



## ISSF STATUS OF THE WORLD FISHERIES FOR TUNA

### MANAGEMENT OF TUNA STOCKS AND FISHERIES

This document summarizes the management frameworks that are in place for tuna stocks and fisheries, with emphasis on intergovernmental arrangements known as Regional Fishery Management Organizations (RFMOs). The document also summarizes the main measures adopted by RFMOs in terms of Monitoring, Control and Surveillance. (Summaries of measures adopted by RFMOs for tuna stock conservation and bycatch mitigation are located in the ISSF Stock Status Report corresponding to each of the stocks -ISSF Technical Report 2012-04).

#### Table of Contents

|                                                                                                                           |           |
|---------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>1. Introduction.....</b>                                                                                               | <b>2</b>  |
| <b>2. RFMOs .....</b>                                                                                                     | <b>3</b>  |
| 2.1 Inter-American Tropical Tuna Commission (IATTC) .....                                                                 | 3         |
| 2.2 Western and Central Pacific Fisheries Commission (WCPFC) .....                                                        | 5         |
| 2.3 International Commission for the Conservation of Atlantic Tunas (ICCAT).....                                          | 7         |
| 2.4 Indian Ocean Tuna Commission (IOTC) .....                                                                             | 8         |
| 2.5 Commission for the Conservation of Southern Bluefin Tuna (CCSBT) .....                                                | 9         |
| <b>3. National Governments .....</b>                                                                                      | <b>11</b> |
| <b>4. Challenges .....</b>                                                                                                | <b>11</b> |
| 4.1 Fishing capacity .....                                                                                                | 11        |
| 4.2 Allocation.....                                                                                                       | 12        |
| 4.3 Insufficient financial resources.....                                                                                 | 12        |
| 4.4 Bycatches .....                                                                                                       | 12        |
| <b>Appendix 1. Participation in Tuna RFMOs and UNFSA (updated 7/2012) .....</b>                                           | <b>14</b> |
| <b>Appendix 2. Summary of Monitoring, Control and Surveillance (MCS) Measures Adopted by RFMOs (Updated 7/2011) .....</b> | <b>17</b> |

## 1. Introduction

Tunas are like any other renewable resource: the rate at which they are harvested affects their abundance and their ability to sustain various levels of exploitation. As fishing pressure on tuna increases on a global scale, it is essential that mechanisms be implemented to maintain the degree of exploitation at levels that will ensure that the populations of tunas and other large predators are maintained at desired levels of abundance. However, effective management of the tunas and billfishes is complicated by the fact that they are great wanderers, and during the course of their travels pass through waters under the jurisdiction of many different nations as well as on the high seas; therefore, no nation can unilaterally manage tuna in an effective manner. International law calls on states to co-operate, directly or through appropriate international organizations, to ensure the conservation of highly-migratory species<sup>1</sup>.

Currently, there are five regional fisheries management organizations (RFMOs) responsible for tuna fisheries: the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), the Western and Central Pacific Fisheries Commission (WCPFC), and the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). These bodies have as an objective the maintenance of the populations at or above levels of abundance that can support the maximum sustainable yield (MSY) on a sustained basis. **Section 2** of this document provides more information about these tuna RFMOs.

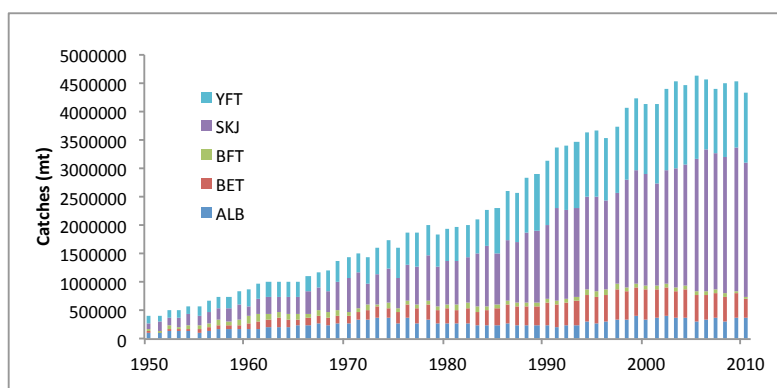
The so-called UN Fish Stocks Agreement<sup>2</sup> (UNFSA) provides further arrangements for countries to cooperate in the management of highly migratory stocks for the effective implementation of the relevant provisions of the Law of the Sea. But, not all RFMO members are parties to this Agreement, so it is not binding to RFMOs in general. Nevertheless, UNFSA has prompted improvements in all tuna RFMOs through the adoption of some of the arrangements that it outlines.

The global catch of albacore, bigeye, bluefin, skipjack and yellowfin in 2010 was 4.34 million tonnes, a 4% decrease from 2009. Catches increased steadily until the early 2000s and have stabilized since then (Figure 2.1). This plateau is explained by continuously-increasing catches of skipjack, offset by declining catches of yellowfin and bigeye (Figure Global2). Ranked by species (using the 2006-2010 average = 4,471,000 tonnes), the majority of the catch is skipjack (55%), followed by yellowfin (27%), bigeye (9%), albacore (8%) and bluefin (1%). In terms of fishing gear, 63% of the catch is made by purse seining, followed by longline (14%), miscellaneous gears (gillnets, handline, traps, etc., 13%), and pole-and-line (10%).

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<sup>1</sup> Article 64 of the United Nations Convention on the Law of the Sea.

<sup>2</sup> Agreement for the Implementation of the Provisions of the United Nations Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.



**Figure 2.1.** Global catches of the principal tuna species, 1950-2010.

## 2. RFMOs

Brief descriptions are provided below for each of the five tuna RFMOs. More detailed information can be obtained from the Web Sites provided.

