THE LISTING OF SOUTHERN BLUEFIN TUNA (*Thunnus maccoyii*) ON APPENDIX II OF CITES. WHAT WOULD IT ACTUALLY MEAN?

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(Information Paper for the Southern Tuna and Billfish Management Advisory Committee at its 9 March 1998 meeting in Adelaide).

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INTRODUCTION

At the request of the Southern Tuna and Billfish Management Advisory Committee, TRAFFIC Oceania in this document has put together a very brief explanation of the implications and logistics in the case of Southern Bluefin Tuna (SBT) being listed on Appendix II of CITES. Due to this being a briefing with the intention of stimulating discussion at the STB MAC meeting, the explanation and summary of the specifics have been kept extremely brief with much greater technical detail provided as attachments. Also for this reason there are no recommendations or conclusions as this is not intended to provide information on the implications and logistics of a CITES Appendix II listing. Most detail is given to the implications of an Appendix II as opposed to an Appendix I listing.

The explanations and interpretations in this document are those of TRAFFIC Oceania. TRAFFIC Oceania would be prepared to approach the CITES Secretariat for a validation of the information provided in this document if the STB MAC requested such action.

The next Conference of the Parties (COP) to CITES is in Bali, Indonesia in December 1999. Proposals to list species on the appendices of CITES need to be submitted 180 days prior to the COP by the government of a party[1] if range states of the species have been consulted and their comments included in the proposal. If range states have not been consulted the proposal needs to be submitted 330 days in advance of the next COP.

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[1] Attachment 6

Glossary of Terms.

Introduction from the sea - This is Res.Conf. 2.8.(copy included as attachment 1A and analysis of meaning attachment 1B). This means that if a country catches Appendix II listed species on the highseas and then lands it back in its own country, the management authority has to have issued a permit prior to landing the fish. If a vessel from Country A lands species in Country B caught on highseas, Country B has to have issued a permit prior to landing. NB: As CCSBT was not in existence prior to CITES (1975), there is no exemption of this Resolution.

Look-alike listings - This is where a species which looks like a species listed on the Appendices is also listed so that there is no avenue for loopholes. In the case of SBT there is a need for Northern Bluefin to also be listed. This would pose no problem due to the existing certification scheme within ICCAT.

Non-Detriment Finding - This is where the management authority of a country shall only issue a permit if it will not be detrimental to the survival of the species involved.

Reservation - This is where a country takes out a reservation on a listing which means it does not apply to them.

1. What is CITES?

CITES[#] , the Convention on International Trade in Endangered Species of Wild Fauna and Flora, is an international agreement that was signed in Washington, D.C. in 1973 and came into force in 1975. Currently 143 countries are party to the Convention and over 30,000 species are listed on the appendices.

CITES aims to regulate and document international trade through a system of permits and controls.

2. Description of how CITES works.

The Convention accords varying degrees of protection to wild animal and plant species depending on their biological status and the effect international trade has on them. **Appendix I** to the treaty includes those species in danger of extinction that are, or may be, affected by trade. Such species cannot be traded among member countries except under exceptional circumstances. In rare cases where trade is allowed, export and import permits are required. Included on Appendix I are the giant panda, the Asian and most populations of African elephants, all the great apes, rhinos, sea turtles and great whales,

[#] CITES is pronounced "sighteez"

most of the large cats, and some small cats, and many species of monkeys, birds of prey, parrots, lizards, crocodiles, orchids, and cacti.

Appendix II includes species that may become endangered if trade in them is not controlled. Trade in species on this list requires an export permit from the country of origin or a re-export permit from a country of re-export. In the case of marine species taken on the high seas an Introduction from Sea permit is required (see glossary). The Appendix II list includes species of the following taxa that are not already on Appendix I - primates, cats, otters, whales, birds of prey, parrots, tortoises, crocodiles, and orchids - as well as other species such as hummingbirds, birds of paradise, sturgeons, black and hard corals, and birdwing butterflies.

The actual permit requirements for trading SBT, if it was included on Appendix I or Appendix II, are summarised in tables 1 and 2 respectively. It should be noted that a country can take out a Reservation and would, hence, not have to comply with any permitting or reporting requirements, but the CITES Resolution 4.25 does ask Parties with reservations to still report trade to the secretariat*.

LOCATION SBT CAUGHT	**Import**	**Export**
FROM WITHIN EEZ	NO PERMIT REQUIRED. CAN BE SOLD FOR DOMESTIC USE	NO COMMERCIAL EXPORT
FROM HIGHSEAS	NO COMMERCIAL TRADE. INTRODUCTION FROM THE SEA.	NO COMMERCIAL EXPORT

Table 1. Requirements for trade in appendix I listed species.

* See Attachment 2B, Para 265.

LOCATION SBT CAUGHT	Import	Export
FROM WITHIN EEZ	NO PERMIT REQUIRED	CITES PERMIT NB: NON-DETRIMENT FINDING
FROM HIGHSEAS	CITES INTRODUCTION FROM THE SEA PERMIT. NB: NON-DETRIMENT FINDING	CITES PERMIT NB: NON-DETRIMENT FINDING

Table 2. Requirements for trade in CITES Appendix II listed species

3. Implications of CITES Introduction from the sea resolution.

This is Res.Conf. 2.8.(copy included as attachment 1A and analysis of meaning attachment 1B). This means that if a country catches Appendix II listed fish on the highseas and then lands it back in its own country, the management authority has to have issued a permit prior to landing the fish. If a vessel from Country A lands fish in Country B caught on the highseas, Country B has to have issued a permit prior to landing. NB: As CCSBT was not in existence prior to CITES (1975), there is no exemption from this Resolution.

4. CCSBT and ICCAT certification scheme versus a CITES Appendix II listing.

A certification scheme within the context of CCSBT was suggested in 1997 and is strongly supported by both Australia and New Zealand. It is not supported by Japan at this stage and it does not appear that there will be support for certification in the near future.

Attachment 2A contains a description of a possible CCSBT SBT Statistical Document Program as drafted by the CCSBT Secretariat (CCSBT 4.2 paper). This also contains an outline of the existing ICCAT Bluefin Tuna Statistical Document Program.

A summary of the information gathered and basic process/approval by a possible CCSBT Statistical Document, the ICCAT Statistical Document and Information gathered through a CITES Appendix II listing is found in Table 3.

5. How CITES works, which SBT trading countries are party to CITES and the logistics of trade if they are not.

Upon accession to CITES, a country designates one or more governmental departments as its management authority for issuing permits and compiling annual trade reports. A designated scientific authority provides the scientific expertise on which wildlife import and export approvals are based. CITES enforcement is often the responsibility of customs or a similar agency.

The CITES Secretariat, located in Geneva, Switzerland, oversees implementation on a global level and acts as a clearing house of information for inter-governmental agencies and nongovernmental organisations (NGOs). It also organises the meetings of the Conference of the Parties (COP)- held every two years to review and amend the treaty and its appendices - and meetings of committees established to discuss implementation issues and problems. CITES is financed by contributions from member countries calculated according to a scale established by the United Nations. The CITES Secretariat itself is administered by the United Nations Environment Programme (UNEP).

Australian CITES controls are implemented under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982.* This Act also controls the export of Australian native animals and plants, and the import of many live animals and plants. The Act is administered by Environment Australia in Canberra, who function as both the CITES Management and Scientific Authority for Australia. Enforcement of the Act is undertaken primarily by the Australian Customs Service. Penalties for the violation of Australia's CITES-implementing legislation are among the highest of any CITES Party for an individual, up to 10 years imprisonment, a $100,000 fine, or both.

Attachment 3A and 3B shows the countries which are exporting SBT to Japan and whether they are Parties to CITES. Almost all are. In the case of Non-Parties, they can notify the CITES Secretariat of which is their competent CITES management Authority. Once acknowledged by the Secretariat the Competent Authority can issue documentation for Export which can be accepted by Parties to CITES as the equivalent as a CITES export permit. NB: This is because a CITES Party should not Import a shipment of CITES listed species without a CITES Export permit, Export permit from a CITES recognised Competent Authority, or re-export permit.

Information requirements for statistical documents	CCSBT	ICCAT	CITES Appendix II
1. When imported to member country must be accompanied by relevant documentation	Yes	Yes	Yes
2. Information on document:			
(a) name of country issuing document	Yes	Yes	Yes
(b) name of exporter and importer	Yes	Yes	Yes
(c) time of harvest of fish in a shipment (yr + mth)	Yes	No	No[$]
(d) gear utilised to catch fish	Yes	Yes	No[$]
(e) type of product and total weight	Yes	Yes	Yes
(f) if caged, relevant info to estimate weight when caught	Yes	No	No[$]
(g) point of export	Yes	Yes	Yes
(h) geographical area of harvest	No	Yes	No[$]
3. Validation of the document by government of flag state of vessel.	Yes	Yes	Yes
(a) Exceptions to this	No	Yes	No[$]
4. Information in relation to document			
(a) parties provide information to secretariat on competent authority issuing documents and copies of those documents.	Yes	Yes	Yes
(b) Secretariat request from Non-Parties information as at 4 (a)	Yes	Yes	Yes
(c) Secretariat continually update info from (a) and (b) and provide to parties	Yes	Yes	Yes
5. Presentation of data			
(a) Parties compile annual reports of Import/Export	Yes	Yes	Yes
(b) Parties importing to provide information within a designated time	Yes	Yes	Yes[#]
(c) Exporting countries must cross check with annual reports from importing countries and respond to Secretariat on results	Yes	No	No[$]
(d) Parties must exchange Annual Reports to facilitate 5 (c)	Yes	Yes	No[*]
(e) Provision to monitor re-export.	Yes	No	Yes

Table 3: Comparison of a proposed CCSBT Statistical Document, ICCAT Statistical documents and documentation by CITES Appendix II listings[@] . NB: This table is constructed in respect to CITES meeting the requirements of the proposed CCSBT statistical documentation.

[$] Within CITES these information requirements are not provided for, however, further requirements could be agreed through a CITES Resolution specific to SBT trade. NB: a Resolution would not be completely binding.

[#] by October the following year. See Attachment 2B.

[*] The CITES database is maintained by the World Conservation Monitoring Centre (WCMC). The compilation of annual report data within this database would facilitate such comparisons and again this could be required by Resolution.

[@] see Attachment 2C

6. Criteria for listing species on Appendix I and II of CITES.

There are specific criteria used when amending the Appendices of CITES (Attachment 4A). These criteria have been considered in relation to SBT (Attachment 4B) and this will be further discussed at the STB Mac.

7. Look-alike provisions of CITES

This is where a species which looks like a species listed on Appendix II is also listed so that there is no avenue for loopholes. In the case of SBT there is a need for Northern Bluefin to also be listed. This should not pose a problem due to the existing certification scheme within ICCAT. See Attachment 5 for an interpretation of look-alike species being placed on Appendix II of CITES.

8. Commonly asked questions regarding CITES.

Q. Isn't it easy for a species on Appendix II to slip to Appendix I?
A. No

Q. Don't all CITES listings stop trade?
A. No

Q. Aren't listings susceptible to a high degree of subjectivity?
A. No

For further discussion at the STB Mac.

Attachment 1A

Conf. 2.8*

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

SECOND MEETING OF THE CONFERENCE OF THE PARTIES

San José (Costa Rica), 19 to 30 March 1979

RESOLUTION OF THE CONFERENCE OF THE PARTIES

Introduction from the Sea

RECOGNIZING that Articles III, paragraph 5 and IV, paragraph 6, of the Convention prohibit the transportation into a Party State of specimens (including any readily recognizable part or derivative thereof) of any species listed in Appendix I or II to the Convention which were taken in the marine environment not under the jurisdiction of any State without prior grant of a certificate from a Management Authority of the State of introduction;

RECOGNIZING that the jurisdiction of the Parties with respect to marine resources in their adjacent seas is not uniform in extent, varies in nature and has not yet been agreed internationally;

DESIRING that the maximum protection possible under this Convention be afforded to the cetaceans listed on the appendices;

CONSIDERING that the International Whaling Commission has asked for the support of the Parties in protecting certain stocks and species of whales.

THE CONFERENCE OF THE PARTIES TO THE CONVENTION

RECOMMENDS that the Parties use their best endeavours to apply their responsibilities under the Convention in relation to cetaceans.

* This document was prepared after the meeting from document Doc. 2.37 adopted after being amended. (Note from the Secretariat).

98 *Re-export of Appendix II specimens*

Article IV.5:
The re-export of any specimen of a species included in Appendix II shall require the prior grant and presentation of a re-export certificate. A re-export certificate shall only be granted when the following conditions have been met:

(a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention (note 99); and

(b) a Management Authority of the State of re-export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment (notes 73 and 74).

99 In note 89, the condition that the importation must have been in accordance with the Convention was called simple with regard to Appendix I specimens because of the necessary availability of a copy of the import permit.

As such an import permit is not required for Appendix II specimens, at least not under the Convention (see note **97**), it may be more difficult to trace the necessary information on the legal import of specimens.
Much depends on the implementation system adopted by the re-exporting country. A Management Authority will in the absence of an import permit only be able to comply with the condition of paragraph (a) if the export permit or re-export certificate presented at the time of importation, was retained by customs and transmitted to the Management Authority. The same is of course true for import permits, but there the Management Authority will, in addition, have a copy of every import permit issued and both the Management Authority and the importer will have a copy of every used, customs endorsed, permit. The legality of the importation can thus be proven more easily.
Where no import permit is required, importers should be given a customs endorsed copy of the export or re-export document in order to enable them to prove the legal importation of specimens.
What is said in note **89** is of the same importance in relation to Appendix II specimens. The higher volume of Appendix II specimens in trade makes it, however, more complicated for a Management Authority to establish that a given specimen was legally imported. Whether or not the specimens to be re-exported (or products derived therefrom!) are indeed the same as those in the CITES documents claimed to have covered their importation is a difficult question to answer. The proper implementation of the provision concerned requires a thorough knowledge of the trade situation in the Management Authority's country with regard to CITES specimens and regular inspection of the premises of dealers, producers, etc.

The use of marking systems (see **Chapter 9**) increases the possibilities for Management Authorities to follow specimens and corresponding documents at all production and trade stages.

100 *Introduction from the sea of Appendix II specimens*

Article IV:
6. The introduction from the sea of any specimen of a species included in Appendix II shall require the prior grant of a certificate from a Management Authority of the State of introduction. A certificate shall only be granted when the following conditions have been met (note 101):

(a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved (notes 71 and 283); and

(b) a Management Authority of the State of introduction is satisfied that any living specimen will be so handled as to minimize the risk of injury, damage to health or cruel treatment (notes 73-74).

7. Certificates referred to in paragraph 6 of this Article may be granted on the advice of a Scientific Authority, in consultation with other national scientific authorities or, when appropriate, international scientific authorities, in respect of periods not exceeding one year for total numbers of specimens to be introduced in such period (note 102).

101 Article XIV.4 (see note **331**) implies that a certificate for the introduction from the sea of Appendix II specimens is not required with respect to specimens that are taken by ships registered in a State which is a Party to a treaty, convention or international agreement affording protection to marine species included in Appendix II and where that take is in accordance with that treaty, convention or international agreement.

As Article XIV.4 specifically refers to any other treaty, convention or international agreement which is in force at the time of the coming into force of the present Convention, this provision only applies to treaties, conventions and international agreements which were in force on 1 July 1975 and not to those which entered into force thereafter.
A Convention, older than CITES and affording protection to Appendix II marine species is the 1946 International Convention for the Regulation of Whaling. All cetaceans regulated by that Convention, however, have meanwhile been included in Appendix I of CITES and commercial whaling is currently subject to zero quotas under the Whaling Convention.

At its ninth meeting, the Conference of the Parties confirmed that cetacean species subject to zero quotas under the International Convention for the Regulation of Whaling should be listed in Appendix I and rejected a Norwegian proposal to transfer the North Atlantic minke whale stock to Appendix II.

102 The provision of Article IV.7, that certificates may be granted for total numbers of specimens to be introduced in a period not exceeding one year, is in contradiction with Article VI.5 which provides that a separate permit or certificate shall be required for each consignment of specimens (note **110**). In relation with Article XIV.4, note **101**, it is also confusing.

Chapter 7

Trade in Specimens of Appendix III Species

103 The conditions under which trade in specimens of species included Appendix III must take place are laid down in **Article V**, paragraph 1 which provides that:

All trade in specimens of species included in Appendix III shall be accordance with the provisions of this Article (note 104).

Subsequent paragraphs deal with the different forms of trade: 2 with export, 3 w import and 4 with re-export.

104 Appendix III is intended to provide international assistance to individ Parties in regulating the exploitation, if any, of species within th jurisdiction (see notes **62-64**).

It is therefore necessary for an *importing* country to be able to establish the ori of specimens of such species.
Article V provides for no less than four different documents for that purpose, c of which is an export permit similar to that to be presented at the export and imp of Appendices I and II specimens. Such an export permit is only required if export is from the country having included the species in Appendix III. If specimen is exported from another country, a certificate of origin is required in the case of re-export, either a certificate that the specimen was processed c being re-exported (i.e. a re-export certificate). The latter three documents only h to be presented at the time of import.

105 ***The export of Appendix III specimens***

Article
The export of any specimen of a species included in Appendix III from State which has included that species in Appendix III shall require the p

The Evolution of CITES

A reference
to the
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in Endangered Species
of Wild Fauna and Flora

by

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January 98

Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

CCSBT/9801/5

Possible Certification System of Trade in Southern Bluefin Tuna with reference to the ICCAT System

Purpose

1. To provide a possible certification system of trade in Southern Bluefin Tuna with reference to the ICCAT system to facilitate the consideration by the Commission on this issue.

Background

2. At the Fourth Annual Meeting of the Commission (First Part) held in September 1997, Australia strongly supported the immediate introduction of a statistical document program to provide accurate information on the origin and volume of SBT entering international trade. Australia indicated that there were good international precedents, and advocated a scheme along the line already implemented by ICCAT. The Commission noted that more detailed SBT trade information was a key issue to be addressed.

3. To assist the Commission's consideration on this matter, the Secretariat contacted the Secretariat of ICCAT and obtained relevant documents regarding the ICCAT Bluefin Tuna Statistical Document Program (a summary made by the Secretariat is attached) and drafted a possible CCSBT Southern Bluefin Tuna Statistical Document Program based on the ICCAT System, outlined below for the consideration by the Commission.

Outline of Program

4. The Outline of a possible CCSBT Southern Bluefin Tuna Statistical Document Program drafted by the Secretariat is as follows;

(1) Nature of the Program
The Members of the CCSBT should require that all southern bluefin tuna, when imported into the territory of a Member, be accompanied by a CCSBT Southern Bluefin Tuna Statistical Document.

(2) Information to be contained in the Southern Bluefin Tuna Statistical Document
- (a) the name of the country/entity issuing the document
- (b) the name of the exporter and the importer
- (c) the time of harvest of the fish in the shipment (in year and month)
- (d) the gear utilized to catch the fish
- (e) the type of product and total weight

(c) The Members which export southern bluefin tuna shall examine export data upon receiving the import data mentioned in paragraph (b) above from the Executive Secretary, and report the results to the Commission.

(d) The Members should exchange copies of statistical documents to facilitate the examination mentioned in paragraph (c).

(6) System necessary for re-export

It might be necessary to consider the necessity to develop a system for re-export of SBT imported to a Member which collected the Statistical Document.

Prepared by the Secretariat

(f) if caged, relevant information to estimate the weight when caught
(g) the point of export

note:
(i) Since SBT is managed as one stock in the whole area, the area of harvest has not been included. Instead, the time of harvest is included as SBT is managed through an annual TAC system.
(ii) The Program is established to obtain catch statistics through trade data. Therefore, appropriate information needs to be provided to estimate the weight when caught, if imported fish have been caged.
(iii) Although the form of the Document is decided by issuing countries in the ICCAT system, it is preferable to have a standard format to ensure consistency in the Program.

(3) Validation of the Document
The Document must be validated by a government official of the flag state of the vessel that harvested the tuna.

note:
The ICCAT System dose allow some exceptions to this requirement. However, allowing any kind of exception or variation will make the Program complicated and may raise expectations for any new members, and it is considered appropriate to start the SBT Program with the simple one.

(4) Information relating to the Document and its validation
(a) Each Member shall provide to the Executive Secretary information on validation (e.g. name of the organization which validates the documents, name and title of officials who validate the documents, sample of impression of stamp or seal and signature), and inform him of any change in a timely fashion.
(b) The Executive Secretary shall request information specified in paragraph (a) from all the non-Members fishing and exporting southern bluefin tuna to Members, and request them to inform him in a timely fashion of any changes in the information provided.
(c) The Executive Secretary shall maintain and update information specified in paragraph (a) and (b) and provide it to all the Members and promptly circulate any changes.

(5) Presentation of data compiled through the implementation of the Program
(a) The Members which export or import southern bluefin tuna shall compile data from the Documents.
(b) The Members which import southern bluefin tuna shall report the data collected by the Program to the Executive Secretary each year by April 1 for the period of July 1 – December 31 of the preceding year and October 1 for the period of January 1 – June 30 of the current year, which shall be circulated to all the Members by the Executive Secretary.

Pap. CCSBT 4 · 2
Jan. 98

Attach. 2A

The Outline of the ICCAT Bluefin Tuna Statistical Document Program

1. Nature of the Program
The Contracting Parties of the ICCAT should require that all bluefin tuna, when imported into the territory of a Contracting Party, be accompanied by an ICCAT Bluefin Tuna Statistical Document.

2. Information to be contained in the Bluefin Tuna Statistical Document
   a. the name of the country issuing the document
   b. the name of the exporter and the importer
   c. the area of harvest of the fish in the shipment (i.e., for the Atlantic Ocean the areas would be the east, west, or Mediterranean Sea)
   d. the gear utilized to catch the fish
   e. the type of product and total weight
   f. the point of export

3. Validation of the Document
The Document must be validated by a government official of the flag state of the vessel that harvested the tuna, except in the each of following cases.
(1) A validation may be waived when the following criteria are met by the flag state for the vessel that harvested the tuna. However, in the case of an ICCAT-accepted logbook and an ICCAT accepted information retrieval system, validation by an institution accredited by the government is required.
   a. All bluefin tuna available for sale are tagged or included in an ICCAT-accepted logbook or ICCAT-accepted information retrieval system;
   b. All information relating to the tag, the ICCAT-accepted logbook or the ICCAT-accepted information retrieval system is compiled by the government;
   c. The compiled information is provided in a timely fashion to ICCAT;
   d. The compiled information includes that outlined as in 2. Above.

(2) The requirement for validation of the ICCAT Statistical Document by a government official of the flag state of the vessel that harvested the tuna with respect to any member of the Commission in good standing which over the preceding 36 month period regularly provided to ICCAT statistical information consistent with ICCAT requirements, may be met by validation by a recognized institution accredited by it to validate documents, for example, a national Chamber of Commerce so recognized.

4. Information relating to the Document and its validation
   a. Each Contracting Parties shall provide to the Executive Secretary a sample of its statistical document form required with bluefin tuna imports and information on validation (e.g. type of validation, name of the organization which validates the documents, title of officials who validate the documents, sample of impression of stamp or seal, tag samples), and inform him of any change in a timely fashion.
   b. The Executive Secretary shall request information on validation from all the non-Contracting Parties fishing and exporting bluefin tuna to Contracting

Parties, and request them to inform him in a timely fashion of any changes in the information provided.

c. The Executive Secretary shall maintain and update information specified in paragraph a and b and provide it to all the Contracting Parties and promptly circulate any changes.

5. Presentation of data compiled through the implementation of the Program

a. The Contracting Parties which export or import bluefin tuna shall compile data from the Documents.

b. The Contracting Parties which import bluefin tuna shall report the data collected by the Program to the Executive Secretary each year by April 1 for the period of July 1 – December 31 of the preceding year and October 1 for the period of January 1 – June 30 of the current year, which shall be circulated to all the Contracting Parties by the Executive Secretary.

c. The Contracting Parties which export bluefin tuna shall examine export data upon receiving the import data mentioned in paragraph b above from the Executive Secretary, and report the results to the Commission.

d. The Contracting Parties should exchange copies of statistical documents to facilitate the examination mentioned in paragraph c.

Attachment 2B

The Resolution is worded in general terms but was initially aimed at the member states of the European Union, which commonly implement CITES at the outside borders of the Union and have removed border controls between them. This obviously implies the absence of CITES reports on trade between Member States, a situation which is provided for in Article XIV.3.

Resolution Conf. 6.5 (Rev.) on the implementation of CITES in the European Economic Community recommended that it monitor the movement of CITES specimens within and between Member States in accordance with the mechanisms foreseen in its legislation and by use of existing forms.

The Resolution urges every Party to consider whether the preparation of its statistical reports could be computerized, or undertaken under a contract between the Party and the Wildlife Trade Monitoring Unit of the World Conservation Monitoring Centre. (**ex Resolution Conf. 5.6**)

It recommends that Parties studying or developing computer programs for licensing and reporting trade under the Convention consult with each other, and with the Secretariat, in order to ensure optimal harmonization and compatibility of systems. (**ex Resolution Conf. 3.10**)

Resolution Conf. 3.10 also requested the Secretariat to continue the regular comparative tabulation of annual reports from Parties, with a view to the publication of a Yearbook of International Wildlife Trade; and in consultation with the Chairman of the Technical Expert Committee, to explore the availability of the external funding for this purpose.

The year-book concerned was never published and the request is not repeated in Resolution Conf. 9.4.

With Resolution Conf. 9.4, the Conference of the Parties decides:

a) that failure to submit an annual report by 31 October of the year following the year for which the report was due constitutes a major problem with the implementation of the Convention, which the Secretariat shall refer to the Standing Committee for a solution in accordance with Resolution Conf. 7.5 (**ex Resolution Conf. 8.7**); and

b) that the Secretariat may approve a valid request from a Party for a reasonable extension of time to the 31 October deadline for the submission of annual reports provided the Party submits to the Secretariat a written request, containing adequate justification, before that deadline. (**ex Resolution Conf. 8.7**)

The Resolution finally appeals to all Parties, and to non-governmental organizations interested in furthering the objectives of the Convention, to make financial

Secretariat and that of the Wildlife Trade Monitoring Unit undertaken under contract to the Secretariat. (ex **Resolution Conf. 5.6**)

Resolution Conf. 5.4 requested the Secretariat to contact non-Party States, urging them to submit reports.
I never considered this request to be very realistic, particularly not where it concerns importing countries. In order to be able to prepare reports, a country must have a monitoring system for trade in CITES specimens. Countries of origin are probably able to provide useful information on the export of species subject to exploitation, but consumer countries are likely to lack the sources to provide relevant information on imports and re-exports, unless they have committed themselves to the purposes of CITES, in which case they will be a Party to the Convention.
The request was not repeated with Resolution Conf. 9.4.

265 **Resolution Conf. 4.25**, on the effects of reservations calls on the Parties having entered reservations nevertheless to maintain and communicate statistical records on trade in the species concerned, as part of their annual reports, so that international trade in these species may be properly monitored.

266 **Resolution Conf. 8.16** on travelling live animal exhibitions recommends in paragraph j), that the Parties include in their annual reports lists of all pre-Convention certificates and certificates of captive breeding issued for specimens in exhibitions.

267 ***Guidelines for the preparation and submission of CITES annual reports.***

These guidelines were first prepared by the Secretariat in 1982 in compliance with recommendation f) of Resolution Conf. 3.10.

They have been revised and updated since and a new set of guidelines was distributed with Notification No. 788 of 10 March 1994.

They read as follows:

268 1. INTRODUCTION

Article VIII, paragraph 7, of the Convention requires each Party to submit to the Secretariat an annual report summarizing the following information:

- the number and type of permits and certificates granted;

Attachment 2c

It considers the need to improve the standardization of export permits and re-export certificates and that the data carried on permits and certificates must supply maximum information, as much for export as for import, to allow verification of the conformity between the specimens and the document (ex **Resolution Conf. 7.5**);

It recommends ***regarding the standardization of CITES permits and certificates***

a) that Parties wishing to modify their permit and certificate forms, to reprint existing documents or to introduce new documents, first ask the Secretariat for advice (ex **Resolution Conf. 8.5**); and

b) that Parties adapt the contents and, to the extent practicable, the format of their export permits and re-export certificates to the standard form attached to the present Resolution as Annex 2 (also **Annex 2** of this book).

It is unclear why this recommendation does not cover all certificates and import permits. The proposed standard format includes those as well !

The Conference of the Parties agrees:

a) that, to fulfil the requirements of Article VI of the Convention and relevant Resolutions, export and import permits, re-export and pre-Convention certificates, and certificates of captive breeding and artificial propagation should include all the information specified in Annex 1 of the present Resolution;

This Annex reads as follows:

** a) The full name and the logo of the Convention
* b) The complete name and address of the Management Authority issuing the permit
c) A control number
d) The complete names and addresses of the exporter and importer
e) The scientific name of the species to which the specimen belongs (or the subspecies when it is relevant in order to determine in which Appendix the taxon concerned is included)
f) The description of the specimens, in one of the Convention's three working languages, using the nomenclature of specimens distributed by the Secretariat
g) The numbers of the marks appearing on the specimens if they are marked or if a Resolution of the Conference of the Parties prescribes marking (specimens from ranches, subject to quotas approved by the Conference of the Parties, originating from operations which breed animals included in Appendix I in captivity for commercial purposes, etc.)
h) The Appendix in which the species or subspecies or population is listed
i) The source of the specimen
j) The quantity of specimens and, if appropriate, the unit of measure used
k) The date of issue and the date of expiry
l) The name of the signatory and his/her handwritten signature
m) The embossed seal or ink stamp of the Management Authority

n) A statement that the permit, if it covers live animals, is only valid if the transport conditions comply with the CITES Guidelines for Transport of Live Animals or, in case of air transport, with the IATA Live Animals Regulations

o) The registration number of the operation, attributed by the Secretariat, when the permit involves specimens of a species included in Appendix I that originate from an operation practicing breeding in captivity or artificial propagation for commercial purposes (Article VII, paragraph 4, of the Convention), and the name of the operation when it is not the exporter

p) The actual quantity of specimens exported, certified by the stamp or seal and signature of the authority that carried out the inspection at the time of the exportation.

* THIS INFORMATION SHOULD ALREADY BE PRINTED ON THE FORM

For export permits for registered plant nurseries, see note **222**.

