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Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks

New York, 22 to 26 May 2006

**Report submitted in accordance with paragraph 17 of General Assembly resolution 59/25 of 17 November 2004, to assist the Review Conference to implement its mandate under paragraph 2, article 36 of the United Nations Fish Stocks Agreement**

**Report of the Secretary-General**

## *Summary*

The present report has been prepared in response to the request of the General Assembly to the Secretary-General, contained in paragraph 17 of its resolution 59/25 of 17 November 2004, to present to the review conference a comprehensive report prepared in cooperation with the Food and Agriculture Organization of the United Nations (FAO). As provided for in paragraph 21 of the General Assembly resolution 60/31 of 29 November 2005, the report takes into account the specific guidance elaborated by the fourth round of informal consultations of States Parties to the Agreement. The report is based on information provided by States and regional fisheries management organisations, as well as a contribution by FAO. It contains an overview of the status of straddling fish stocks and highly migratory fish stocks, of the status of discrete high seas fish stocks and of the possible impact that fishing the stocks concerned might have on other marine species. It also includes a review of the implementation of the Agreement in sub-regional and regional agreements or arrangements, as well as national legislation related to the implementation of the Agreement. The report further examines to what extent States Parties, individually and through regional fisheries management organisations and other relevant multilateral mechanisms, take into account the special requirements of developing States in relation to the implementation of the Agreement and provide assistance to those States. Finally, the report examines issues that have prevented some States from becoming parties to the Agreement.

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## Abbreviations

AIDPC	Agreement on the International Dolphin Conservation Program
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CDS	Catch Documentation Scheme
CEMP	CCAMLR Ecosystem Monitoring Program
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COFI	FAO Committee on Fisheries
CWP	FAO Coordinating Working Party on Fishery Statistics
EC	European Community
EDF	European Development Fund
EEZ	Exclusive economic zone
FAO	Food and Agriculture Organization of the United Nations
FFA	Forum Fisheries Agency
FIGIS	Fisheries Global Information System
FIRMS	Fishery Resources Monitoring System
GEF	Global Environment Facility
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GFCM	General Fisheries Commission for the Mediterranean
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tuna
ICES	International Council for the Exploration of the Sea
ICP	Informal Consultative Process on Oceans and the Law of the Sea
ICSP	Informal Consultations of State Parties
IOTC	Indian Ocean Tuna Commission
IUU fishing	Illegal, unreported and unregulated fishing
LRP	Limit reference point
MARPOL	International Convention for the Prevention of Pollution from Ships
MCS	Monitoring, control and surveillance
MOU	Memorandum of understanding
MSY	Maximum Sustainable Yield
NAFO	Northwest Atlantic Fisheries Organization
NEAFC	North-East Atlantic Fisheries Commission
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
RFMO	Regional fisheries management organization
SEAFO	South East Atlantic Fisheries Organisation
SIDP	FAO Species Identification and Data Programme
SIOFA	South Indian Ocean Fisheries Agreement
SPC	Secretariat of the Pacific Community
SWIOFC	South West Indian Ocean Fisheries Commission
VMS	Vessel Monitoring System
WCPFC	Western Central Pacific Fisheries Commission

## I. Introduction

1. The Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the Agreement) is considered to be one of the most important multilateral legally binding instruments for the conservation and management of high seas fisheries since the conclusion of United Nations Convention on the Law of the Sea (the Convention or UNCLOS) in 1982. Its objective is to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of the Convention. To this end, the Agreement establishes a clear set of rights and obligations for States to conserve and manage the two types of stocks and associated and dependent species as well as to protect biodiversity in the marine environment. It requires States to cooperate with other States directly or through appropriate regional fisheries management organizations or arrangements (RFMOs) for the conservation and management of straddling fish stocks and highly migratory fish stocks, including cooperation for the establishment of new RFMOs where none exist in a particular region or subregion.<sup>1</sup> States having a real interest in the fisheries concerned are encouraged by the Agreement to become members of such RFMOs. The Agreement also provides that only States that are members of an RFMO, or those that agree to apply the conservation and management measures established by such organization or arrangement, shall have access to the fishery resources to which the measures apply.<sup>2</sup>

2. The Agreement provides for a significant reinforcement of flag State duties concerning control over fishing vessels to ensure the effectiveness of international conservation and management measures. It also contains enhanced compliance control mechanisms, including: 1. strengthened enforcement by flag States, 2. innovative non-flag State enforcement through subregional and regional cooperation, and 3. port State measures. Part VII of the Agreement recognises the special requirements of developing States in the conservation and management of straddling fish stocks and highly migratory fish stocks. An Assistance Fund under Part VII was established by the General Assembly in 2003 to assist developing States Parties in the implementation of the Agreement.

3. In addition, the Agreement provides for the mandatory recourse by States Parties to the procedures for the peaceful settlement of disputes contained in the Convention. Article 30 of the Agreement stipulates that Part XV of the Convention applies *mutatis mutandis* to any dispute between States Parties to the Agreement concerning the interpretation or application of the Agreement, or concerning the interpretation or application of a subregional, regional or global fisheries agreement relating to straddling fish stocks and highly migratory fish stocks to which they are Parties, including any dispute concerning the conservation and management of such stocks, whether or not they are also Parties to the Convention.

4. Although the Agreement is concerned with straddling fish stocks and highly migratory fish stocks, a number of its provisions, including provisions on application of the precautionary approach and an ecosystem approach to fishing activities, are applicable to the conservation and management of all marine capture fisheries, whether in areas under national jurisdiction or on the high seas, and are now often associated with “generally recommended international minimum standards” for the conservation of marine living resources, as referred to in the relevant provisions of the Convention.<sup>3</sup> Indeed, at present there seems to be an emerging consensus among States according to which the general principles of the Agreement should also apply to discrete fish stocks on the high seas.<sup>4</sup>

5. The Agreement entered into force on 11 December 2001. Article 36 of the Agreement provides that four years following the entry into force of the Agreement, the Secretary-General of the United Nations shall convene a conference with a view to assessing the effectiveness of the Agreement in securing the conservation and management of straddling fish stocks and highly migratory fish stocks.<sup>5</sup> The conference is to review and assess the adequacy of the provisions of the Agreement and, if necessary, propose means of strengthening the substance and methods of implementation of the provisions of the Agreement in order to better address any continuing problems in the conservation and management of the two types of stocks.<sup>6</sup>