Each of the RFMOs may adopt conservation and management measures to ensure that the tuna stocks are maintained at levels consistent with each Convention, or to restore the stocks to those levels. In addition, the RFMOs may adopt measures to address ecosystem considerations, for example through bycatch mitigation. These measures are not summarized in this document, as they are part of the ISSF Stock Status Report (ISSF Technical Report 2011-04) corresponding to each of the stocks.

The following appendices provide additional information:

**Appendix 1** lists the members of each RFMO and whether or not they are also parties to UNFSA.

**Appendix 2** summarizes the main Monitoring, Control and Surveillance (MCS) measures adopted by the various RFMOs.

### 2.1 *Inter-American Tropical Tuna Commission (IATTC)*

Established:

1950.

Note: The "Antigua Convention" (for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention) entered into force in 2010.

Headquarters:

La Jolla, California, USA.

Area of competence:

Pacific Ocean waters East of 150° (EPO).

Convention Objective:

Art. II: "... ensure the long-term conservation and sustainable use of the fish stocks covered by this Convention, in accordance with the relevant rules of international law."

Article VII: "... adopt measures ... to maintain or restore the populations of harvested species at levels of abundance which can produce the maximum sustainable yield."

NOTE: The IATTC also serves as the Secretariat for the International Dolphin Conservation Programme (AIDCP) which aims to reduce dolphin mortality in fisheries that target tuna schools associated with dolphins (primarily yellowfin); to seek ecologically sound means of capturing large yellowfin tunas not in association with dolphins; and to ensure the long-term sustainability of the tuna stocks in the Agreement Area, as well as that of the marine resources related to this fishery.

Ecosystems / Precautionary Approach:

The Commission may adopt conservation and management measures for species belonging to the same ecosystem and that are affected by fishing for the target stocks, with the objective that their reproduction does not become seriously threatened. In addition, the Commission is required to apply the Precautionary Approach (as described by UNFSA) in adopting conservation and management measures. See also AIDCP objectives referred to above.

Tuna stocks managed (reported 2010 catches):

EPO Yellowfin (259,000 t)

EPO Bigeye (94,000 t)

EPO Skipjack (149,000 t)

North Pacific Albacore (also managed by WCPFC) (21,000 t)

South Pacific Albacore (managed by WCPFC) (8,000 t)

Pacific Bluefin (also managed by WCPFC) (8,000)

Principal fishing gears:

Purse Seining (91%)

Long lining (8%)

Other species subject to conservation management measures:

Dolphins, sharks, sea turtles, sea birds.

Number of Members:

21

Number of Cooperating non-Parties:

1

New Members:

Under the Antigua Convention, coastal states can become members; other states would have to be invited to accede by the existing Parties.

Web Site:

<http://www.iattc.org>

Scientific Advice:

IATTC has a relatively large number of staff in charge of collecting fisheries data, conducting biological studies and conducting stock assessments. It is the Director's responsibility to make recommendations for management actions based on these assessments. The stock assessment results and draft recommendations are supposed to be reviewed by a Scientific Advisory Committee (SAC) composed of representatives from each Commission member. The SAC may suggest changes before the scientific advice is finalized by the Director for presentation to the

Commission members. However, three years after the Antigua Convention entered into force, SAC participation has been insufficient to reach a quorum, so the Staff's recommendations have gone directly to the Commission.

Some of the data collected or compiled by the staff are very detailed, particularly for purse seine fisheries. Data for other fisheries such as longline ones tend to be reported by Commission members in an aggregated form.

Decision-making:

The IATTC Convention requires that decisions be adopted by consensus (consensus means without a vote and without stated objections). In some cases (such as allocation of catches, effort or capacity), consensus has to be by all members; in other cases, consensus is required of the members present at a meeting (two-thirds of the members are needed in order for a meeting to have quorum). Decisions that are binding to members are called "Resolutions".

## ***2.2 Western and Central Pacific Fisheries Commission (WCPFC)***

Established:

2004.

Headquarters:

Kolonia, Pohnpei State, Federated States of Micronesia.

Area of competence:

Approximately, Pacific Ocean waters West of 150°W to the North of 4°S and waters West of 130°W to the South of 4°S (WPO).

Convention Objective:

Article 2: "... the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the 1982 Convention and the Agreement [The Law of the Sea and UNFSA]."

Article 5: "... ensure that such measures are based on the best scientific evidence available and are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States in the Convention Area, particularly small island developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global."

Ecosystems / Precautionary Approach:

The Commission is required to assess the impacts of fishing, other human activities and environmental factors on non-target species, and species belonging to the same ecosystem or dependent upon or associated with the target stocks. In addition, there is an explicit requirement to apply the Precautionary Approach (as described by UNFSA) in adopting conservation and management measures.

Tuna stocks managed (reported 2010 catches):

WPO Yellowfin (559,000 t)

WPO Bigeye (126,000 t)

WPO Skipjack (1,611,000 t)

North Pacific Albacore (also managed by IATTC) (72,000 t)

South Pacific Albacore (81,000t)

Pacific Bluefin (also managed by IATTC) (9,500 t)

Principal fishing gears:

Purse Seining (75%)  
Long lining (10%)  
Pole and line (8%)

Other species subject to conservation management measures:

Swordfish, striped marlin, sharks, seabirds, sea turtles.

Number of Members:

25

Number of Cooperating Parties:

11

New Members:

New members would have to be countries located in the Convention Area (coastal States) or invited to accede by the Commission.