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b) that every form should be printed in one or more of the working languages of the Convention (English, Spanish, French) and in the national language if it is not one of the working languages (ex **Resolution Conf. 3.6**);

c) that every form should indicate which type of document it is (import or export permit, re-export or pre-Convention certificate, certificate of captive breeding or artificial propagation) (ex **Resolution Conf. 8.5**);

d) that if a permit or certificate form includes a place for the signature of the applicant, the absence of the signature should render the permit or certificate invalid;

e) that if an annex is attached to a permit or certificate as an integral part of it, this and the number of pages should be clearly indicated on the permit or certificate, and each page of the annex should include the following:

i) the number of the permit or certificate and its date of issue; and

ii) the signature and the stamp or seal, preferably embossed, of the authority issuing the document;

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f) that a re-export certificate should also spécify (ex **Resolution Conf. 8.5**):

i) the country of origin, the number of the export permit of the country of origin and its date of issue; and

ii) the country of last re-export, the number of the re-export certificate of that country and its date of issue;

or if the case arises:

Attachment 3A

Commission for the Conservation of Southern Bluefin Tuna

みなみまぐろ保存委員会

CCSBT/9801/

Import Statistics of SBT by Japan

B: Some of these have Ratified and still to accede

Members of CITES

Japanese Import of SBT by Country/Area (Fresh, Chilled and Frozen)
Source: Japan Trade Statistics, Ministry of Finance

	Country/ Area	1995 kg	1996 kg	1997 Jan-Aug kg	% against 1996 Jan-Aug
✓	Australia	3,272,990	3,195,903	4,522,867	217.5
	Taiwan	1,276,474	1,396,915	285,539	45.8
✓	Korea	75,836	562,573	197,351	
✓	Indonesia	207,758	317,687	113,207	62.7
✓	Honduras	146,574	179,918	44,162	1,755.2
✓	New Zealand	202,636	128,249	34,160	46.9
✓	Singapore	1,968	43,835	6,214	55.0
✓	Vanuatu		17,855		
✓	France		2,995		
✓	Belize	3,380	9,534		
✓	Palau		569	315	55.4
	Guam		680	304	44.7
✓	Philippines		182		
	Cook Islands		140		
✓	Chile		334		
✓	Uruguay	342	102		
✓	Thailand		333		
✓	USA	1.320			
✓	China	9,183			
✓	Spain	11,061			
✓	Tunisia	124			
✓	Fiji	445		96	
	Tonga	138			
✓	Portugal			93	
✓	New Caledonia			119	
✓	Maldives			163	
	Total	5,210,229	5,857,804	5,204,590	

This addition by G.SANT (Signatories as to 25/2/98)

Convention on International Trade in Endangered Species of Wild Fauna and Flora

List of Parties / Lista de las Partes / Liste des Parties

(R) Ratification/Ratificación
(A) Accession/Adhesión/Adhésion
(Ap) Approval/Aprobación/Approbation
(Ac) Acceptance/Aceptación/Acceptation
(Ds) Declaration of succession/Declaración de sucesión/Déclaration de succession

State/Estado/Etat	Date/Fecha	
Afghanistan/Afganistán	30.10.1985	(A)
Algeria/Argelia/Algérie	23.11.1983	(A)
Antigua and Barbuda/Antigua y Barbuda/Antigua-et-Barbuda	06.10.1997	(A)
Argentina/Argentine	08.01.1981	(R)
Australia/Australie	29.07.1976	(R)
Austria/Autriche	27.01.1982	(A)
Bahamas	20.06.1979	(A)
Bangladesh	20.11.1981	(R)
Barbados/Barbade	09.12.1992	(A)
Belarus/Belarús/Bélarus	10.08.1995	(A)
Belgium/Bélgica/Belgique	03.10.1983	(R)
Belize/Belice	19.08.1986	(Ds)
Benin/Bénin	28.02.1984	(A)
Bolivia/Bolivie	06.07.1979	(R)
Botswana	14.11.1977	(A)
Brazil/Brasil/Brésil	06.08.1975	(R)
Brunei Darussalam/Brunéi Darussalam	04.05.1990	(A)
Bulgaria/Bulgarie	16.01.1991	(A)
Burkina Faso	13.10.1989	(A)
Burundi	08.08.1988	(A)
Cambodia/Camboya/Cambodge	02.10.1997	(A)
Cameroon/Camerún/Cameroun	05.06.1981	(A)
Canada/Canadá	10.04.1975	(R)
Central African Republic/República Centroafricana/ République centrafricaine	27.08.1980	(A)
Chad/Tchad	02.02.1989	(A)
Chile/Chili	14.02.1975	(R)
China/Chine	08.01.1981	(A)
Colombia/Colombie	31.08.1981	(R)
Comoros/Comoras/Comores	23.11.1994	(A)
Congo	31.01.1983	(A)
Costa Rica	30.06.1975	(R)
Côte d'Ivoire	21.11.1994	(A)
Cuba	20.04.1990	(A)
Cyprus/Chipre/Chypre	18.10.1974	(R)

Czech Republic/República Checa/République tchèque	14.04.1993	(Ds)
Denmark/Dinamarca/Danemark	26.07.1977	(R)
Djibouti	07.02.1992	(A)
Dominica/Dominique	04.08.1995	(A)
Dominican Republic/República Dominicana/République dominicaine	17.12.1986	(A)
Ecuador/Equateur	11.02.1975	(R)
Egypt/Egipto/Egypte	04.01.1978	(A)
El Salvador	30.04.1987	(A)
Equatorial Guinea/Guinea Ecuatorial/Guinée équatoriale	10.03.1992	(A)
Eritrea/Erythrée	24.10.1994	(A)
Estonia/Estonie	22.07.1992	(A)
Ethiopia/Etiopía/Ethiopie	05.04.1989	(A)
Fiji/Fidji	29.12.1997	(A)
Finland/Finlandia/Finlande	10.05.1976	(A)
France/Francia	11.05.1978	(Ap)
Gabon/Gabón	13.02.1989	(A)
Gambia/Gambie	26.08.1977	(A)
Georgia/Géorgie	13.09.1996	(A)
Germany/Alemania/Allemagne	22.03.1976	(R)
Ghana	14.11.1975	(R)
Greece/Grecia/Grèce	08.10.1992	(A)
Guatemala	07.11.1979	(R)
Guinea/Guinée	21.09.1981	(A)
Guinea-Bissau/Guinée-Bissau	16.05.1990	(A)
Guyana	25.05.1977	(A)
Honduras	15.03.1985	(A)
Hungary/Hungría/Hongrie	29.05.1985	(A)
India/Inde	20.07.1976	(R)
Indonesia/Indonésie	28.12.1978	(A)
Iran, Islamic Republic of/Irán, República Islamica del/ Iran, République islamique d'	03.08.1976	(R)
Israel/Israël	18.12.1979	(R)
Italy/Italia/Italie	02.10.1979	(R)
Jamaica/Jamaïque	22.06.1997	(A)
Japan/Japón/Japon	06.08.1980	(Ac)
Jordan/Jordania/Jordanie	14.12.1978	(A)
Kenya	13.12.1978	(R)
Latvia/Letonia/Lettonie	11.02.1997	(A)
Liberia/Libéria	11.03.1981	(A)
Liechtenstein	30.11.1979	(A)
Luxembourg/Luxemburgo	13.12.1983	(R)
Madagascar	20.08.1975	(R)
Malawi	05.02.1982	(A)
Malaysia/Malasia/Malaisie	20.10.1977	(A)
Mali/Malí	18.07.1994	(A)
Malta/Malte	17.04.1989	(A)
Mauritius/Mauricio/Maurice	28.04.1975	(R)
Mexico/México/Mexique	02.07.1991	(A)
Monaco/Mónaco	19.04.1978	(A)
Mongolia/Mongolie	05.01.1996	(A)

Morocco/Marruecos/Maroc	16.10.1975	(R)
Mozambique	25.03.1981	(A)
Myanmar	11.09.1997	(A)
Namibia/Namibie	18.12.1990	(A)
Nepal/Népal	18.06.1975	(A)
Netherlands/Países Bajos/Pays-Bas	09.04.1984	(R)
New Zealand/Nueva Zelandia/Nouvelle-Zélande	10.05.1989	(A)
Nicaragua	06.08.1977	(A)
Niger/Níger	08.09.1975	(R)
Nigeria/Nigéria	09.05.1974	(R)
Norway/Noruega/Norvège	27.07.1976	(R)
Pakistan/Pakistán	20.04.1976	(A)
Panama/Panamá	17.08.1978	(R)
Papua New Guinea/Papua Nueva Guinea/Papouasie-Nouvelle-Guinée	12.12.1975	(A)
Paraguay	15.11.1976	(R)
Peru/Perú/Pérou	27.06.1975	(R)
Philippines/Filipinas	18.08.1981	(R)
Poland/Polonia/Pologne	12.12.1989	(R)
Portugal	11.12.1980	(R)
Republic of Korea/República de Corea/République de Corée	09.07.1993	(A)
Romania/Rumania/Roumanie	18.08.1994	(A)
Russian Federation/Federación de Rusia/Fédération de Russie	13.01.1992	(Ds)
Rwanda	20.10.1980	(A)
Saint Kitts and Nevis/Saint Kitts y Nevis/Saint-Kitts-et-Nevis	14.02.1994	(A)
Saint Lucia/Santa Lucía/Sainte-Lucie	15.12.1982	(A)
Saint Vincent and the Grenadines/San Vicente y las Granadinas/ Saint-Vincent-et-les Grenadines	30.11.1988	(A)
Saudi Arabia/Arabia Saudita/Arabie saoudite	12.03.1996	(A)
Senegal/Sénégal	05.08.1977	(A)
Seychelles	08.02.1977	(A)
Sierra Leone/Sierra Leona	28.10.1994	(A)
Singapore/Singapur/Singapour	30.11.1986	(A)
Slovakia/Eslovaquia/Slovaquie	02.03.1993	(Ds)
Somalia/Somalie	02.12.1985	(A)
South Africa/Sudáfrica/Afrique du Sud	15.07.1975	(R)
Spain/España/Espagne	30.05.1986	(A)
Sri Lanka	04.05.1979	(A)
Sudan/Sudán/Soudan	26.10.1982	(R)
Suriname	17.11.1980	(A)
Swaziland	26.02.1997	(A)
Sweden/Suecia/Suède	20.08.1974	(R)
Switzerland/Suiza/Suisse	09.07.1974	(R)
Tanzania, United Republic of/Tanzanía, República Unida de/ Tanzanie, République-Unie de	29.11.1979	(R)
Thailand/Tailandia/Thaïlande	21.01.1983	(R)
Togo	23.10.1978	(R)
Trinidad and Tobago/Trinidad y Tabago/Trinité-et-Tobago	19.01.1984	(A)
Tunisia/Túnez/Tunisie	10.07.1974	(R)
Turkey/Turquía/Turquie	23.09.1996	(A)
Uganda/Ouganda	18.07.1991	(A)

United Arab Emirates/Emiratos Arabes Unidos/ Emirats arabes unis	08.02.1990	(A)
United Kingdom of Great Britain and Northern Ireland/ Reino Unido de Gran Bretaña e Irlanda del Norte/ Royaume-Uni de Grande-Bretagne et d'Irlande du Nord	02.08.1976	(R)
United States of America/Estados Unidos de América/ Etats-Unis d'Amérique	14.01.1974	(R)
Uruguay	02.04.1975	(R)
Uzbekistan/Uzbekistán/Ouzbékistan	08.10.1997	(A)
Vanuatu	17.07.1989	(A)
Venezuela	24.10.1977	(R)
Viet Nam	20.01.1994	(A)
Yemen/Yémen	03.08.1997	(A)
Zaire/Zaïre	20.07.1976	(A)
Zambia/Zambie	24.11.1980	(A)
Zimbabwe	19.05.1981	(A)

November/Noviembre/Novembre 1997

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Document URL: *http:// www.wcmc.org.uk /CITES/english/parties1.htm*
Revision date: *11-11-1997*
Current date: *25-02-1998*

CITES Home Comments Acknowledgements

CITES late news!

to the Parties of such sources and each Management Authority should obtain tags to mark crocodilian skins only from these approved sources.

2. Any approved tag manufacturer registered by the Secretariat should first agree, in writing, that it will:

a) not duplicate any series of tags produced in accordance with this Resolution;

b) sell such tags only to Management Authorities or, in non-party States, to designated government agencies recognized by the Secretariat in accordance with Resolution Conf. 9.5, or to bodies approved by these agencies; and

c) report direct and immediately to the Secretariat each order for tags that is fulfilled.

3. When ordering tags from approved sources, Management Authorities should immediately inform the Secretariat of the details of each tag order.

4. Upon request by a Management Authority, the Secretariat should purchase and distribute tags for crocodilian skins, and should recover the full cost, except if external funding becomes available for Parties requiring assistance.

5. The Secretariat should seek additional resources to allow it to computerize the information collected in connection with this Resolution.

6. The Management Authorities of the exporting, re-exporting and importing Parties should provide to the Secretariat, when directed by the Standing Committee or agreed to between the range State and the CITES Secretariat, a copy of each export permit, re-export certificate, or other Convention document for crocodilian skins or flanks immediately after issuance or on receipt, as appropriate.

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

Ninth Meeting of the Conference of the Parties

Fort Lauderdale (United States of America) , 7 to 18 November 1994

RESOLUTION OF THE CONFERENCE OF THE PARTIES

Conf. 9.24

Criteria for Amendment of Appendices I and II

RECALLING that the Conference of the Parties at its eighth meeting, held in Kyoto, Japan, in March 1992, was convinced that the criteria adopted at the first meeting of the Conference of the Parties (Berne, 1976) (Resolutions Conf. 1.1 and Conf. 1.2) did not provide an adequate basis for amending the appendices, and directed the Standing Committee to undertake, with the assistance of the Secretariat, a revision of the criteria for amending the appendices (Resolution Conf. 8.20);

NOTING that this review was carried out in consultation with the Parties and on the basis of initial technical work carried out by IUCN in collaboration with other experts;

NOTING further that all aspects of this review were addressed by a joint meeting of the Plants and Animals Committees, in association with the Standing Committee, held in Brussels in September 1993;

CONSIDERING the fundamental principles in paragraphs 1 and 2 of Article II of the

Convention, which specify the species to be included in Appendices I and II;

RECOGNIZING that to qualify for inclusion in Appendix I a species must meet biological and trade criteria;

RECALLING that Article II, paragraph 2(a) , provides for the inclusion of species which may become threatened with extinction in Appendix II, in order to avoid utilization incompatible with their survival;

RECOGNIZING that for the proper implementation of this provision it is necessary to adopt appropriate criteria, considering both biological and trade factors;

RECALLING that paragraph 2(b) of Article II provides only for the inclusion in Appendix II of species which must be subject to regulation in order that trade in specimens of certain species included in Appendix II in accordance with Article II, paragraph 2(a) , may be brought under effective control;

CONSIDERING, however, that this provision should also apply where there is a need to bring under effective control trade in specimens of species included in Appendix I;

RECOGNIZING that the range States of a species subject to an amendment proposal should be consulted following the procedures recommended by the Conference of theParties, and that the intergovernmental bodies having a function in relation to that species should be consulted as well;

NOTING the competence of certain intergovernmental organizations in relation to the management of marine species;

RECALLING that the international trade in all wild fauna and flora is under the purview of the Convention;

EMPHASIZING the importance of Resolution Conf. 3.4, adopted at the third meeting of the Conference of the Parties (New Delhi, 1981), regarding the need to provide to developing countries technical assistance in matters relating to the Convention;

RECOGNIZING that by virtue of the precautionary principle, in cases of uncertainty, the Parties shall act in the best interest of the conservation of the species when considering proposals for amendment of Appendices I and II;

THE CONFERENCE OF THE PARTIES TO THE CONVENTION

ADOPTS the following Annexes as an integral part of this Resolution:

Annex 1: Biological criteria for Appendix I;

Annex 2a: Criteria for the inclusion of species in Appendix II in accordance with Article II, paragraph 2(a) ;

Annex 2b: Criteria for the inclusion of species in Appendix II in accordance with Article II, paragraph 2(b) ;

Annex 3: Special cases;

Annex 4: Precautionary measures;

Annex 5: Definitions, notes and guidelines; and

Annex 6: Format for proposals to amend the appendices;

RESOLVES that when considering any proposal to amend Appendix I or II the Parties shall

apply the precautionary principle so that scientific uncertainty should not be used as a reason for failing to act in the best interest of the conservation of the species;

RESOLVES that, when considering proposals to amend Appendices I and II, the following applies:

a) any species that is or may be affected by trade should be included in Appendix I if it meets at least one of the biological criteria listed in Annex 1;

b) a species "is or may be affected by trade" if:

i) it is known to be in trade; or

ii) it is probably in trade, but conclusive evidence is lacking; or

iii) there is potential international demand for specimens; or

iv) it would probably enter trade were it not subject to Appendix-I controls;

c) any species that meets the criteria for inclusion in Appendix II listed in Annex 2a should be included in Appendix II in accordance with Article II, paragraph 2(a) ;

d) species should be included in Appendix II under the provisions of Article II, paragraph 2(b) , if they satisfy the criteria listed in Annex 2b;

e) species should be included in more than one appendix at the same time, and higher taxa should be included in the appendices, only if the species or higher taxa concerned satisfy the relevant criteria listed in Annex 3;

f) species of which all specimens in trade have been bred in captivity or artificially propagated should not be included in the appendices if there is no probability of trade taking place in specimens of wild origin;

g) any species included in Appendix I for which sufficient data are available to demonstrate that it does not meet the criteria listed in Annex 1 should be transferred to Appendix II only in accordance with the relevant precautionary measures listed in Annex 4;

h) any species included in Appendix II in accordance with Article II, paragraph 2(a) , that does not meet the criteria listed in Annex 2a should be deleted only in accordance with the relevant precautionary measures listed in Annex 4; and species included in accordance with Article II, paragraph 2(b) , because they look like the species subject to the deletion, or for a related reason, should also be deleted only in accordance with the relevant precautionary measures; and

i) the views, if any, of intergovernmental organizations with competence for the management of the species concerned should be taken into account;

RESOLVES that proposals to amend Appendices I and II should be based on the best information available and presented in the format in Annex 6, unless otherwise justified;

RESOLVES that, to monitor the effectiveness of protection offered by the Convention, the status of species included in Appendices I and II should be regularly reviewed by the range States and proponents, in collaboration with the Animals Committee or the Plants Committee, subject to the availability of funds;

URGES Parties and co-operating organizations to provide financial and technical assistance, when requested, in the preparation of proposals to amend the appendices, the development of management programmes, and the review of the effectiveness of the inclusion of species in the appendices. Parties should be open to using other available international mechanisms and

instruments for these purposes in the broader context of biodiversity;

RECOMMENDS that the text and the annexes of this Resolution be fully reviewed before the twelfth meeting of the Conference of the Parties with regard to the scientific validity of the criteria, definitions, notes and guidelines and their applicability to different groups of organisms; and

REPEALS the Resolutions listed hereunder:

a) Resolution Conf. 1.1 (Berne, 1976) - Criteria for the Addition of Species and Other Taxa to Appendices I and II and for the Transfer of Species and Other Taxa from Appendix II to Appendix I;

b) Resolution Conf. 1.2 (Berne, 1976) - Criteria for the Deletion of Species and Other Taxa from Appendices I and II;

c) Resolution Conf. 2.17 (San José, 1979) - Format for Proposals to Amend Appendix I or II;

d) Resolution Conf. 2.19 (San José, 1979) - Criteria for Addition of Extremely Rare Species to Appendix I;

e) Resolution Conf. 2.20 (San José, 1979) - The Use of the Subspecies as a Taxonomic Unit in the Appendices;

f) Resolution Conf. 2.21 (San José, 1979) - Species Thought to Be Extinct;

g) Resolution Conf. 2.22 (San José, 1979) - Trade in Feral Species;

h) Resolution Conf. 2.23 (San José, 1979) - Special Criteria for the Deletion of Species and Other Taxa Included in Appendix I or II without Application of the Berne Criteria for Addition;

i) Resolution Conf. 3.20 (New Delhi, 1981) - Ten-year Review of the Appendices;

j) Resolution Conf. 4.26 (Gaborone, 1983) - Ten-year Review of the Appendices;

k) Resolution Conf. 7.14 (Lausanne, 1989) - Special Criteria for the Transfer of Taxa from Appendix I to Appendix II; and

l) Resolution Conf. 8.20 (Kyoto, 1992) - Development of New Criteria for Amendment of the Appendices.

Annex 1

Biological Criteria for Appendix I

The following criteria must be read in conjunction with the definitions, notes and guidelines listed in Annex 5.

A species is considered to be threatened with extinction if it meets, or is likely to meet, *at least one* of the following criteria.

A. The wild population is small, and is characterized by *at least one* of the following:

i) an observed, inferred or projected decline in the number of individuals or the area and quality of habitat; or

ii) each sub-population being very small; or

iii) a majority of individuals, during one or more life-history phases, being concentrated in one sub-population; or

iv) large short-term fluctuations in the number of individuals; or

v) a high vulnerability due to the species' biology or behaviour (including migration) .

B. The wild population has a restricted area of distribution and is characterized by *at least one* of the following:

i) fragmentation or occurrence at very few locations; or

ii) large fluctuations in the area of distribution or the number of sub-populations; or

iii) a high vulnerability due to the species' biology or behaviour (including migration) ; or.

iv) an observed, inferred or projected decrease in any one of the following:

- the area of distribution; or

-the number of sub-populations; or

-the number of individuals; or

-the area or quality of habitat; or

-reproductive potential.

C. A decline in the number of individuals in the wild, which has been *either*:

i) observed as ongoing or as having occurred in the past (but with a potential to resume) ; or

ii) inferred or projected on the basis of any one of the following:

- a decrease in area or quality of habitat; or

- levels or patterns of exploitation; or

- threats from extrinsic factors such as the effects of pathogens, competitors, parasites, predators, hybridization, introduced species and the effects of toxins and pollutants; or

- decreasing reproductive potential.

D. The status of the species is such that if the species is not included in Appendix I, it is likely to satisfy one or more of the above criteria within a period of five years. Annex 2a

Criteria for the Inclusion of Species in Appendix II

in Accordance with Article II, Paragraph 2(a)

The following criteria must be read in conjunction with the definitions, notes and guidelines listed in Annex 5.

A species should be included in Appendix II when either of the following criteria is met.

A. It is known, inferred or projected that unless trade in the species is subject to strict regulation, it will meet at least one of the criteria listed in Annex 1 in the near future.

B. It is known, inferred or projected that the harvesting of specimens from the wild for international trade has, or may have, a detrimental impact on the species by *either*:

i) exceeding, over an extended period, the level that can be continued in perpetuity; *or*

ii) reducing it to a population level at which its survival would be threatened by other influences.

Annex 2b

Criteria for the Inclusion of Species in Appendix II

in Accordance with Article II, Paragraph 2(b)

Species should be included in Appendix II in accordance with Article II, paragraph 2(b) , if they satisfy *one* of the following criteria.

A. The specimens resemble specimens of a species included in Appendix II under the provisions of Article II, paragraph 2(a) , or in Appendix I, such that a non-expert, with reasonable effort, is unlikely to be able to distinguish between them.

B. The species is a member of a taxon of which most of the species are included in Appendix II under the provisions of Article II, paragraph 2(a) , or in Appendix I, and the remaining species must be included to bring trade in specimens of the others under effective control.

Annex 3

Special Cases

Split-Listing

Listing of a species in more than one appendix should be avoided in general in view of the enforcement problems it creates. When split-listing does occur, this should generally be on the basis of national or continental populations, rather than subspecies. Split-listings that place some populations of a species in the appendices, and the rest outside the appendices, should normally not be permitted.

For species outside the jurisdiction of any State, listing in the appendices should use the terms used in other relevant international agreements, if any, to define the population. If no such international agreement exists, then the appendices should define the population by region or by geographic co-ordinates.

Taxonomic names below the species level should not be used in the appendices unless the taxon in question is highly distinctive and the use of the name would not give rise to enforcement problems.

Higher Taxa

If all species of a higher taxon are included in Appendix I or II, they should be included under the name of the higher taxon. If some species in a higher taxon are included in Appendix I or II and all the rest in the other appendix, the latter species should be included under the name of the higher taxon, with an appropriate annotation. Annex 4

Precautionary Measures

A. When considering proposals to amend the appendices, the Parties shall, in the case of uncertainty, either as regards the status of a species or as regards the impact of trade on the conservation of a species, act in the best interest of the conservation of the species.

B.1. No species listed in Appendix I shall be removed from the appendices unless it has been first transferred to Appendix II, with monitoring of any impact of trade on the species for at least two intervals between meetings of the Conference of the Parties.

2. Species included in Appendix I should only be considered for transfer to Appendix II if they do not satisfy the relevant criteria in Annex 1. Even if such species do not satisfy the relevant criteria in Annex 1, they should be retained in Appendix I unless they satisfy one of the following criteria:

a. the species is not in demand for international trade, nor is its transfer to Appendix II likely to stimulate trade in, or cause enforcement problems for, any other species included in Appendix I; or

b. the species is likely to be in demand for trade, but its management is such that the Conference of the Parties is satisfied with:

i) implementation by the range States of the requirements of the Convention, in particular Article IV; and

ii) appropriate enforcement controls and compliance with the requirements of the Convention; or

c. an integral part of the amendment proposal is an export quota approved by the Conference of the Parties, based on management measures described in the supporting statement of the amendment proposal, provided that effective enforcement controls are in place; or

d. an integral part of the amendment proposal is an export quota approved by the Conference of the Parties for a specified period of time, based on management measures described in the supporting statement of the amendment proposal, provided that effective enforcement controls are in place; or

e. a ranching proposal is submitted consistent with the applicable Resolutions of the Conference of the Parties and is approved.

3. No proposal for transfer of a species from Appendix I to Appendix II with an export quota shall be considered from a Party that has entered a reservation for the species in question, unless that Party agrees to remove the reservation within 90 days of the adoption of the amendment.

4. No species should be deleted from Appendix II if such deletion would be likely to result in it qualifying for inclusion in the appendices in the near future.

C. The following review procedures shall apply when a species is transferred to Appendix II pursuant to paragraphs B 2.c. and B 2.d. above.

1. Where the Plants Committee, the Animals Committee or a Party becomes aware of problems in compliance with the management measures and export quotas of another Party, the Secretariat shall be informed and, if the Secretariat fails to resolve the matter satisfactorily, it shall inform the Standing Committee which may, after consultation with the Party concerned, recommend to all Parties that they suspend trade with that Party in specimens of CITES-listed species, and/or request the Depositary Government to prepare a proposal to transfer the population back to Appendix I.

2. If, on review of a quota and its supporting management measures, the Animals or Plants Committee encounters any problems with compliance or potential detriment to a species, the relevant Committee shall request the Depositary Government to prepare a proposal for appropriate remedial action.

D. If the proponent Party wishes to renew, amend or delete a quota established pursuant to paragraph B 2.d. above, it shall submit an appropriate proposal for consideration at the next meeting of the Conference of the Parties. In anticipation of there being no such proposal submitted, the Depositary Government shall submit a proposal for consideration at the next meeting of the Conference of the Parties to impose a zero quota.

E. Species that are regarded as possibly extinct should not be deleted from Appendix I if they may be affected by trade in the event of their rediscovery; these species should be annotated in the appendices as "p.e." (i.e. possibly extinct) .

Annex 5

Definitions, Notes and Guidelines

Area of distribution

Area of distribution is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of occurrence, excluding cases of vagrancy (though inferring and projecting area of occurrence should be undertaken carefully, and in a precautionary manner) . The area within the imaginary boundary should, however, exclude significant areas where the species does not occur, and so in defining area of distribution, account should be taken of discontinuities or disjunctions in the spatial distribution of species. For migratory species, the area of distribution is the smallest area essential at any stage for the survival of that species (e.g. colonial nesting sites, feeding sites for migratory taxa, etc.). For some species in trade where data exist to make an estimate, a figure of less than 10,000 km2 has been found to be an appropriate guideline (not a threshold) of what constitutes a restricted area of distribution. However, this figure is presented only as an example, since it is impossible to give numerical values that are applicable to all taxa. There will be many cases where this numerical guideline does not apply.

Decline

A decline is a reduction in the number of individuals, or a decrease of the area of distribution, the causes of which are either not known or not adequately controlled. It need not necessarily still be continuing. Natural fluctuations will not normally count as part of a decline, but an observed decline should not be considered part of a natural fluctuation unless there is evidence for this. A decline that is the result of a harvesting programme that reduces the population to a planned level, not detrimental to the survival of the species, is not covered by the term "decline". For some species in trade where data exist to make an estimate, a decrease of 50% or more in total within 5 years or two generations, whichever is the longer, has been found to be an appropriate guideline (not a threshold) of what constitutes a decline. A guideline (not a threshold) of what constitutes a decline in a small wild population could be 20% or more in total within ten years or three generations, whichever is the longer. However, both these figures are presented only as examples, since it is impossible to give numerical values that are applicable to all taxa. There will be many cases where these numerical guidelines do not apply.

Extended period

The meaning of the term extended period will vary according to the biological characteristics of the species. Selection of the period will depend upon the observed pattern of natural fluctuations in the abundance of the species and on whether the number of specimens removed from the wild is consistent with a sustainable harvesting programme that is based on these natural fluctuations.

Fragmentation

Fragmentation refers to the case where most individuals within a taxon are found in small and relatively isolated sub-populations, which increases the probability that these small sub-populations will become extinct and the opportunities for re-establishment are limited. For some species in trade where data exist to make anestimate, an area of distribution of 500 km2 or less for each subpopulation has been found to be an appropriate guideline (not a threshold) of what constitutes fragmentation. However, this figure is presented only as an example, since it is impossible to give numerical values that are applicable to all taxa. There will be many cases where this numerical guideline does not apply.

Generation

Generation is measured as the average age of parents in the population; except in the case of species that breed only once a lifetime, this will always be longer than the age at maturity.

Large fluctuations

Large fluctuations occur in a number of species where the population size or area of distribution varies widely, rapidly and frequently, with a variation greater than one order of magnitude. For some species in trade where data exist to make an estimate, a figure of two years or less has been found to be an appropriate guideline (not a threshold) of what constitutes a short-term fluctuation. However, this figure is presented only as an example, since it is impossible to give numerical values that are applicable to all taxa. There will be many cases where this numerical guideline does not apply.

Population

Population is measured as the total number of individuals of the species (as defined in Article I of the Convention) . In the case of species biologically dependent on other species for all or part of their life cycles, biologically appropriate values for the host species should be chosen. For some species in trade where data exist to make an estimate, a figure of less than 5,000 individuals has been found to be an appropriate guideline (not a threshold) of what constitutes a small wild population. However, this figure is presented only as an example, since it is impossible to give numerical values that are applicable to all taxa. There will be many cases where this numerical guideline does not apply.

Possibly extinct

A species is presumed extinct when exhaustive surveys in known and/or suspected habitat, and at appropriate times (diurnal, seasonal, annual) , throughout its historic range have failed to record an individual. Before a species can be declared possibly extinct, surveys should take place over a time frame appropriate to the species's life cycle and life form.

Sub-populations

Sub-populations are defined as geographically or otherwise distinct groups in the population between which there is little exchange. For some species in trade where data exist to make an estimate, a figure of less than 500 individuals has been found to be an appropriate guideline (not a threshold) of what constitutes a very small sub-population. However, this figure is presented only as an example, since it is impossible to give numerical values that are applicable to all taxa. There will be many cases where this numerical guideline does not apply.

Threatened with extinction

Threatened with extinction is defined by Annex 1. The vulnerability of a species to threats of extinction depends on its population demographics, biological characteristics, such as body size, trophic level, life cycle, breeding structure or social structure requirements for successful reproduction, and vulnerability due to aggregating habits, natural fluctuations in population size (dimensions of time and magnitude) , residency/migratory patterns. This makes it impossible to give numerical values for population size or area of distribution that are applicable to all taxa.
Annex 6

Format for Proposals to Amend the Appendices

The following provides information and instructions for the submission of a proposal to amend the appendices and the appropriate supporting statement. Proponents should be guided by the need to provide to the Conference of the Parties sufficient information, of sufficient quality and in sufficient detail (to the extent available) , to allow the Conference to judge the proposal against the criteria established for the proposed action. This means that the relevant published and unpublished sources of information should be used, but acknowledges that for some species the amount of scientific information will be limited. Furthermore, this means that it may not be

possible to address all elements of the Proposal Format.

A. *Proposal*

The proponent should indicate the intent of the specific action being proposed and the relevant criteria against which the proposal is to be judged.

___Inclusion in Appendix I

___ Inclusion in Appendix II

___in accordance with Article II 2(a)

___in accordance with Article II 2(b)

___ for reasons of look-alike problems (in this case, the name of the similar species already included in the appendices should be given in section C 7. Additional Remarks)

___ for other reasons (such as those referred to in Annex 3 to this Resolution)

___Transfer from Appendix I to Appendix II in accordance with a precautionary measure specified in Annex 4 to this Resolution

___Deletion from Appendix II

___Other action (provide explanation)

B. *Proponent*

The proponent may only be a Party to the Convention, in accordance with Article XV of the Convention.

C. *Supporting Statement*

1. *Taxonomy*

The proponent should provide sufficient information to allow the Conference of the Parties to identify clearly the taxon that is the subject of the proposal.

1.1 Class

1.2 Order

1.3 Family

1.4 Genus, species or subspecies, including author and year

If the species concerned is included in one of the standard lists of names or taxonomic references adopted by the Conference of the Parties, the name provided by that reference should be entered here. If the species concerned is not included in one of the adopted standard references, the proponent should provide references as to the source of the name used.

1.5 Scientific synonyms

1.6 Common names

The proponent should provide information on other scientific names or synonyms under which the species concerned may be known currently, especially if these names are used

in the trade in the species.

1.7 Code numbers

If the species concerned is already included in the appendices, refer to the code numbers in the CITES Identification Manual.

2. *Biological Parameters*

The information required in this section is a summary of the principal results of surveys, literature searches, and other studies. The references used must be listed in section 8. of the proposal. It is understood that the quality of information available will vary a lot. But these instructions indicate the type of information that is required.

2.1 Distribution

Give an estimate of the current range of the species, and specify the references used. Specify the types of habitats occupied and, if possible, the extent of each habitat type over the range of the species. If possible, provide information to indicate whether or not the distribution of the species is continuous and, if it is not, indicate to what degree it is fragmented.

2.2 Habitat availability

Give information on the nature, rate and extent of habitat loss and/or degradation, if possible with information from at least three points in time, and give the basis for future projections.

2.3 Population status

Give an estimate of the total population or number of individuals with: i) date and nature of census; and ii) justification for any inferences made about total population size and/or number of individuals. Give the number of sub-populations, where possible their estimated size, and the date and method of census. Give an estimate of, or information on, the size of the population in captivity.

2.4 Population trends

Basic, quantitative and referenced information should be provided on whether the population of the species is increasing, stable or declining. The period over which the trend, if any, has been measured should be indicated. If the species naturally undergoes marked fluctuations in population size, information should be provided to demonstrate that the trend transcends natural fluctuations. If generation-time has been used in estimating the trend, state how the generation-time has been estimated.

2.5 Geographic trends

Give data on the nature, rate and extent of decrease in range area or number of sub-populations, if possible with information from at least three points in time. Give data on the degree and periodicity of fluctuations in range area or number of sub-populations, if possible with information from at least three points in time.

2.6 Role of the species in its ecosystem

Give information about the specific relationship that exists between this species and others living in the same ecosystem. Indicate the possible consequences of depletion of the population of the species proposed for listing, for those depending on or associated with it.

2.7 Threats

Specify the nature, intensity and extent of threats (e.g. habitat loss and/or degradation; exploitation; effects of introduced species, competitors, pathogens, parasites, predators, hybridization and the effects of toxins and pollutants; etc) , if possible with information from at least three points in time, and give the basis for future projections.

3. *Utilization and Trade*

3.1 National utilization

Give data on the level of exploitation, indicating trends if possible. Specify the purposes of exploitation. Provide details of harvest methods. Assess the importance of the offtake and the relationship between national and international trade.

Provide details of any stockpiles known to exist, and the measures that might be taken to dispose of them.

Where applicable, provide details of commercial captive-breeding or artificial propagation operations for the species in question, including the size of captive stock and the production, and the extent to which these operations are either contributing to a conservation programme or meeting a demand that would otherwise be met by specimens from the wild.

3.2 Legal international trade

Quantify the level of international trade, identifying the source of statistics used (e.g. Customs statistics, CITES annual report data, FAO data, industry reports, etc.). Provide justification for inferences made about trade levels. Provide information about the nature of the trade (e.g. primarily for commercial purposes, primarily live specimens, primarily parts and derivatives, primarily of captive-bred or artificially propagated specimens, etc.) and about how the proposed amendment is expected to affect the nature of the trade.