6. By its resolution 56/13, paragraph 6, of 28 November 2001, the General Assembly established the informal consultations of States Parties to the Agreement for the purposes and objectives of, *inter alia*, considering the regional, subregional and global implementation of the Agreement and preparing for the review conference.<sup>7</sup> Subsequently, the informal consultations of States Parties have been convened annually by the Secretary-General, in accordance with relevant resolutions of the General Assembly.<sup>8</sup>

7. By its resolution 59/25, paragraph 16, of 17 November 2004, the General Assembly requested the Secretary-General to convene, pursuant to Article 36 of the Agreement, a one-week review conference in the first part of 2006, to render the necessary assistance and provide such services as may be required and to submit to the conference a comprehensive report prepared in cooperation with the Food and Agriculture Organization of the United Nations (FAO).<sup>9</sup> By its resolution 60/31, paragraph 21, of 29 November 2005, the General Assembly took note of the report of the fourth round of informal consultations of States Parties to the Agreement (ICSP-4), which requested the Secretary-General to take into account the specific guidance proposed by ICSP-4 regarding the comprehensive report.<sup>10</sup> As provided for in those guidelines, Parts II and V of this report are based on a submission by FAO.

8. Accordingly, a note verbale was circulated requesting information from States Parties on measures they have adopted to implement the Agreement and from non-State Parties on measures they have adopted that might reflect the principles in the Agreement. The latter were also requested to provide information about impediments that have

prevented them from becoming parties to the Agreement.<sup>11</sup> In addition, RFMOs have been requested to provide information on how they have incorporated the relevant provisions of the Agreement into their conservation and management measures.

9. This report also includes information obtained through the questionnaire circulated to States and RFMOs soliciting information for the preparation of the report of the Secretary-General on sustainable fisheries to the sixtieth session of the General Assembly.<sup>12</sup>

10. In preparing this report, a number of other sources were used, in particular the web sites of the relevant RFMOs, some documents presented at the June 2005 meeting of the United Nations Informal Consultative Process on Oceans and the Law of the Sea (ICP), and other information and expertise available to the Division for Ocean Affairs and the Law of the Sea of the Office of Legal Affairs (DOALOS/OLA).<sup>13</sup>

## **II. Status of fish stocks and other marine species**

11. This part of the report contains detailed information on the development of various tuna fisheries, including their current status and on other highly migratory species, in particular the world shark population. FAO states that since the main species that constitute straddling fish stocks are generally well studied, its contribution to this report does not include the biology, and life history and migratory behaviour of these species. Such information is readily available from various published sources of information or from RFMOs. This part also gives an overview of discrete high seas fish stocks and evaluates the possible impact of fishing for such stocks might have on other species.

### **A. General considerations**

#### **1. Species and stock terminology**

12. For the purpose of this review, “highly migratory species” are the species listed in Annex I to the Convention. This is a legal definition rather than a scientific definition based on the actual migratory behaviour of the species. Nevertheless, the species listed in Annex I are in general capable of migrating relatively long distances, and stocks of these species are likely to occur both in exclusive economic zones (EEZs) and on the high seas.

13. The Convention does not use the term “straddling stocks”, but Article 63, paragraph 2 refers to: “the same stock or stocks of associated species [that] occur both within the exclusive economic zone and in an area beyond and adjacent to the zone”. This can be taken as a working definition of the concept of a straddling stock. The Agreement, while using the term extensively, does not define it. The concept of a straddling fish stock can cover a continuum from most of the fish being inside EEZs to most of the fish being outside EEZs.

14. Neither the term “discrete high seas fish stocks” nor the concept behind it are used in Part VII of the Convention, which addresses the living resources of the high seas in general. The term or concept does not appear in the Agreement, because it covers only

stocks occurring both in the high seas and in EEZs. FAO has used the term “purely high seas stocks” for stocks that are not found within EEZs. This review uses the term “other high seas stocks” to refer to stocks that are not highly migratory or straddling. It is preferred to “discrete high seas stocks” because the discreteness of such stocks is generally unknown (e.g. fish caught on distinct seamounts hundreds or thousands of kilometres apart do not necessarily belong to discrete separate biological units). The list of other high seas stocks used in this review is considered provisional as new resources continue to come under exploitation.

15. Associated species are caught and/or impacted in fisheries for straddling fish stocks, highly migratory fish stocks, and other high seas fish stocks. Any landed catch that is not from a straddling fish stock or highly migratory fish stock, may be regarded as from other high seas fish stocks. It is considered that associated species are impacted species that are not part of the landed catch.

## 2. Approach, including data issues

16. The information in this chapter builds on a review of highly migratory fish stocks and straddling fish stocks prepared by FAO in 1994<sup>14</sup> as a contribution to the negotiations on the Agreement, and on FAO’s most recent published review of the state of world fisheries.<sup>15</sup> In some cases, the FAO review was updated based on information provided by RFMOs,<sup>16</sup> in particular by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), the North-East Atlantic Fisheries Commission (NEAFC), the Secretariat of the Pacific Community (SPC) and the International Council for the Exploration of the Sea (ICES). Catch information is from the FAO Fisheries Statistic Database.<sup>17</sup> The most recent complete year of data is 2003.

17. At present, there is no global inventory of fish stocks, although FAO’s Committee on Fisheries (COFI) called for one in the “Strategy for Improving the Information on the Status and Trends of Capture Fisheries” approved in February 2003.<sup>18</sup> FAO is developing a Fisheries Global Information System (FIGIS)<sup>19</sup> which will fulfil this need, but has little stock information at this stage. The available FAO global fisheries statistics database is by country, species and statistical areas. These statistical areas are generally too large to correspond to stocks<sup>20</sup> and the data available do not distinguish EEZ catches from catches on the high seas. Therefore, it has been necessary to make informed judgements for each FAO statistical area about which species are fished partially or entirely on the high seas.