Web Site:

<http://www.wcpfc.int>

Scientific Advice:

The Secretariat of the Pacific Community's (SPC's) Oceanic Fisheries Programme (<http://www.spc.int/oceanfish/>) serves as the Commission's Science Services Provider and Data Manager. As the SPC started collecting fisheries data and conducting biological studies and stock assessments before WCPFC was established, this relationship minimizes duplication of effort between the two organizations. The WCPFC has a Scientific Committee (SC) composed of representatives from each Commission member. The SC reviews the assessment results and related information prepared by SPC and by other SC experts and makes recommendations for management actions based on these assessments.

The International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC, <http://isc.ac.affrc.go.jp/>) provides scientific advice for species that inhabit the Pacific Ocean in waters generally North of 20°N, inside and outside the Convention Area (e.g., North Pacific albacore and Pacific bluefin).

Decision-making:

Decisions taken by WCPFC are generally done by consensus. In cases where decisions have to be taken by vote, usually on substantive matters, a "two-chamber system" applies. The Pacific Islands Forum Fisheries Agency (FFA) members of the Commission comprise one chamber, while the non-FFA members form the other chamber. Decisions are taken by a three-fourths majority of those present and voting in each chamber and no proposal can be defeated by two or fewer votes in either chamber. Decisions that are binding to Commission members are called "Resolutions". In respect of stocks occurring primarily north of 20°N (the so-call "northern stocks"), management decisions by the Commission are based on recommendations of the Northern Committee. Currently, North Pacific albacore, Pacific bluefin and North Pacific swordfish are recognized as "northern stocks".

Other notes:

- The FFA (<http://www.ffa.int>) was created in 1979, recognizing that the 200-mile extension of EEZ jurisdiction would result in most of the tuna resources of the WCPO falling within the EEZs of Pacific island states. The FFA deals with registration and licensing arrangements and implements monitoring and enforcement capabilities. The FFA maintains a regional register of foreign fishing

vessels that are eligible to apply for access licenses for fishing in the EEZs of the FFA members.

- The Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest, which entered into force in 1982, has the objective of coordinating and harmonizing the management of fisheries with regard to common stocks within the EEZs of the eight Contracting Parties (which account for roughly 25% of the world's tuna catch). The Parties to the Nauru Agreement (PNA, <http://www.pnatuna.com/>) grant priority to fishing vessels of the Parties and establish uniform terms and conditions under which the Parties may license foreign fishing vessels. To date, the FFA has provided much of the advisory, administrative, and secretariat support for the Nauru Agreement. However, since 2010 the PNA established its own offices in Majuro, Marshall Islands.

### ***2.3 International Commission for the Conservation of Atlantic Tunas (ICCAT)***

Established:

1969.

Headquarters:

Madrid, Spain.

Area of competence:

Atlantic Ocean, including adjacent seas (e.g., Mediterranean).

Convention Objective:

Preamble: "[members]... to co-operate in maintaining the populations of these fishes at levels which will permit the maximum sustainable catch for food and other purposes."

Article VIII: "The Commission may, on the basis of scientific evidence, make recommendations designed to maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area at levels which will permit the maximum sustainable catch."

Ecosystems / Precautionary Approach:

The ICCAT Convention pre-dates UNCLOS and UNFSA; there is no explicit mention in the Convention about the Precautionary Approach or ecosystem considerations. However, the Convention requires that the Commission study other species of fishes exploited in Atlantic tuna fisheries as long as they are not under investigation by another international fishery organization.

Tuna stocks managed (reported 2010 catches):

Atlantic Yellowfin (108,000 t)

Atlantic Bigeye (76,000 t)

Eastern Atlantic Skipjack (116,000 t)

Western Atlantic Skipjack (18,000 t)

Northern Atlantic Albacore (20,000 t)

Southern Atlantic Albacore (19,000 t)

Mediterranean Albacore (2,000 t)

Western Atlantic Bluefin (2,000 t)

Eastern Atlantic and Mediterranean Bluefin (11,000 t)

Principal fishing gears:

Purse Seining (54%)

Pole and line (19%)

Long lining (20%)

Other species subject to conservation management measures:

Swordfish, marlins, sharks, sea turtles, sea birds.

Number of Members:

48

Number of Cooperating Parties:

5

New Members:

Open to accession by any member of the United Nations.

Web Site:

<http://www.iccat.int>

Scientific Advice:

The Standing Committee on Research and Statistics (SCRS), composed of representatives from each Commission member, is responsible for all scientific work and providing scientific advice on management measures. The Secretariat plays primarily a facilitating role in organizing meetings, maintaining databases and making publications. The stock assessments are carried out by species-specific working groups of the SCRS.

Decision-making:

Decisions taken by ICCAT are generally done by consensus. Conservation and management measures for tuna stocks are first elaborated by Panels (bigeye, yellowfin and skipjack are in Panel 1; bluefin tuna, northern albacore and Mediterranean albacore are in Panel 2; southern albacore are in Panel 3). If a vote is required in a Panel, a simple majority of the Panel members needs to be in favor in order for the proposal to move to the Commission. Once the Commission considers a Panel-approved proposal, and a vote is needed, a two-third majority of Commission members is required for the proposal to be adopted (Note: other decisions that are not originated in Panels require a majority of Commission members). Decisions that are binding to Commission members are called "Recommendations" (ICCAT is the only tuna RFMO where "Resolutions" refer to non-binding measures and "Recommendations" refer to binding ones). There is well-defined system for members to object to any management Recommendation approved, and any member that meets a particular schedule of objections is not bound by it, i.e. there is an "opt out" clause for nations that do not want to be bound by the management measure.

## ***2.4 Indian Ocean Tuna Commission (IOTC)***

Established:

1996.