3.3 Illegal trade

To the extent possible, quantify the level of illegal trade, including national and international trade, and provide details of the nature of this trade. Assess the relative importance of this trade as it relates to legal offtake for national use or legal international trade. Provide information on how the proposed amendment is expected to affect the nature of the trade.

3.4 Actual or potential trade impacts

Comment on the actual or potential trade impacts of the proposed amendment on the species in question, and on the reason for believing that trade might become a threat to the survival of the species in question, or on whether trade may be beneficial to the survival of the species in question. Where applicable, include information on the actual or potential ecological impacts of the change in trade controls.

3.5 Captive breeding or artificial propagation for commercial purposes (outside country of origin)

To the extent possible, provide information on the extent of captive breeding or artificial propagation outside the country or countries of origin.

4. *Conservation and Management*

4.1 Legal status

4.1.1 National

Provide details of legislation relating to the conservation of the species, including its habitat, either specifically (such as endangered species legislation) or generally (such

as legislation on wildlife and accompanying regulations) . Indicate the nature of legal protection (i.e. is the species totally protected, or whether harvesting is regulated or controlled) . Provide an assessment of the effectiveness of this legislation in ensuring the protection and/or wise management of the species.

Provide similar information relating to legislation governing the management of trade in the species in question. Provide an assessment of the effectiveness of this legislation in controlling illegal trade in the species.

4.1.2 International

In preparing proposals to amend the appendices, consult in advance with the relevant competent intergovernmental organizations responsible for the conservation and management of the species, and take their views fully into account.

Provide details of international instruments relating to the species in question, including the nature of the protection afforded by such instruments. Provide an assessment of the effectiveness of these instruments in ensuring the protection and/or wise management of the species.

Provide similar information relating to international instruments relating to the management of trade in the species in question. Provide an assessment of the effectiveness of these instruments in controlling illegal trade in the species.

4.2 Species management

4.2.1 Population monitoring

Provide details of programmes in place in the range States to monitor the status of wild populations and the sustainability of offtake from the wild. Such programmes might be under the auspices of government or through non-governmental organizations or scientific institutions. Indicate the extent to which non-governmental monitoring programmes link to governmental decision-making.

4.2.2 Habitat conservation

Provide details of programmes in place in the range States to protect the habitat of the species in question, both inside and outside protected areas. Provide details about the nature of the protection offered by the programmes in question.

4.2.3 Management measures

Provide details of programmes in place in the range States to manage populations of the species in question (e.g. controlled harvest from the wild, captive breeding or artificial propagation, reintroduction, ranching, quota systems, etc.). Include, where appropriate, details such as planned harvest rates, planned population sizes, mechanisms for ensuring that the advice of those responsible for management of the species is taken into account, mechanisms and criteria for the establishment of quotas, etc. Where applicable, provide details of any mechanisms used to ensure a return from utilization of the species in question to conservation and/or management programmes (e.g. pricing schemes, community ownership plans, export tariffs, etc.).

4.3 Control measures

4.3.1 International trade

Provide information regarding measures in place, in addition to CITES, to control the movement of specimens of the species in question across international borders. Include information about marking schemes in place, if any.

4.3.2 Domestic measures

Provide information regarding controls in the range States aimed at ensuring a sustainable harvest from the wild of the species in question. Include information on education, compliance and enforcement activities as appropriate and an assessment of the effectiveness of the programmes.

5. *Information on Similar Species*

Give the names of species of which specimens in trade look very similar, state how they may be distinguished, and explain whether or not it is reasonable to expect an informed non-expert to be able to make a firm identification. Outline measures that would need to be taken to handle potential difficulties in distinguishing between specimens of this and similar species.

If the proposed amendment would be likely to lead to an increase in trade in the species concerned, explain why this would not result in unsustainable trade in similar species.

6. *Other Comments*

Provide details of the consultation undertaken to secure comments on the proposal from the range States of the species, either through direct contact or via the CITES Secretariat. Comments received from each country should be provided. Where comments were sought but not received in sufficient time to enable their inclusion in the supporting statement, this should be noted, as well as the date of the request.

In cases of consultation with Parties via the CITES Secretariat, information from range States and non-range States should be separated.

In the case of species that are also managed through other international agreements or intergovernmental bodies, provide details of the consultations undertaken to obtain the comments of those organizations or bodies, and indicate how those comments have been addressed in the supporting statement. Where comments were sought but not received in sufficient time to enable their inclusion in the supporting statement, this should be noted, as well as the date of the request.

7. *Additional Remarks*

8. *References*

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

Ninth Meeting of the Conference of the Parties

Fort Lauderdale (United States of America) , 7 to 18 November 1994

RESOLUTION OF THE CONFERENCE OF THE PARTIES

Conf. 9.25 (Rev.)

Inclusion of Species in Appendix III

RECOGNIZING that Article XVI, paragraph 1, provides Parties with the right to list species in Appendix III;

RECALLING that Article II, paragraph 3, provides for the inclusion of species in Appendix III by a Party only if it needs the co-operation of other Parties in the control of trade;

RECOGNIZING that, for a species with a natural distribution that goes beyond the territory of the Party requesting its inclusion in Appendix III and its immediate neighbours, such inclusion

may not necessarily need to cover all range States;

NOTING that Resolution Conf. 1.5, adopted at the first meeting of the Conference of the Parties (Berne, 1976), recommends that all readily recognizable parts and derivatives of species included in Appendix III be covered;

NOTING that Resolution Conf. 5.22, adopted at the fifth meeting of the Conference of the Parties (Buenos Aires, 1985), recommends criteria for the inclusion of species in Appendix III;

NOTING that Resolution Conf. 7.15, adopted at the seventh meeting of the Conference of the Parties (Lausanne, 1989), encourages Parties to declare inclusion of species in Appendix III or withdrawals therefrom at meetings of the Conference of the Parties;

NOTING that Resolution Conf. 8.23, adopted at the eighth meeting of the Conference of the Parties (Kyoto, 1992), recommends *inter alia* that, before submitting a species for inclusion in Appendix III, Parties request the advice of the Animals Committee or the Plants Committee regarding the trade status and biological status of that species;

AWARE that, at the moment, Appendix III contains species that occur rarely or not at all in international trade and for which the Convention is therefore not effective;

OBSERVING that many Parties are unwilling to take on the administrative burden of implementing the provisions of the Convention with regard to Appendix III;

BELIEVING that this unsatisfactory implementation arises because the Parties are not fully convinced of the effectiveness of Appendix III;

RECOGNIZING that Resolution Conf. 1.5, paragraph 5, is deficient in not addressing the need for adequate implementation of domestic legislation;

RECALLING the wish of the Conference of the Parties, expressed at its eighth meeting (Kyoto, 1992), to reduce the number of its Resolutions;

CONSIDERING that for the effective implementation of the Convention with regard to Appendix III it is desirable to give clear guidelines for including species in Appendix III that reflect the aims of the Convention expressed in its Preamble;

THE CONFERENCE OF THE PARTIES TO THE CONVENTION

RECOMMENDS that, when considering the inclusion of a species in Appendix III, a Party:

a) ensure that:

i) the species is native to its country;

ii) its national regulations are adequate to prevent or restrict exploitation and to control trade, for the conservation of the species, and include penalties for illegal taking, trade or possession and provisions for confiscation;

iii) its national enforcement measures are adequate to implement these regulations; and

iv) for species that are traded for their timber, consideration is given to including only that geographically separate population of the species for which the inclusion would best achieve the aims of the Convention and its effective implementation, particularly with regard to the conservation of the species in the country requesting its inclusion in Appendix III;

b) determine that, notwithstanding these regulations and measures, there are indications that the co-operation of the Parties is needed to control illegal trade;

c) inform the Management Authorities of other range States, the known major importing countries, the Secretariat and the Animals Committee or the Plants Committee that it is considering the inclusion of the species in Appendix III and seek their opinion on the potential effects of such inclusion; and

d) after due consultation, and having satisfied itself that the biological status and trade status of the species justify the action, submit to the Secretariat the name of the species it wishes to include in Appendix III;

RECOMMENDS further that, unless there is an urgent need for inclusion, a Party intending to include a species in or delete a species from Appendix III inform the Secretariat of its intention at least three months before a meeting of the Conference of the Parties, in order that the Parties are informed of the amendment in time to ensure that it enters into force on the same date as amendments to Appendices I and II adopted at the meeting;

DIRECTS the Secretariat:

a) to publish the changed Appendices I, II and III together after each meeting of the Conference of the Parties, or at other times when warranted; and

b) before communicating to Parties the inclusion of a species in Appendix III, to ensure that copies of all relevant national laws and regulations have been received from the Party concerned in accordance with paragraph 4 of Article XVI;

REQUESTS the Animals Committee and the Plants Committee to assist Parties if necessary in reviewing the status of species in Appendix III, subject to available funding;

URGES Parties having included species in Appendix III to periodically review the status of these species and, taking into account these guidelines and any recommendations of the Animals and Plants Committees, to consider the necessity to maintain them in that appendix; and

REPEALS the Resolutions, or parts thereof, listed hereunder:

a) Resolution Conf. 1.5 (Berne, 1976) - Recommendations Concerning the Interpretation and implementation of Certain Provisions of the Convention - paragraphs 3, 4 and 5;

b) Resolution Conf. 5.22 (Buenos Aires, 1985) - Criteria for the Inclusion of Species in Appendix III - paragraphs a) and b) under RECOMMENDS and the paragraph under REQUESTS;

c) Resolution Conf. 7.15 (Lausanne, 1989) - Amendments to Appendix III; and

d) Resolution Conf. 8.23 (Kyoto, 1992) - Review of Appendix III.

For further information please write to:
CITES Secretariat, 15, chemin des Anémones, CH-1219 Châtelaine-Genève, Suisse. Tel. (+4122) 979 9139/40, fax (+4122) 797 3417
Email: cites@unep.ch
Document URL: *http:// www.wcmc.org.uk /CITES/english/eresol921.htm*
Revision date: *12-12-1997*
Current date: *25-02-1998*

Annex 4B

CHARACTERISTICS OF SOUTHERN BLUEFIN TUNA RELATIVE TO CITES APPENDICES CRITERIA

A REVIEW COMPILED BY CSIRO AND BRS FOR THE BIODIVERSITY GROUP, ENVIRONMENT AUSTRALIA

NOVEMBER 1996

DIVISION OF FISHERIES

CONTENTS

PART 2: CITES APPENDICES, AND CHARACTERISTICS OF SBT IN RELATION TO THE CRITERIA FOR INCLUSION OF SPECIES ON THE APPENDICES

CHARACTERISTICS OF SOUTHERN BLUEFIN TUNA RELATIVE TO CITES APPENDICES CRITERIA: A Review Compiled by CSIRO and BRS for the Biodiversity Group, Environment Australia

SUMMARY

The criteria for inclusion of a species in appendices to the Convention on Trade in Endangered Species (CITES) focus on trade in the species; areas of its occurrence, and changes in the area over time; habitat change; numbers of individuals in the population or sub-populations, and changes over time; and reproductive potential. Characteristics of southern bluefin tuna (SBT) are reviewed relative to the criteria.

Inclusion on CITES Appendix 1 requires that a species is considered to be threatened with extinction and is, or may be, affected by trade. It is clear based on the importance of the commercial fisheries that SBT must be regarded as very significantly affected by trade. Four biological criteria are specified, the last allowing for the eventuality that, if not already meeting one of the prior three criteria, a species is likely to do so within a period of five years. It is sufficient if SBT meets just one of the biological criteria for it to warrant classification as threatened.

The first biological criterion is that the wild population is small. It is clear that SBT population sizes could not be regarded as 'small' as defined by CITES.

The second criterion is that the wild population has a restricted area of distribution. This does not apply for SBT because of the species' extremely broad temperature tolerance and wide distribution in the Southern Hemisphere.

The third criterion is that there has been an ongoing or potentially resuming decline in the number of individuals in the wild, or a decline is inferred or projected. If total population number of a species has decreased by 50% over two generations then it is appropriate to conclude that a decline has occurred. It is estimated that SBT population in 1991 was 30-57% of the 1966 population. The reduction occurred within two generations and is thus generally consistent with that guideline. This conclusion is reinforced by the fact that the largest catches taken from the stock occurred in 1960 and 1961, and these earlier catches have been estimated to have already resulted in a substantial decline.

The SBT population size in 1991 has been estimated because several years elapse before reliable estimates can be obtained of recruit abundance in a year (and hence of total population numbers then). This is not a limitation in relation to the adult component and current numbers can be estimated for the year for which the most recent catch-by-age data are available. By 1991 parent numbers had declined to 9-18% of the numbers in 1966. Their 1994 abundance was estimated to be 6-20% of the 1966 number. 1966 is used as a reference because the data available for estimating historical stock sizes prior to this time are considered less reliable. However, estimates based on the earlier catch data indicate that parent numbers were reduced by at least 50% between 1960 and 1966.

Two features should be noted. First, there is considerable variation in the range of estimates, both for total population number and for number of parents. Second, some assessments suggest that the number of parents in 1994 may have increased relative to 1991. Thus, some uncertainty exists as to whether or not the decline is still ongoing. In that context, a species should be listed as threatened if there is potential for resumption of the decline, or if it is inferred or projected on the basis of specified factors. Projections in 1995 generated a wide range of possible stock trends under the current exploitation regime, ranging from rapid increase to further decline. Marked differences exist among Japanese, Australian and New Zealand scientists as to the most likely range of interpretations. In effect, the future trend of the SBT stock under current catches is highly uncertain.

Interpretive information developed by CITES, includes comments on how to interpret decline. However, these comments do not provide any guidance for incorporating uncertainty in assessments and projections. The 'decline' criteria are phrased in deterministic rather than stochastic language. The main guideline available with respect to uncertainty is the requirement that parties to CITES considering proposals to amend the Appendices shall act in the best interests of the conservation of the species.

Inclusion on CITES Appendix 2a requires that trade is having, or is likely to have, a detrimental impact on a species. The first criterion is that unless trade is strictly regulated the species will soon qualify for inclusion in Appendix I. For SBT, the issue is whether without trade control there will be stock or reproductive potential declines. There is already a degree of control on 'trade' to the extent that strict catch quotas apply for the main resource users (Australia and Japan). Furthermore, the main market is located in Japan, which maintains import statistics to monitor product flow. The uncontrolled component of the global take is the catch by entities not party to the CCSBT, which is predominantly the catch by Taiwan, Korea and Indonesia. There is a need to control this non-CCSBT take. To the extent that it is imported into Japan, there is scope to monitor, and perhaps also apply some form of restraint. However, it is clear that markets other than Japan are developing for sashimi grade SBT, wherein monitoring and control are substantially more difficult. There are reports of an increase in domestic Taiwan markets, and the published Taiwanese statistics do not seem to reflect a sufficiently large catch to account for both Japanese imports and a Taiwan domestic market. Korean SBT-targeted activities have developed recently in the southern Indian Ocean. The Indonesian SBT catch is an important bycatch in its Indian Ocean longline fishery for yellowfin and bigeye tuna. A substantial portion of this bycatch is marketed in Indonesia as the quality of the meat is poor for sashimi. Potential exists for significant expansion of the Indonesian longline fishery because it targets a prolific and not fully exlpoited yellowfin and bigeye resource. A listing on Appendix 2 might improve prospects for identification of any such unreported catches (but not in domestic markets in Taiwan, which is not party to CITES). Estimates of non-CCSBT removals are already factored into VPAs and projections of future stock levels under present catches, but adjustment for potential increase catches have not been made.

The second criterion relative to Appendix 2 is that harvesting has, or may have, a detrimental impact by (i) exceeding sustainable yield over an extended period; or by (ii) reducing the species to a level where its survival would be threatened by other influences. Harvesting clearly exceeded sustainable yield over an extended period notably the 1950's, 1960's and early 1980's, but management measures have sought to reverse that trend. It cannot be determined reliably at present whether or not that is the case. There is no firm evidence addressing the likelihood that the SBT stock has been reduced to a level where it may be threatened by influences other than 'harvesting from the wild for international trade'. For SBT, it is unlikely that threats would be associated with availability of or access to sustaining habitat. Problems would likely be associated with school or aggregation size on the spawning grounds, or egg and larval production levels relative to inherent environmental variability. These are conjectural.

Inclusion on CITES Appendix 2b requires that a species is difficult to distinguish from a species listed on Appendix 1 or 2a, and hence needs special consideration. Two criteria are specified, and it is sufficient if a species meets just one for it to warrant inclusion. The first is that specimens of the species resemble specimens of a species included in Appendix 2a or Appendix I, such that a non-expert is unlikely to be able to distinguish between them. The second is that the species is a member of a taxon where most of the species are included in Appendix 2a or Appendix I. Currently neither applies in the case of SBT. However, if another *Thunnus* species became included on one of the Appendices then inclusion of SBT on Appendix 2b may be required because there can be considerable difficulty in distinguishing among the various *Thunnus* species, especially when specimens are in the form of processed frozen carcases, and especially where the distinction is between northern and southern bluefin.

CITES Appendix 3 is to include all species identified by a CITES party as subject to their regulation for preventing or restricting exploitation, and requiring cooperation of other CITES parties in the control of trade. SBT is already managed intensively within the Australian Fishing Zone under a quota management regime, and could be nominated. The existence of substantial catches by non-CCSBT countries provides a reason for seeking cooperation of other CITES parties in the control of trade.

CHARACTERISTICS OF SOUTHERN BLUEFIN TUNA RELATIVE TO CITES APPENDICES CRITERIA: A Review Compiled by CSIRO and BRS for the Biodiversity Group, Environment Australia

INTRODUCTION

The criteria for inclusion of species in appendices to the Convention on Trade in Endangered Species (CITES) focus on:

- trade in the species
- areas of occurrence of them, and changes over time
- habitat changes
- numbers of individuals in the population or sub-populations, and changes over time
- reproductive potential

This paper reviews characteristics of southern bluefin tuna (SBT; *Thunnus maccoyii*) in relation to the criteria outlined in Annexes 1, 2a and 2b of the Resolution Conf 9.24' of the Conference of the Parties. The resolution represents the outcome of a review in November 1994 by the CITES Parties of the criteria for inclusion of species in Appendices to the Convention. The paper first discusses the main issues listed above in relation to SBT and then looks specifically at each component of the Appendices criteria in relation to SBT.

PART 1: CRITERIA ISSUES

TRADE IN THE SPECIES

Development of the SBT Fishery

Trade is defined in the CITES convention as export, re-export, import and introduction from the sea, the last meaning transport into a State from marine waters not under the jurisdiction of any state. SBT has long been an important commercial species in trade. A SBT-target surface fishery has operated in Australian since the 1950s, and there were incidental troll catches prior (Caton, 1994). Expansion of Japanese longlining beyond the western North Pacific occurred during the 1950s. By the mid 1950s there were intensive operations in the eastern Indian Ocean (Ward, 1996), with the historical peak in SBT longline catches taken there in the 1960s. There has been a progressive decline in the global catch weight since then (Table 1.), even though there was a major increase in the Australian surface fishery (troll, pole and purse-seine) catches during the late 1970s and early 1980s, and expansion of Japanese longline fishing into the Southern Ocean between about South Africa and New Zealand.

Australian catches of SBT developed as a means of satisfying a demand for canning species. The canned product was marketed both domestically and internationally. A component of the catch was also exported whole to canneries overseas. In general expansion of the Japanese longline fishery was similarly prompted by a demand for canning species, in this case albacore for export to the USA, but Indian Ocean SBT catches were marketed as sashimi. When fishing operations spread to cooler areas of the Southern Ocean, where fish have a high fat content, SBT became a prime sashimi target like the bluefins of the North Pacific and North Atlantic. The fishing through the 1960s to the 1980s caused a significant reduction in the parent stock (ie the reproductive part of the population), and management through catch quotas were introduced in the 1980's (Caton et al 1990).

Quota Management and its Impact on the Fishery

Quota management was introduced on an informal basis among Australia, Japan and New Zealand (Franklin 1987) in the mid 1980s. After a decade of informal arrangements, the three countries developed and signed the Convention for the Conservation of Southern Bluefin Tuna (CCSBT) in May 1993. The objective of the Convention is to ensure, through appropriate management, the conservation and optimum utilization of southern bluefin tuna. The Commission established under the Convention is required to decide upon a total allowable catch, unless advised of other appropriate measures by its Scientific Committee, and its allocation among parties to the Convention. Scope exists for parties other than Australia, Japan and New Zealand, and whose vessels engage in fishing for SBT or through whose economic or fishery zone SBT migrates, to accede to the Convention.

After introduction of the quota management the Australian industry redirected their product to the Japanese sashimi market. Quotas did not restrict Japanese catches at first because their early quotas were more than the fleet could catch. Major quota reductions in 1988 and 1989, however, resulted in a limitation of Japanese operations.

Catches of SBT by Entities not Party to CCSBT

There was a rapid and immediate increase in the SBT catch of the Taiwanese longline fleet in the late 1980's, coincident with quota restrictions on the Japanese fleet (Figure 2.). The Taiwanese catch increased to 1000 - 1300t per year (Table 1.), and has remained at about that level since. The Taiwanese catch is mostly exported frozen to the Japanese sashimi market. There are indications of a growing domestic sashimi market in Taiwan, but it appears that the main domestic demand is for fresh-chilled rather than frozen product (Haward and Bergin 1996). The scope to domestically sell the frozen SBT is apparently limited to a small number of restaurants specializing in high quality sashimi.

An increase in Korean fishing that targets SBT has also occurred (Haward and Bergin op. cit.), but at present it appears that only a few vessels are involved. The annual catch in 1995 was estimated to be in the order of 100 t to 150 t but a rapid increase has been in progress during 1996 (Japan Tariff Association, various). There is a rapidly-growing domestic market for frozen sashimi tuna (primarily yellowfin and bigeye) in Korea, which could be an outlet for SBT.

The other recent entrant to the SBT fishing, and making some use of the Japanese sashimi market, is Indonesia (Figure 1; Table 1.). It takes a SBT by-catch from its developing domestic, and Indonesia/Taiwan joint venture, longline operations in the Indian Ocean. (Figure 2.). The SBT catch is a small (<5%) fraction of the total tuna catch, which is mainly bigeye and yellowfin tuna (Bahar and Naamin, 1989). Nevertheless SBT is seen as a valuable component of the catch, and processed weight tonnage reached 1204 t (816 t exported) in 1993 and 805 t (449 t exported) in 1994. The decrease perhaps reflects a decline in effort in the fishery after 1993 (Davis and Farley, 1995). The Japanese fresh sashimi market is one outlet for exported fish.

The SBT tonnage (in processed weight) reported in Japanese import statistics (Japan Tariff Association, various) as imported annually from Indonesia was 245 t in 1993, 281 t in 1994 and 208 t in 1995. Polacheck et al. (1995) state: "The results from this [catch monitoring programme in Bali] suggest that only about 60% of the SBT landed are actually exported. Further, the results suggests that in 1993 and 1994 that only 30 to 63% of the SBT exported from Indonesia was recorded within the Japanese import statistics. Part of the difference is due to the fact that only a fraction of the SBT exported from Indonesia is sent to Japan. Another factor may be some of the exports are sent as loins. The actual weight of these fish would be under-reported in the import statistics while the data collected under the collaborative program should reflect the actual processed weights. There is also the possibility of inaccuracies in import statistics. Overall, the large fraction of unaccounted

catch from Indonesia (eg about 40% of the catch) is a source of concern. To the extent that the difference may be due to inaccuracies in the import statistics raises the possibility that the non-CCSBT catch from other states (Table 1.) which are based on these import statistics) could be substantially underestimated."

SBT Catch Statistics

The Australian, Japanese and New Zealand SBT catch statistics of (Table 1.) have been provided to CCSBT by members of the Commission. The estimates of catches by non-trilateral countries (Table 1.) are in the main sourced from Japanese import statistics; however, the details for Indonesia are based on Australia/Indonesia joint monitoring of SBT catches there, taking into account catches not destined for the Japanese market.

The catch series for Australia were developed originally by CSIRO from domestic fish cannery records. After quota management was introduced in 1983/84, catch statistics were developed from the quota monitoring database. There were very few cannery outlets and virtually no other marketing outlets in pre-quota times so monitoring was relatively simple. There was no obvious incentive for mis-reporting of throughput. Once catch limits were adopted and implemented by way of a system of individual transferable quotas (Franklin 1987), it became necessary for individuals to hold quota to take any SBT, even as by-catch. This generated some incentive for illegal catches and sales, but countering this was a strong incentive on the part of quota owners or lessors, who had paid for that privilege, for a degree of 'self-policing' to prevent quota evasion, and this was re-enforced by compliance monitoring.

Australia first adopted a quota (unilaterally) in 1983. Since then, catch has always remained below the limit set (an apparent catch in excess of quota during the calendar year 1993 was not an overcatch; the catch included components from two quota years).

Japanese catch statistics were developed from logbook collections and published in the 'yellow book' series until 1980 (Japan Fisheries Agency, various). The progressive introduction of 200-nautical-mile fishing zones towards the end of the 1970s, the establishment of access fees based on levels of catches within the newly-established zones, and the development of access restrictions based on the extent of interaction between Japanese longline operations and domestic resource users, and the development of competing longline fleets with an interest in knowing about Japanese fishing patterns, provided an incentive for withholding Japanese catch and effort information. Japan ceased publication and distribution of the 'yellow book' catch and effort in 1981. Despite continuing to withhold publication of the data, Japan has been particularly cooperative in permitting Australian scientists access to the subsequent years' 'yellow book' data for scientific analysis, and furthermore, has cooperated generously in allowing access in Japan to finer scale (daily logbook) data for collaborative scientific analysis.

The Japanese catch failed to reach the allocated quota during the 1980s despite continuing high levels of fishing effort. In 1989, when the quota was reduced, catch exceeded quota, and this continued each year (by 1000 t in 1990) until 1994.

Japan also provides a source of information on catches by other countries, because it provides the main global market for sashimi grade tuna. Import statistics have been maintained routinely. Unfortunately SBT is grouped together with northern bluefin tuna (NBT) until 1992. For some countries of origin, with bluefin catches known to be mainly or totally SBT, it is possible to separate some of the SBT catch despite this; but this method is not readily applied to Taiwan and Korea whose longliners operate globally and take both northern and southern bluefins.

Maintenance of detailed New Zealand catch statistics has presented difficulties recently because of a change in the agency responsible for their collation, but the domestic and joint venture catch is low relative to the Japanese, Australian, Taiwanese and Indonesian catches.

A revised catch series has just been developed for the 1987-1995 period (Talbot Murray, NIWA, pers. comm.). New Zealand first adopted a quota for SBT in 1980, but it was a developmental target rather than a limitation, and catch fell well below it. In 1988 the quota was reduced along with those of Australia and Japan. Subsequently, there have been occurrences of the combined New Zealand domestic and joint venture catch exceeding the allocated quota, but variability in annual catch is quite marked.

Catch statistics for non-CCSBT entities are less comprehensive and of more questionable reliability. The annual catches provided in (Table 1.) are based primarily on Japanese import statistics (Polacheck et al 1995), so take no account of any component forwarded to other countries or marketed in domestic outlets. Indonesia domestically markets SBT unsuitable for export as sashimi but these are accounted for in the figures in Table 1 (Farley and Davis, 1995). In Taiwan, landings of driftnet-caught SBT were probably destined for canning (Polacheck et al, 1992). There are annual catch statistics published by Taiwan (Taiwan Fisheries Bureau, various), but only recently was distinction made between northern and southern bluefin catches in official statistics, such that the 1993 and 1994 catch statistics (published in 1994 and 1995 respectively) have a separate category (#5006) for SBT. The Kaohsiung Municipal Government fisheries statistics (incorporated in the Taiwanese "greenbook") have now also separated SBT (Marcus Haward, pers. comm.).

In some years, the Taiwanese combined northern and southern bluefin catch reported (Taiwan Fisheries Bureau, various) was less than the reported imports from Taiwan into Japan (Japan Tariff Association, various). Since neither Taiwan nor Korea have reliable data on SBT catches they use Japan import statistics to verify their data (which both countries admit is of problematic quality) (Marcus Haward, pers. comm.).

Although Taiwanese longline logbooks had not discriminated between northern and southern bluefin, it is pertinent to note that Taiwan now maintains close daily contact with its longline fleet to monitor their SBT take. The new system of reporting is expected to increase reliability of Taiwanese SBT data (Marcus Haward, pers. comm.).

Non-Reported Catches

There are two aspects of 'taking' for trade which should be noted separately, namely the kill of fish and the traded component of that kill. Regulation of the latter can do little to address the non-traded component, yet the additional removals may be significant in terms of impact on stock. They can include intentional practices like high-grading and dumping, discarding of dead damaged (eg shark- or net-damaged) fish, or discarding of spoiled fish; or there may be unintentional or unsubstantiated kills, such as aborted purse seine sets, drop-out from driftnets, or losses of line sections. There is very little information on the quantity of fish killed through these practices, although they are known to occur from observer reports and feed back from the industry.

Formal catch statistics have been used for assessments on the assumption that they document total removals from the stock. The question remains as to how accurate and comprehensive these catch statistics are.

In Australian domestic operations, potential sources of under-representation, suggested mainly from anecdote might be:

- mortalities as a consequence of aborted purse seine sets. Some purse seine skippers and crew have described occasions during the height of the Australian surface fishery when mortalities occurred because of gear problems. Sometimes, complete sets were lost and a large proportion of the lost fish may have been dead. It is possible that similar events could still occur, but the risks are probably less because cage-rearing demands careful handling of fish at all times.

- high-grading of fish while pole fishing. Sometimes it is possible to select suitable size-composition schools when poling, but at others the fish are mixed and some selection occurs. If unsuitable fish are not returned promptly, then some of the returned fish may die.

- high-grading when longlining. This apparently varies considerably according to circumstances. For example there were anecdotal suggestions of extensive high-grading by some longliners for a period of about one month in 1994 when lease price of quota was expensive and returns for small fish were perceived to be lower than for larger fish. When it became apparent that it was not simply size which determined per-kilo price, the practice reportedly diminished.

- high-grading (ie selection of preferred fish and discard dead or alive of others) from purse seines or tow cages when catching fish for cage-rearing.

- aborted cage-rearing tows. Mortalities tend to occur when fish become trapped in cage net folds. There have been anecdotal reports of problems with tow cages, which have collapsed or split.

- recreational catches (which are not accounted for in quota monitoring procedures). SBT was a popular recreational fish in the 1970s off southern NSW but catches virtually ceased with the mid-1980s disappearance of surface aggregations. Regular angling competitions continue there but the SBT take is negligible. A recreational troll fishery occurs seasonally off eastern Tasmania, but catches are minor, with a very poor 1996 season. Western Australian operations have probably been more consistent, with operations occurring in the Rottnest Island and Albany areas. Generally, however, the catch levels are thought to be minor. Overall the catch is estimated to be quite small at present, but there is no overall limit on the recreational angling take of SBT, and so there is potential for an increase in recreational fishing if angling conditions improve off NSW.

There are also potential sources of under-representation of catches by other countries:

- Discarding of small fish occurs in the Japanese longline fleet, although verified data on the extent are limited. Japanese longliners reportedly have been instructed in 1995 and 1996 by Japan Tuna Federation to return all SBT less than 25 kg to the sea. Observations by Australian observers aboard Japanese longliners off Tasmania in 1990 reported that large quantities of small SBT were taken and discarded, and that fish were usually gaffed in the head before release (reports by AFMA fisheries observers).

- In the 1990 season of Japanese fishing in the Australian Fishing Zone, monitoring of catch rates of joint venture vessels with and without observers aboard suggested that catch under-reporting might be occurring. A surveillance exercise resulted in a successful prosecution for 60% under reporting. There were grounds to suspect that the practice had been more widespread. Monitoring of operations in following seasons suggested that the problem within the AFZ had been overcome.

- Taiwanese 1980s pelagic driftnet statistics were reportedly slow to reflect total levels of activity in the fishery because of a lack of awareness by logbook monitoring personnel of the extent to which the fishery had expanded and so under reporting is likely especially early in the history of the fishery. The fishery was concentrated in the central region of the southern Indian Ocean (Ardill, 1995), but operations of the fleet extended southward to include areas where Japanese Indian Ocean longline operations took sizeable amounts of SBT historically (Japan Fisheries Agency,

various; Ardill, 1995). So the unreported SBT catch could be expected to be substantial.

- There are indications that a small number of Korean vessels have operated in 1994 and 1995 on south-eastern Indian Ocean SBT grounds when Japanese vessels ceased seasonal operations there because of quota restraints (Haward and Bergin 1996). Formal maps of 1994 Korean Indian Ocean longline activity do not show operations in the region, suggesting that the logbook collection is not comprehensive.

The foregoing comments are basically anecdotal, so are not supportable by firm quantitative and verified evidence. They indicate potential sources of under-representation of catch levels in the fishery. Some could only be substantiated by routine presence of observers aboard a significant proportion of the fleet, because they relate to mortality additional to that represented by landings. Others (eg pelagic driftnet removals) relate to practices no longer in train. The important point is to recognize that as well as the component of the catch represented in trade, there may be an external source of fishing mortality.

SPECIES AND SUB-POPULATIONS

Identity

Information on the identity and affinities of SBT was provided by Caton (ed.) 1991. It remains current (Dr Peter Last, CSIRO Marine Laboratories, Hobart, pers. Comm.), and is provided as Annex 1 to this paper.

Discrimination among *Thunnus* Species

In comparing the species of *Thunnus*, Annex 1 draws attention to the superficial and anatomical differences between SBT, NBT and other *Thunnus* species. In trade, the identification must often be made from superficial characteristics of whole fish, gilled and gutted fish, or frozen carcasses. The main superficial characteristics of SBT are the yellow lateral keels on the tail. However, in the case of small fish – <50 cm fork length – the colour may be white, or keels may be translucent. Also, storage in brine can bleach colour from usually dark keels, and complicate discrimination (K. Williams, WW Fisheries Consultants, pers. comm.). It can at times be difficult for inexperienced observers to separate SBT from NBT and bigeye tunas using superficial characteristics. When the fish are presented as frozen carcasses, identification by inexperienced observers is considerably more difficult (M. Gleeson, Australian Fisheries Management Authority, pers. comm.).