18. Species/stocks were classified according to a classification scheme used previously by FAO as follows: Underexploited: undeveloped or new fishery, believed to have a significant potential for expansion in total production; Moderately exploited: exploited with a low fishing effort, believed to have some limited potential for expansion in total production; Fully exploited: the fishery is operating at or close to optimal yield / effort, with no expected room for further expansion; Overexploited: the fishery is being

exploited above the optimal yield/effort which is believed to be sustainable in the long term, with no potential room for further expansion and a higher risk of stock depletion/collapse; Depleted: catches are well below historical optimal yields, irrespective of the amount of fishing effort exerted; Recovering: catches are again increasing after having been depleted or a collapse from a previous high; Not known: not much information is available to make a judgment.

19. In its 2005 review of the state of world marine fishery resources, FAO reports on 584 species (or species group)-statistical area combinations, for which the state of 441 (76%) is reported known.<sup>21</sup> While these are referred to as stocks, in many cases they are a collection of several stocks according to either a management or biological perspective. For example, cod in the Northwest Atlantic<sup>22</sup> is reported on as a single entry although there are ten separate management units for cod fisheries in the area. There are probably more than one reproductively isolated breeding population (i.e. stocks from a biological perspective) in some of these management units. In spite of these limitations, the state of stocks reported in the abovementioned review was used herein as the best available global source of stock status information, with refinements based on more recent information provided by RFMOs or fishery specific knowledge of FAO staff or its consultants.

20. Information on species associated with fisheries for highly migratory species, straddling fish stocks and other high seas fish stocks is very limited. Catches of these species are rarely reported; most are discarded at sea. Some States collect data on discards, but the information is incomplete and not routinely reported to FAO. However, FAO recently published an update of information on fishery discards, which provides useful information on associated species.<sup>23</sup> The status of some species is known from various sources (for example, some sea turtle populations are in danger of extinction), while almost nothing is known about others. Thus, this review highlights known and potential issues concerning associated species, but a comprehensive assessment is not possible.

21. Various FAO information resources were used as sources of information on the biological characteristics and geographical distribution of the species, including the FAO species catalogues and other information products provided by the FAO Species Identification and Data Programme (SIDP),<sup>24</sup> FIGIS species fact sheets,<sup>25</sup> and Fishbase.<sup>26</sup>

## **B. Highly migratory fish stocks**

22. As indicated above, highly migratory species are legally defined as those listed in Annex I of the Convention. They include tuna and tuna-like species, oceanic sharks, pomfrets, sauries, and dolphinfish. Some of these species may only occur and /or be caught within EEZs, but the available global database does not distinguish between catches on the high seas and those within EEZs. Highly migratory species are therefore discussed without regard to stocks or occurrence within EEZs or on the high seas.

## 1. Tuna and tuna-like species

23. The information presented in this section is based primarily on the 2005 review by FAO<sup>27</sup> and on the FAO project on "Management of tuna fishing capacity: conservation and socio-economics".<sup>28</sup> Information has also been obtained from RFMOs, either directly from their web sites<sup>29</sup> and publications, or through submissions they have made to FAO specifically for this report

### (a) The resources

24. All tuna and tuna-like highly migratory species (billfishes, bonitos, mackerels and tunas) belong the sub-order Scombroidei. The tunas (*Thunnini*) include the most economically important species referred to as principal market tunas because of their global economic importance and their intensive international trade for canning and sashimi. Tunas are sub-classified into four genera (*Thunnus*, *Katsuwonus*, *Euthynnus* and *Auxis*) with fourteen species altogether.

25. The tunas included in Annex I to the Convention are: albacore tuna (*Thunnus alalunga*), which occurs in tropical and temperate waters; bluefin tuna<sup>30</sup> (*Thunnus thynnus*), mostly found in temperate waters of the Atlantic, including the Mediterranean, and Pacific Oceans; bigeye tuna (*Thunnus obesus*), found in the Atlantic, Indian and Pacific Oceans; skipjack tuna (*Katsuwonus pelamis*) with a worldwide distribution in tropical and temperate waters; yellowfin tuna (*Thunnus albacares*), also with a worldwide distribution in tropical and sub-tropical more temperate seas; blackfin tuna (*Thunnus atlanticus*) found in the western Atlantic in tropical and warm seas; little tuna (*Euthynnus alleteratus*),<sup>31</sup> found in tropical and sub-tropical waters of the Atlantic, including the Mediterranean, the Black Sea, the Caribbean Sea and the Gulf of Mexico, and *E. affinis*, in the Indian and Pacific Oceans; southern bluefin tuna (*Thunnus maccoyii*), in temperate waters of the southern hemisphere in the Atlantic, Indian and Pacific Oceans; and, frigate mackerel tuna (*Auxis thazard* and *A. rochei*)<sup>32</sup> found in the Atlantic (including the Mediterranean Sea where only *A. rochei* is found), Indian and Pacific Oceans.

26. Tuna species can be loosely categorised into tropical and temperate tunas. They exhibit a wide range of life histories, ranging from the skipjack tuna, which has a short lifespan, high fecundity and wide distribution in tropical and temperate waters, to the bluefin tuna which is long lived, breeds late and has well defined breeding and migration patterns. Differing life histories result in contrasts in vulnerability to overfishing. Skipjack are generally considered to be more resilient to exploitation, while the bluefin tuna is considered more vulnerable, all the more so because of their extremely high market value. The other species have life history characteristics that are intermediate between those two extremes.

27. The tuna-like species included in Annex I to the Convention also have an extensive distribution. These are: marlins<sup>33</sup> of which there are nine species (*Tetrapturus angustirostris*, *T. belone*, *T. pfluegeri*, *T. albidus*, *T. audax*, *T. georgei*, *Makaira mazara*, *M. indica*, *M. nigricans*) with one or more species found in every ocean; sailfishes, with

two species, *Istiophorus platypterus* formerly restricted to the Indian and Pacific Oceans, but is now found in the Mediterranean Sea where it entered via the Suez Canal, and *I. albicans* found in the Atlantic Ocean and migrating in the Mediterranean Sea; and swordfish (*Xiphias gladius*) found in the Atlantic Ocean, Indian and Pacific Oceans, the Mediterranean Sea, the Sea of Marmara, the Black Sea and the Sea of Azov.