IOTC was established under Article XIV of the FAO Constitution (it is the only Tuna RFMO established in this way).

Headquarters:

Victoria, Seychelles.

Area of competence:

The Indian Ocean (IO, defined for the purpose of the Agreement as being FAO Statistical Areas 51 and 57), and adjacent seas, north of the Antarctic Convergence. In 1999, the Commission extended the western boundary of the IOTC statistical

area from 30°E to 20°E, thus eliminating the gap in between the areas covered by the IOTC and ICCAT.

Convention Objective:

Article V: "...ensuring, through appropriate management, the conservation and optimum utilization of stocks..."

Ecosystems / Precautionary Approach:

The IOTC Convention makes no explicit mention about the Precautionary Approach or ecosystem considerations. The Precautionary Approach was formally adopted in 2012 through a Resolution. The Commission requires data for non-target species that are caught in Indian Ocean tuna fisheries.

Tuna stocks managed (reported 2010 catches):

IO Yellowfin (299,000 t)

IO Bigeye (71,000 t)

IO Skipjack (429,000 t)

IO Albacore (44,000 t)

Principal fishing gears:

Gillnet (43%)

Purse Seining (33%)

Long lining (16%)

Pole and line (10%)

Other species subject to conservation management measures:

Swordfish, sharks, sea turtles, sea birds.

Number of Members:

30

Number of Cooperating Parties:

2

New Members:

Open to FAO members that are either coastal States to the IOTC Convention Area or that engage in fishing for tunas in that area.

Web Site:

<http://www.iotc.org>

Scientific Advice:

The Scientific Committee (SC), composed of representatives from each Commission member, is responsible for all scientific work and providing scientific advice on management measures. The Secretariat plays primarily a facilitating role by assisting members on scientific and compliance matters, organizing meetings, maintaining databases and conducting preparatory analyses in support of the subsidiary Committees. The stock assessments are carried out by species-specific Working Parties of the SC.

Decision-making:

Conservation and management measures are agreed to by two-thirds majority vote of members present and voting, and are binding on all Commission members. However, there is an 'opt-out' clause: any member can file an objection to the measure, and by doing so is not bound by it. Binding decisions are called "Resolutions".

## ***2.5 Commission for the Conservation of Southern Bluefin Tuna (CCSBT)***

Established:

1994.

Headquarters:

Canberra, Australia.

Area of competence:

The area of competence is the entire geographical range of southern bluefin tuna (southern waters of the Atlantic, Indian and Pacific Oceans).

Convention Objective:

Article 3: "...to ensure, through appropriate management, the conservation and optimum utilisation of southern bluefin tuna."

Ecosystems / Precautionary Approach:

The CCSBT Convention makes no explicit mention in about the Precautionary Approach or ecosystem considerations. However, the Commission requires data for non-target species.

Tuna stocks managed (reported 2010 catches):

Southern Bluefin (10,000 t)

NOTE: IOTC, ICCAT and WCPFC also have responsibility for southern bluefin in their respective Convention Areas. However, since CCSBT is responsible for the species throughout its range, members of these other organizations defer to CCSBT for assessment and management of the species.

Principal fishing gears:

Long lining (58%)

Purse Seining (42%)

Other species subject to conservation management measures:

Sharks, sea birds, sea turtles. Note: Members are expected to comply with binding and recommendatory measures on these species and other ecologically related species adopted by IOTC or WCPFC when fishing for southern bluefin tuna in those Convention Areas. Members are required to use Tori poles in all longline SBT fisheries below 30° south.

Number of Members:

6

Number of Cooperating Parties:

3

New Members:

Open to States whose vessels fish for southern bluefin and to States having EEZs through which the species migrates.

Web Site:

<http://www.ccsbt.org>

Scientific Advice:

The Scientific Committee (SC), composed of representatives from each Commission member and an independent scientific advisory panel, is responsible for all scientific work and providing scientific advice on management measures. The Secretariat plays primarily a facilitating role in organizing meetings, maintaining databases and making publications. The stock assessments are carried out by the SC. From October 2010, the Scientific Committee is required to incorporate advice consistent with the precautionary approach in its advice to the Commission.

Decision-making:

Conservation and management measures are agreed to by consensus or unanimous vote of members present (two-thirds of members in a meeting constitutes a quorum). Binding decisions are called "Resolutions".

### **3. National Governments**

While the Tuna RFMOs are the framework under which governments collaborate with each other in order to effectively manage these highly migratory species, in the end it is up to these governments to individually implement and enforce any agreed measures at a national level. This is typically done by adopting and enforcing national laws or regulations to implement these measures. A summary of such decisions is beyond the scope of this document. However, such decisions can usually be obtained from the National Reports submitted by these countries to the different RFMOs.

As members of RFMOs, governments enjoy a number of privileges, such as fishing quota or capacity allocations, but also a number of responsibilities, besides the mandate to implement the RFMO decisions at the national level. These include:

- Financing the operations of the RFMO;
- Compiling and reporting relevant fishery statistics
- Reporting other scientific information such as biological studies;
- Monitoring and reporting on compliance with RFMO measures.

### **4. Challenges**

#### ***4.1 Fishing capacity***

The term "capacity" generally refers to the potential to catch a given amount of fish. Many tuna fleets have "overcapacity", in the sense that if the existing number of vessels operated at full efficiency, they would catch more fish than what the stock's productivity could sustain.