Within the SBT fisheries a percentage of fish caught are identified by the fishers as NBT. For example, in 1989 almost 7% of bluefin species caught in New Zealand waters were recorded as NBT; in 1990 the percentage decreased to 1.4%; and in 1991, 2.0% were recorded as NBT (from MAF Fisheries unpublished data given in Smith et al 1994). The Australian Fisheries Management Authority has directed that all NBT caught within the Australian EEZ shall be deemed to be southern bluefin tuna for quota monitoring purposes (Anon. 1994 - see Ward et al 1995). The Australian solution does not, however, alleviate the problems of identifying and recording NBT in the catch records.

Biochemical genetic analysis of muscle tissues may provide an unambiguous method for the discrimination of *Thunnus* species. Smith et al (1994) found that SBT caught off New Zealand could be distinguished from NBT caught in Japanese waters using the enzyme markers glycerol-3-phosphate dehydrogenase (G3PDH) and malate dehydrogenase (MDH). Using these two markers only 2 of the 12 specimens recorded as NBT in the 1990 fishery were in fact *Thunnus thynnus*; of the 5 "northern" specimens tested from the 1991 and 1992 fisheries, all were *Thunnus maccoyii* (Smith et al 1994).

However, Elliott & Ward (1995) and Ward et al (1995) were unable to confirm the usefulness of G3PDH and MDH in discriminating between southern bluefin and northern bluefin tuna species. Instead the allozymes adenosine deaminase (ADA), guanine deaminase (GDA) and aconitate hydratase (sAH) were found, in a new study, to be discriminatory for SBT and NBT (Ward et al 1995). Only ADA is primarily expressed in muscle tissue and so this is the most useful allozyme for distinguishing between species when they have been gilled and gutted. By combining the use of ADA with glucose-6-phosphate isomerase (GPI-A), fumerate hydratase (FH) and phosphogluconate dehydrogenase (PGDH) expressed in muscle tissue, 99% of gutted specimens could be identified correctly (Ward et al 1995). Although most specimens can be rapidly identified using allozyme analysis, it does not permit discrimination with 100% accuracy; mitochondrial DNA analysis, however, will provide 100% accuracy in identification (Ward et al 1995). Any one of Ban I, Bcl I, Dra I, Pvu II and Xba I restriction enzymes will provide mtDNA separation (Ward et al 1995). Of 12 putative NBT (from southern Australian waters) identified by observers, Ward et al (1995) were able to unambiguously class six of these samples as *Thunnus thynnus*; the other six were genetically identified as *Thunnus maccoyii*. Furthermore, of the 525 presumptive SBT, only one was genetically identified as NBT.

Allozyme analysis requires tissue samples in good condition – i.e. fresh or frozen tissue (Elliott & Ward 1995). Mitochondrial DNA analysis, on the other hand, is less sensitive to tissue condition - positive identifications can be gained from tissue samples taken from cooked/canned and smoked tissue samples (P. Grewe pers. comm.). The development of accurate genetic tests has confirmed that northern and southern bluefin are easily confused, even by experienced fishers and observers.

Subpopulations of SBT

The length-frequency distribution of southern bluefin tuna caught off southern Western Australia in 1961/62 showed three distinct modal groups within each age group (Hynd 1965). At the time there were three possible explanations for these groups: repeated spawnings of a single stock, single spawnings of three stocks, or a combination of the two. The differences between the groups were initially thought to be inconsistent with the hypothesis of a single stock (Hynd 1965). More recent genetic evidence, however, suggests that there is a single spawning stock (Grewe et al in press). No significant allozyme or mitochondrial DNA separation was found between SBT collected from South African, Western Australian, South Australian and Tasmanian waters (Grewe et al in press).

Southern bluefin tuna are known to spawn south of Java in the east Indian Ocean (Yukinawa & Miyabe 1984; Yukinawa 1987; Caton 1991). Despite previous inferences that there may be two spawning grounds (Robins 1961), repeated sampling for larvae in alternative spawning areas with similar oceanographic parameters to the known spawning ground has found no other significant spawning grounds (Yukinawa & Miyabe 1984; Yukinawa 1987; Caton 1991). Furthermore, microprobe analyses of sagittal otolith composition of larval and juvenile SBT from the eastern Indian Ocean and adult SBT from the main fishery areas support the hypothesis of a single spawning ground (Proctor et al 1995). However, recent collections of adult SBT in the Flores and Bandes Seas, Indonesia, indicate that spawning may also occur in this region (Farley & Davis 1996), but no genetic or other comparisons have been made with the eastern Indian Ocean fish to test for stock separation.

The spawning season of SBT is protracted, extending from August through to June (Farley & Davis, 1996). Mature SBT have been recorded from the main spawning ground throughout the spawning season but commercial catch rate data indicates that the main spawning season is between October and March (Farley & Davis 1996). Within this period there are two peaks in spawning activity: one in October, the other in February (Farley & Davis 1996). Although

individuals appear to leave the spawning ground soon after spawning (Farley & Davis 1996), no genetic differentiation has been found between juveniles from the two different spawning peaks (Grewe et al in press).

Spatial separation of adult SBT may account for the two spawning peaks (Farley & Davis 1996). In recent decades the second spawning peak has been the larger (Farley & Davis 1996), while the Japanese CPUE data indicated that the first spawning peak was the larger in the 1960's and 1970's (Davis & Farley 1995). Farley and Davis (1996) postulate that the reduction in the size of the first spawning peak may be the result of fish which contribute to the first peak being under greater fishing pressure than those which contribute to the second peak. This implies a spatial structure in the population that is either weakly related to genetics or has yet to be genetically detected.

Some spatial structuring of the population is evident in tagged fish recovery data. Caton ed. 1991 states: 'Comparative [tagged SBT] recovery rates suggest that 2-year-old SBT off WA migrate at a higher rate into ocean waters than those off SA, supporting the hypothesis that a significant proportion of fish do not travel from the WA fishing grounds to the more eastern surface fishery grounds.' Ishizuka (1987) concluded from recaptures of 1960s and 1980s tagged SBT that eastern-tagged fish tend to remain more eastward and western-tagged more westward. From limited numbers of releases off eastern Tasmania, there have been no recoveries west of Australia (Preece and Polacheck 1996). Even so, tag recapture data shows two-way movement of juveniles, between Tasmania-NSW and areas from which more westwards-recovered fish have been released (Murphy and Majkowski, 1981; Preece and Polacheck, 1996). Ishizuka's observation has not been compared with results from the 1990-96 releases for which much more intensive tag recovery liaison activities were promoted among the Japanese longline fleet.

Some spatial structuring of the population is also suggested by the pattern of catch rate decline during development of the fishery. As each new broad fishing region was discovered and exploited it showed an initially very high catch rate followed by a rapid decline; the reduced catch rate in previously fished regions was not rapidly and completely transmitted to the more recently discovered regions. Fonteneau (World Fisheries Congress paper), suggests tuna may be more linked to a location than the concept of 'highly migratory species' would suggest, which would increase scope for localized fishing-down; this is basically conjectural in relation to SBT.

Regardless of whether or not SBT off eastern Australia and NZ represent a sub-stock or are 'spatially localized', there are strong indications of a period of reduced strength of young cohorts in areas east of 140E in the 1980's and early 1990's (see below under areas of occurrence). New Zealand reports of annual catch length composition patterns in the 1980s show this reduction (Murray and Dean 1995), as does catch length composition off Tasmania (Caton 1991; Caton, et al 1991, and Caton et al 1995) and collapse of the NSW surface fishery during the 1980's. Such substantial reductions were not seen in the Western part of the species range, again indicating some spatial structuring is present even if this does not appear to be due to existence of genetically identifiable sub populations.

AREAS OF OCCURRENCE

General distribution

On the basis of the distribution patterns of commercial catches, SBT occur between about 25S and 55S, latitudes extending to about 5S in the south-eastern Indian Ocean where spawning occurs and longitudes 10W to 185E (Fishery Agency of Japan, various). Persistent occurrence of SBT in the South East Atlantic, Indian Ocean and western South Pacific is well illustrated by the distribution of longline catches, and these regions have supported extensive fisheries since the 1950s. Catches have been reported regularly in the western South Atlantic with some catches reported as recently as 1994. Catch rates in this area have been quite

variable and the level of reported effort has generally been low. The south central and south eastern Pacific have not been areas of continuing longline activity. When global longline operations increased on Indian Ocean grounds south of 40S in the late 1960s and early 1970s, there were also some extended Japanese operations in the South Pacific around 130W-140W, and 80W-100W. This fishery in the South central and South eastern Pacific gave small catches of SBT (eg Fishery Agency of Japan, 1969) (Figure 3). There are no more recent catch data available from this area for comparison. Presumably, although SBT have been caught in both the western South Atlantic and south central and south eastern Pacific, catch rates were not economic and these areas have not become important commercially.

Very young (20-30 cm) juveniles are found in the vicinity of North West Cape and Busselton off the WA west coast (Robins 1975; Kono et al. 1989). SBT are estimated to be 55 cm at the end of their first year of life (Hearn 1994). Aggregations of older juveniles occur on and adjacent to the southern Australian Continental Shelf between Fremantle and Sydney (Caton and Williams 1991). Generally, 0+ to 2+ year old fish were common in surface fishery catches from the Continental Shelf of south-western WA. Fish of between 2+ and 6+ years old were common in catches beyond the Continental Shelf in the far south-east of WA and across southern Australia to NSW; but individuals to at least 9+ years old were also taken at times. Fish aged 0+ to 3+ years seem more closely associated with waters of the Continental Shelf than do older ones [Caton (ed.) 1991].

While seasonal movements of immature SBT occur throughout the region of the surface fishery, the presence of immature fish in longline catches indicates a tendency (as early as 2 years of age for some, and progressively for older ages) for these fish to leave the coastal areas and distribute themselves widely in the middle layer of offshore waters of lower temperature Caton (ed.) 1991. These immature SBT inhabit the West Wind Drift region until they become adults, but move northward seasonally to the areas north of 40S in the east of Australia, in the east of New Zealand and off South Africa. This northerly movement takes place usually in the southern winter. Mature SBT pass by way of the Oki fishing ground (adjacent to North West Cape, WA) to the Oka fishing ground (in the north-eastern Indian Ocean south of Java) arriving there between September and March, whereupon they spawn. During the feeding stage the mature fish are distributed in the West Wind Drift and some of them migrate seasonally northward like the immature ones. Not all fish move concurrently from south to north seasonally; rather the distribution range expands northwards seasonally. Likewise, throughout the spawning period, adults can be found in the spawning ground as well as in the West Wind Drift. Interannual frequency of spawning is unknown, as is resident time of spawners on the spawning ground.

Changes in Distribution over Time

Changes in SBT distribution must be largely inferred from changes in distribution of fishing operations. However, a decline in fishing operations in an area is not necessarily indicative of reduced fish presence there. Since the late 1970s, introduction of 200 nautical mile fishing zones, and associated limitation of foreign longliner access, have modified fishing campaigns. Off south-eastern Australia, for example, closure of access to important AFZ winter fishing grounds between 34S and 40S, together with restrictions on late-winter/spring access to more northern regions, resulted in cessation of AFZ operations by a component of the Japanese longline fleet and their relocation to other Pacific regions (Ward, ed. 1996). Similarly, from 1989, quotas were reduced below the Japanese fleet's catching capacity, and this resulted in some restructuring of the temporal and spatial pattern of fleet operations (Caton et al 1990). The increased abundance of older juveniles in the population (caused by reduced catches of very young juveniles in the surface fishery beforehand) could also have resulted in changes in the spatial and temporal coverage of fishing operation. Hence, while some indication of the distribution of fish is available from the distribution of catches, the absence of operations in previously-fished areas or times is not necessarily indicative of an

absence or decline in fish presence there. Comments on changes in abundance are discussed separately.

Changes in the distribution of fishing operations for SBT are most consistently provided by the Japanese longline fishery and the Australian surface fishery. Although Korean and Taiwanese longliners have participated in the SBT fishery at times, only the Japanese longline fishery has conducted a SBT-targeted operation (predominantly directed at older juvenile and adult SBT) consistently since the 1950s. The Australian surface fishery, similarly, provides a comparable time series for the juvenile component of the resource.

Global (Japanese longline) patterns

All the main global areas of SBT occurrence appear to have been discovered and fished during the late 1950s and 1960s (Japan Fisheries Agency, various; Ward ed. 1996). SBT-target fishing in the spawning area and south of it decreased during the late 1960's and early 1970's. The incentive for the southward shift was the predominant occurrence of fish of poor quality meat in the spawning area (Shingu 1978). The shift was facilitated by development of ultra-low temperature refrigeration on vessels, which improved storage longevity for the high fat content fish from the cooler southern regions. To some extent the reduced northern activity also reflects a voluntary seasonal (Dec. to Mar.) closure (Figure 4.), since 1971, of the area south (20S-27S; 95E-110E) of the spawning area [7S-20S; 102E-124E - Caton (ed.) 1991]. However, substantial decreases in catch rates occurred in the spawning area prior to the closure (Hearn and Polacheck 1995). An examination of effort patterns and catches there in the 1950s and 1960s (Fishery Agency of Japan, various, Hearn and Polacheck 1995) shows initial high catch rates, then decreases associated with ongoing high levels of effort. Spawning area catch rate declines can also be inferred from a report at the time in Australian Fisheries (Anon, 1959) which indicates "This area [ie the Indian Ocean in the vicinity of the spawning ground] – highly productive in 1954 and 1955 – passed into a period of declining yield, which levelled off early in 1958. Then late in 1958, and continuing strongly this year, vessels fishing the Indian Ocean have experienced excellent fishing over a wide area and involving several species. ... Partly responsible was the discovery of a new ground for bluefin ... along latitude 25S running westerly from Australia".

Although SBT targeted fishing was concentrated in southern areas after the 1960s, longline operations targeting other species continued in the spawning area. Japanese longline SBT catch rates on the spawning ground have decreased markedly, but since the mid 1970s this is confounded by changed fishing practices to target deeper-swimming bigeye tuna. Additionally, most of the post-1970 effort there was by training vessels rather than by commercial vessels. There has been no standardization (ie quantitative adjustment) of spawning ground SBT catch rates to take account of the changed target practices and vessels, while absolute amounts of effort has been relatively small. Consequently it is not possible to separate the effects of changes in fishing practice and fish abundance on the spatial distribution of fishing operations or catch rate on the spawning ground.

Nishida (1993) provides a summary overview of trends in the Japanese longline fishery in the Indian and South Pacific Ocean regions, illustrating patterns of catch (Figure 5.) and effort (Figure 6.) distribution by decade for the 1950s to 1990s. He also provides summaries of catch length frequency distribution by decade for the 1960s to 1990s (Figure 7.). The commencement of the fishery in the 1950s in the eastern Indian Ocean, its spread in the 1960s, and its concentration in the south after the 1970s are well illustrated. Despite continuation of high effort levels across the region from Australia to South Africa in the 1990s, high catches have been confined predominantly to the area adjacent to South Africa. Length composition of the catch showed strong representation of larger (>140 cm) fish in the 1960s, a shift in dominance by the 1980s to even larger (~160 cm) fish, then rapid development of a bimodal distribution so that the 1990s (ie 1990-1992 catches) catches were dominated by two size groups of fish; one of 90-130 cm fish, and a second less frequent group 170 cm. long. Because there is no reason to suspect low abundance of small (90 - 130

cm) fish in the 1960's and 1970's the increased catch of small fish in the 1990's is taken to be mostly due to changed fishery targeting and/or retention practices.

In the southern region, there has been a substantial change in spatial concentration of effort and catch rates during the history of the fishery. Polacheck and Tuck (1995) prepared quarterly maps of effort levels for sequential five-year time periods from 1971-75 to 1991-93 (the last 5-year period incomplete) for the area between 30S and 55S. The main centres of concentration of activity are located north-east of the New Zealand North Island, south-east of the New Zealand South Island, east of Bass Strait, south-west of Tasmania, south west of Cape Leeuwin, south/south-east of South Africa, and south west of South Africa. Seasonal fish movement patterns influence the quarter of the year in which various locations are important. For example, winter activity off eastern Australia is located east of Bass Strait (ie southern NSW to Eastern Tasmania) whereas summer activity is located south-west of Tasmania. The first and fourth quarters had much reduced fishing effort since the catch reductions in the mid and late 1980's, which reflects operational changes in the fishing.

The overall spatial range, and the main centres, of effort and catches have been generally consistent in a global sense. However, each of the main foci of effort shows a similar pattern of an initial period of increased activity, subsequent reduced catch rates despite persistent effort, and later a contraction of spatial extent of the effort concentration. Activity in the two New Zealand regions peaked in the 1970s then declined to relative unimportance. The south-western Tasmanian region was intensively fished during the early 1970s then declined. The region south-west of South Africa was intensively fished in the late 1970s then declined, although it maintained greater significance than the New Zealand regions. The region south-west of Australia, the eastern Bass Strait region, and the region south-east of South Africa, have also had declining effort in the 1980's and 1990's, but were the main centres of effort during that period.

Examining changes in effort on a finer scale, Campbell et al. (1995) presented a summary (Figure 8.) of the number of 1x1 degree squares fished each year by Japanese longliners between 1971 (after which no further major new grounds were opened up) and 1994 in the main southern fishing areas (ie Japanese statistical areas 4 to 9). They note that from a high in 1971, area fished remained relatively constant during the 1970s until the mid 1980s. Since then, coinciding with the impact of catch quotas, the fishery has undergone a steady decrease in spatial extent, the area fished in 1993 being about 70% of the area fished before 1985. They note that the significance of the changes in distribution of effort depends on whether it represents a contraction of the fleet onto higher catch rate areas or not.

Campbell et al. (op. cit.) examined this in more detail by estimating, for each five-year period, the extent to which effort was concentrated in decile groups of 1x1 degree squares, ordered according to the amount of effort in them (Figure 9.). They found that approximately 50% of effort was expended in the top 10 percent of 1x1 degree squares, with only 20% of effort spread over the majority of the area fished (80%). They repeated the analysis in relation to 1x1 degree squares ordered by catch rates (Figure 10.) and found that while effort tended to be targeted at the higher catch rate squares, the relationship was not as non-linear as in the previous analysis, so that, for example, 70% of the total effort was expected in the top 50% of squares (with the squares ordered by catch rate). So high catch rate areas are differentially fished but this targeting is far from perfect.

Campbell et al. (op. cit.) noted that spatial targeting has always been a feature of the SBT longline fishery, and there has been a tendency and ability to target areas of high catch rates. While there have been significant spatial shifts in the areas targeted, overall the percentage of effort targeted at the higher catch rate areas appears to have changed little over time. Nevertheless, because of the marked reduction in spatial extent of the fishery since the mid 1980s, that same percentage of total effort is being targeted at an increasingly smaller area.

Overall, there have been changes in the spatial distribution of the fishery, and especially in the late 1980's and 19990's where there was a 30% reduction in the number of 1x1 squares fished and significant contractions in the spatial distribution of fishing effort off New

Zealand, South West Tasmania, Western South Africa and South West Australia. The significance of this reduction in the spatial distribution of fishing effort depends on whether and to what extent it reflects a reduction of fish distribution. With the fishery data available it has proved very difficult to separate the effects of possible stock contraction, the effects of changes in distribution of the fishery that are unrelated to stock abundance, and to identify the ability of the fleet to target high catch rate areas. This remains a major point of uncertainty in the scientific interpretations of stock status.

In the absence of definitive analysis, two interpretations are often used which provide reasonable upper and lower bounds to the stock implications (see Hearn et al 1995). One interpretation (so called 'constant squares') assumes that the areas no longer fished have the same average abundance of SBT as those still fished; the reason they are no longer fished is not related to the abundance of fish there. The other interpretation (so called 'variable squares') assumes that there are no SBT in the area no longer fished; the fish have contracted their range and fishery has tracked that. It is recognized that neither extreme is likely to be true. The truth is expected to be somewhere in between and to have varied over time between the two bounds.

Australian Fishing Zone Patterns

The distribution of small juvenile SBT is linked with the Continental Shelf, where they have been the prime focus of domestic Australian surface fishery operations which rarely extend beyond 200 nautical miles offshore. The operations in the surface fishery ranged from Busselton to Sydney, until the early 1980s when the introduction of quota management caused their major re-orientation. After the introduction of quotas there was a major relocation of fishing effort such that the WA fishery, which at the time took an annual catch in the order of 6000t of small juveniles, closed down within four years. Similarly, much of the quota allocated to NSW was relocated to the SA surface fishery. The low-priced, small SBT common in WA were not economic with the changed focus of the fishery from canning to the Japanese sashimi market. This was not the case in NSW, where the fish average size had been increasing but catches had been declining. The incentive to relocate quota from NSW was largely a consequence of the declining availability of fish in the surface fishery. Ultimately the surface fishery failed through lack of fish in the mid-1980s and has still not recovered (Caton and Williams, 1991; Caton et al. 1995).

At the same time as the failure of small fish in the NSW surface fishery there was a decline in the Tasmanian troll fishery catch. Subsequently, the areas of operation of the SA fishery receded westwards (Caton 1991; Caton and Williams 1991). With the halving of catch quota between 1987 and 1989, and development of an Australia/Japan joint venture longline arrangement, most of the catch was diverted away from use by the Australian surface fishery. Catches in the surface fishery then decreased rapidly. Subsequently, there were indications of a broad movement of SA fishery catches eastwards. In the years following this reduction in the catch of small juveniles in the surface fishery there have been occasional reports of surface sightings of small SBT off NSW. However, no progressive increase in NSW surface aggregations evolved.

Length composition patterns in the winter longline fishery off Tasmania from 1988 suggested that, after declines during the early to mid 1980s, availability of smaller SBT there was increasing each year (Figure 11.). The increase persisted until 1993 after which time the proportion of the youngest cohort progressively decreased again (Caton, et al., 1995; AFMA Observer Programme pers. comm.). Patterns in the New Zealand longline size composition have been similar to those seen off eastern Australia. Progressive decreases in young fish representation in the NZ longline catch from 1982 to 1988 (Murray and Dean 1995) were followed by increases between 1989 and 1992. Subsequently, the increase has halted, with a reduced representation of smallest sizes (Figures 12, 13 and 14.).

There may be explanations associated with changes in oceanographic conditions, or other fishery unrelated causes. However, the changing patterns of surface fishery distribution off south-eastern Australia, and changes in the longline fishery size composition there, are consistent with a reduction in the magnitude and extent of eastward distribution of small juvenile when surface catches were high (20,000 t in 1982-83), then an eastern build-up after the reduction of first WA, then also SA, surface removals (to a minimum surface catch of ~1500 t in 1992-93). Since then, concurrent with increase in SA surface removals back to the 1989-90 level (>4000t) in 1995-96 (Figure 15.; Table 2.)), there has been an ongoing lack of improvement in sightings of NSW surface aggregations, and resumption of a decrease off Tasmania in young (2+) longline cohorts. A parsimonious interpretation of this is that the surface fishery resulted in a reduction of the number of small juveniles reaching eastern Australia, that the numbers have not fully recovered, and that recent increases in surface catch are again effecting small fish numbers in eastern Australia.

Tag recovery patterns show clear links among the south-western and southern surface fishery areas (where releases occurred) and the Tasmanian and New South Wales aggregations (Hampton, 1991,Majkowski et al 1988, Polacheck, 1994, Preece and Polacheck, 1996). Ishizuka (1987) examined release and recovery patterns and concluded that fish released from SA and NSW tended to be recovered from eastern areas rather than towards South Africa, whereas WA-tagged fish had higher recovery rates from those western areas. Polacheck (1994) and Hearn and Polacheck (1991) also noted these differentials in return rates but caution that interpretation is confounded by differences in age and year of tagging. John Gunn (pers comm) advises that archival tag recoveries from SBT indicate that SA-tagged fish have had western or eastern movement patterns, returning to SA after movements to the central southern Indian Ocean for one group of recoveries and to the region off southern NSW and back for another group. It is possible that this reflects some degree of spatial structuring of the stock, and may provide an explanation for different patterns of change in juvenile abundance by area.

Catch Rate Changes

A substantial source of uncertainty in the recent SBT assessments comes from poorly interpretable CPUE data. The capacity to interpret them continues to deteriorate. The data for the longline fishery have included major increases in representation of small fish. The longline component of the fishery now in effect replaces the surface fishery for juveniles. There were substantial increases in longline catch rate of small fish apparent in the early 1990s (Figure 16.) but it is not clear to what extent the change reflected changes in targeting practices rather than changes in abundance. Subsequently, there are indications that there may be a reversal of that increase in catch rates of the youngest cohorts, perhaps reflecting another change in targeting or perhaps reflecting weak cohorts. Furthermore, recent cohorts with high catch rates as very young fish have shown a rapid reduction in catch rate as the cohort ages to old juveniles. It is not clear whether this is due to rapid fishing down of these cohort or some operational feature of the fishery (eg. targeting). This has severe implications for the prospect of rebuilding the breeding stock.

Further comment on this issue is given in relation to tuning indices for Virtual Population Analysis estimation of population size.

HABITAT CHANGES

SBT are distributed widely in the Southern Hemisphere, through tropical to cool temperate waters. Olson (1980) states:

> ".. currents, temperature and the presence of land are important ecological determinants of the distribution of southern bluefin. The longline fishery is concentrated in waters adjacent to the northern extremity of the West Wind Drift (30-

40S) and within the West Wind Drift (south of 40S) (Nakamura, 1969). Shingu (1967) states that the West Wind Drift and the northward branches of the West Wind Drift off the west coasts of continents and land masses (West Australian Current, Peru or Humboldt Current, Benguela Current) seem to provide environmental conditions suitable to southern bluefin. Adult southern bluefin have the distinction among the tunas of living in the most extreme continuously cold habitat. They rival the Atlantic northern bluefin, Thunnus thynnus thynnus, for inhabiting the most varied water temperature of the tunas (Sharp and Dizon, 1978). Southern bluefin seek warmer water only during the spawning portion of its life history. Water temperatures in the spawning area at that time of the year ... range from 25C to 30C (Shingu, 1970 and 1978). Water temperature and salinities in the areas where southern bluefin are commonly caught range from about 5C to 30C and slightly below 34C to about 37C, respectively (Shingu, 1970 and 1978). The ranges of temperatures and salinities in major fishing areas [are shown in a figure]. Shingu (1978) presents graphs depicting detailed temperature isotherms and fishing positions in fishing areas 1, 2, 4, 5 and 7 [ie Japanese statistical areas]. The preferred temperature of southern bluefin in the New South Wales, Australia, fishery is between 17C and 20C (Williams 1977). De Jager (1963) and De Jager et al. (1963) report that from winter of 1960 to autumn of 1961 the highest catches off South Africa were made in waters between 16C and 17C. Thermal fronts, areas where large temperature changes occur, are known to attract southern bluefin (Williams, 1977; Pownall, 1979). McKenzie (1964) states 'In Australia, fish smaller than 60 pounds (27.2 kg) generally occur nearer the coast than larger sizes, and usually nearer convergences and current boundaries'."

From the foregoing it is evident that the habitat of SBT is very broad, and the species is apparently tolerant of a wide range of oceanographic conditions. It would seem unlikely that there have been man-induced modifications which would reduce the extent of suitable habitat; on the other hand there would seem to be scope for varying oceanographic conditions to change features such as seasonal or inter-annual distribution patterns. and perhaps the extent of larval survival or distribution. Presumably the relatively long life-span of SBT provides something of a 'buffer' to the effects of variability across years.

NUMBERS OF INDIVIDUALS

Before discussing the current and historic size in number of the SBT stock, there are aspects of the interpretive notes in Conf. 9.24 which need consideration. These are the discussions on 'population', 'generation time', and 'decline'. Comments under those headings follow, after which there is a discussion on estimation of population size and a review of SBT population size and trends.

'Population'

The notes relative to interpretation of criteria in CITES appendices make comment about 'population'. It is to be measured in terms of the total number of individuals of the species. Since the early 1980s, rather than focusing on total population size, scientific advice on management of SBT has generally been based on trends in the estimated parental biomass and in estimated recruitment (number of fish of age 1 entering the population each year). In particular, attention has focused on the size of the current parental biomass (total weight of mature fish in the population) in relation to its initial level, and on projected stock trajectories based on a fitted stock-recruitment relationship and a range of possible future catches. The basis of this focus has been concern about reproductive potential at reduced parent stock size. Also, because fish in general have high fecundity there is a tendency for total population numbers to be dominated by recruitment, which obscures trends in the adult numbers. The definition of the population adopted by the CITES criteria does not seem appropriate to high fecundity fish. Strictly, the total number of individuals in the population should include the

large number of larval fish produced each year, compared to which the number of adult fish is minuscule. For high fecundity fish some definition of population other than the total population is necessary. For SBT two approaches are taken, one based on the number of adult fish and one based on the number of fish 1 year old and older. This topic is addressed separately in a subsequent section, but it is appropriate to draw attention here to the focus which has been central to management development, because the CITES criteria are differently directed.

'Generation Time'

When CITES criteria relative to population 'decline' are addressed, the time frame in which a decline is considered is considered in terms of 'generations', where one generation is defined (Annex 5) as the average age of adults. For SBT, average age of adults when the population was unfished is unknown. Estimates may be developed using the natural mortality rate vectors currently adopted as an input parameter for VPAs by Australia, Japan and New Zealand. These assume higher (or stable) natural mortality rate for young fish than for older ones, with a period of moderately stable natural mortality rate until maturity then a lower rate for the remainder of the life span. If simulated populations are decayed by these natural mortality rates and the average age estimated for the mature component (8 years and older), average age of adults is about 16-18 years. In contrast, Japanese VPA estimates of number at age for the population in recent years provide estimates of average age of adults as 10-12 years, the decrease reflecting the reduction in the proportion of older fish in the stock as a result of exploitation. (Australian VPAs group fish 12 years and older in a single age group, which prevents average adult age estimation).

On this basis then, 'two generations' involves a period in the general order of 20-35 years. The assessments presented to the 1995 CCSBT Scientific Committee meeting provide tables of numbers at age for years from 1966 to 1991 (the 4-year lag from current abundance arising because the VPA procedure is unreliable for estimating most recent abundance of age groups younger than about 4 years of age). Within this period, the other reference year commonly adopted by CCSBT is 1980, the parent biomass at that time being regarded as having provided satisfactory levels of recruitment, and so representing an appropriate target parent stock which management arrangements should seek to re-establish. It is convenient to use these three reference years for comparison of changes in stock numbers, as 1966 to 1980 represents roughly one generation, and 1980 to 1991/1994 is roughly a second generation.

A qualification is necessary here. Exploitation of SBT commenced in the 1950s and peak catches occurred around 1961, so that a decline in stock abundance had been in train for a period of about one generation before 1966 when formal VPA can be applied. Precise estimates of the extent of population decline (or in other words estimates of virgin population numbers) are difficult with the fishery data available, but Polacheck et. al. (1995) estimate that the 1966 parental biomass was at most 50% of the 1960 level and that significant reductions had already occurred between 1953 and 1960.

'Decline'

The CITES criteria refer to 'decline' as a factor to evaluate in relation to a species appropriateness for listing. Annex 5 provides comment on interpretation of decline, and relates it to reduced numbers of individuals or a decrease in the area of distribution, where in either case unknown, or uncontrolled or inadequately controlled, causes operate. The change in total population numbers which might be used as a reference is 50% (but not where that is 'planned', such as in an intentional 'fish-down' of accumulated stock). In the context of SBT, where there is relatively a long-generation time, that decrease would have to have occurred within two generations, namely 20-30 years. Special interpretation is needed for the case of a 'small' wild population.

Estimating Population Size

The SBT population ranges from shallow Continental Shelf waters to deep oceanic regions, sometimes occupying surface waters and at others remaining below the photic zone. Direct counts are not practical. Surveys of sub-components of the population, undertaken independent of commercial fisheries, are rarely feasible because of cost, practicality, or uncertainties about their representativeness. Attempts are in train to establish fishery-independent estimates of abundance of the juvenile component of the population from those visible at the surface from aircraft in the great Australian Bight, but at present these are relative rather than absolute abundance estimates (Cowling et al 1996). There have not been any fishery-independent estimates for adults.

In consequence, the main abundance estimates are from procedures based on analysis of commercial fisheries data. Some indication of relative changes in population size can be gained from changes in catch rate in commercial fisheries. Estimates of absolute size can be developed from analysis of these and the age composition of the catch, using methods such as Virtual Population Analysis (VPA).

There are characteristics of SBT and it's fisheries which complicate the use of catch rate data to estimate relative changes in population size . First, the population itself consists of many age classes, and spatial distribution of SBT changes with age. Fisheries target different age group in different areas and seasons. Furthermore, across the years there have been broad-scale changes in concentration of activities by areas and season. Superimposed on this again is a progressive change in fishing and maritime technology, and a changing marketing and economic climate in which vessels operate. Many things other than fish abundance effect catch rate. Overall, while changes in catch rates may provide some indication of gross population changes, trends apparent in the 'raw' data need to be treated cautiously; some quantitative adjustment is necessary to take account of changes in all factors that effect catch rate other than fish abundance, and to identify the catch rate 'signal' that is due to fish abundance. The ability to account for all other factors is limited by the data available, and particularly by the combination of lack of observations on many operational aspects of the fishery and poor 'statistical contrast' in the data available (that is, several changes occur together and their effects cannot be separated). So, for example, analysis of CPUE assumes that catchability (eg. the fraction of the population within an area and time period caught per 10,000 hook placed in the water) has not changed since 1965. This is unlikely to be true given technological improvements, but there are not data available for construction of a more likely alternative. However, the catch rates can be, and are, standardised for some of the effects of changed area and time of operations among the areas and times that have been consistently fished.