28. Little tunny (*E. alleteratus*) and kawakawa (*E. affinis*), and to some extent, blackfin tuna (*T. atlanticus*), black skipjack (*E. lineatus*), bullet tuna (*A. rochei*) and frigate tuna (*A. thazard*) are less oceanic and more associated with the continental shelves than the other tunas and tuna-like species in Annex I to the Convention.

29. The longtail tuna (*T. tonggol*) is an important tuna, not included in Annex I to the Convention, which has a wide but less oceanic distribution associated with the continental shelves. Other important tuna-like species not in Annex I to the Convention include slender tuna (*Allothunnus fallai*), butterfly kingfish (*Gasterochisma melampus*), wahoo (*Acanthocybium solandri*), bonitos (*Cybiosarda*, *Orcynopsis* and *Sarda*), and species of the genus *Scomberomorus* (Spanish mackerel, king mackerels, seerfish and sierra). Slender tuna and butterfly kingfish (with a circumpolar distribution in the Southern Ocean) are now caught mostly as bycatch in the longline fishery targeting southern bluefin tuna.

#### **(b) The fisheries**

30. Until the second part of the 20<sup>th</sup> century, fishing occurred mostly in coastal areas. As a result of increasing demand for tuna for canning, industrial fisheries began during the 1940s and 1950s. During the 1950s, the major industrial fisheries were the Japanese longline fishery and the pole-and-line fisheries of Japan\* and the United States, operating in the Pacific. The longline fishery reached the Atlantic during the late 1950s. In addition, some European pole-and-line vessels, based in local ports, began fishing off the west coast of Africa at that time.

31. During the 1960s, European pole-and-line and purse-seine vessels began fishing for tunas off tropical West Africa. The Japanese fleet of pole-and-line vessels increased and expanded their area of operation in the western and central Pacific. Japanese longliners also expanded their fishing operations all over the world, targeting mostly albacore tuna and yellowfin tuna for canning. During the mid-1960s, vessels of Taiwan, Province of China\* and the Republic of Korea\* became involved in large-scale longline fishing for tunas. At the end of the decade, improvements in freezing technology and cold storage systems developed for Japanese longliners made it possible to produce fish acceptable for the sashimi market, which, in turn, led the vessels to shift their target species from yellowfin tuna and albacore tuna for canning to bluefin tuna and bigeye tuna for sashimi. In the eastern Pacific, the pole-and-line vessels of the United States were almost completely replaced by purse-seine vessels. Quotas for yellowfin tuna in that region were first established in 1966.

32. During the 1970s the purse-seine fishery by vessels from European States in the tropical eastern Atlantic developed quickly while the United States purse-seine fishery of

the tropical eastern Pacific expanded offshore. A purse-seine fishery for tunas began in the western Indian Ocean during the 1980s, when vessels from European States, which had fished in the Atlantic, moved to that region. In the Pacific the purse-seine fishery further expanded its fishing area, particularly in the western and central Pacific. In the Atlantic, countries such as Brazil and Venezuela\* entered the purse-seine fisheries.

33. Purse seiners began fishing with artificial fish-aggregating devices (FADs) in the Atlantic early in the 1990s, and the method quickly spread to the Indian and Pacific Oceans. Management efforts during the 1990s intensified and are continuing in response to stock concerns and increasing focus on illegal, unreported and unregulated (IUU) fishing. The catch by small-scale coastal longline fisheries increased greatly during the 1990s. Another important event was the development of bluefin tuna farming which can increase fishing pressure.

34. Tuna are fished, traded, processed and consumed globally. Industrial fleets often transfer their operations from one ocean to another in response to changing conditions either in fish availability, markets, and/or fishing regulations and the fish caught are frequently transported to other parts of the world for processing. In addition, substantial IUU fishing, which occurs in all oceans in spite of recent efforts to control it, complicates the management of tuna fisheries.

35. In 2003, tuna and tuna-like species classified as highly migratory in Annex I to the Convention accounted for 5 million tonnes, nearly 80% of the total reported catches of all tunas and tuna-like species. Two species, skipjack tuna and yellowfin tuna, accounted for more than 50% of the catch (3.6 million tonnes) in that year, and a substantial portion is caught within EEZs.

**(c) State of the stocks**

36. This section classifies the state of exploitation of tuna and tuna-like species according to the FAO classification scheme described above. Most highly migratory tropical tunas have very high fecundity, wide geographic distribution, opportunistic behaviour and other characteristics that make them highly productive and resilient to exploitation. With proper management, they are capable of sustaining high yields, but possibilities of overexploitation and stock depletion nevertheless exist if fishery management is not adequate. Highly migratory temperate tunas have life history characteristics that make them much more sensitive to exploitation. As a result, expected yields are lower and the risks of overexploitation are higher making it all the more important to exercise prudent management.

37. Bluefin tuna, a temperate species, is depleted in the western Atlantic, as is southern bluefin tuna, and it is overexploited in the eastern Atlantic. The Pacific bluefin tuna is fully exploited.

38. Albacore, another temperate species, is fully exploited in the South Atlantic as well as in the North and South Pacific and overexploited in the North Atlantic. Albacore is

probably moderately exploited in the Indian Ocean, while the state of exploitation in the Mediterranean Sea is unknown.

39. Although bigeye tuna is tropical and has a life span shorter than bluefin tuna, there is increasing concern that its exploitation may be too high. In addition to being overexploited, there is concern that increasing purse seine catches of small bigeye associated with FADs may negatively affect the longline catches of large bigeye, which have a much higher price. Bigeye tuna is overexploited in the eastern Pacific and is probably fully exploited elsewhere.

40. The yellowfin tuna stocks are close to or being fully exploited in all oceans while skipjack tuna is only moderately exploited in the Pacific and probably also in the Indian Ocean. However, with the present fishing technique, catches of skipjack cannot be increased without undesired increases of catches of other species. In the Atlantic, the state of skipjack is uncertain.

41. The state of exploitation of many other tuna and tuna-like species is highly uncertain or unknown. Significant uncertainties in the state of exploitation of many billfishes represent a serious conservation problem. In the Atlantic, blue and white marlins seem to be overexploited even though they are not generally targeted. Blue marlin is fully exploited in the Eastern Pacific, but striped marlin is only moderately exploited. Because of commercial exploitation, there is more known on the state of swordfish exploitation than for other billfishes. In the Atlantic and the South-Eastern Pacific, swordfish are fully exploited, and there is concern about the effect of recent increases in fishing effort in the South Pacific. In the North-Eastern Pacific, swordfish is only moderately exploited. There is also intensification of fisheries targeting swordfish in the Indian Ocean.