The open-access nature of many fisheries leads to overcapacity. Under open access, fishing increases until profits disappear; catches are taken with higher costs than needed; and eventually catches diminish. As profits are eroded, pressure on management mounts to weaken restraints in an effort by industry to avoid financial losses. Overcapacity, once developed, takes a long time to disappear, as boat owners continue fishing as long as variable costs are covered. Endemic overcapacity in tuna fisheries leads to overexploitation and wastes resources.

Dealing with overcapacity is especially problematic in fleets that catch more than one tuna species. For example, tropical purse seine fleets catch skipjack, yellowfin and bigeye tunas. If some stocks are overfished while others are not, the same fleet can have overcapacity for some stocks and not for the others. In addition, large-scale tuna fishing vessels are highly mobile. Success in limiting fishing mortality and overcapacity in one area could easily redirect capacity to another area. This does not mean that capacity management should not be undertaken, but that global success requires coordination among RFMOs.

The establishment of exclusive rights to fish is essential for RFMOs to prevent overfishing, achieve sustainability and to realize maximum economic benefits of the fisheries. Open access creates perverse incentives for the “race to fish” whereas exclusive rights provide a positive incentive to preserve and conserve the fish stock which enhances the future value of the right. A right can be an exclusive use or a property right and allocated rights may be based on measures of catch, effort, or licenses. Similar systems could also be used for fulfilling obligations such as bycatch limits.

#### ***4.2 Allocation***

Allocation of fishing rights or fishing possibilities is one of the most contentious matters in tuna fisheries management. Allocation generally refers to what part of the Total Allowable Catch (TAC) will be assigned to different countries. In some cases, other metrics can be allocated (e.g., fishing days).

None of the tuna RFMOs follow a formulaic approach to allocate fishing opportunities. Allocation is almost always done by intense and very politicized negotiations that take into account various aspects about the different countries involved (usually member countries of the RFMO). Two that are typically considered are (a) the historical fishing levels of a country for the stock in question, and (b) the aspirations of developing coastal states who want to participate in the fishery.

In today's tuna RFMO decision-making climate, which is basically consensus-driven, allocation negotiations often result in overall catch levels that are higher than the level recommended by scientists. This is especially the case when science indicates that the amount of fishing needs to be reduced considerably: Those with a strong historical presence in the fishery do not want to give it up, and those without one want a chance; in an effort to reach consensus, sacrifices tend to be insufficient, and the sum of the individual catch allocations is larger than the overall TAC level recommended by scientists. Such allocations in excess of optimal levels will reduce the overall efficiency of the allocation and reduce the benefit of the allocation in the future.

#### ***4.3 Insufficient financial resources***

All tuna RFMOs rely on science in support of decision-making. This science involves the collection and analysis of fishery statistics, as well as important (and expensive) field research to improve estimates of vital parameters for tunas, such as the rates of natural mortality, fishing mortality, migration, growth and reproduction. The demands on science far exceed the budgets of any RFMO (RFMO science budgets are a minute fraction of fishing revenues). In addition, in some RFMOs, some member states do not have the resources needed to actively fulfill their most basic obligations of collecting and reporting data for their fisheries, or for adequately participating in the scientific process.

The effectiveness of any conservation measure depends on strict compliance by all fishing vessels. Monitoring, Control and Surveillance (MCS) measures are weak in many cases, and the level with which RFMO measures are complied with is unknown. As is the case with science, Tuna RFMOs generally have insufficient resources to institute comprehensive and effective MCS measures.

#### ***4.4 Bycatches***

Bycatch is the unintended catch in a fishing operation of species other than the target species, or individuals of the target species that are of undesirable size. Bycatch can either be discarded or landed. Bycatch occurs in virtually all fisheries.

Bycatch is of concern to governments and stakeholders alike. An example of the complexity of the problem is the fishery on fish-aggregating devices (FADs), which targets skipjack, and in which the bycatch of other species are greatest: more than half the world skipjack catch is taken on FADs so, if FAD fishing is prohibited in order to protect bycatch species, the catch of skipjack would drop precipitously. Any measures to deal with this issue must be based on sound science if they are to be effective in reducing bycatch and maintaining sustainable fisheries. Obtaining the data needed to quantify the impact of bycatch on the ecosystem will entail expanding observer programs to longline fleets, and require scientific studies of the ecosystem to which the bycatch species and tunas belong and research into the development of fishing gear and technology that will allow the target species to be caught without harming the bycatch species. All of this will require considerable resources, both human and financial.

