion regarding options for encouraging and maintaining improved SBT catch monitoring systems in Benoa.

Agenda Item 7. Adoption of Report

27. The complete report could not be adopted by the end of the two days allocated to the workshop. The report, as far as it had progressed by the end of the Management

Procedure Workshop, was accepted by the participants present at that stage. It was agreed that accepted sections of the report would be considered to have been adopted. However, it was further agreed that the report would be circulated to Indonesia and the IOTC for any additional comments, which will be appended to the report.

Agenda Item 8. Close of Meeting

28. Mr Tambunan thanked the workshop for fully involving Indonesian representatives in the discussions, and expressed the hope that the outcome of the workshop would place a strong emphasis on the need for development, implementation and support of effective tuna catch monitoring systems in Indonesia.
29. The Chair thanked participants for their constructive contributions and closed the meeting.

List of Attachments

Attachment

A	List of Participants
B	Agenda
C	List of Documents

Attachment A

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Indonesian Catch Monitoring Workshop
10-11 April 2003
Queenstown, New Zealand

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Attachment B

INDONESIAN CATCH MONITORING REVIEW WORKSHOP
10-11 April 2003 – Queenstown, New Zealand

AGENDA

1. Opening of meeting.

   1.1 Introduction of participants.
   1.2 Administrative arrangements.

2. Adoption of agenda and document list.

3. Description of Indonesia SBT fisheries and catch monitoring systems:

   3.1 Description of Indonesian fisheries, fleet distributions, catches and landing sites.
   3.2 Overview of systems used to monitor Indonesian SBT catches, landings and exports.
   3.3 Description of changes that have occurred in Indonesian catch monitoring systems in recent years, and the reasons for such changes.

4. Review of Indonesian catch monitoring systems:

   4.1 Review of possible sources of error, bias, over- or under-reporting in existing catch monitoring systems, and how these may have changed over time.
   4.2 Review of existing data conversion and raising procedures, with specific emphasis on potential sources of increased error or bias resulting from raising procedures.
   4.3 Review of possible reasons for variation of Indonesian export calculations from TIS data.
   4.4 If feasible, development of revised estimates of Indonesian SBT catches over time, considering the potential sources of error or bias evaluated at the Workshop.

5. Recommendations for improvements to Indonesian catch monitoring systems and possible coordination of these with IOTC data collection activities.

6. Proposed work schedule, timetable and budgetary implications for implementation of recommended improvements to Indonesian catch monitoring systems.

7. Adoption of report.

8. Close of meeting.

Attachment C

Draft List of Documents
Indonesian Catch Monitoring Workshop (ICMWS)

（CCSBT-ICM/0304/ ）

1. Draft Agenda of ICMWS
2. List of Participants of ICMWS
3. List of Documents of ICMWS
4. Review of Indonesia Catch Monitoring System
5. (Secretariat) Indonesian TIS Data Summaries
6. (Australia) The CSIRO/RIMF Monitoring Systems Used to Determine the Catch of SBT by the Indonesian Longline Fishery. T.L.O. Davis and R. Andamari
7. (Australia) Analysis of 2001 Dinas Export Packing List Data by Species, Product and Destination. T.L.O. Davis and R. Andamari
8. (Australia) Indonesia's Monitoring and Reporting Systems for Tuna Landings at Port of Benoa. C.H. Proctor, T.L.O. Davis and R. Andamari
9. (Australia) Estimates of Precision and Sampling Biases Associated with SBT Catch Estimates from the CSIRO/RIMF Monitoring System. T. Polacheck, T. Patterson and T.L.O. Davis
10. (Japan) Amount of tuna export by type, by country from Bali, Indonesia (the data obtained from DINAS). Tuji Nishimot and Hiroyuki Kurota
11. (Japan) Japanese Import Statistics of SBT from Indonesia. Yuji Nishimoto
12. (Japan) Export invoice data available in Bali, Indonesia (tentative)

[Note: No12 of above Document list is the invoice data which all exporter were required to submit to DINAS (Provicial Fisheries Service, Laboratory Quality Control and Fish Inspection Division) in Bali. The data include the detail information, e.g. destination, species, exporting company, and processing company, etc. Japan is planning to provide this information obtained from DINAS through our visit to Indonesia which assists the estimation of species composition and SBT catch of Indonesia, if there is no problem for Indonesia.]

13. (Indonesia) Monitoring Program of Indonesia SBT Catch
14. (Indonesia) List of registered vessels in the Directorate General of Capture Fisheries
15. (Indonesia) List of registered processing units in Bali Province in 2003
16. (IOTC) IOTC Summary Data on Indonesian Catch Monitored Through Sampling in Benoa (July-December 2002)
17. (IOTC) Notes on IOTC data collection activities in Indonesia
18. (Japan) Export statistics reported DINAS for 2001
19. (Indonesia) Notes on SBT catch data arrangement in Indonesia. Parlin Tambunan, Kiagus Abdul Aziz, I Gede Sedana Merta, Sam Simorangkir

（CCSBT-ICM/0304/BGD ）

1. (Japan) Review of the current estimation procedure of Indonesian SBT catch（CCSBT-ESC/0209/19）. Sachiko Tsuji

（CCSBT-ICM/0304/Info ）

（**CCSBT-ICM/0304/Rep　**）
1. Report of the Ninth Annual Commission Meeting (October 2002)
2. Report of the Seventh Meeting of the Scientific Committee (September 2002)

Classification of List of Documents for ICMWS

（**CCSBT-ICM/0304/　**）
Documents to be discussed at the meeting and not yet given a document number of CCSBT, to be classified into this category.

（**CCSBT-ICM/0304/BGD　**）
Documents to be discussed at the meeting and already given a document number of CCSBT in the previous meeting, to be classified into this category.

（**CCSBT-ICM/0304/Info　**）
Documents not to be discussed at the meeting but presented for information and reference, to be classified into this category.

（**CCSBT-ICM/0304/Rep　**）
The previous report of CCSBT to be classified into this category.

（**CCSBT-ICM/0304/WP　**）
The draft of the document and report developed through the discussion of the meeting and documents of informal meetings, to be classified into this category.