42. In summary, the scientific information available from RFMOs and intergovernmental organizations indicates that most stocks of tuna are fully exploited, with some overfished, and a few depleted. There are probably few opportunities to increase exploitation, except in some areas of the Pacific, and possibly in the Indian Ocean, where significant increases in catches of skipjack tuna might be sustainable. However, if current fishing techniques are used, this can only be done at the expense of undesired increases of catches of other species.

## **2. Oceanic sharks**

43. Sharks covered under this heading are those listed in Annex I to the Convention: Bluntnose sixgill shark (*Hexanchus griseus*), basking shark (*Cetorhinus maximus*), thresher sharks (family Alopiidae), whale shark (*Rhincodon typus*), requiem sharks (family Carcharhinidae), hammerhead, bonnethead, or scoophead sharks (family Sphyrnidae), and the mackerel sharks (family Lamnidae<sup>34</sup>).

44. Information on the biological characteristics and geographical distribution of oceanic sharks is found in an FAO report<sup>35</sup> prepared in support of the International Plan

of Action for Conservation and Management of Sharks,<sup>36</sup> FAO catalogues,<sup>37, 38</sup> other FAO sources,<sup>39</sup> and Fishbase.

45. Due to the nature of the available information, the description of the resource, the fisheries, and the state of exploitation are covered species by species. Unfortunately, the state of many shark populations is unknown, or poorly known. However, the life history of sharks, e.g. slow growth, long life span, low fecundity, makes them particularly vulnerable to overexploitation and depletion. The total reported catches of species and families of sharks listed in the Annex I to the Convention, was close to 100,000 tonnes in 2003. Requiem sharks account for 90% of these catches.

**(a) Bluntnose sixgill shark**

46. Bluntnose sixgill shark (*Hexanchus griseus*) has an almost circum-global distribution in tropical and temperate seas on the continental and insular shelves and upper slopes at depths from surface to at least 1875 m, but it is mostly a deepwater shark. It is locally common and taken by line gear, gillnets, traps and pelagic and bottom trawls. There are no assessments of the state of the stock(s) or exploitation. Catches have been reported only from the Atlantic since 2001.

**(b) Basking shark**

47. The basking shark (*Cetorhinus maximus*), is a coastal-pelagic shark found in boreal to warm temperate waters of the continental and insular shelves, occurring from well offshore to near shore. It occurs around all the continents except Antarctica and the Arctic. Basking sharks undertake long-distance migrations.

48. The basking shark has been the target of harpoon fisheries from small boats, but it has also been taken in nets, including bottom gillnets and occasionally bottom and pelagic trawls. The species also interacts with other gears, harming themselves in the process. Several localised basking shark fisheries have shown sharp declines, but it is difficult to separate natural fluctuations in local abundance from the effects of exploitation globally.

49. The basking shark is likely to be extremely vulnerable to overexploitation, perhaps more so than most sharks, because its slow growth rate, advanced age of maturity, long gestation period, low fecundity, and probable small size of existing populations. Reported catches in excess of 8,000 tonnes were common during 1960 to 1980, but have been much less since the end of the 1990s. The species is probably overexploited globally with some areas being depleted. The basking shark is listed on Annex II to the Protocol 'Endangered or Threatened Species' of the Barcelona Convention for the Protection of the Mediterranean Sea and in Appendix II of the Convention on International Trade in Endangered Species (CITES).

(c) **Thresher sharks (*family Alopiidae*)**

50. There are three species of thresher sharks: *Alopias pelagicus*, *Alopias superciliosus* and *Alopias vulpinus*. All three species are believed to occur in temperate and tropical waters of all oceans. Given their life-history characteristics, these species are not expected to have a high resilience to exploitation, but stock status remains uncertain. It is prudent to consider these species as being fully exploited or overexploited globally.

51. *Alopias pelagicus* was formerly exploited by longline fisheries in the north-western Indian Ocean, but it is also fished in the central Pacific. *Alopias superciliosus*, commonly known as the bigeye thresher shark, has been caught in the oceanic longline fisheries operating in the north-western Indian Ocean, western and central Pacific, eastern North Pacific and in the North Atlantic. This species is also taken as incidental bycatch in fixed bottom and pelagic gill nets and in trawls. *Alopias vulpinus* is frequently caught by offshore longline and pelagic gill net fisheries. It is also fished with anchored bottom and surface gill nets, and it is a bycatch of other gear including bottom trawls and fish traps. The species became the object of an important targeted pelagic gill net fishery off the west coast of the United States in the late 1970s, with a peak reported catch of 1,000 tonnes in 1982, declining due to overfishing to less than 300 tonnes by the late 1980s. The targeted fishery was ended by 1990, but the species is still caught as bycatch of the swordfish gill net fishery and may be sold for higher prices in the market than swordfish.

(d) **Whale shark (*Rhincodon typus*)**

52. The whale shark has a circum-global distribution in tropical and warm temperate seas. It is an epipelagic oceanic and coastal pelagic species ranging from far offshore to close inshore, sometimes entering lagoons of coral atolls. Whale sharks migrate long distances, with their movements probably timed with plankton blooms and changes in water temperatures. They are often associated with schools of pelagic fish, especially scombrids. Whale sharks have been fished sporadically by some countries around the Indian and western Pacific Oceans<sup>40</sup> but no catches are recorded in the FAO fisheries statistics database.

53. Given its life-history characteristics, the whale shark is expected to have low resilience to exploitation, but the state of stocks remains uncertain in most areas. It is prudent to consider the species as being fully exploited globally. The whale shark is listed on both Appendix II of CITES and Annex II to the Protocol 'Endangered or Threatened Species' of the Barcelona Convention.

(e) **Requiem sharks (*family Carcharhinidae*)**

54. Requiem sharks have a worldwide distribution in tropical and temperate waters. There are 50 species in the family (30 in genus *Carcharhinus*) which is, by far, the most important shark family for fisheries in the tropics. The main species from a fisheries point of view are: *Carcharhinus falciformis*, *Carcharhinus signatus*, *Carcharhinus longimanus*, and *Prionace glauca*.