VPA is the primary method used for assessing absolute abundance and status of the SBT stock (Caton, ed. 1991; Polacheck and Sainsbury, 1994). The technique calculates estimates of numbers at age in the population based on estimates of the age structure of the catches, the natural mortality rate (M) and a set of indices of abundance (in this case commercial longline catch rates, standardised as far as possible). The version currently adopted for SBT uses a modification of the 'ADAPT' model fitting or tuning procedure (Ishizuka and Tsuji 1990; 1991; Ishizuka 1992; 1993; 1994; Ishizuka et al 1995; Polacheck et al 1992;1993; Polacheck and Sainsbury, 1994; Polacheck et al. 1995). The procedure is one of the recent 'integrated approaches' which finds the set of parameter estimates which provide the best statistical fit to all the available data. Various types of data can be used in that context, and differential weighting of the various sources of information can be used to evaluate consistency and identify uncertainty in the assessment. It is important to note in this regard that the procedure seeks to encompass all the data available on the fishery – catch rate trends, catch at age trends, quantitative data from tagging studies – and combine them quantitatively, rather than seeking to draw conclusions from them independently.

Annual variations in the Australian fishery for juvenile fish, and a delay until about age 3-5 when juveniles the longline fishery and hence the abundance indices, prevents reliable use of

VPA estimations of recruitment at age 1 from ages less than 3-5 years old. Consequently, while parental biomass can be estimated from the VPAs up until the latest year for which catch data are available, reliable estimates of recruitment at age 1, and hence total population numbers, are not available for the 3-4 years prior to the latest year for which catch data are available. This delay will be even longer if longline vessels change target practices to avoid small SBT, or discard small fish, such that the age at which SBT are fully recruited to longline catches increases again.

While VPA provides estimates of actual population size, there is uncertainty inherent in the basic input parameters and data, and hence in the estimates. Because of this, comprehensive sensitivity testing of the estimates is required, and conclusions about population size, and changes in it, are expressed in terms of a credible range. Generally, the uncertainty prevents precise comment on absolute population size, but still allows reasonable conclusions about the relative size and change of the population.

Results of VPA stock assessments have been discussed annually since 1982 by trilateral scientific meetings on SBT among Australia, Japan and New Zealand, and subsequently by them within the framework of CCSBT [Reports of the 1982-91 trilateral scientific meetings are provided in Bureau of Rural Resources (1992)]. The scientists expressed concern throughout that period at the extent of reduction in the parental biomass of SBT, at the risks associated with concurrent recruitment decline if the trend continued, and the need to set catches at levels that would allow the parental biomass to stabilise at levels for which satisfactory historical recruitment has been observed (the 1980 level was set as a reference level).

Uncertainty in the parent stock-recruit production relationship, and the variability introduced by uncertainties in VPA input and tuning parameters, prevented precise projection of stock response under various catch regimes. This, combined with the uncertainties in the VPA estimates results in considerable uncertainty in advice to managers about appropriate quota levels. In summary, some projections have indicated that the stock will recover with the current quota levels, whereas others have indicated a continuing decline.

Current VPAs and their Shortcomings

Scientists from Australia, Japan and New Zealand come to annual scientific meetings with assessments undertaken independently, and usually involving different series of input parameter assumptions and tuning approaches. It is not feasible, in the limited time frame available, for the scientists to fully confirm the likely reliability and adequacy of the assessments of their counterparts. This leads to problems in comparison, and, sometimes, the development of independent conclusions on stock status and trends under various catch regimes. In an attempt to resolve the situation, special workshops have been held to review methods and data, and to develop agreed reference-cases for comparison of results. As a result there has been progress in identifying differences caused by the different assumptions made in interpreting the available data through VPA (eg CCSBT 1996).

Currently, VPAs take account of known patterns of increase in individual fish growth rate between the 1960s and 1980s. They explore the implications of a lower natural mortality rate, especially for older fish, as a consequence of the recent increase in the estimated longevity of SBT. They also explore the implications of higher natural mortality of young fish, as a consequence of comparison with other tunas and results of tagging studies.

The lack of firm information about natural mortality rate is one source of uncertainty in VPAs and projections based on them. There are also uncertainties associated with the CPUE tuning indices. Ideally, changes in CPUE reflect changes in SBT abundance. As indicated previously, however, raw catch rate data do not reflect the impact of changes due to features other than abundance change. There have been unquantified changes, eg changing practices in relation to discards of small fish and changing catchability due to changing gear

technology, for which adjustment has not been possible. This introduces uncertainty in the appropriateness of the CPUE series as tuning indices.

Various time series of relative abundance indices were developed from CPUE data and, despite the recognised shortcomings mentioned above, were used to tune VPAs because there are no other sources of information on the abundance of SBT. Some indices were based on 5-degree square data (Hearn et al 1995; Nishida and Hiramatsu 1995) grouped into statistical area or 5-degree latitude strips. Others used fine-scale (1-degree square) CPUE data (Campbell et al 1995). There were criticisms that 5-degree-based broader-region index series masked fine-scale trends with important connotations to interpretation of fish abundance. However, most controversy centred on how best to represent the current abundance of SBT in areas and seasons where fishing no longer took place, and hence where no catch rate data were available. Japanese assessments were tuned on the basis of an assumption that catch rates in unfished time and area strata are on average the same as catch rates in fished strata. Australian assessments explored the sensitivity of the analyses to different possible assumptions. One approach assumed no fish in the unfished strata, one assumed average abundance was the same as in the fished strata, and an intermediate approach sought to estimate probable abundance on the basis of relative catch rates among strata at times when fishing did occur in the presently unfinished strata.

One dilemma associated with the use of CPUE tuning indices is through their effect on the estimates of recent recruitment of one year olds entering the population. This recruitment is critical to prediction of future growth in the parental stock but VPA estimates of this component of the population are the least reliable, and are virtually driven by the CPUE tuning indices. Relatively small changes in the index for the youngest recent cohorts can make the difference between conclusion of a rapid recovery of parental biomass and no recovery.

Further uncertainties were associated with inconsistencies between the catch rates of SBT older than 12 years and their abundance as estimated by VPAs driven by the CPUE of younger fish. The declines estimated to have occurred among the older fish are not matched by relative declines in catch rates. No single explanation for this inconsistency is uniquely identifiable from the data available, but several hypotheses are current. These include that the historic catch and size composition data are not accurate, that large SBT can be targeted very effectively so that catch rate is not a good measure of abundance, that the method of calculating the age composition for old fish is not accurate, and that there is a large and as yet undiscovered pool of large SBT that is not accessible to the fishery.

The points above highlight uncertainties in estimation of historic population sizes. For prediction of the effect of catches on stock recovery however, it is necessary to make assumptions about the relationship between recruitment and stock size. The time lag in obtaining reliable estimates of recent recruitment levels means that there are no VPA estimates of recruitment at the present and recent low parent biomass levels. Similarly, under catch regimes where further, perhaps short term, declines in parent stock are projected, there is a need to predict the stock's capacity to produce recruits at parental stock levels not previously experienced. Uncertainty in the general form of the relationship between stock and recruitment, and the absence of recruitment estimates for the present low stock size, contribute significantly to uncertainty in stock projections.

Status of the SBT Stock Relative to CITES-defined Decline

The most recent estimates of SBT population size were developed for the 1995 meeting of the Scientific Committee of the CCSBT. New assessments are currently in progress and will be presented at the 1996 meeting in August-September. The 1995 estimates were developed independently by Australian (Polacheck et al 1995) and Japanese (Ishizuka et al 1995) scientists and, as described above, they explored a range of uncertainty in input parameters and assumptions about tuning indices. Population numbers at age by year from the

assessment papers are summarised in Tables 3 and 4. The tables do not encompass all VPA cases but provides the estimates from the cases Japan circulated as indicative, and those adopted by Australia as appropriate to illustrate population projections.

Table 5 summarizes the percentage change in population total and parental stock (ie 8 years and older) numbers between 1966 and 1980, 1980 and 1991, and 1966 and 1991, representing changes over roughly two generations separately, and two generations combined, but not the change since fishing on the stock commenced.

- For 'one generation' time between 1966 and 1980, the decline in total numbers ranges from 59% and 75% of the 1966 level. The parent stock was reduced to 40%-51% of the 1966 level.

- For 'one generation' between 1980 and 1991, the decline in total numbers ranges between 40% and 84% of the 1980 level. The parent stock was reduced to 20%-38% of the 1980 level.

- For the 'two generations' between 1966 and 1991, the decline in total numbers ranges between 30% and 57% of the 1966 level. The parent stock was reduced to 9%-18% of the 1966 level.

- Estimation of total population numbers in 1994 must await future estimation of recent young cohorts' abundance; however, for 'one generation' between 1980 and 1994, the parental stock was reduced to 14%-41% of the 1980 level; for the 'two generations' between 1980 and 1994, the parental stock was reduced to 6%-20% of the 1966 level (Table 6.).

The changes in population size indicated above are summarised in Table 7.

It is apparent that for parent stock abundance the Japanese estimates are similar to the range of estimates. When comparisons are based on total population number and include recent population size, the Japanese assessments generally show smaller declines. This reflects the generally more optimistic conclusions in Japanese assessments, often following from higher estimates of the abundance of juveniles for more recent cohorts. Estimation of the reduction in the population prior to 1966 is less reliable than that post 1966 because of limitations in the data available. Estimates are not available from Japanese scientists, but Australian estimates indicate that the parent stock was reduced by at least 50% between 1960 and 1966.

The comparisons presented in the above table address the population size in 1991. As the most recent complete data available for the 1995 assessments were for 1993, and there was disagreement about the validity of using the 40% sample of 1994 data then available, the most recent recruitment estimates were for 1991. Estimation of current population size requires assumptions about levels of recruitment so as to estimate abundance of the young cohorts. Japanese projections gave increasing abundance of these younger cohorts; the Australian projections generated a much broader range of possible outcomes, from increase similar to that shown by Japanese projections, to decline. Consequently the comparisons of population size in the table above are referenced to the 1991 situation, noting that shortcoming.

Future Population Numbers

Future population size depends upon reproductive success and subsequent catch levels to which cohorts are exposed. Although variability in recruitment is superimposed, there is a clear trend of decrease in recruit production as parent stock biomass has decreased in both Australian and Japanese assessments (Polacheck et al. 1995, Ishizuka et al. 1995). The parental biomass is currently lower than any previous levels for which reliable estimates of recruit production have been obtained. Past observations of population sizes and

corresponding recruitments indicate that recruitment levels in the mid 1980 were particularly low, yet had occurred at parent population levels substantially greater than recent levels (Commission for the Conservation of Southern Bluefin Tuna 1995). This suggests that the range of recruitment expected from the present parental stock would include even lower recruitment levels than those seen in the mid 1980's and that caused concern. While projections seek to look ahead from a current stock situation, that can only be done on a reasonably sound basis several years retrospectively.

Each year since the introduction of catch quotas in the 1980s, Japanese and Australian scientists have developed projections of future SBT stock trends under various catch regimes (eg Klaer et al.. 1995; Tsuji 1995). These have been undertaken in support of a management arrangement taking account of the decrease in parent biomass in train since commercial exploitation of the species commenced in the 1950s. Managers specified an objective of restoring the stock condition to that which existed in 1980 because recruitment was judged to be adequate up to about that year (Southern Bluefin Tuna Trilateral Management Discussions 1992).

The stock projections contain considerable uncertainty because of the combination of uncertainty in the VPA results with uncertainty about the SBT stock-recruit relationship. Furthermore, uncertainty in recruitment takes little account of the possibility of runs of strong or weak recruitment or of events that could cause an abrupt decline in recruitment at low abundance.

As might be expected, the most recent projections (Klaer et al. 1995; Tsuji 1995) do not give definitive indications of future stock trends under the current level of catch. A wide range of possible population futures can be projected using the various estimates of current population number at age and the levels of uncertainty inherent in them. The 1995 review of them (CCSBT Scientific Committee 1995) could not agree on the likely future trend.

Japanese scientists concluded that "the SBT stock has been showing a significant rebuilding in recent years, starting sequentially from younger juveniles to young adult stocks. Future stock projections under the current global catch as well as higher catches than that indicated that the parent biomass will increase rapidly [by 2005 in most cases] to above the 1980 level, which is the target level for stock recovery." They suggested that global quota of SBT should be increased because of the increasing assessment difficulties arising from the operational restraints of quota regimes.

Australian scientists concluded that "The expected outcome is for the parental biomass to remain at low levels for the next 15 years. There is a 27-53% probability of remaining below the 1994 parental biomass by 2010 and a zero probability within the next 10 years of either collapse or recovery to 1980 levels." In contrast to Japanese views that juveniles and young adults were showing significant rebuilding, the Australian scientists concluded that there were major inconsistencies in the various sources of information from the fishery, such that interpretations ranged from significant rebuilding of juvenile abundance (and subsequently of parental biomass), to weaker and uneven juvenile rebuilding with further declines in parental biomass.

If historical projections from the various trilateral scientific meetings are examined, it is apparent that they have always tended towards more optimistic futures for the stock under the then current exploitation regimes. In early 1980s projections, the parent stock was predicted to be at or near the end of its decline, with prediction of increases in the near future. Progressively through the 1980s, new assessments resulted in revision downwards of the parent stock, but still with an imminent increase projected (eg Trilateral Scientific Meeting among Australian, Japanese and New Zealand Scientists on Southern Bluefin Tuna 1990). The Japanese projection of 1995 is more optimistic than any of the previous projections as it commences from a parental biomass already in the process of increasing. This projected rate of increase is such that recovery should become quickly apparent in the form of strongly increasing adult catch rates.

Since 1990 Australian scientists projections have tended to be more pessimistic, with none indicating that the decline in parental biomass had reversed by the year for which the most recent data were available. In contrast, Japanese projections have usually indicated that the decline had ceased, the 1995 estimates indicating that rebuilding had commenced. More significantly, the range of possible stock futures has always been much broader in the Australian projections, reflecting acceptance of a much wider uncertainty in the results of VPAs and the projections based on them. What has been progressively apparent in both the Australian and Japanese assessments and projections during the 1990s is the increasing estimate of the relative reduction in parent stock compared with the 1980 level.

It is important to bear in mind that the projections can not be regarded as independent of the VPAs. The latter are a cumulative quantitative representation of the various data sources and indicators available on trends in the stock. Stock projections start with those representations, and so contain the same assumptions and uncertainties. VPA estimates of recent recruitment are strongly driven by the CPUE of the youngest-aged fish in the longline catch, and it is those catch rate indices which are most significant also in generating future parental biomass trends; any increase of the latter requires prior increase of the former. In essence, projections of sustained increase in parental biomass assume that the most recent catch rates of juveniles reflect increased abundance, and assume that the abundance of the yet-to-be-recruited cohorts will be sustained at reasonable levels. Much hinges on these assumptions.

REPRODUCTIVE POTENTIAL

The key significance of reproductive potential in relation to review of the Conf. 9.24 criteria, is the capacity of the SBT stock to produce sufficient numbers of new recruits to compensate for removals from fishing, while allowing also for rebuilding of parent stock from the current levels. The estimates of that capacity in SBT rely on prior observations of recruit production at various parental population levels. These issues are considered above.

The stock-recruit relationship developed for SBT assumes that recruit production is proportional to the mass of adults in the population. It is possible that size or age composition of the adult population is also important. No modelling of this possibility has been incorporated in projections. Similarly, modelling has not explored the consequences of only a fraction of adults migrating annually to the spawning grounds, and the interaction of this with the Indonesian fishery catches.

Studies on SBT reproductive biology were undertaken in the 1950s and 1960s by Japanese scientists using samples from the commercial fishery on the spawning grounds. A review of SBT maturation and spawning is provided by Davis in Caton ed. 1991. Recently, CSIRO scientists have resumed studies on size and age at maturity, spawning seasonality, fecundity, and spawning periodicity. SBT were sampled on the spawning ground in the Indian Ocean, and from the main feeding grounds in the Southern Ocean (Farley and Davis in press). Only mature SBT were taken from the spawning ground. They were found in all months, except July, the smallest fish being 147 cm (LCF), and most between 160 cm and 195 cm. Catch rates suggest low relative abundance of SBT from May to August. Two catch rate peaks were apparent, the first in October and the second in February. Examination of ovaries indicated that individuals do not spawn over the whole season. Oocyte development was asynchronous and annual fecundity was indeterminate. Individual fish were capable of multiple spawning. Those in prime spawning condition spawn on average every 1.1 days for an unknown total individual spawning period. Average spawning batch fecundity was estimated at 6.0 million eggs or 57 eggs per gram body weight.

Japanese longliners have maintained a voluntary seasonal closure in the vicinity of the spawning ground since 1971 (figure 4) reportedly to protect spawning SBT but in fact the closed area is south of the recognized spawning area. As discussed previously, Japanese longlining continues at low levels on the spawning ground targeting bigeye and yellowfin tuna, but SBT are taken as a by-catch.

The main age at first reproduction has been estimated to be 8 years, but this estimate is based on indirect methods and should be regarded cautiously. Individual fish can clearly produce very large numbers of eggs, but mortality on the early life history stages is also very high (eg of the presumably many hundreds of millions of eggs produced each year only 2-6 million survive to age one). The high fecundity of SBT may give rise to the thought that only one female is really needed, but in reality recruitment decline and collapse has been seen in many highly fecund fish stocks (eg Walters and Maguire 1996). The critical question is the extent to which directly density dependent processes in the SBT life history can compensate for the reduced population fecundity, so that reasonable levels of recruitment (at age one) are maintained. This compensation is reflected in the shape of the stock-recruitment curve used in projections. At present the difference between recovery and further decline in the population hinges on average differences in recruitment of 1-2 million fish per year, against a background ('natural') fluctuation of about the same magnitude.

PART 2: CITES APPENDICES, AND CHARACTERISTICS OF SBT IN RELATION TO THE CRITERIA FOR INCLUSION OF SPECIES ON THE APPENDICES

[Note that definitions, notes and guidelines are presented in Conf. 9.24 (Annex 5) to assist in interpretation of the criteria. These are mentioned as necessary in the discussion on each criterion.]

CITES Appendix 1

Inclusion on this Appendix indicates that a species is considered to be threatened with extinction, and is or may be, affected by trade. Four biological criteria are specified in relation to determination that a threat of extinction exists, and it is sufficient if a species meets just one for it to warrant classification as threatened.

It is clear at the outset that SBT must be regarded as very significantly affected by trade. Its status against the specific biological criteria is given below.

The first biological criterion ('A') is that the wild population is small. This is characterized by one or more of five possible sub-criteria. The interpretive notes indicate that 'small' refers to the total number of individuals of the species, and as an illustration, the notes provide a figure (5000 individuals) found to be appropriate as a guideline for some species. Japanese estimates of the 1991 SBT population of fish 1 year and older exceeded 10 million individuals (SBFWS/95/18). The corresponding Australian estimates ranged from about 4 to 7.5 million individuals. Provision of VPA estimates for more recent years is difficult and projection methods would be needed to calculate a probable current population level (by projection). However, it is clear that SBT population sizes could not be regarded as 'small' in the context of the Conf. 9.24 description.

In addition to meeting the 'small' criterion, the population would also have to be characterized by one of the five other qualifying characteristics specified below. However, as the overall descriptor 'small' is not pertinent, only brief comments follow on those five sub-criteria:

A I 'an observed, inferred or projected decline in the number of individuals or the area and quality of habitat'

Comments on 'decline' are provided below in relation to criterion C; the comments above on habitat changes suggest that a decline in the area or quality of SBT habitat is unlikely to be relevant.

A II 'each sub-population being very small'

SBT does not appear to have distinct and recognizable sub-populations, but some spatial structuring may exist. If an 'eastern' component of the population is a spatially segregated entity it may have decreased in abundance since the early 1980s and may at present be subject to decreasing recruitment of the youngest cohorts. Nevertheless, the numbers of individuals in longline catches off south-eastern Australia in recent years have been in the order of 15-20,000, so the component of the stock occurring seasonally there, if equated to a 'sub-population' would not match a description of 'very small'.

A III 'a majority of individuals, during one or more life-history phases, being concentrated in one sub-population'

Genetic evidence at present suggests that SBT should be regarded as a single population. In that context, the number of individuals in the wild population is not consistent with the description given for a 'small' population.

A IV 'large short-term fluctuations in the number of individuals'

SBT are long-lived (45 years), and perturbations in the population tend to be reflected in its dynamics over a long time span. For example, heavy removals of juveniles by the Australian surface fishery in the late 1970s and early 1980s are still reflected by gaps in representation in the current adult population (Gunn, 1995). Short term fluctuations in SBT recruitment may occur, but as the population is built up of individuals from many years of previous recruitments, this tends to buffer short term variations in the recruitment.

A V 'a high vulnerability due to the species' biology or behaviour (including migration)'

It seems that the commercial fishery is able to target effectively on aggregations of SBT. The Australian surface fisheries take advantage of surface schooling of juveniles seasonally on the Continental Shelf. Tag recoveries from releases in the early 1980s indicated that the juveniles were highly vulnerable to the surface fishery component at the time (>40% exploitation rate). However, subsequent quota reductions reduced the removals considerably, the catches of small juveniles in the longline component subsequently reflecting the increased escapement. The longline fishery on older juveniles and adults has also shown a capacity to target effectively on aggregations of large adults. This was evident in early operations on the spawning grounds, but there are also signs in the size composition of catches on the southern feeding grounds. In both cases this vulnerability has not been sufficient to reduce the population to a size in the context of the Conf. 9.24 Annex 5 description.

B. The wild population has a restricted area of distribution.

The extremely broad temperature tolerance SBT exhibits, and its wide distribution in the Southern Hemisphere, are not indicative of a 'restricted area of distribution', so the criterion does not seem appropriate for SBT. The sub-criteria associated with this criterion similarly seem inappropriate as indicative of SBT characteristics:

I 'fragmentation or occurrence at very few locations'

The distribution of commercial fishing catches indicate broad oceanic occurrence of SBT. There have been changes in the area of operations over time, especially in the last decade. Even so, range of occurrence of the species as indicated by the distribution of fishing effort and catch is still broad, and would not fit a categorization of 'fragmented occurrence at very few locations'.

II 'large fluctuations in the area of distribution or the number of sub-populations'

There do not appear to be sub-populations and, again, while some change in distribution patterns of SBT have been apparent, it would not be appropriate to describe them as showing 'large fluctuations'. There have been strong foci of effort in the longline fishery, and some indication of decline in several of them, but the overall distribution is still quite broad. While the centres of activity might suggest a degree of localization of components of the population, the broad distribution of tagged fish recoveries throughout the range of the species suggests that the local aggregations are likely to be at least loosely linked.

III a high vulnerability due to the species' biology or behaviour (including migration)'

Previously spawning, and, more recently, feeding aggregations have been targeted by the commercial fishing fleets, but this has not occurred in the context of a population in a restricted area of distribution. The exception may be the component of the stock distributed towards the east of the species range, but even that component is very widely distributed.

IV an observed, inferred or projected decrease in any of the following:

– the area of distribution; or the number of sub-populations; or the number of individuals; or the area or quality of habitat; or reproductive potential.

Decreases in area of distribution, the number of individuals, and in reproductive potential may apply in the case of SBT but they are not relevant in the context of a 'population with a restricted area of distribution'. The decreases are best considered in the context of criterion 'C' below.

C. Criterion C specifies that a species should be listed as threatened if there has been an ongoing or potentially resuming decline in the number of individuals in the wild, or if a decline is inferred or projected on the basis of specified factors (habitat decrease, exploitation levels/patterns, extrinsic threats, or decreasing reproductive potential).

The interpretive information provides guidelines about what might be regarded to constitute a decline. It suggests that if total population number of a species has decreased by 50% over two generations (the alternative of 5 years is not appropriate for SBT as its generation time is considerably longer) then it is appropriate to conclude that a decline has occurred. The magnitude of reduction of the SBT population to 1991 (to 30-57% of the 1966 population number) is generally consistent with that guideline. The indications that the species had been subject to considerable fishing activity prior to 1966 (record catches from the stock in 1960 and 1961) and reduction, at least on the accumulated biomass of the adult component, re-enforce this evaluation.

The population reduction has been estimated relative to the population size in 1991, because several years elapse before reliable estimates of recruit abundance in a year (and hence of total population numbers then) can be obtained. This is not a factor in relation to the adult component of the species; current numbers can be estimated for the year for which the most recent catch-by-age data are available. By 1991 parent numbers had declined to 9-18% of the numbers in 1966 (which had already been reduced by the intensive early '60s spawning ground fishery). Their 1994 abundance was estimated to be 6-20% of the 1966 number.

Two features should be noted. First, there is considerable variation in the range of estimates, both for total population number and for number of parents. Second, some assessments suggest that the number of parents in 1994 may have increased since 1991. This requires a prior increase in juvenile numbers, or better rates of avoidance of the juvenile fishery. Whether there has subsequently been an increase or decrease of juveniles will not be known until recent years' recruit abundance is known.

There is some uncertainty, then, as to whether or not the decline specified is ongoing. In that context, a species should be listed as threatened if there is potential for resumption of decline, or if it is inferred or projected on the basis of specified factors (above). Those associated with habitat decrease and extrinsic threats are unlikely to have relevance in the case of SBT. Those which may have relevance are exploitation patterns and reproductive potential. They are closely linked. The capacity of the stock to sustain exploitation is dependent on capacity to produce recruits at various population levels. Those levels, in turn, are determined by patterns of exploitation.

The most recent projections generate a wide range of possible stock trends under the current exploitation regime ranging from rapid increase to further decline, and there are marked differences of view between Japanese, Australian and New Zealand scientists as to the most likely range of interpretations. It should be recalled that Australian projections include the possibility of recovery.

There is no clear justification for selecting any one projection trend as most representative of likely stock future under the current catch regime. In effect, the future trend of SBT stock status under current catches is highly uncertain at present because of the nature of the most recent CPUE data, the conflicting indications of abundance of old SBT cohorts, and the uncertainty surrounding strength of recent recruitments.

The interpretive information in Annex 5 of CITES Conf. 9.24, while providing comment on interpretation of decline, does not encompass within that any guidance as to uncertainty of the type arising in VPAs and projections. Similarly, the Appendix I (C) criteria are phrased in deterministic rather than stochastic language. Some comment is provided in Annex 4, which specifies that in the case of uncertainty as regards status or impact of trade, Parties to CITES considering proposals to amend the Appendices shall act in the best interests of the conservation of the species.

The assessments and projections discussed above assume that catches by non-CCSBT parties are in the order of 2500 t. If those catches, and any non-reported catches by CCSBT parties are greater, then the projections will under-represent the impact of exploitation, and there would be increased possibility that 'a decline might be inferred or projected on the basis of levels or patterns of exploitation'. The CCSBT has also been considering the possibility of an experimental fishing programme to assist resolution of the uncertainties in VPAs. Japan is keen to commence the programme rapidly, indicating that it will quickly shed light on uncertainties about abundance of SBT in currently unfished areas. Australian scientists have indicated that the risks of any increase in removals above current quota must first be carefully assessed as must the design of any experiment to ensure that it will indeed answer the questions raised. An experimental fishing programme, if it were simply to involve catch above current quotas and fail to resolve some of the uncertainty would just increase the possibility that a continued or future stock decline might occur.

The other factor which is to be addressed when considering listing of a species is when decline has been inferred or projected on the basis of decreasing reproductive potential. As pointed out above, the stock-recruitment relationship for SBT is uncertain. However, in all assessments there has been a trend of decreasing recruit production as parental biomass has declined. There is major uncertainty about the species' capacity to maintain recruit production at lower levels of parental biomass. This includes both the long term capacity to maintain recruitment at the present low parental biomass and that capacity at lower levels. Furthermore, delays (3 or more years) in estimating recruitment success makes identification of any major failure in recruitment difficult until it was well-entrenched in the population. Recent aerial surveys would help this situation but do not yet have the credibility to induce urgent catch reductions if they were needed.

D The status of the species is such that if the species is not included in Appendix 1, it is likely to satisfy one or more of the above criteria within a period of five years.

It is unlikely that SBT would satisfy criteria A or B within the five-year time frame specified. In relation to criterion B, habitat is unlikely to become diminished. Some risk with respect to criterion A has to be accepted, but it would require the contribution of major catches from the population and extremely reduced recruitment

to result in a 'small' population within 5 years. The main criterion with relevance would seem to be criterion 'C'. The basis for estimating the potential future decline is addressed within that criterion. The key issue here is one of risk levels, and interpretation of 'likely to'. In 1995 Japanese projections estimated probability of further decline was zero. In 1995 Australian projections the estimated probability of further decline by the end of the next 5 years was 45%.

CITES Appendix 2a

Inclusion on this Appendix indicates that trade is having, or is likely to have, a detrimental impact on a species. Two criteria are specified, and it is sufficient if a species meets just one for it to warrant inclusion.

Criterion 'A'

The first criterion ('A') is that unless trade is strictly regulated the species will soon qualify for inclusion in Appendix I.

The review above of characteristics of SBT relative to Appendix I criteria indicates that the aspects likely to be relevant are the criteria concerning population decline and decline of reproductive potential. The issue then is whether without trade control there will be stock or reproductive potential declines.

In the case of SBT, there is already a degree of control on 'trade' to the extent that strict catch quotas apply for the main resource users (Australia and Japan). Furthermore, the main market is located in Japan, which maintains comprehensive import statistics to monitor product flow. It also has tuna import agreements with Taiwan, which potentially have scope to limit imports. The uncontrolled component of the global take is the catch by entities not party to the CCSBT, which is predominantly the catch by Taiwan, Korea and Indonesia. To the extent that their production is imported into Japan, there is scope to monitor them, and perhaps also apply some form of restraint. However, it is clear that markets other than Japan are developing for sashimi grade SBT, wherein monitoring and control are substantially more difficult.

In the absence of regulation of trade, as distinct from regulation of take, there are two important issues which have implications to the possibility of further decline in SBT. The first is the extent to which non-reported catches (if any exist) by CCSBT entities can be detected. The second and similar issue is identification of catches not encompassed by CCSBT controls, and their likely trends. For both, the significance is whether catches beyond those identifiable as presently accounted for in population assessments are likely to be sufficiently large to drive the population or its reproductive potential into decline.

Catches by Taiwan increased rapidly when quotas first physically limited Japanese SBT catch, but on the basis of indications from Japanese import statistics they subsequently stabilized at around 1000 t. The main concern at present is that there are reports of an increase in domestic Taiwan markets, and the published statistics do not seem to reflect a sufficiently large catch to account for both Japanese imports and a Taiwan domestic market (Haward and Bergin 1996).

Some Korean SBT-targeted activities may have developed recently in the southern Indian Ocean. Published data on distribution of longline catches do not reflect the known distribution of operations into SBT areas. The level of activity in the early 1990s was estimated to be in the order of only 100 t annually. Haward and Bergin (1996) reported that substantial increase in SBT activity was unlikely. However,

Japanese import statistics for 1996 indicated a significant increase from Korea (Japan Tariff Association July 1996).

There appears to be potential for expansion of the Indonesian Indian Ocean longline fishery because it targets a prolific yellowfin and bigeye resource. It has potential for significant increase in that regard. Indonesian fishery development plans include realizing that potential, and so a corresponding increase in the SBT by-catch is to be expected. Fortunately, independent monitoring of landings by a joint CSIRO/Indonesian research project provides good data on magnitude and size composition of the catch. Continued monitoring depends on the ongoing commitment of funds for the work. It should be noted that the monitoring programme identified catch levels considerably greater than had been assumed before it began.

The main consideration is whether there is likely to have been significant traded, but non-reported, CCSBT-party catches, and whether an increase in currently unmonitored; non-CCSBT catches will develop. A listing on Appendix II might improve prospects for identification of any such unreported catches (but not in domestic markets in Taiwan, which is not party to CITES). The estimated non-CCSBT catch is currently about 2500 t compared with the 11750 t CCSBT allocation, ie about 20%. This level of removal is already factored into VPAs and projections of future stock levels under present catches. Adjustment for any greater non-CCSBT catches would have to be made in stock assessments and projected stock trends. If a stock decline was evident or imminent under the present or increased non-CCSBT catches, it would place the CCSBT in the difficult position of cutting CCSBT catches in response to increased non-CCSBT catching. The difficulty of making such a decision would pose a threat of continued stock reduction in the event of markedly increased non-CCSBT catches. There is need to control the non-CCSBT take. Obviously the status of the species relative to Appendix I criteria would also need to be considered.

Criterion 'B'

Criterion 'B' is that harvesting has, or may have, a detrimental impact by (i) exceeding sustainable yield over an extended period; or by (ii) reducing the species to a level where its survival would be threatened by other influences.

In essence, these issues have been addressed for criteria of 1 (C), which consider the extent to which SBT has experienced, or may likely experience, a decline. Projections by CCSBT scientists have examined the impact of various levels of exploitation, and the stock's sensitivity to the current exploitation level. Despite management efforts in the early 1980s which reversed the rapidly increasing juvenile catch, the harvesting of the stock overall clearly exceeded sustainable yield from the 1950's through most of the 1980's, with parental biomass continuing to decline into the 1990s. Cooperative management measures by Australia, Japan and New Zealand from the mid 1980's have sought to reverse that trend. Indications of increasing juvenile catch rates and in population numbers suggest that quotas could have reduced catches to a sustainable level or even below that level. However, as discussed, it cannot be determined reliably at present whether or not that is the case: Japanese assessments show the present catches are lower than the sustainable catch (and so give rapid stock increase); Australian assessments give an about 50:50 chance of present catches being sustainable in the long term.