## Appendix 1. Participation in Tuna RFMOs and UNFSA (updated 7/2012)

Key: M=Member; C=Cooperating non-Member; P=Participating Territory

| Country                             | IATTC | ICCAT | IOTC | WCPFC | CCSBT | UNFSA |
|-------------------------------------|-------|-------|------|-------|-------|-------|
| Albania                             |       | M     |      |       |       |       |
| Algeria                             |       | M     |      |       |       |       |
| American Samoa                      |       |       |      | P     |       |       |
| Angola                              |       | M     |      |       |       |       |
| Australia                           |       |       | M    | M     | M     | Y     |
| Barbados                            |       | M     |      |       |       | Y     |
| Belize                              | M     | M     | M    | C     |       | Y     |
| Brazil                              |       | M     |      |       |       | Y     |
| Canada                              | M     | M     |      | M     |       | Y     |
| Cape Verde                          |       | M     |      |       |       |       |
| China, People's Republic of         | M     | M     | M    | M     |       |       |
| Chinese Taipei                      | M     | C     |      | M     | M     |       |
| Colombia                            | M     | C     |      |       |       |       |
| Comoros                             |       |       | M    |       |       |       |
| Cook Islands                        | C     |       |      | M     |       | Y     |
| Costa Rica                          | M     |       |      |       |       | Y     |
| Côte d'Ivoire                       |       | M     |      |       |       |       |
| Croatia                             |       | M     |      |       |       |       |
| Curacao                             |       | C     |      |       |       |       |
| Denmark                             |       |       |      |       |       | Y     |
| Ecuador                             | M     |       |      | C     |       |       |
| Egypt                               |       | M     |      |       |       |       |
| El Salvador                         | M     |       |      | C     |       |       |
| Equatorial Guinea                   |       | M     |      |       |       |       |
| Eritrea                             |       |       | M    |       |       |       |
| European Union                      | M     | M     | M    | M     | C     | Y     |
| Fiji                                |       |       |      | M     |       | Y     |
| France                              | M     |       | M    | M     |       | Y     |
| French Polynesia                    |       |       |      | P     |       |       |
| Gabon                               |       | M     |      |       |       |       |
| Ghana                               |       | M     |      |       |       |       |
| Guam                                |       |       |      | P     |       |       |
| Guatemala                           | M     | M     |      |       |       |       |
| Guinea Rep.                         |       | M     | M    |       |       | Y     |
| Guyana, Cooperative Republic of     |       | C     |      |       |       |       |
| Honduras                            |       | M     |      |       |       |       |
| Iceland                             |       | M     |      |       |       | Y     |
| India                               |       |       | M    |       |       | Y     |
| Indonesia                           |       |       | M    | C     | M     | Y     |
| Iran, Islamic Republic              |       |       | M    |       |       | Y     |
| Japan                               | M     | M     | M    | M     | M     | Y     |
| Kenya                               |       |       | M    |       |       | Y     |
| Kiribati                            | M     |       |      | M     |       | Y     |
| Korea, Republic of                  | M     | M     | M    | M     | M     | Y     |
| Korea, Democratic People's Republic |       |       |      | C     |       |       |
| Libya                               |       | M     |      |       |       |       |
| Madagascar                          |       |       | M    |       |       |       |
| Malaysia                            |       |       | M    |       |       |       |
| Maldives                            |       |       | M    |       |       |       |
| Marshall Islands, Republic of       |       |       |      | M     |       | Y     |
| Mauritius                           |       |       | M    |       |       | Y     |

| Country                                          | IATTC | ICCAT | IOTC | WCPFC | CCSBT | UNFSA |
|--------------------------------------------------|-------|-------|------|-------|-------|-------|
| Mauritania                                       |       | M     |      |       |       |       |
| Mexico                                           | M     | M     |      | C     |       |       |
| Micronesia, Federated States of                  |       |       |      | M     |       | Y     |
| Morocco                                          |       | M     |      |       |       |       |
| Mozambique                                       |       |       | M    |       |       |       |
| Namibia                                          |       | M     |      |       |       | Y     |
| Nauru                                            |       |       |      | M     |       | Y     |
| New Caledonia                                    |       |       |      | P     |       |       |
| New Zealand                                      |       |       |      | M     | M     | Y     |
| Nicaragua                                        | M     | M     |      |       |       |       |
| Nigeria                                          |       | M     |      |       |       | Y     |
| Niue                                             |       |       |      | M     |       | Y     |
| Northern Mariana Islands,<br>Commonwealth of the |       |       |      | P     |       |       |
| Norway                                           |       | M     |      |       |       | Y     |
| Oman                                             |       |       | M    |       |       | Y     |
| Pakistan                                         |       |       | M    |       |       |       |
| Palau                                            |       |       |      | M     |       | Y     |
| Panama                                           | M     | M     |      | C     |       | Y     |
| Papua New Guinea                                 |       |       |      | M     |       | Y     |
| Peru                                             | M     |       |      |       |       |       |
| Philippines                                      |       | M     | M    | M     | C     |       |
| Russia                                           |       | M     |      |       |       | Y     |
| St. Pierre and Miquelon (France)                 |       | M     |      |       |       |       |
| Samoa                                            |       |       |      | M     |       | Y     |
| São Tomé and Príncipe                            |       | M     |      |       |       |       |
| Senegal                                          |       | M     | C    | C     |       | Y     |
| Seychelles                                       |       |       | M    |       |       | Y     |
| Sierra Leone                                     |       | M     | M    |       |       |       |
| Solomon Islands                                  |       |       |      | M     |       | Y     |
| South Africa                                     |       | M     | C    |       | C     | Y     |
| Spain                                            |       |       |      |       |       | Y     |
| Sri Lanka                                        |       |       | M    |       |       |       |
| St. Kitts and Nevis                              |       |       |      | C     |       |       |
| St. Vincent and The Grenadines                   |       | M     |      |       |       | Y     |
| Sudan                                            |       |       | M    |       |       |       |
| Suriname                                         |       | C     |      |       |       |       |
| Syria                                            |       | M     |      |       |       |       |
| Tanzania                                         |       |       | M    |       |       |       |
| Thailand                                         |       |       | M    | C     |       |       |
| Tokelau                                          |       |       |      | P     |       |       |
| Tonga                                            |       |       |      | M     |       | Y     |
| Trinidad and Tobago                              |       | M     |      |       |       | Y     |
| Tunisia                                          |       | M     |      |       |       |       |
| Turkey                                           |       | M     |      |       |       |       |
| Tuvalu                                           |       |       |      | M     |       | Y     |
| Ukraine                                          |       |       |      |       |       | Y     |
| United Kingdom (Overseas<br>Territories)         |       | M     | M    |       |       | Y     |
| United States of America                         | M     | M     |      | M     |       | Y     |
| Uruguay                                          |       | M     |      |       |       | Y     |
| Vanuatu                                          | M     | M     | M    | M     |       |       |
| Venezuela                                        | M     | M     |      |       |       |       |
| Vietnam                                          |       |       | C    | C     |       |       |

| <b>Country</b>    | <b>IATTC</b> | <b>ICCAT</b> | <b>IOTC</b> | <b>WCPFC</b> | <b>CCSBT</b> | <b>UNFSA</b> |
|-------------------|--------------|--------------|-------------|--------------|--------------|--------------|
| Wallis and Futuna |              |              |             | P            |              |              |