55. The silky shark (*Carcharhinus falciformis*) has an oceanic and coastal, circum-tropical distribution and is most common offshore. It is an oceanic, epipelagic and littoral, tropical shark, found near the edge of continental and insular shelves, as well as far from land in the open sea. Its population dynamics and stock structure are poorly known. This is one of the three most common oceanic sharks, along with the blue shark (*Prionace glauca*) and oceanic whitetip shark (*Carcharhinus longimanus*), and one of the most abundant large marine organisms. It is often taken by pelagic longline fisheries, and occasionally by fixed bottom nets. The state of exploitation is unknown. Its wide distribution and high abundance in most tropical shelves of the world suggests that presently there are no major concerns over the conservation of this species globally. In 2003 slightly more than 5,000 tonnes were recorded, but past catches have been considerably higher.

56. Whitetip shark (*Carcharhinus longimanus*) is an oceanic shark found in tropical and warm-temperate waters of the Atlantic, possibly in the Mediterranean Sea, in the western Indian Ocean and in the Pacific. It is usually found far offshore, but it sometimes occurs in shallow waters inshore, particularly off oceanic islands or in continental areas where the shelf is very narrow. It is regularly caught with pelagic longlines, also handlines and occasionally pelagic and even bottom trawls. Although it is one of the most common oceanic sharks, recorded catches total only 175 tonnes.

57. The blue shark (*Prionace glauca*) has a worldwide distribution in temperate and tropical oceanic waters. It is one of the most abundant and the most heavily fished shark in the world, often as bycatch in pelagic longlines fisheries, but also on hook-and-lines, in pelagic trawls, and even bottom trawls near the coasts. In 2003 more than 30,000 tonnes were recorded.

58. Catches of requiem sharks reported to FAO were less than 10,000 tonnes in the 1950s, increasing to 40-50,000 tonnes in the 1960s and 1970s. After a brief decline in the early 1980s, reported catches have increased more or less steadily to more than 80,000 tonnes in 2003. Catches are reported from the Atlantic, Indian and Pacific Oceans with blue shark, spot-tail shark (*Carcharhinus sorrah*); a coastal non-oceanic species and silky shark being the most important species.

**(f) Hammerhead, bonnethead, or scoophead sharks (family Sphyrnidae)**

59. The family Sphyrnidae comprises nine species: the winghead shark (*Eusphyra blochii*), the scalloped bonnethead (*Sphyrna corona*), the whitefin hammerhead (*Sphyrna couardi*), the scalloped hammerhead (*Sphyrna lewini*), the scoophead (*Sphyrna media*), the great hammerhead (*Sphyrna mokarran*), the bonnethead (*Sphyrna tiburo*), the smalleye hammerhead (*Sphyrna tudes*), and the smooth hammerhead (*Sphyrna zygaena*). The family is considered coastal, occasionally occurring in brackish water with a global distribution mostly in warm waters. Catches of Sphyrnidae have been reported only from the Atlantic since 1991. The catch was less than 2,000 tonnes in 2003.

60. Although all species are caught, only the smooth hammerhead and the scalloped hammerhead are reported as individual species in the FAO statistics. The smooth

hammerhead (*Sphyrna zygaena*) was believed to be an amphitemperate species (i.e. occurs in temperate water in the northern and southern hemispheres, absent from the tropics), but it is now known to occur in the tropics. It has a circum-global distribution. It is an active, common, coastal-pelagic and semi-oceanic species, caught with pelagic longlines, handlines, as well as bottom and pelagic trawls.

61. The scalloped hammerhead (*Sphyrna lewini*) has essentially a circum-global distribution in coastal and semi-oceanic warm temperate and tropical seas. It occurs over continental and insular shelves and in deep water adjacent to them, often approaching close inshore and entering enclosed bays and estuaries. It is probably the most abundant hammerhead. This species is apparently highly mobile and in part migratory, forming huge schools of small migrating individuals. Owing to its abundance, the species is common in inshore artisanal and small commercial fisheries, as well as offshore operations. It is caught with pelagic longlines, fixed bottom longlines, fixed bottom nets, and even bottom and pelagic trawls. Given its life-history characteristics, the scalloped hammerhead shark is expected to have very low resilience to exploitation. Although its worldwide distribution and known high abundance gives the species some protection globally, the risk of local depletion remains a serious concern.

**(g) Mackerel sharks**

62. Mackerel sharks (currently family Lamnidae, although Annex I to the Convention refers to them as Isurida) have a worldwide distribution in temperate and tropical seas. There are five species in the Lamnidae family: the great white shark (*Carcharodon carcharias*), the shortfin mako (*Isurus oxyrinchus*), the longfin mako (*Isurus paucus*), the salmon shark (*Lamna ditropis*), and the porbeagle (*Lamna nasus*). Reported catches of lamnidae have increased steadily from about 1,000 tonnes in the early 1980s to almost 7,000 tonnes in 2003, mostly short-fin mako (5,000 tonnes) and porbeagle (1,000 tonnes) sharks.

63. The great white shark (*Carcharodon carcharias*) is mostly amphitemperate and found in coastal and offshore areas of continental and insular shelves. The great white shark is of little interest to commercial fisheries, but its sensitivity to harvest has led to its listing on CITES Appendix II in 2004. It is also listed on Annex II to the Protocol 'Endangered or Threatened Species' of the Barcelona Convention.

64. The short-fin mako (*Isurus oxyrinchus*) is a coastal and oceanic circum-global species found in temperate and tropical waters. It is important for longline fisheries, because of its high quality meat. It is also a prime game fish prized by sport anglers. Given its life-history characteristics, the short-fin mako is expected to have medium resilience to exploitation (relative to other sharks). Its worldwide distribution and relatively high abundance in some areas probably means it is not currently at risk, but it can be easily overfished and localized depletion is always a risk. ICCAT cannot rule out that the biomass in the north Atlantic is below that producing maximum sustainable yield (MSY), but it in the south Atlantic it is probably above.<sup>41</sup>

65. The long-fin mako (*Isurus paucus*) is an oceanic, warm water, epipelagic species, probably circum-tropical, but records are sporadic with the result that the distribution is poorly known. The species is probably often mistaken for the apparently far more common short-fin mako shark or included with records for it. It was apparently common in the western Atlantic and possibly in the central Pacific, but rare elsewhere. It is probably taken regularly in tropical pelagic longline fisheries for tuna and swordfish as bycatch. In addition to longlines, the species is taken with hooks and lines and with anchored gill nets. Little is known about the state of long-fin mako shark populations.