There is no firm evidence addressing the likelihood that the SBT stock has been reduced to a level where it may be threatened by influences other than 'harvesting from the wild for international trade'. There have been examples of recruitment failure in other species where the extent of reduction of parental biomass had not

been as substantial as that to which the SBT parental biomass has been subject (Sainsbury and Polacheck 1994). For SBT it is unlikely that threats would be associated with availability of or access to sustaining habitat. Problems would likely be associated with school or aggregation size on spawning grounds, or egg and larval production levels relative to inherent environmental variability. These are conjectural. Irrespective of the absence of information on which to judge SBT stock susceptibility to such a threat, the CCSBT objective of rebuilding parental biomass to 1980 level would, if achieved, probably return the stock to a level at which it would be secure from recruitment failure.

CITES Appendix 2b

Inclusion on this Appendix indicates that a species is difficult to distinguish from a species listed on Appendix 1 or 2a, and hence needs special consideration. Two criteria are specified, and it is sufficient if a species meets just one for it to warrant inclusion.

The first criterion ('A') is that specimens of the species resemble specimens of a species included in Appendix II or Appendix I, such that a non-expert is unlikely to be able to distinguish between them. The second ('B') is that the species is a member of a taxon where most of the species are included in Appendix II or Appendix I. Currently neither 'A' nor 'B' applies in the case of SBT.

It is apparent from the notes on identity that there can be considerable difficulty in distinguishing among the various *Thunnus* species, especially when specimens are in the form of processed frozen carcases, and especially where the distinction is between northern and southern bluefin. For most species of *Thunnus* except albacore, confusion can occur with very small live/fresh individuals. This is unlikely to be an issue in the case of SBT because most operations where small juveniles were commercially taken have ceased, or continue to specifically target SBT, with little by-catch of other species. In the case of larger individuals, SBT are virtually exclusively taken by longline. *Thunnus* species taken by other gear would rarely include SBT as a by-catch. Longlined SBT are handled individually, and identification is usually feasible at the time of capture. The main scope for mis-identification would arise if fish were intentionally mis-represented as a different species, and a non-expert was subsequently charged with their identification from specimens such as frozen, gilled, gutted, finned and tailed carcases. At the market, however, different species command quite distinct price grades, so clear identification from market documentation is usually routine. As no *Thunnus* species are currently classified under any CITES Appendices, the question is somewhat academic. On the other hand, it would need careful consideration if SBT or one of the other *Thunnus* species became included on one of the Appendices.

CITES Appendix III

This appendix is to include all species identified by a CITES party as subject to their regulation for preventing or restricting exploitation, and requiring cooperation of other CITES parties in the control of trade.

SBT is managed intensively within the Australian Fishing Zone. It is an important product in trade, both for the domestic and licensed Japanese fleet. Any trade movement of the species into Australia (ie from the high seas) from the domestic fleet is subject to close monitoring under a quota management regime. Japan is virtually the exclusive market for AFZ-caught SBT. Trade movement of SBT from Australia to Japan can involve exports of domestic-landed fish (similarly subject already to strict quota monitoring) or fish taken during licensed fishing operations within the AFZ. Regular surveillance activities monitor the AFZ for illegal operations. The main SBT catch not closely checked by Australian surveillance operations are those of licensed Japanese vessels taking SBT in the AFZ within the Japanese quota allocation.

SBT catches beyond the AFZ are not monitored by Australia. Those of New Zealand and Japan fleets are subject to quota monitoring by their respective countries. However there are catches outside the CCSBT quota regime, and uncertainty about their magnitude and size composition. These latter catches have the potential to impact on quota allocations to Australia and the other CCSBT parties. The existence of these substantial catches by non-CCSBT countries provides a reason for seeking cooperation of other CITES parties in the control of trade.

ANNEX 1

AN OUTLINE OF THE TAXONOMIC CLASSIFICATION OF SOUTHERN BLUEFIN TUNA

[Prepared by Peter Last, CSIRO Division of Fisheries, Hobart; Chapter 2 in Caton, A.E. (ed.) (1991) Review of aspects of southern bluefin tuna biology, population and fisheries. In World Meeting on Stock Assessment of Bluefin Tunas: Strengths and Weaknesses. Special Report No. 7: 181-357. Ed by R. B. Deriso and W. H. Bayliff, Inter-American Tropical Tuna Commission, La Jolla, California.]

"Specific name

Thunnus maccoyii (Castelnau, 1872) - Fig. 1.

"Synonymy

- *Thynnus maccoyii* Castelnau 1872: 104 (original description; Melbourne, Australia).
- *Thunnus phillipsi* Jordan and Evermann 1926:13 (original description; Bay of Islands, New Zealand).
- *Thunnus maccoyii*: Jordan and Evermann 1926: 13 (new combination).
- *Thunnus (Thunnus) maccoyii*: McCulloch 1929: 263 (new combination).
- *Thunnus thynnus maccoyii*: Serventy 1956:13 (new combination).
- *Thunnus thynnus maccoyi*: Talbot and Penrith 1962: 558 (amended).
- *Thunnus thynnus orientalis* (not Temminck and Schlegel): Jones and Silas 1960: 381-382 (misidentification).

"Sources of this synonymy are Iwai, Nakamura and Matsubara (1965), Collette and Nauen (1983) and Collette (1986a). Following current nomenclatural procedures (Ride et al. 1985: Zoological Code of Nomenclature, Article 31a), the specific name should be maccoyi as it is based on a noun in the genitive case. Also Article 58 would deem maccoyi and maccoyii to be homonyms if they were used for different nominal taxa. However, maccoyii should be preserved because its spelling is that used when the species-group name was established (Articles 32a and 33d of the Zoological Code).

"Vernacular names

"Southern bluefin tuna, bluefin, bluefin tuna, southern tunny, tunny (English); minami maguro, indo (Goshu) maguro (Japanese); thon rouge du sud (French); atun del sur, atun (Spanish); suidelike blouvin tuna (Afrikaans); avstralijskaya tunets (Russian).

"Affinities

Suprageneric affinities

Phylum Chordata

Class Osteichthyes

Subclass Actinopterygii

Order Perciformes

Suborder Scombroidei

Family Scombridae

Tribe Sardini

"The bony fish family Scombridae, comprising various mackerels, bonitos and tunas, is among the most extensively researched teleost family. The supraspecific structure of the group, however, is not adequately defined and will undoubtedly undergo modification as additional morphological and ontogenetic information becomes available (Johnson 1986). Important recent contributions to the systematics of the family have been made by Godsil and Holmberg (1950), Collette and Gibbs (1963), Iwai and Nakamura (1964), Gibbs and Collette (1967), Talbot and Penrith (1968), Fischer and Whitehead (1974), Collette and Chao (1975), Collette (1978, 1986a, 1986b), Collette and Nauen (1983), Collette et al. (1984) and Johnson (1986). The above classification follows Johnson (1986) and Nelson (1984) above subordinal level.

"Collette and Chao (1975) and Collette and Nauen (1983) recognized two scombrid subfamilies: the monospecific Gasterochismatinae, and the Scombrinae containing the remaining members of the family. The Scombrinae was further divided into four tribes (Thunnini, Sardini, Scomberomorini and Scombrini) with the Thunnini, or tunas, including four genera, *Thunnus, Katsuwonus, Euthynnus* and *Auxis*. Collette et al. (1984) relocated *Allothunnus* from the Sardini to the Thunnini. Johnson (1986) has since proposed amendments to this scheme which include the subsumption of the tribe Thunnini within the Sardini (including *Gymnosarda, Sarda, Cybiosarda* and *Orcynopsis*) and the omission of a subfamilial category on the basis of his cladistic classification.

"Generic affinities

- *Thunnus* South 1845
- *Thynnus* Cuvier 1817 (preoccupied).
- *Thunnus* South 1845: 620. (Substitute name for *Thynnus* Cuvier; type species *Scomber thynnus* Linnaeus 1758, by absolute tautonomy.)

"Sources of this synonymy are Iwai, Nakamura and Matsubara (1965), Collette and Nauen (1983) and Collette (1986a).

"Description. Members of the genus are distinguished from other members of the family by the following combination of characters: the body is fusiform, elongate and slightly compressed; the teeth are small, conical and in a single row in each jaw; two cartilaginous ridges are present along the upper surface of the tongue; very small scales are present on the body with an obvious corselet of slightly larger and thicker scales anteriorly; the small pelvic fins do not recess into grooves; the eyes lack adipose eyelids; the caudal peduncle has two small keels with a larger median keel between; the dorsal fins are barely separated; the fleshy process between the pelvic fins is long and not bifurcated; 11-14 dorsal-fin spines; 7-10 dorsal and anal finlets; 30-36 pectoral-fin rays; 19-43 gill rakers on the outer gill arch; 39 vertebrae; the body lacks dark spots and longitudinal stripes.

"Specific affinities

Thunnus maccoyii (Castelnau)

"Diagnosis. A member of the genus *Thunnus* in which the liver is striated ventrally and the central lobe is larger than the left and right lobes; the gill raker count is relatively high (31-40 rakers on the first gill arch); the pectoral fin is relatively short (less than 80 % of head length and 20.2-23 % of fork length); the first ventrally directed, bony process (parapophysis) of the backbone is located on the 9th vertebra; and the median caudal keel is yellow.

"Comparisons. The species of *Thunnus* have been widely researched. The most comprehensive accounts of *Thunnus* have been given by Iwai, Nakamura and Matsubara (1965) and Collette and Nauen (1983). Seven species, *Thunnus albacares* (Bonnaterre), *T. alalunga* (Bonnaterre), *T. atlanticus* (Lesson), *T. obesus* (Lowe), *T. thynnus* (Linnaeus), *T. tonggol* (Bleeker) and *T. maccoyii*, are recognised as valid species. *Thunnus* species can be grouped on the form of the liver. The livers of *T. maccoyii*, along with *T. alalunga, T. obesus*

and *T. thynnus*, have an enlarged central lobe and prominent striations on the ventral surface. The liver in the remaining species is smooth and the right lobe is much longer than either the central or left lobes. The species group with striated livers (which includes *T. maccoyii*) have sympatric distributions.

"Adult *T. alalunga* and *T. obesus* have longer pectoral fins (greater than 80 % of head length) and lower gill raker counts (23-31 rakers on the first arch) than *T. maccoyii* and *T. thynnus*. *Thunnus thynnus*, ['northern bluefin'], which is primarily a Northern Hemisphere species, consists of two subspecies, *T. thynnus thynnus* (Linnaeus) and *T. thynnus orientalis* Temminck and Schlegel (Collette and Nauen 1983). Some authors have regarded *T. maccoyii* as a subspecies of *T. thynnus* (Serventy 1956, Munro 1958, Robins 1963) but, although rarely sympatric, the two species are distinct. *Thunnus maccoyii* can be distinguished in the field by the yellow median caudal keel (dark in *T. thynnus*) and a relatively longer pectoral fin in the adult (16.8-21.7 % of fork length in *T. thynnus*). Identifications of *T. thynnus* from the Southern Hemisphere should be confirmed by examining the location of the first ventrally directed parapophysis - on the 8th vertebra rather than the 9th vertebra as for *T. maccoyii*.

"There is also biochemical evidence to suggest that the subspecies *of T. thynnus* may be a valid species. Sharp and Pirages (1978) have shown, in an electrophoretic study of 15 muscle proteins, that the subspecies are more biochemically divergent than are *T. thynnus orientalis* and *T. maccoyii*."

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FIGURES

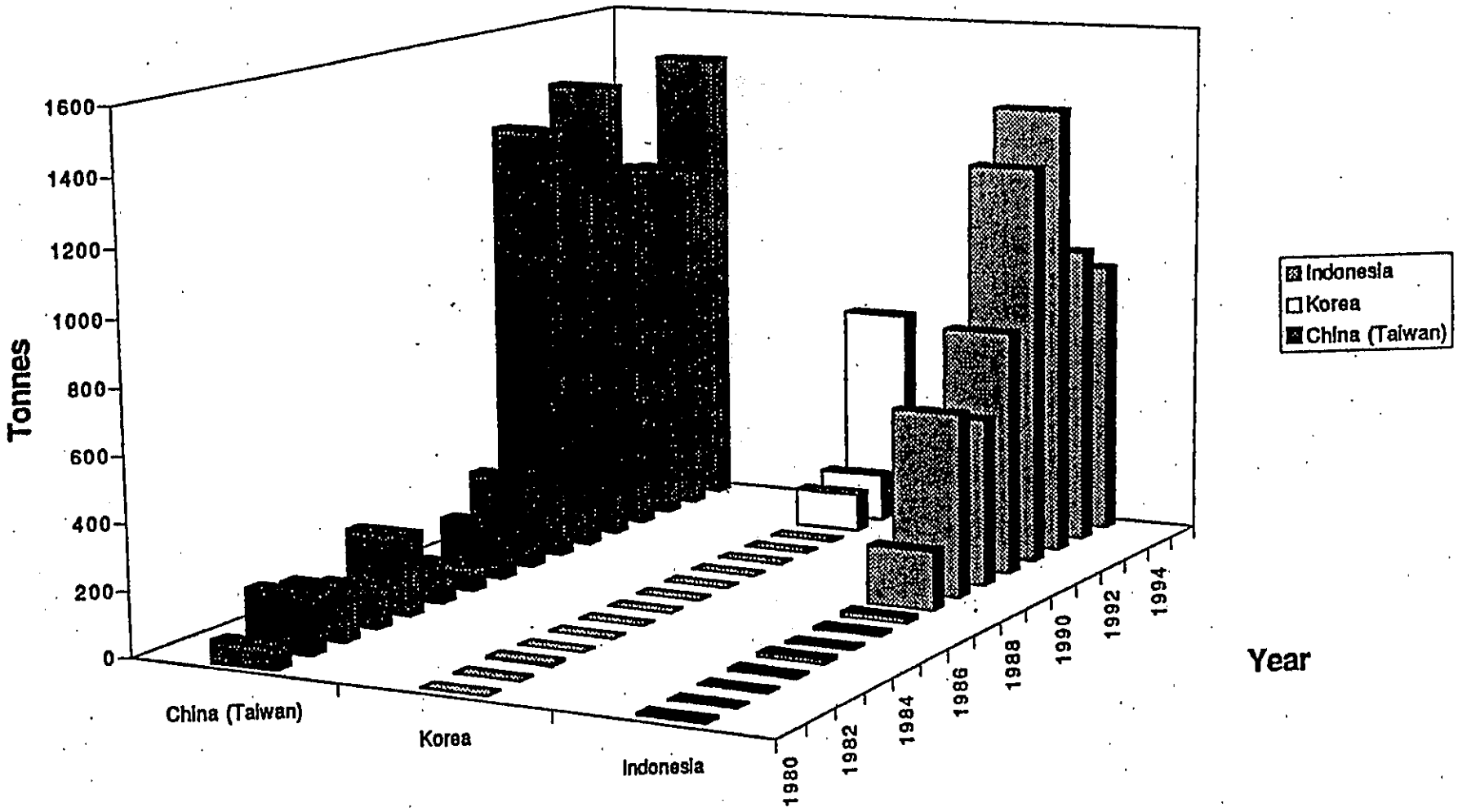


Figure 1: Korean, Indonesian and Taiwanese southern bluefin tuna catch, 1980 to 1994 (Source: Polacheck et al 1995)

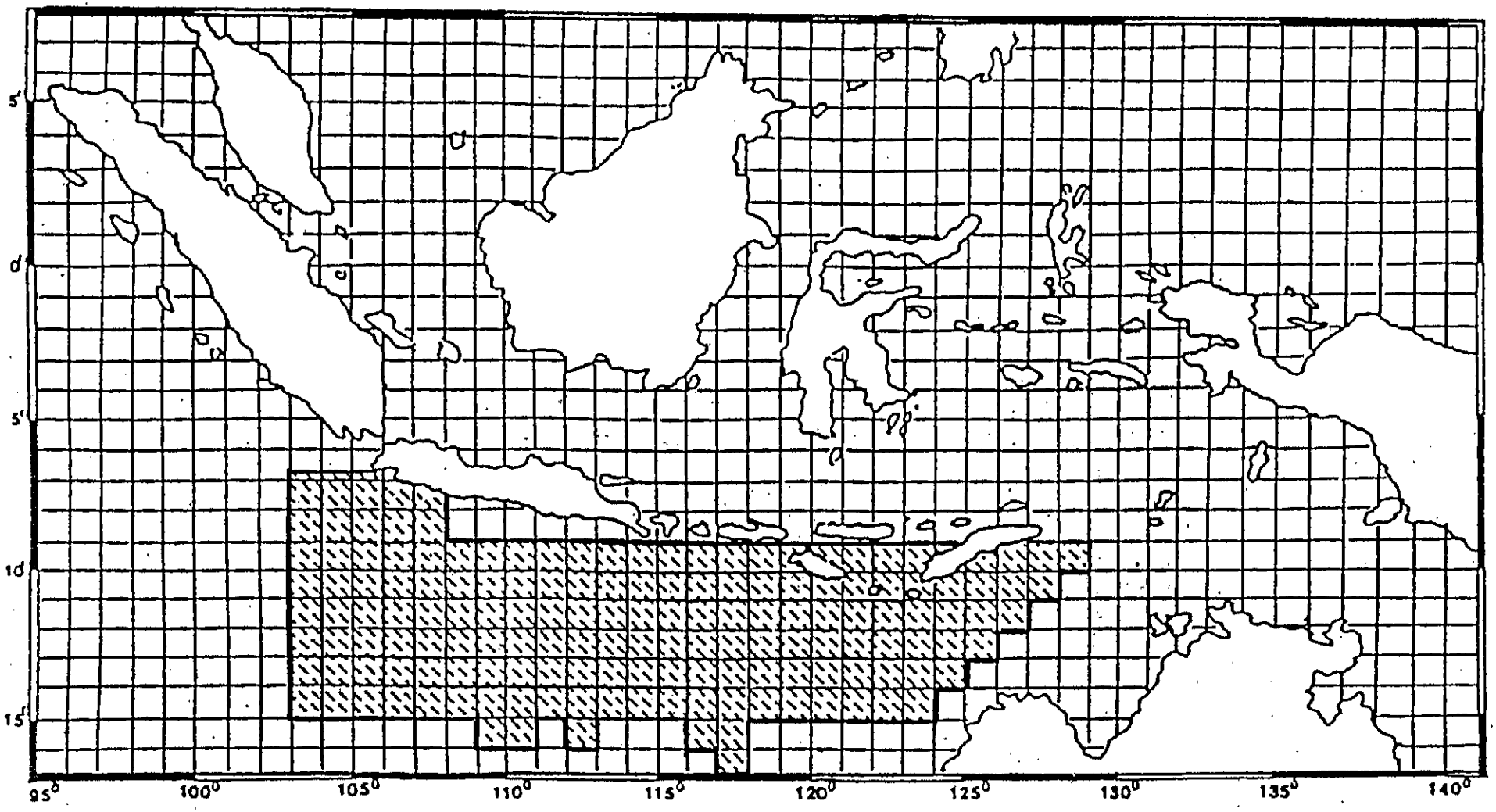


Figure 2: Distribution of Indonesian southern bluefin tuna fishing grounds, 1978-1988
(Source: Bahar and Naamin, 1989)

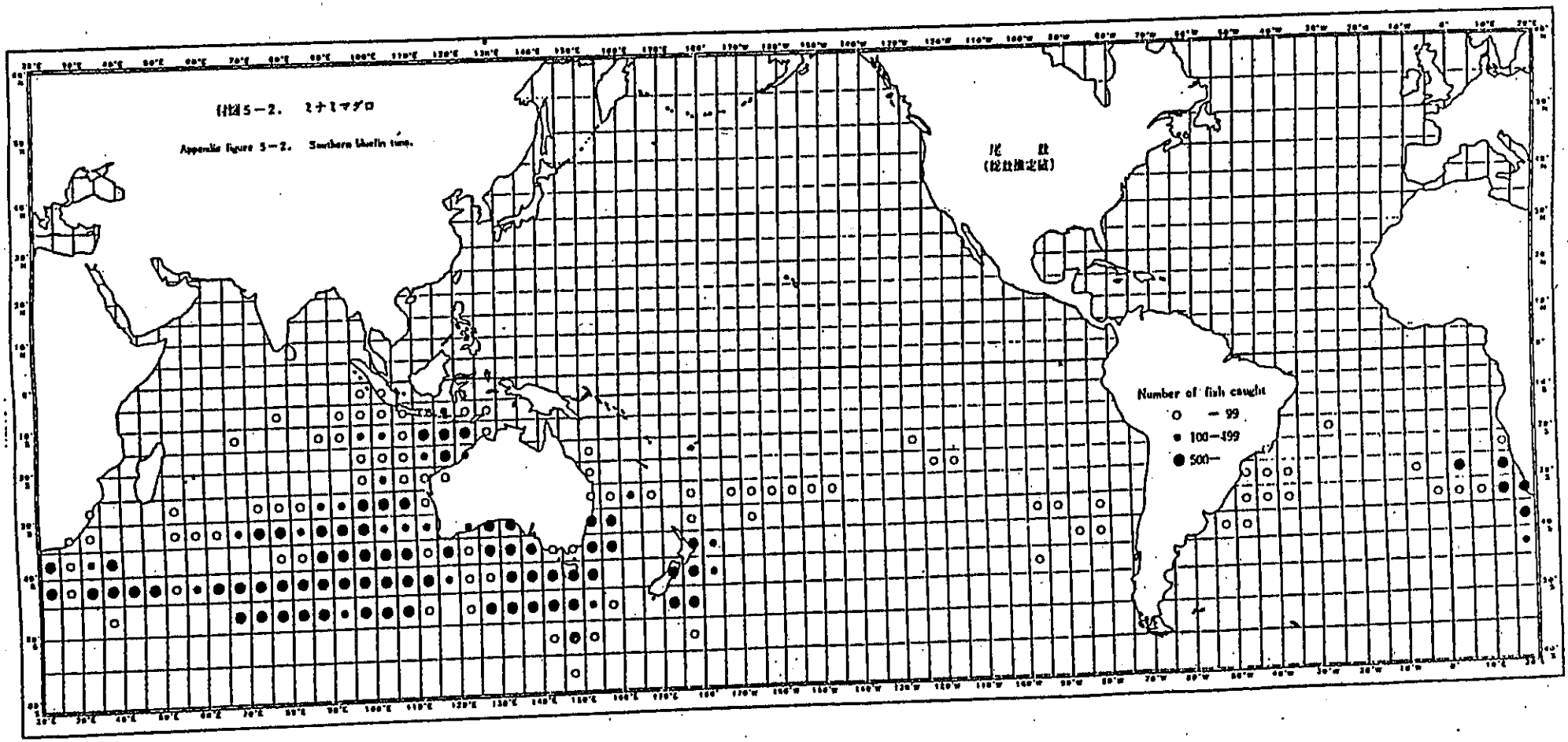


Figure 3: Distribution of Japanese longline fishery southern bluefin tuna catches in 1968 (Source: Japan Fisheries Agency 1969)

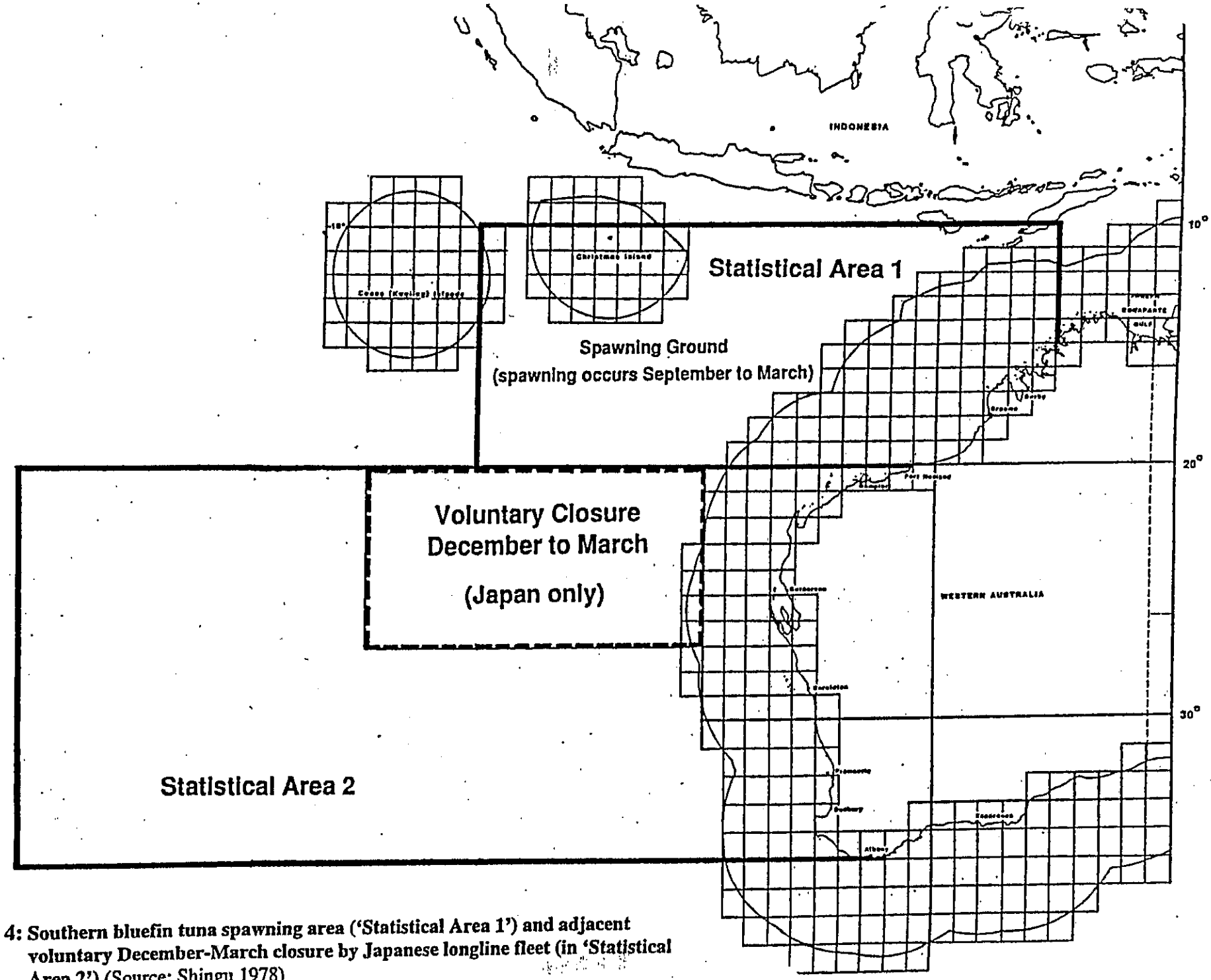


Figure 4: Southern bluefin tuna spawning area ('Statistical Area 1') and adjacent voluntary December-March closure by Japanese longline fleet (in 'Statistical Area 2') (Source: Shingu 1978)

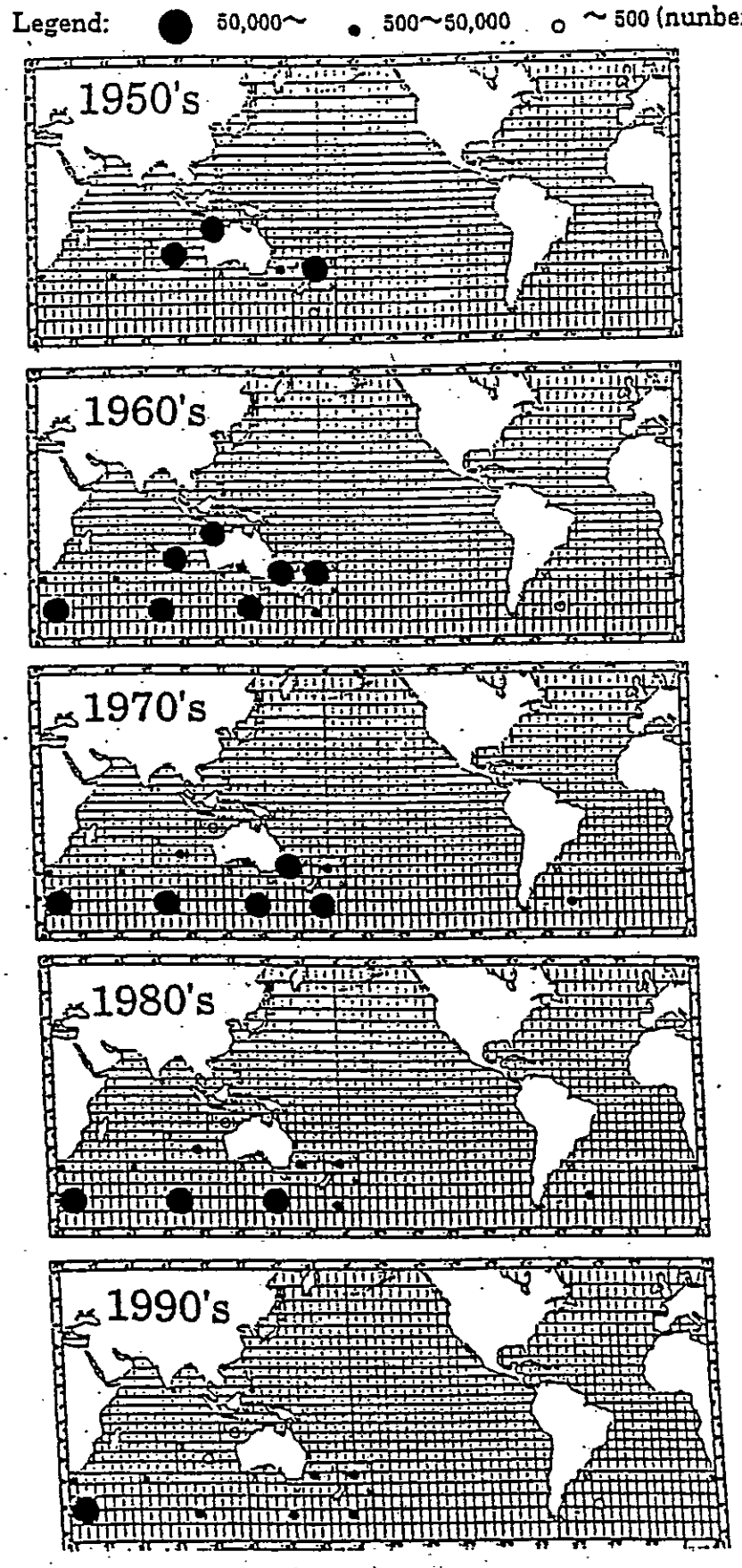
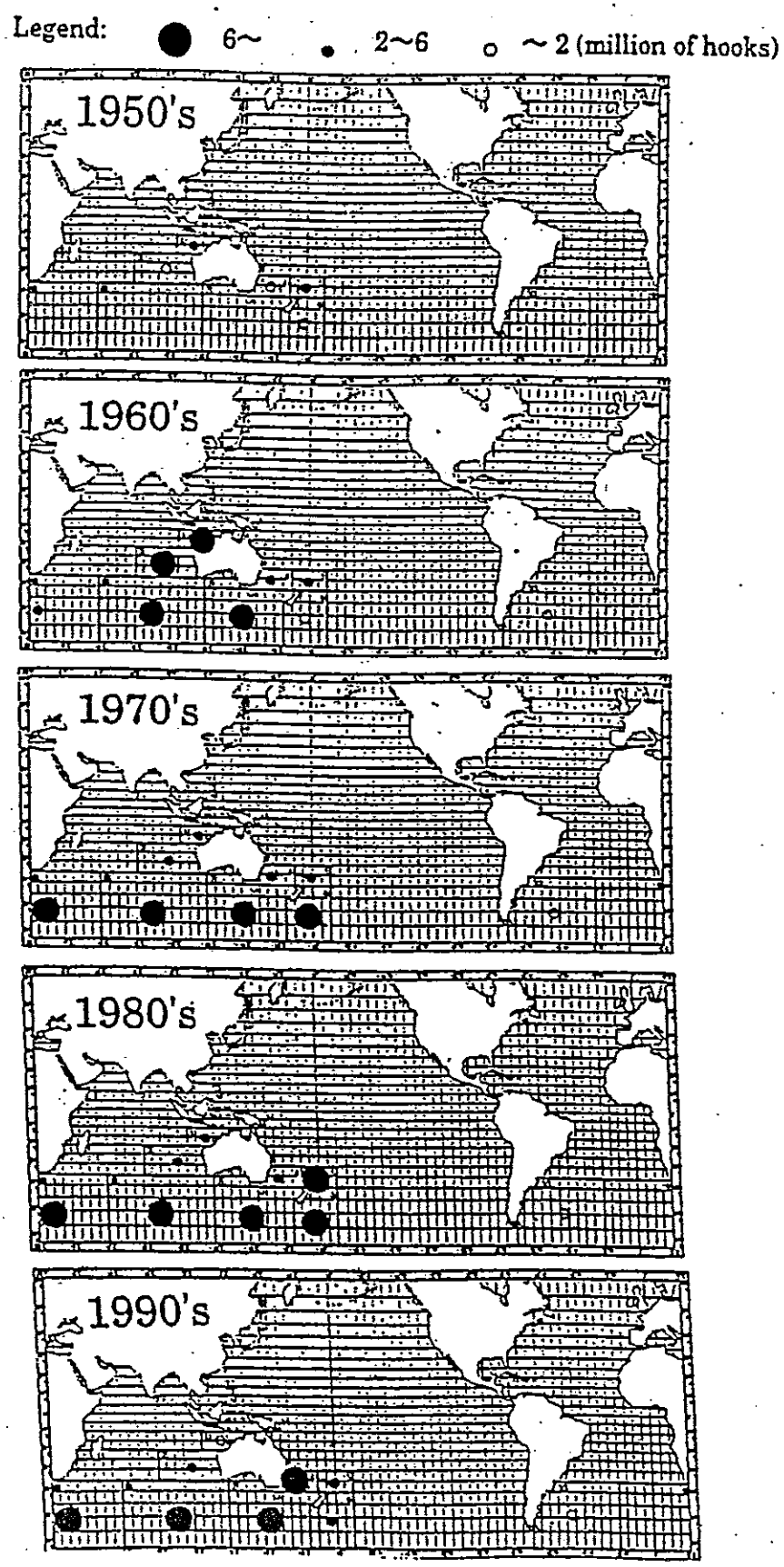


Figure 5: Distribution by statistical area of Japanese longline fishery southern bluefin


Legend:
6~
2~6
~2 (million of hooks)
1950's
1960's
1970's
1980's
1990's

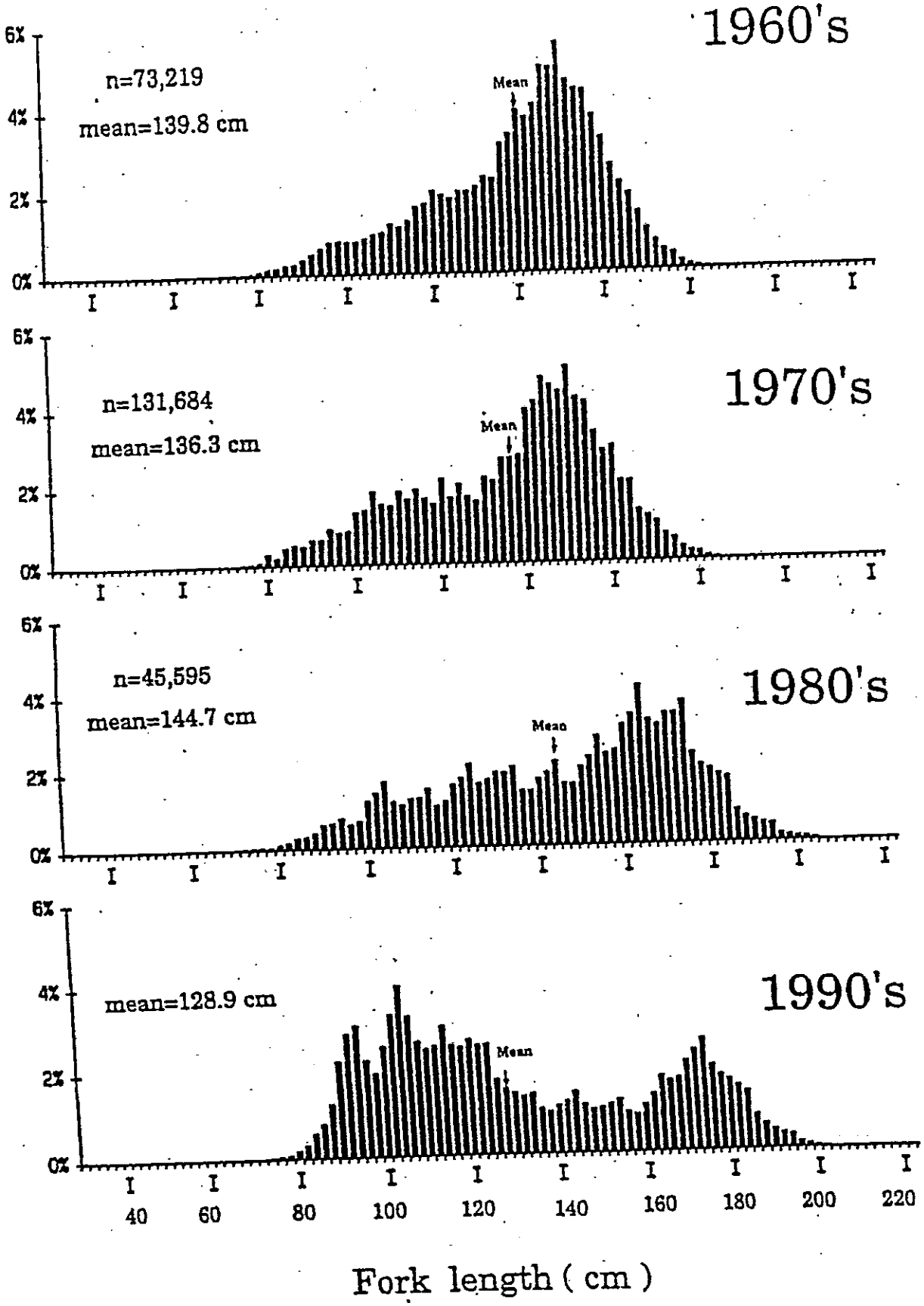


Figure 7: Size frequency by decade of Japanese longline fishery southern bluefin tuna catch (Source: Nishida 1993).