## Appendix 2. Summary of Monitoring, Control and Surveillance (MCS) Measures Adopted by RFMOs (Updated 7/2011)

This summary of the MCS measures adopted by the five Tuna RFMOs is intended to provide an overview of some of the most important measures. For each RFMO, a reference number is provided. More details can be obtained by downloading the appropriate reference from the RFMO's website.

| <b>1. Maintain an active Compliance / Monitoring Committee</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b>                                                   | A Compliance Committee reviews and assesses compliance with all management measures, including data submissions (adopted 2010).                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>IATTC</b>                                                   | The Antigua Convention establishes the Committee for the Review of Implementation of Measures Adopted by the Commission. C-11-07 established a detailed process for the Committee to review compliance with all IATTC Resolutions by members and non-members. The AIDCP established the International Review Panel, which has the power to review observer reports, if necessary send possible infractions to governments to investigate within a prescribed time frame, and in some cases to confirm sanctions on vessels and captains. |
| <b>ICCAT</b>                                                   | The Permanent WG for the Improvement of ICCAT Statistics and Conservation Measures [Rec. 11-23] addresses compliance by non-members; the Conservation and Management Measures Compliance Committee [Rec. 11-24] for members. Rec. [11-11] sets up a detail process for reviewing compliance. Rec. [11-15] establishes penalties for non-reporting.                                                                                                                                                                                       |
| <b>IOTC</b>                                                    | A Compliance Committee is established [Res. 02-03] for members.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>WCPFC</b>                                                   | The WCPFC Convention establishes a Technical and Compliance Committee to review implementation for members and non-members.                                                                                                                                                                                                                                                                                                                                                                                                              |

| <b>2. Operate catch documentation schemes that permit full traceability from sea to processing</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b>                                                                                       | Bluefin Catch Documentation Scheme [modified 2010]. Very complete traceability model.                                                                                                                                                                                                                                                                                                                                                          |
| <b>IATTC</b>                                                                                       | Statistical Document Program for bigeye [C-03-01]. Bigeye caught by pole-and-line or purse seine vessels that are destined for canning are exempt. AIDCP provides system for monitoring purse-seine catches from time of capture to processing.                                                                                                                                                                                                |
| <b>ICCAT</b>                                                                                       | Bigeye statistical document [Recs. 01-21 and 03-19]. Bigeye caught by pole-and-line or purse seine vessels that are destined for canning are exempt.<br>Bluefin Catch Documentation Scheme [Rec. 09-11]. Very complete traceability model but not functioning effectively. Rec. [10-11]: pilot electronic catch documentation system for bluefin. Res. [11-22] (non-binding) established a working group to study how to improve traceability. |
| <b>IOTC</b>                                                                                        | Bigeye statistical document [Res.01-06 and 03-03]: Bigeye caught by pole-and-line or purse seine vessels that are destined for canning are exempt.                                                                                                                                                                                                                                                                                             |
| <b>WCPFC</b>                                                                                       | None                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| <b>3. Operate real-time vessel and catch monitoring schemes</b> |                                                                                                                                                                      |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b>                                                    | Members to use VMS systems from CCAMLR, ICCAT, IOTC or WCPFC, depending on where vessels operate. Monthly catch reporting by members (since 2005).                   |
| <b>IATTC</b>                                                    | VMS systems in place in member countries to monitor vessels over 24 m (C-04-06). IATTC staff in field offices conduct real-time monitoring of the purse seine fleet. |

|              |                                                                                                                                                                                                                                                                                                                     |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ICCAT</b> | VMS systems in place in member countries to monitor vessels over 24 m (Rec. 2003-14); VMS for eastern Atlantic and Mediterranean bluefin transmitted to the Secretariat (Rec. 10-04). No real-time catch monitoring, except for eastern Atlantic and Mediterranean bluefin with monthly catch reports (Rec. 10-04). |
| <b>IOTC</b>  | VMS systems in place in member countries to monitor vessels greater than 15 m and fishing on the high seas (Res. 06-03). Electronic logbooks for purse seiners (Res. 10-03) but only aggregated data sent to Secretariat annually.                                                                                  |
| <b>WCPFC</b> | Commission VMS system for vessels fishing on the high seas transmitted to the Secretariat (CMM-11-02); VMS systems also in place for member countries.                                                                                                                                                              |

#### **4. Implement at-sea observer programs to assist surveillance of conservation measures or for scientific purposes**