66. The salmon shark (*Lamna ditropis*) is a common coastal-littoral, offshore and epipelagic shark, found in cool waters of the north Pacific. Salmon sharks are common in continental offshore waters but range inshore to just off beaches; they also are abundant far from land in the North Pacific basin. This species has been fished in the North Pacific in the past by longlines and gillnets. It is also caught in salmon seines, by salmon trollers towing hooks, and possibly by bottom trawlers off Alaska. It is considered heavily fished even though most of the catch is discarded bycatch. Knowledge of its biology is limited despite its abundance, but its fecundity is very low and the species probably cannot sustain current fishing pressure for extended periods.

67. The porbeagle (*Lamna nasus*) is a coastal and oceanic, amphitemperate species, with centres of distribution in the North Atlantic, and in a circum-global band of temperate water of the southern Atlantic, southern Indian, southern Pacific and Antarctic Oceans. The porbeagle is most abundant on the continental offshore fishing banks, but it is also found far from land in ocean basins and occasionally close inshore. This shark usually occurs in cold water, less than 18° and down to 1°C. Catches in Europe indicate that the porbeagle segregates by size (age) and gender. Porbeagles breed on both sides of the North Atlantic. Porbeagles of the Northwest Atlantic seem to constitute a single stock that undertakes extensive migrations. Long-term tagging data suggest there is no mixing between this population and that of the Northeast Atlantic. This species has been heavily fished commercially and utilized for human consumption in the temperate North Atlantic and the Mediterranean Sea, but is also caught as bycatch in the southern hemisphere.

68. Stocks in the North Atlantic have shown signs of serious overexploitation as indicated by a large decline in catch. The western Atlantic stock is currently considered overexploited. For the Northeast Atlantic, ICES concluded in 2005 that the stock is depleted and no fishery should be permitted.<sup>42</sup> Porbeagle is an important bycatch of in longline fishery and probably of the pelagic fishing fleets in the southern Indian Ocean and elsewhere in the southern hemisphere. The catch is poorly known and may be little utilized except for fins.

**(h) The fisheries**

69. Sharks are long-lived and slow-growing, and produce few offspring.<sup>43</sup> Consequently the production of recruits is closely linked to the spawning stock of adults. Stock recovery should be expected to be slow if overexploitation causes depletion. The number of shark species is small compared with the number of species of bony fishes, but they

occupy a variety of habitats from near shore to the ocean abyss. They are most numerous at depths less than 200 m in tropical and warm temperate marine habitats.

70. Shark fisheries pre-date recorded history, and every part of these animals has been used for some purpose. Shark meat is an important food that is consumed fresh, dried, salted or smoked. In many communities sharkfins are among the world's most expensive fishery products. Shark cartilage and other products are increasingly sought for medicinal purposes. Few fisheries use the whole animal: some use only the meat, others only use the fins, or livers or skin. In the majority of cases where only a portion of the animal is used, the rest is discarded at sea, which makes species identification of the catch difficult.

71. Fisheries for sharks are common throughout the world and use a variety of fishing gears and vessels. Sharks are taken mainly by gillnet and hook or trawl. Small amounts are taken in traditional and recreational fisheries (including game fishers and divers) and in beach gillnet and drumline fishing as bather protection programmes. There are several fisheries directed at one or a small number of species of shark, but most sharks are taken in multi-species fisheries, where the fishers tend to target more highly valued traditional bony fish species.

72. The following categories of shark fisheries can be identified: coastal hook and gillnet fisheries, demersal trawl bycatch fisheries, deepwater bycatch fisheries and pelagic bycatch fisheries (primarily bycatch in tuna longline and purse seine fisheries). Since most shark catch is taken as bycatch, the majority of the catch is reported as unidentified shark, mixed fish or is not reported at all. This lack of species identification of the catches and lack of information on fishing effort means basic data for fishery assessment are not available for most species.

73. An important concern about fisheries that catch sharks is that harvest strategies have a high probability of depleting the least productive species, unless methods for making fishing more selective are developed and implemented. As fishing effort increases, larger individuals and species disappear from the assemblage to be replaced by smaller counterparts. This results in a gradual drift towards shorter-lived, faster-growing species, which negatively effects biodiversity.

### **3. Other highly migratory species**

74. The species in this section, unlike tunas and to some extent sharks, have not attracted large or high profile fisheries. Therefore, there is little information about the biology of these species and the state of exploitation, other than reported catches.<sup>44</sup>

#### **(a) Pomfrets**

75. The pomfrets (family Bramidae) include eight genera and twenty-one species of pelagic, benthopelagic and bathypelagic fishes found in temperate and tropical waters of the Atlantic, Indian and Pacific Oceans. Annex I to the Convention refers to the family Bramidae without listing individual species. The main characteristic of most of the species is that they are oceanodromous, that is, they are migrating within oceans typically

between spawning and different feeding areas, with migrations being cyclical, predictable and covering more than 100 km.

76. Worldwide landings of pomfrets are poorly documented. The FAO database lists Atlantic pomfret (*Brama brama*), pomfrets, and ocean breams not elsewhere included (nei). Maximum landings were close to 18,000 tonnes in 2001, from eighteen countries fishing in the Atlantic and Pacific Oceans, but in 2003 only 4,000 tonnes were reported. Because pomfrets are mostly caught as bycatch in other fisheries, there is very limited biological information on the species. Although their state of exploitation is not known, they are unlikely to be overexploited. According to the FAO, they appear to be fully exploited in the eastern Indian Ocean, and moderately exploited in the Southwest Pacific.