Figure 8: **Number of 1x1 degree squares fished each year by Japanese longliners between 1971 and 1994 in the SBT Statistical Areas 4 to 9.**(Source: Campbell et al 1995)

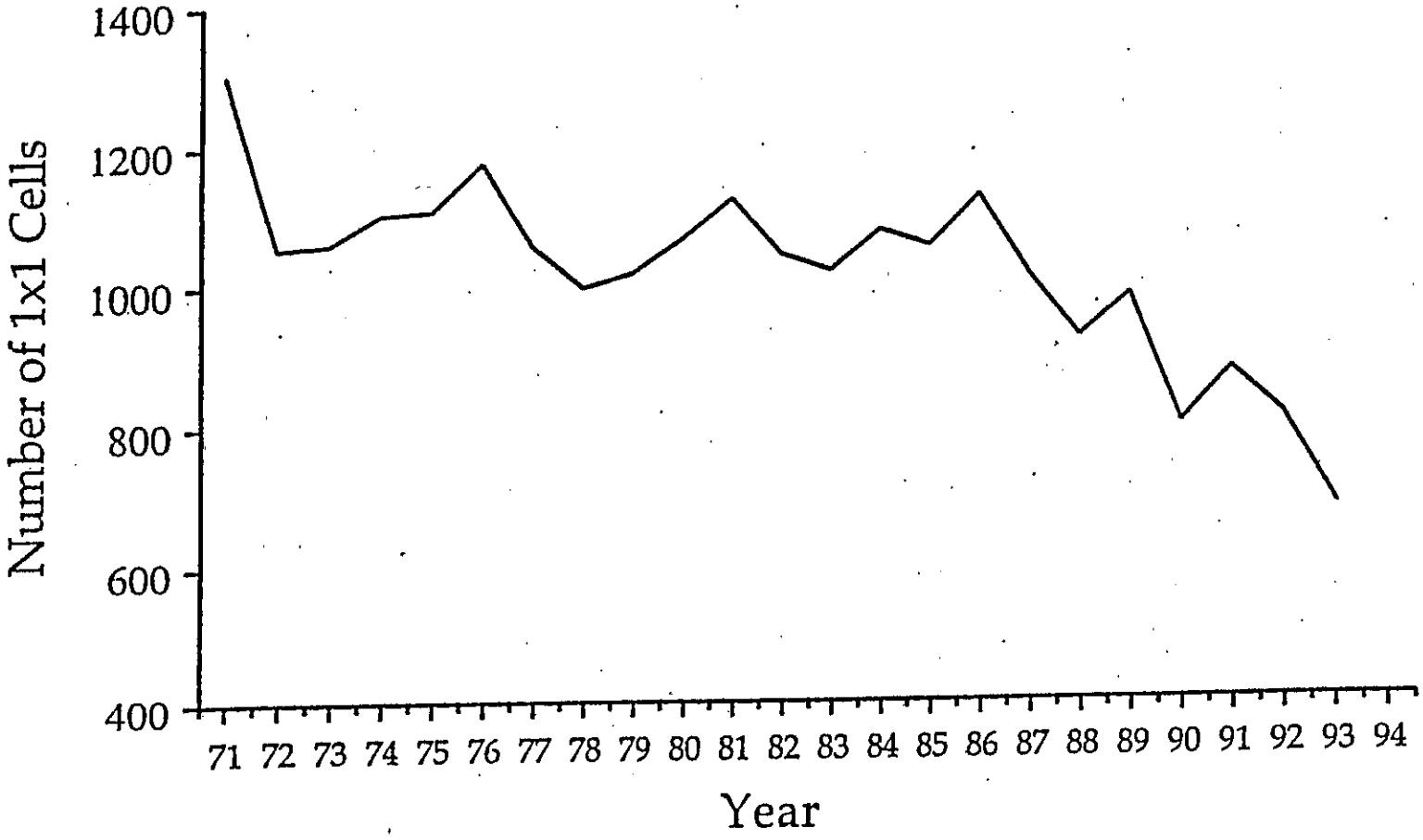


Figure 9: Distribution of Japanese longline effort over the 1x1 degree squares (expressed as percentage of the total squares fished each year) ordered by effort within the SBT Statistical Areas 4 to 9 (Source: Campbell et al 1995)

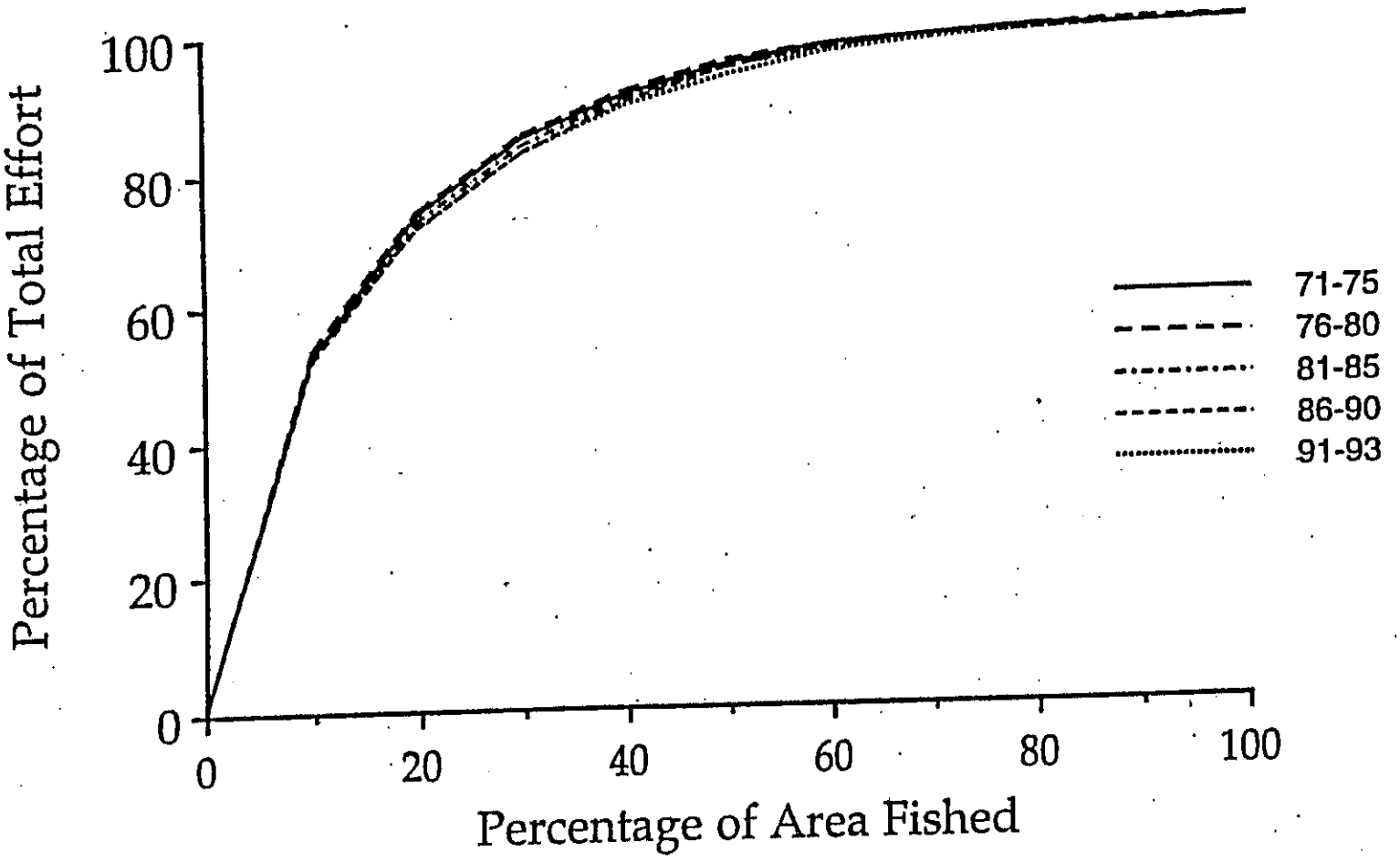
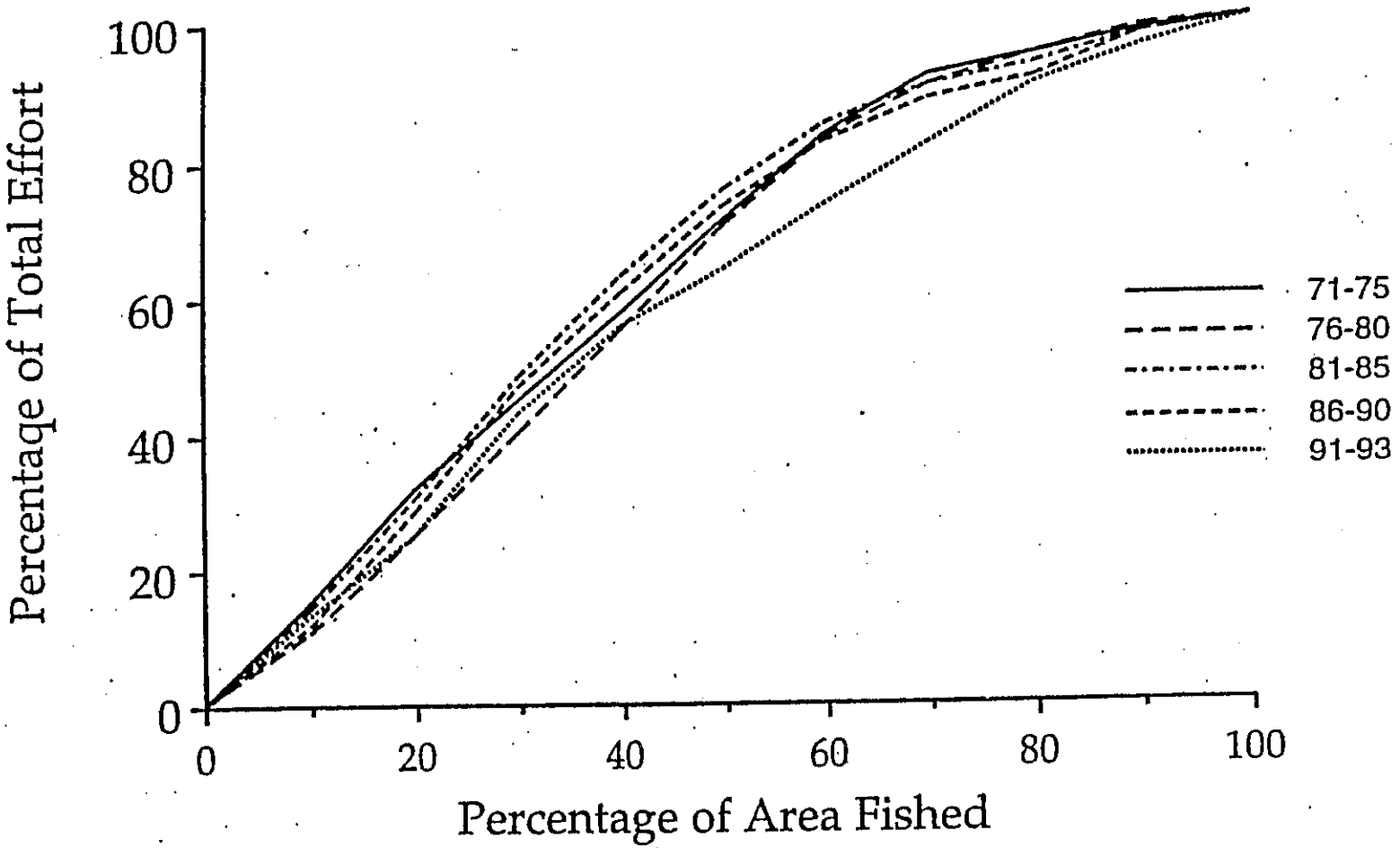
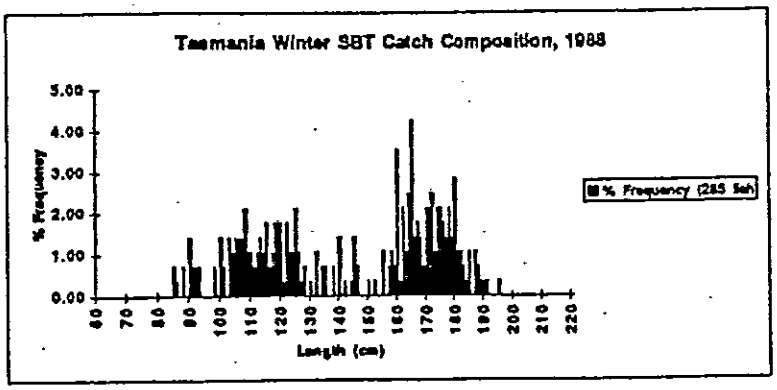
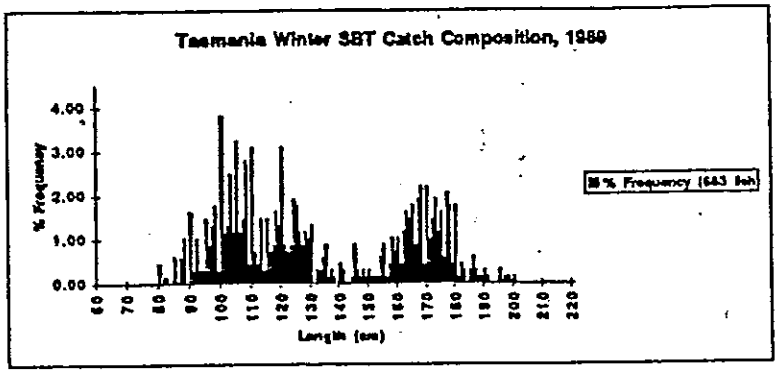
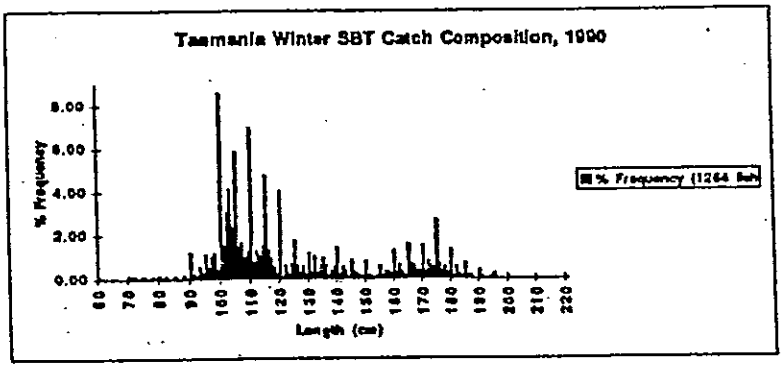


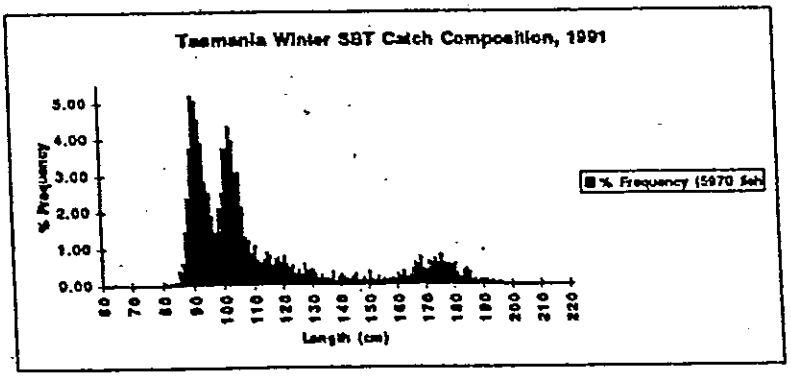
Figure 10: Distribution of Japanese longline effort over the 1x1 degree squares (expressed as percentage of the total squares fished each year) ordered by nominal catch rates within the SBT Statistical Areas 4 to 9 (Source: Campbell et al 1995)




Tasmania Winter SBT Catch Composition, 1988
% Frequency
Length (cm)
% Frequency (285 fish)


Tasmania Winter SBT Catch Composition, 1989
% Frequency
Length (cm)
% Frequency (683 fish)


Tasmania Winter SBT Catch Composition, 1990
% Frequency
Length (cm)
% Frequency (1264 fish)


Tasmania Winter SBT Catch Composition, 1991
% Frequency
Length (cm)
% Frequency (5970 fish)

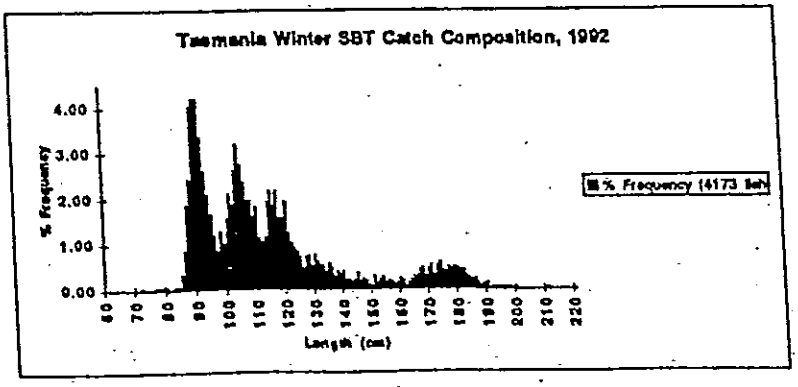

Tasmania Winter SBT Catch Composition, 1992
% Frequency
Length (cm)
% Frequency (4173 fish)

Figure 11 continued: Japanese longline Southern bluefin tuna catch length frequency distribution in winter off Tasmania, 1988 to 1996 (Source: and Williams 1996)

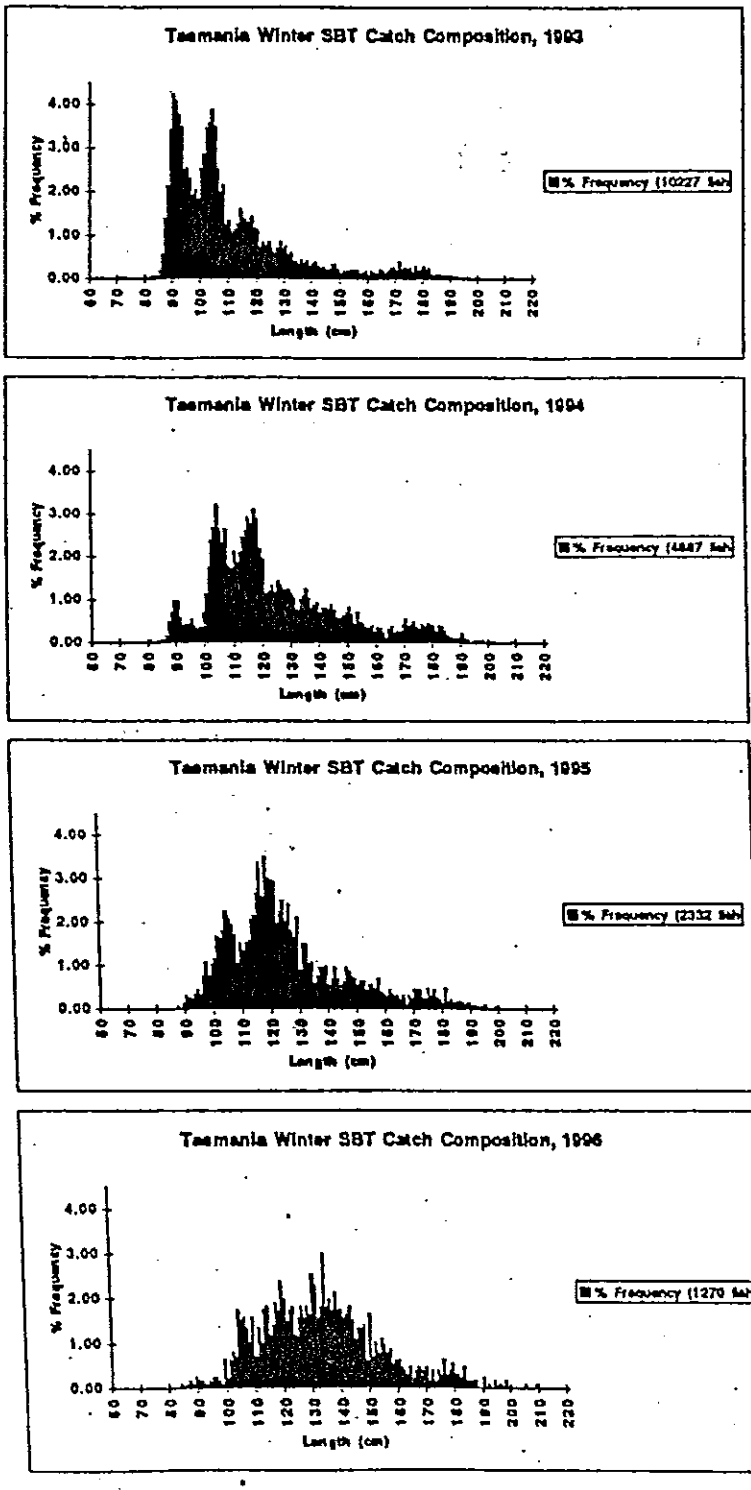


Figure 12: Processed weight frequency distributions for the Japanese foreign licensed longline fishery in the New Zealand EEZ, 1980-1994 (Source: Murray and Dean 1995)

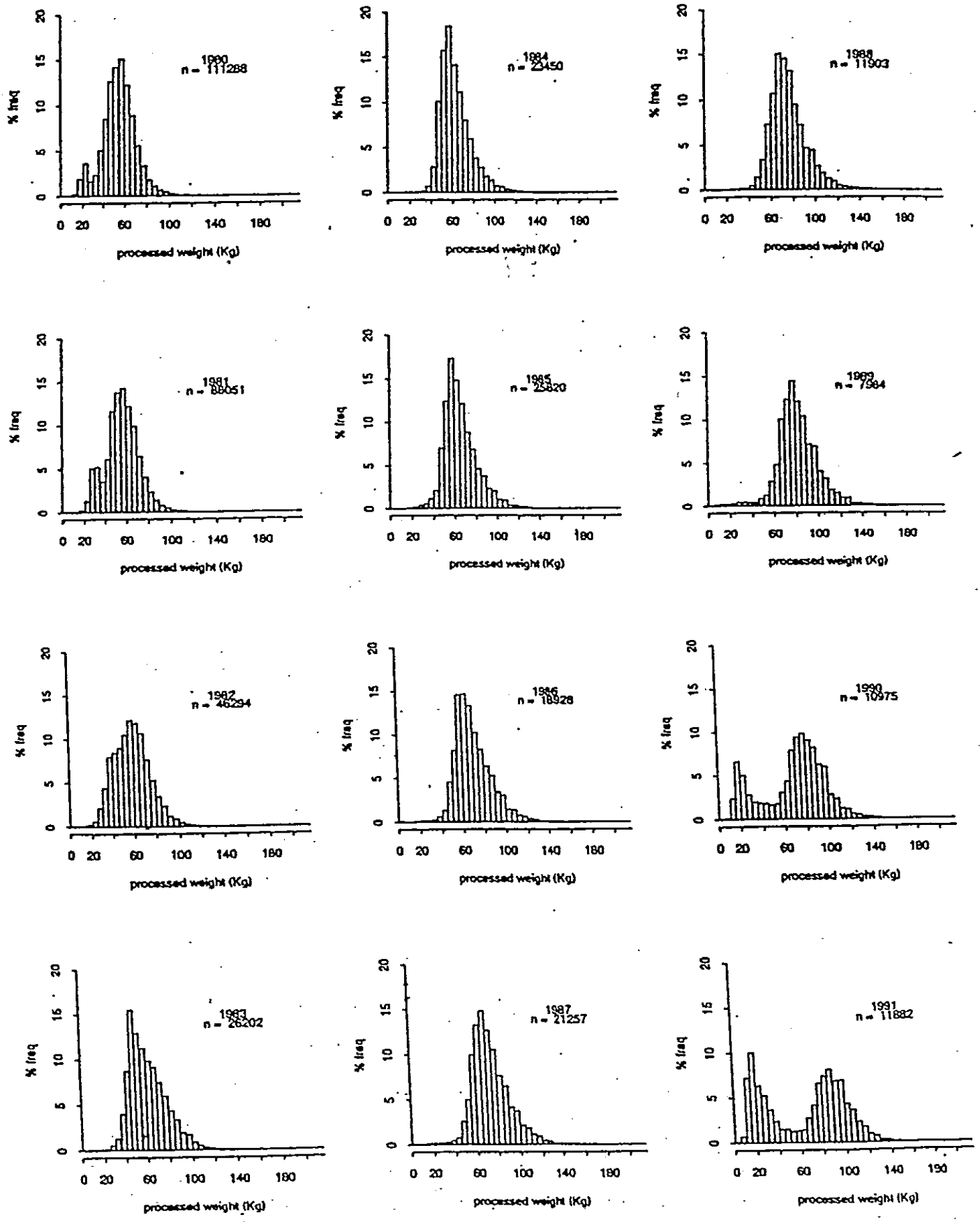


Figure 12 continued: Processed weight frequency distributions for the Japanese foreign licensed longline fishery in the New Zealand EEZ, 1980-1994 (Source: Murray and Dean 1995)

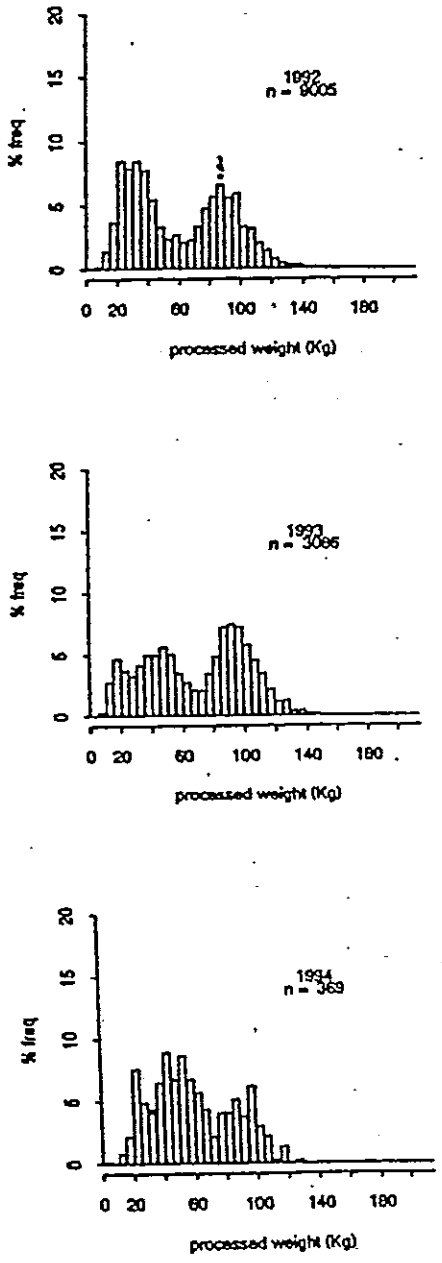


Figure 13: Processed weight frequency distributions for the New Zealand-Japan charter longline fishery in the New Zealand EEZ, 1989-1994 (Source: Murray and Dean 1995)