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b> | Scientific observer program (10% coverage) since 2001, operated by members.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>IATTC</b> | 100% observer coverage for purse-seiners with a carrying capacity greater than 363 metric tons provided by AIDCP. C-11-08 requires 5% scientific observer coverage for longliners greater than 20 m.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>ICCAT</b> | Rec. [10-10]: scientific programs with at least 5% coverage on vessels $\geq 15$ m (purse seine, pelagic longline and pole-and-line fleets, only).<br>Rec. [10-04]: Compliance Regional observer program for purse seine vessels fishing eastern Atlantic and Mediterranean bluefin (100% coverage for vessels > 24 m in 2011, >20 m in 2012, and all sizes thereafter). 100% coverage on all transfers to cages. National programs to cover those purse seine vessels not monitored by the Regional program, as well as 20% coverage on pole-and-line, longline and trawlers.<br>Rec. [06-11]: Observers on all carriers receiving at-sea transshipments.<br>Other Recs. require some level of National observer program coverage for certain fleets catching bigeye, marlins, and for chartered vessels.<br>Rec. [11-10]: Collect and report data on catch of non-target species and discards. |
| <b>IOTC</b>  | Regional program to collect verified catch data and other scientific information (Res. 10-04); target 5% coverage for all vessels over 24m, and under 24m if fishing on the high seas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>WCPFC</b> | CMM 2007-01 requires 5% coverage of the effort in each fishery under the jurisdiction of the Commission (except for vessels used exclusively to fish for fresh fish in area north of 20°N and troll and pole and line vessels). CMM-2008-01 requires 100% observer coverage on purse seiners during FAD closure and for all purse seiners fishing on the high seas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

#### **5. Maintain IUU vessel lists and encourage reporting of vessels fishing in contravention of conservation and management measures**

|              |                                                                                                                                                       |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b> | No.                                                                                                                                                   |
| <b>IATTC</b> | Yes, Res. C-05-07 establishes process for listing and de-listing                                                                                      |
| <b>ICCAT</b> | Yes, Rec. [09-10] and [11-18] establish process for listing and de-listing. Potentially covers vessels of members and non-members, limited to > 20 m. |
| <b>IOTC</b>  | Yes, Res. 09/03 establishes process for listing and de-listing.                                                                                       |
| <b>WCPFC</b> | Yes, CMM-2007-03 establishes process for listing and de-listing.                                                                                      |

#### **6. Establish Port State measures compatible with the FAO Agreement**

|              |     |
|--------------|-----|
| <b>CCSBT</b> | No. |
|--------------|-----|

|              |                   |
|--------------|-------------------|
| <b>IATTC</b> | No.               |
| <b>ICCAT</b> | No.               |
| <b>IOTC</b>  | Yes (Res. 10/11). |
| <b>WCPFC</b> | No.               |

| <b>7. Maintain a register of authorized fishing vessels</b> |                                                                                                                                                                                                                      |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b>                                                | List of fishing vessels and a list of carrier vessels which are authorized to fish for or carry southern bluefin.                                                                                                    |
| <b>IATTC</b>                                                | A Regional Vessel Register established by C-11-06 (an update of C-00-06), covering all fishing methods (the register is closed for purse seine vessels). C-11-05 establishes a list of longliners greater than 24 m. |
| <b>ICCAT</b>                                                | For fishing vessels $\geq 20$ m [Rec. 11-12].<br>Rec. [10-04] for all vessels participating in eastern Atlantic and Mediterranean bluefin fishery.                                                                   |
| <b>IOTC</b>                                                 | Res. 07/02 for all vessels $> 24$ m and smaller vessels operating in the high seas. Res. 12/07 establishes a record of foreign licensed vessels.                                                                     |
| <b>WCPFC</b>                                                | CMM-2009-01; members maintain their own records, except for a regional record to list vessels authorized to fish outside a member's national jurisdiction (e.g. on the high seas)                                    |

| <b>8. Regulate and monitor transshipments</b> |                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b>                                  | Yes (adopted 2008), for large-scale longliners monitored by observers on carrier vessels; the program is coordinated with ICCAT and IOTC.                                                                                                                                                                                         |
| <b>IATTC</b>                                  | C-11-09 prohibits transshipments at sea for most vessels (except for troll vessels, pole and line vessels, and vessels engaged in transshipment of fresh fish). Transshipments at sea for large scale longliners are monitored by observers on carrier vessels. Coverage for longliners that are not large scale is undetermined. |
| <b>ICCAT</b>                                  | Rec. [06-11] prohibits transshipments at sea for most vessels. Transshipments at sea for longliners $> 24$ m are monitored by observers on carrier vessels. Coverage for longliners $< 24$ m fishing for albacore is undetermined.                                                                                                |
| <b>IOTC</b>                                   | Res. 12/05 prohibits transshipments at sea for most vessels. Transshipments at sea for large scale longliners are monitored by observers on carrier vessels. Coverage for longliners that are not large scale is undetermined.                                                                                                    |
| <b>WCPFC</b>                                  | CMM-2009-06 establishes monitoring of transshipments with observer program; transshipments by purse seiners are prohibited, with exemptions for archipelagic and territorial waters and for the EEZs of some members.                                                                                                             |

| <b>9. Require full retention of target tuna species</b> |                                                                                                             |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b>                                            | No                                                                                                          |
| <b>IATTC</b>                                            | Yes (C-11-01) requires retention of skipjack, yellowfin and bigeye, unless unfit for human consumption.     |
| <b>ICCAT</b>                                            | No                                                                                                          |
| <b>IOTC</b>                                             | No (non-binding Rec. 10/13 encourages retention)                                                            |
| <b>WCPFC</b>                                            | Yes (CMM-2008-01) requires retention of skipjack, yellowfin and bigeye, unless unfit for human consumption. |

| <b>10. Implement high-seas boarding and inspection schemes</b> |
|----------------------------------------------------------------|
|----------------------------------------------------------------|

|              |                                                                                                                                        |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCSBT</b> | No                                                                                                                                     |
| <b>IATTC</b> | No                                                                                                                                     |
| <b>ICCAT</b> | Rec. [10-04] applies scheme of joint international inspection only for vessels fishing for eastern Atlantic and Mediterranean bluefin. |
| <b>IOTC</b>  | No                                                                                                                                     |
| <b>WCPFC</b> | CMM-06-08 establishes procedures for the high seas.                                                                                    |