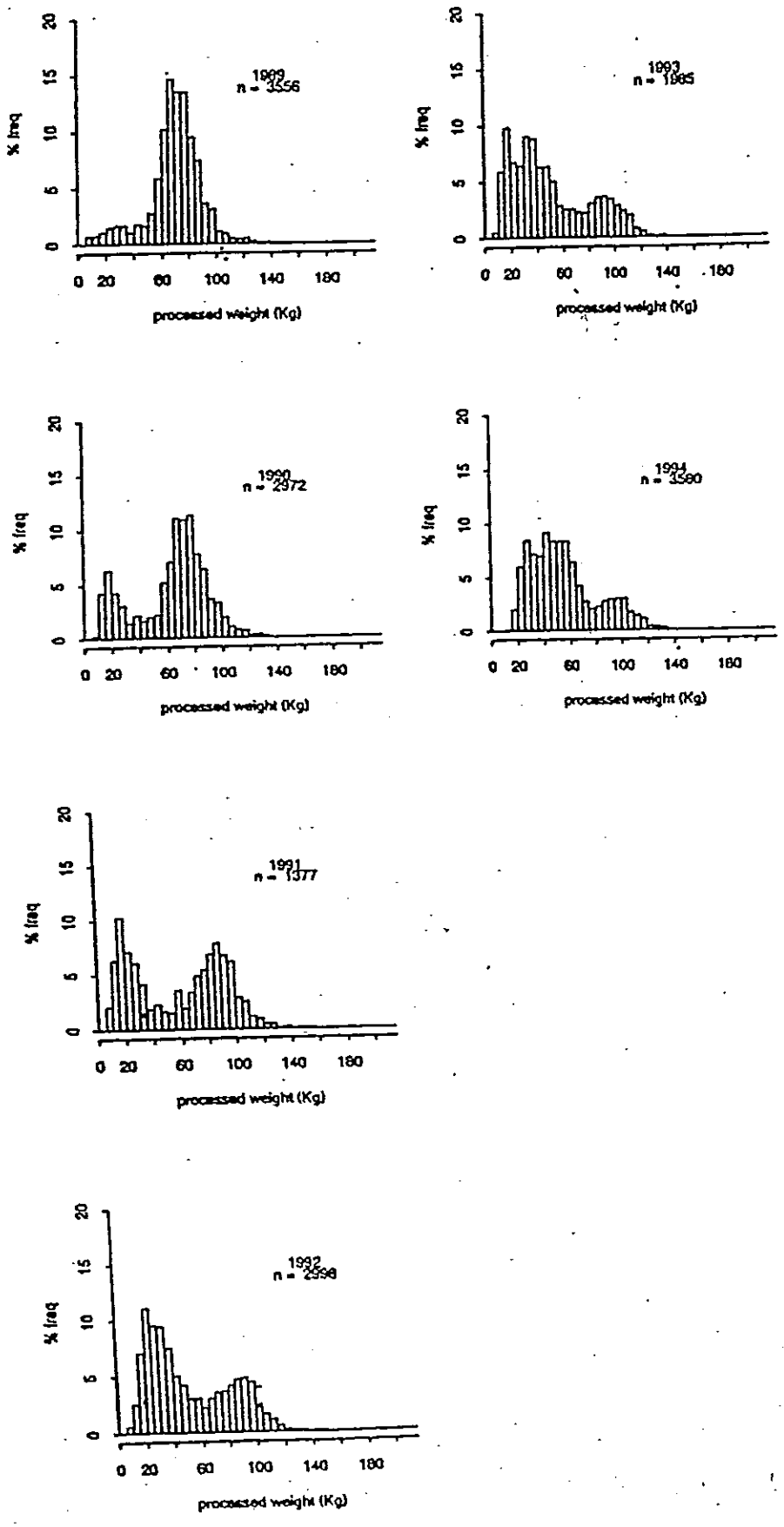


Figure 14: Processed weight frequency distributions for the New Zealand domestic fishery in the New Zealand EEZ, 1982-1994 (Source: Murray and Dean 1995)

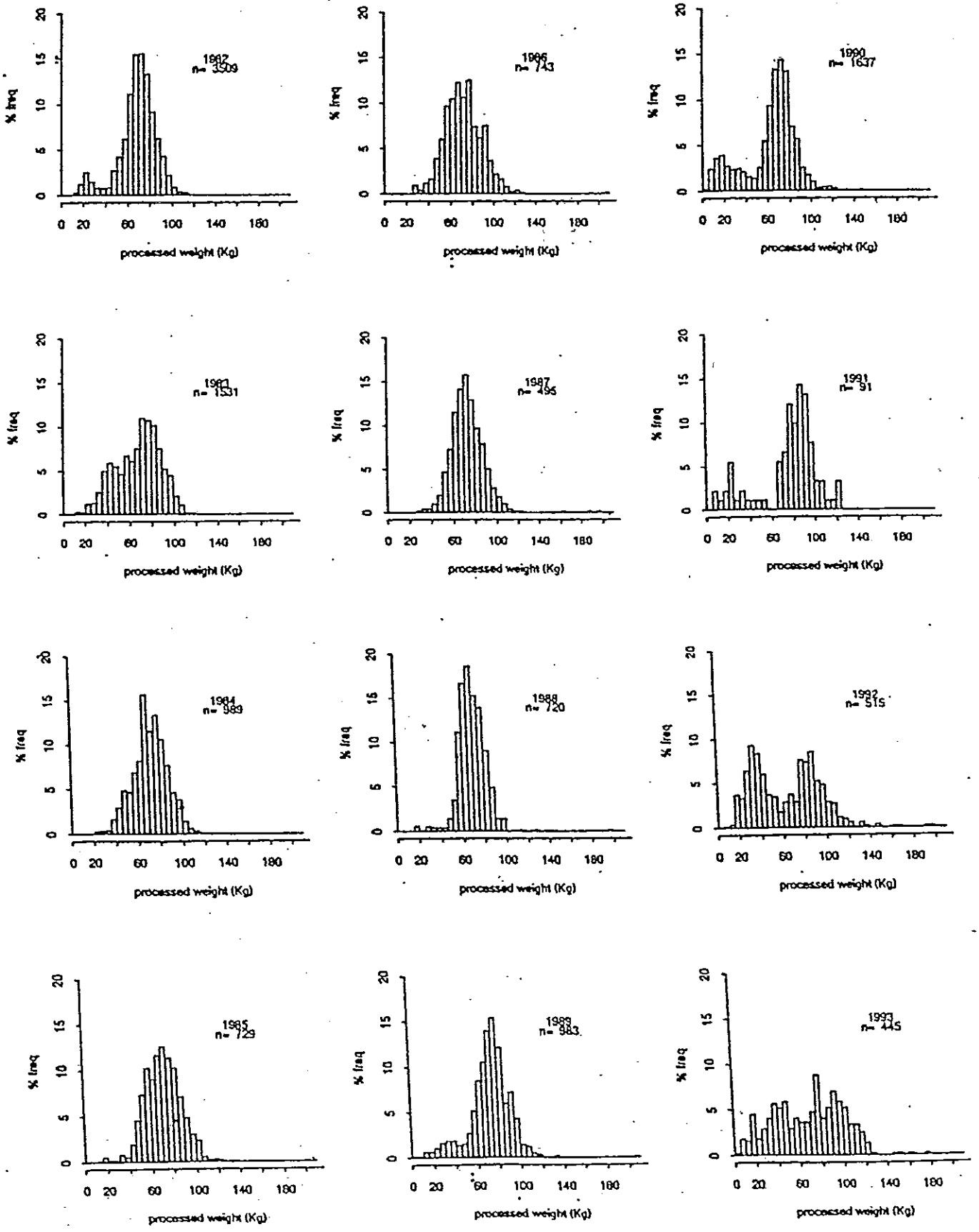
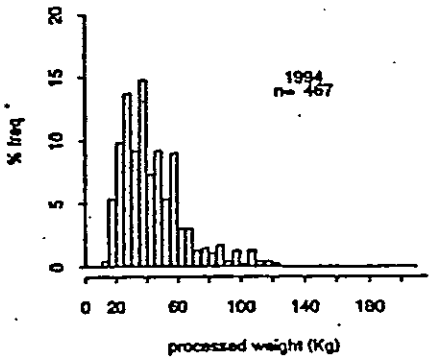


Figure 14 continued: Processed weight frequency distributions for the New Zealand domestic fishery in the New Zealand EEZ, 1982-1994 (Source: Murray and Dean 1995)



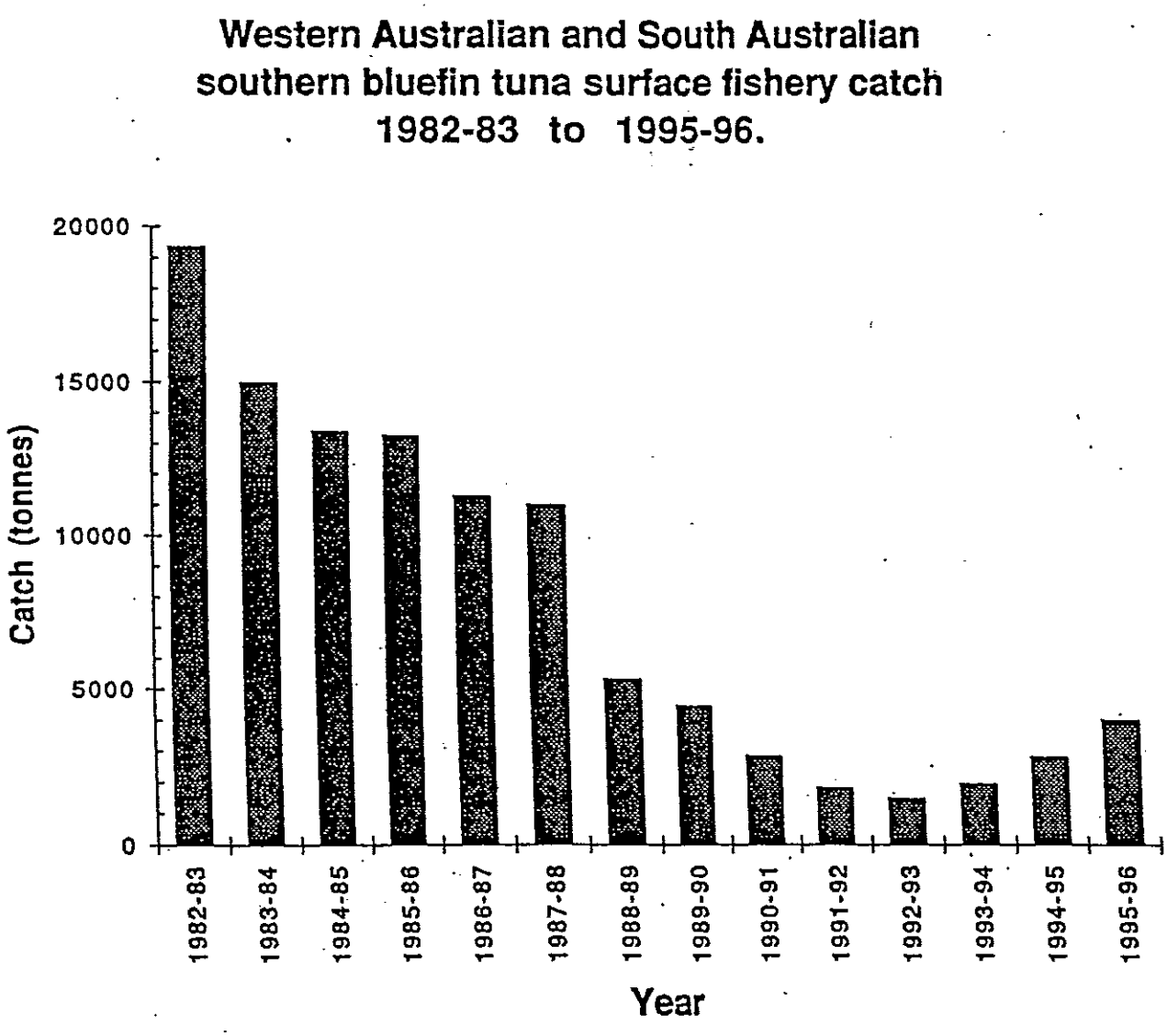
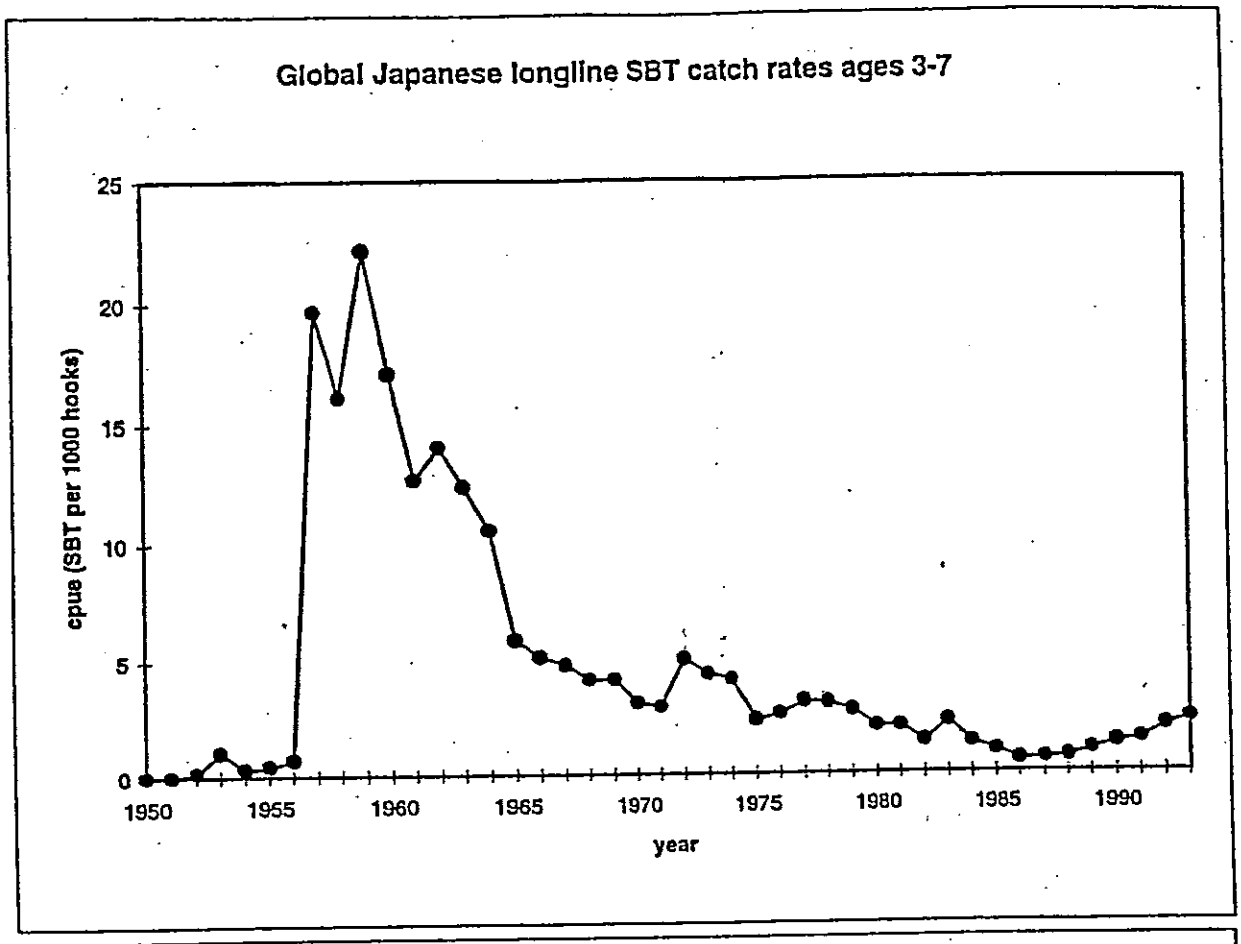


Figure 15: Western Australian and South Australian surface fishery southern bluefin tuna catch, 1982-83 to 1995-96 (Source: Caton and Williams 1996)



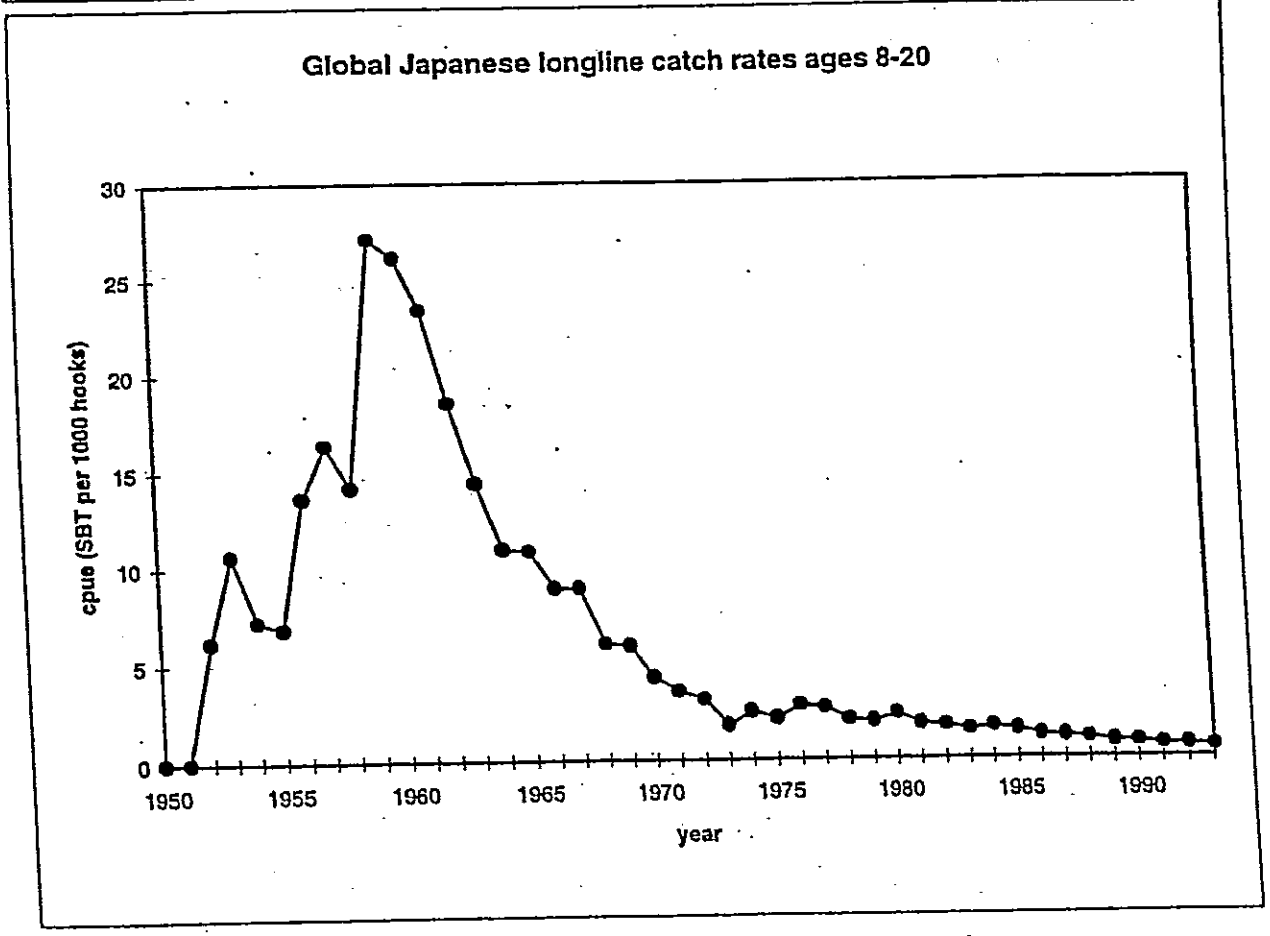


Figure 16 Nominal catch rate by age group of Southern Bluefin Tuna in the Japanese longline fishery 1952-1993 (source: Betlehem, Tuck and Polacheck 1996)

TABLES

Table 1.
Calendar year catch (tonnes whole weight) of southern bluefin tuna by country; 1952 to 1995.

Year	Australia	Indonesia	Japan	Korea	New Zealand	China (Taiwan)	Misc.	Total
1952	264		565					829
1953	509		3890					4399
1954	424		2447					2871
1955	322		1964					2286
1956	964		9603					10567
1957	1264		22908					24172
1958	2322		12462					14784
1959	2486		61892					64378
1960	3545		75826					79371
1961	3678		77927					81605
1962	4636		40397					45033
1963	6199		59724					65923
1964	6832		42838					49670
1965	6876		40689					47565
1966	8008		39644					47652
1967	6357		59281					65638
1968	8737		49657					58394
1969	8679		49769					58448
1970	7097		40929					48026
1971	6969		38149	500		100		45718
1972	12397		39458	100		17		51972
1973	9890		31225	100		12		41227
1974	12672		34005	182		1		46860
1975	8833		24134	99		9		33075
1976	8383	12	34099	28		2		42524
1977	12569	4	29600	7		1		42181
1978	12190	6	23632	94		20		35942
1979	10783	5	27828	0		53	4	38669
1980	11195	5	33653	0	130	64	7	45047
1981	16843	1	27981	0	173	179	14	45177
1982	21501	2	20789	6	305	158	9	42761
1983	17695	5	24881	0	132	118	7	42831
1984	13411	11	23328	1	93	243	3	37087
1985	12589	3	20396	0	94	115	2	33197
1986	12531	7	15182	0	82	70	3	27872
1987	10821	14	13964	0	59	168	7	25026
1988	10591	180	11422	0	94	280	2	22567
1989	6118	568	9222	0	437	1342	102	17687
1990	4586	517	7056	0	529	1127	4	13815
1991	4489	759	6474	0	165	1437	77	13324
1992	5248	1232	6137	0	60	1157	141	13834
1993	5373	1385	6320	117	217	618	18	14030
1994	4724	926	6064	147	277	1107	55	13245
1995 (est	4413	850	5866	650	436	1447		13662

[Australian catch includes joint venture and RTMP catches; Japanese catch does not include joint venture or RTMP catch; Indonesian catch is derived from the CSIRO/Indonesia monitoring programme; and Korean, Taiwan and Miscellaneous catches are based mainly on Japanese import statistics. Source: Australia - CSIRO and Australian Fisheries Management Authority; Japan - NRIFSF and Japan Fisheries Agency; New Zealand - NIWA; Indonesia - CSIRO; Korea, China (Taiwan), and Miscellaneous - Japan Tariff Association and Taiwan Fisheries Bureau.]

Table 2. Western Australian and South Australian southern bluefun tuna surface fishery catches (tonnes), 1982-83 to 1995-96.

Year	SA	WA	Total
1982-83	13831	5478	19309
1983-84	10419	4516	14935
1984-85	11271	2097	13368
1985-86	12088	1146	13234
1986-87	10029	1234	11263
1987-88	9849	1104	10953
1988-89	4872	425	5297
1989-90	4199	230	4429
1990-91	2588	220	2808
1991-92	1767	17	1784
1992-93	1438	0	1438
1993-94	1915	0	1915
1994-95	2805	1	2806
1995-96	4000(est)	1	4000

	Japanese virtual population analysis (VPA) estimates of numbers of immature (0-7-year-olds) and mature (8 years and older) southern bluefin tuna in 1966, 1980 and 1991.					
VPA version	1966 (0 to 7)	1966 (8 & older)	1966 Total	% immature, 1966	% mature, 1966	Avg mature age
Case 7	18972935	3765270	22738205	83%	17%	10.5
Case 8	18100898	3919530	22020428	82%	18%	10.7
Case 10	18690580	3598445	22289025	84%	16%	10.6
Case 19	21109450	4826111	25935561	81%	19%	10.2
VPA version	1980 (0 to 7)	1980 (8 & older)	1980 Total	% immature, 1980	% mature, 1980	Avg mature age
Case 7	14114998	1906628	16021626	88%	12%	10.7
Case 8	13328401	1578511	14906912	89%	11%	10.7
Case 10	14117102	1708800	15825902	89%	11%	10.6
Case 19	13178325	1997360	15175685	87%	13%	11.5
VPA version	1991 (0 to 7)	1991 (8 & older)	1991 Total	% immature, 1991	% mature, 1991	Avg mature age
Case 7	11767033	539722	12306755	96%	4%	12.8
Case 8	10614454	353465	10967919	97%	3%	12.4
Case 10	11973854	641781	12615635	95%	5%	11.6
Case 19	12072625	621905	12694530	95%	5%	11.3

Table 3: Japanese virtual population analysis estimates of numbers of immature (0-7-year-old) and mature (8 years and older) southern bluefin tuna in 1966, 1980 and 1991 (Source: Ishizuka et al 1995)

Australian virtual population analysis (VPA) estimates of numbers of immature (0-7-year-olds) and mature (8 years and older) southern bluefin tuna in 1966, 1980 and 1991.					
VPA version	1966 (0 to 7)	1966 (8 & older)	1966 Total	% immature, 1966	% mature, 1966
VPA1	9814000	3219000	13033000	75.3	24.7
VPA2	15003000	4019000	19022000	78.9	21.1
VPA3	9835000	3313000	13148000	74.8	25.2
VPA4	15016000	4051000	19067000	78.8	21.2
VPA version	1980 (0 to 7)	1980 (8 & older)	1980 Total	% immature, 1980	% mature, 1980
VPA1	8352000	1443000	9795000	85.3	14.7
VPA2	11026000	1966000	12992000	84.9	15.1
VPA3	8356000	1486000	9842000	84.9	15.1
VPA4	11021000	1983000	13004000	84.8	15.2
VPA version	1991 (0 to 7)	1991 (8 & older)	1991 Total	% immature, 1991	% mature, 1991
VPA1	4251000	331000	4582000	92.8	7.2
VPA2	6837000	594000	7431000	92.0	8.0
VPA3	3538000	350000	3888000	91.0	9.0
VPA4	5630000	605000	6235000	90.3	9.7

Table 4: Australian virtual population analysis estimates of numbers of immature (0-7-year-old) and mature (8 years and older) southern bluefin tuna in 1966, 1980 and 1991 (Source: Neil Klaer, CSIRO, pers. comm.)

Table VPA estimates of proportion (in number) of juvenile and adult SBT in 1980 relative to 1966, and in 1991 relative to 1966 and 1980.									
	%'80/66 (Immature)	%'80/66 (mature)	%'80/66 (Total)	%'91/66 (Immature)	%'91/66 (mature)	%'91/66 (Total)	%'91/80 (Immature)	%'91/80 (mature)	%'91/80 (Total)
Japan									
VPA Case 7	74%	51%	70%	62%	14%	54%	83%	28%	77%
VPA Case 8	74%	40%	68%	59%	9%	50%	80%	22%	74%
VPA Case 10	76%	47%	71%	64%	18%	57%	85%	38%	80%
VPA Case 19	62%	41%	59%	57%	13%	49%	92%	31%	84%
	%'80/66 (Immature)	%'80/66 (mature)	%'80/66 (Total)	%'91/66 (Immature)	%'91/66 (mature)	%'91/66 (Total)	%'91/80 (Immature)	%'91/80 (mature)	%'91/80 (Total)
Australia									
VPA Case1	85%	45%	75%	43%	10%	35%	51%	23%	47%
VPA Case2	73%	49%	68%	46%	15%	39%	62%	30%	57%
VPA Case3	85%	45%	75%	36%	11%	30%	42%	24%	40%
VPA Case4	73%	49%	68%	37%	15%	33%	51%	31%	48%
Japanese Range	62-76%	40-51%	59-71%	57-64%	9-18%	49-57%	80-92%	22-38%	74-84%
Australian Range	73-85%	45-49%	68-75%	36-46%	10-15%	30-39%	42-62%	23-31%	40-57%
Combined Range	62-85%	40-51%	59-75%	36-64%	9-18%	30-57%	42-92%	22-38%	40-84%

Table 5: Virtual Population Analysis estimates of proportion (by number) of juvenile and adult southern bluefin tuna in 1980 relative to 1966, and in 1991 relative to 1966 and 1980

Table VPA estimates of proportion (in number) of adult SBT in 1994 relative to 1966 and 1980 (note that estimates of size of the immature population in 1994 are not yet available).						
Japan	%'94/66 (immature)	%'94/66 (mature)	%'94/66 (Total)	% '94/80 (immature)	% '94/80 (mature)	% '94/80 (Total)
VPA Case 7	n.a.	14%	n.a.	n.a.	27%	n.a.
VPA Case 8	n.a.	10%	n.a.	n.a.	25%	n.a.
VPA Case 10	n.a.	20%	n.a.	n.a.	41%	n.a.
VPA Case 19	n.a.	13%	n.a.	n.a.	32%	n.a.
Australia	%'94/66 (immature)	%'94/66 (mature)	%'94/66 (Total)	% '94/80 (immature)	% '94/80 (mature)	% '94/80 (Total)
VPA Case1	n.a.	6%	n.a.	n.a.	14%	n.a.
VPA Case2	n.a.	10%	n.a.	n.a.	21%	n.a.
VPA Case3	n.a.	6%	n.a.	n.a.	14%	n.a.
VPA Case4	n.a.	10%	n.a.	n.a.	21%	n.a.
Japanese Range	n.a.	10-20%	n.a.	n.a.	25-41%	n.a.
Australian Range	n.a.	6-10%	n.a.	n.a.	14-21%	n.a.
Combined Range	n.a.	6-20%	n.a.	n.a.	14-41%	n.a.

Table 6: Virtual Population Analysis estimates of proportion (by number) of adult southern bluefin tuna in 1994 relative to 1966 and 1980 (note that estimates of the size of the immature population in 1994 are not yet available)

Table 7: Summary of Australian and Japanese Virtual Population analysis estimates of proportional reduction (percentage by number) in total and adult southern bluefin tuna populations across various ranges of years

Year	Total	Parents
1966-1980	59-75% Japan 59-71% Australia 68-75%	40-51% Japan 40-51% Australia 45-49%
1966-1991	30-57% Japan 49-57% Australia 30-39%	9-18% Japan 9-18% Australia 10-15%
1966-1994	(not available; estimates of juvenile cohorts incomplete)	6-20% Japan 10-20% Australia 6-10%
1980-1991	40-84% Japan 74-84% Australia 40-57%	20-38% Japan 22-38% Australia 23-31%
1980-1994	(not available; estimates of juvenile cohorts incomplete)	14-41% Japan 25-41% Australia 14-21%

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i) exceeding, over an extended period (note 53), the level that can be continued in perpetuity; or
ii) reducing it to a population level at which its survival would be threatened by other influences.

40

Annex 2b to Resolution Conf. 9.24 - *Criteria for the Inclusion of Species in Appendix II in Accordance with Article II, Paragraph 2(b)*

Species should be included in Appendix II in accordance with Article II, paragraph 2(b), if they satisfy one of the following criteria.

A. The specimens resemble specimens of a species included in Appendix II under the provisions of Article II, paragraph 2(a), or in Appendix I, such that a non-expert, with reasonable effort, is unlikely to be able to distinguish between them.

B. The species is a member of a taxon of which most of the species are included in Appendix II under the provisions of Article II, paragraph 2(a), or in Appendix I, and the remaining species must be included to bring trade in specimens of the others under effective control.

41

Annex 3 to Resolution Conf. 9.24 - *Special Cases*

Split-Listing

Listing of a species in more than one Appendix should be avoided in general in view of the enforcement problems it creates. When split-listing does occur, this should generally be on the basis of national or continental populations, rather than subspecies. Split-listings that place some populations of a species in the Appendices, and the rest outside the Appendices, should normally not be permitted.

For species outside the jurisdiction of any State, listing in the Appendices should use the terms used in other relevant international agreements, if any, to define the population. If no such international agreement exists, then the Appendices should define the population by region or by geographic co-ordinates.

Taxonomic names below the species level should not be used in the Appendices unless the taxon in question is highly distinctive and the use of the name would not give rise to enforcement problems.

Higher Taxa

If all species of a higher taxon are included in Appendix I or II, they should be included under the name of the higher taxon. If some species in a higher taxon are

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intergovernmental bodies having a function in relation to that species should be consulted as well. In this context it notes the competence of certain intergovernmental organizations in relation to the management of marine species. The latter subject is given a lot of attention in the text of the Convention, see notes **331**, **343** and **345**.

The Resolution also emphasizes the importance of **Resolution Conf. 3.4**, regarding the need to provide to developing countries technical assistance in matters relating to the Convention.

In **Resolution Conf. 8.21** the Conference of the Parties notes that the provisions of the Convention do not require the prior support of range states for proposals to amend Appendices I and II, but observes that many proposals have been submitted without the comments from the range states, as provided for in **Resolution Conf. 2.17**, being sought. It recognizes, however, that for certain taxa with extensive distributions such consultation may be difficult. Conscious that amendments to Appendices I and II may affect the interests of range states, remarking that international treaties rely for their successful implementation upon cooperation and mutual respect and mindful that an additional period of time may be required to consult with range states, the Conference of the Parties recommends that for *any submission of a proposal to amend Appendix I or II of the Convention* one of the following two procedures be applied:

The reference to *any submission of a proposal* implies that range states should also be consulted where a proposal concerns a population or populations of a species.

a) where the proposing Party intends to consult the range states, it

   i) advises the Management Authorities of the range states within which the species occurs of its intention to submit a proposal;

   ii) consults with the Management and Scientific Authorities of these states on the substance of the proposal; and

   iii) includes the opinions of these Authorities in section 6 of the proposal submitted in accordance with Resolution Conf. 2.17 (now Resolution Conf. 9.24) except that, where no response has been received from a range state within a reasonable period of time, the proposing Party may instead simply document its attempts to obtain these opinions; or

b) where prior consultation with range states will not take place:

   i) the Party submits the proposal at least 330 days in advance of the next scheduled meeting of the Conference of the Parties;

ii) the Secretariat circulates the proposal as soon as possible to all Parties; and

iii) interested Parties send their comments to the proposing Party in order to allow it to submit a revised proposal at least 150 days prior to the meeting. The revised proposal should incorporate the comments received, in compliance with Resolution Conf. 2.17 (now Resolution Conf. 9.24), separating them into two categories, reflecting the opinions of range states and non-range states.

34 **The precautionary principle in Resolution Conf. 9.24** (see notes 42-49)

The Resolution recognizes that by virtue of the precautionary principle, in cases of uncertainty, the Parties shall act in the best interest of the conservation of the species when considering proposals for amendment of Appendices I and II. It resolves that when considering any proposal to amend Appendix I or II the Parties shall apply the precautionary principle so that scientific uncertainty should not be used as a reason for failing to act in the best interest of the conservation of the species;

The *precautionary principle* was already included in the Bern criteria (see note **21**). It is also laid down in Principle 15 of the June 1992 Rio Declaration on Environment and Development. See point 7 of **Chapter 1**.

35 **Resolution Conf. 9.24** resolves - on the basis of the considerations mentioned in notes **31** to **34** above - that, when considering proposals to amend Appendices I and II, the following applies:

a) any species that is or may be affected by trade should be included in Appendix I if it meets at least one of the biological criteria listed in Annex 1 (note **38**);

b) a species "is or may be affected by trade" if:

i) it is known to be in trade; or
ii) it is probably in trade, but conclusive evidence is lacking; or
iii) there is potential international demand for specimens; or
iv) it would probably enter trade were it not subject to Appendix-I controls;

c) any species that meets the criteria for inclusion in Appendix II listed in Annex 2a (note **39**) should be included in Appendix II in accordance with Article II, paragraph 2(a);