**(b) Sauries**

77. Sauries belong to the Scomberesocidae family. The species included in Annex I to the Convention are the Atlantic saury (*Scomberesox saurus*), the Pacific saury (*Cololabis saira*), the saury (*C. adocetus*), and the king gar (*Scomberesox saurus scombroides*)<sup>45</sup>. These species are pelagic, schooling and oceanodromous. Although their state of exploitation is not known, sauries are unlikely to be overexploited.

78. The Atlantic saury (*Scomberesox saurus saurus*) lives near the surface in the North Atlantic, in the Baltic Sea and throughout the Mediterranean Sea. The Pacific saury (*Cololabis saira*), is widely distributed in the North Pacific. It is generally found offshore, usually near the surface and migrates seasonally. Most of the reported catches are from this species. The saury (*C. adocetus*), is a tropical species of the eastern Pacific. The king gar (*Scomberesox saurus scombroides*) lives in brackish and marine waters, it is only of minor commercial importance and it occurs in the Atlantic, Indian and Pacific Oceans with circum-global distribution in temperate waters of the southern hemisphere.

79. Six countries have reported saury landings to FAO. Annual landings have fluctuated between 200,000 tonnes and 600,000 tonnes since 1950 without a clear long-term trend since the early 1970s. Japan\* accounts for 49% to 98% of the reported total landings. The Pacific saury accounts for more than 95% of the reported landings.

**(c) Dolphinfish**

80. The two dolphinfishes of the Coryphaenidae family, the common dolphinfish (*Coryphaena hippurus*) and the Pompano dolphinfish (*Coryphaena equiselis*), are included in Annex I of the Convention. Both species follow boats and associate with floating objects, which may be used as attracting devices in fisheries. The common dolphinfish (*Coryphaena hippurus*) is generally common in most warm and temperate seas 21° to 30° C in the Atlantic, including the Mediterranean Sea, the western and eastern Indian Ocean and in the western central Pacific. The pompano dolphinfish (*Coryphaena equiselis*) has a worldwide distribution in tropical and subtropical seas. It is primarily an oceanic species but may enter coastal waters.

81. More than forty countries reported dolphinfish landings to FAO (*C. hippurus* only). Reported landings show a sustained increasing trend from 7,000 tonnes in 1950 to almost 50,000 tonnes in the early 2000s. Seven reporting entities have consistently declared landings since 1950. The Pacific accounts for more than the half of catches, with Japan\* and Taiwan, Province of China\* being by far the largest contributors. Although the state of exploitation is not known, dolphinfish are unlikely to be overexploited.

## **C. Selected straddling fish stocks**

82. The list of straddling stocks established by FAO in 1994<sup>46</sup> was taken as a starting point for this review. Enquiries were sent to RFMOs soliciting regional knowledge to refine the lists. Information was received for the Northeast and the Southeast Atlantic. For the Northwest and Southwest Atlantic, and the Northeast, eastern central and Southeast Pacific, staff of the FAO Fisheries Department or its consultants applied their own informed judgements. For the western and eastern central Atlantic, the Southwest Pacific and for the Indian Ocean, catches by country were examined to determine which species were being reported by non-coastal States, which were presumed to be fishing on the high seas. This information was tempered by knowledge of situations where distant water fishing countries have access agreements to EEZs, particularly when the species in the reported catch were not known to be in commercial abundance on the high seas. Using this approach, a refined list of species (by FAO statistical area) likely to be fished as straddling stock and other high seas fish stock was prepared.

### **1. Pacific Ocean**

#### **(a) Northwest Pacific**

83. Straddling stocks in the Northwest Pacific include Alaska (Walleye) pollock (*Theragra chalcogramma*), flying squid (*Ommastrephes bartrami*), Boreal clubhook squid (*Onychoteuthys borealjaponica*), Boreopacific armhook squid (*Gonatopsis borealis*), Pacific Ocean perch (*Sebastes alutus*), pelagic armourhead (*Pentaceros richardsoni*) and the alfonsino (*Beryx splendens*). According to FAO,<sup>47</sup> the pollock is considered fully exploited while the squids vary from moderately to fully exploited, and in some cases recovering. Based on reported landings, the Pacific Ocean perch is considered depleted, while the state of pelagic armourhead and alfonsino is not known.

#### **(b) Northeast Pacific**

84. Straddling stocks in the Northeast Pacific include jack mackerel (*Trachurus picturatus symmetricus*) and Alaska (Walleye) pollock (*Theragra chalcogramma*). The jack mackerel is moderately exploited and the Alaska pollock is fully exploited.

#### **(c) Western Central Pacific**

85. There is no information on straddling stocks in the western central Pacific.

**(d) Eastern Central Pacific**

86. The straddling stocks of giant squid (*Dosidicus gigas*), horse mackerel (*Trachurus* spp), and Spanish mackerel (*Scomber japonicus*) in the eastern central Pacific are moderately to fully exploited, according to the 2005 FAO review.<sup>48</sup>

**(e) Southwest Pacific**

87. There are two types of straddling fish stocks in the Southwest Pacific: more common types associated with large continental shelves and another type associated with small islands with limited continental shelves whose fisheries depend on oceanic resources found both within and outside their EEZs. Species with straddling stocks include orange roughy (*Hoplostethus atlanticus*), oreo dories (*Alloctytus verrucosus*, *A. Niger*, *Neocyttus rhomboidalis*, *Pseudocyttus maculatus*) and hoki (*Macruronus novaezealandiae*). Straddling oceanic resources include the narrow-barred Spanish mackerel (*Scomberomorus commerson*), oceanic squids, and flying fish. According to the 2005 FAO review,<sup>49</sup> orange roughy, oreo dories and hoki are fully exploited to overexploited. The Spanish mackerel, oceanic squid and flying squid are moderately exploited.

**(f) Southeast Pacific**

88. Straddling stocks in the Southeast Pacific Ocean include jumbo squid (*Dosidicus gigas*) and Chilean jack mackerel (*Trachurus picturatus murphyi*). Spanish mackerel (*Scomber japonicus*) is also found beyond the EEZs, but the catches are small. The Chilean jack mackerel is fully or overexploited, while the jumbo squid is moderately exploited.

**2. Atlantic Ocean**

**(a) Northwest Atlantic**

89. Straddling stocks in the Northwest Atlantic Ocean include cod (*Gadus Morhua*), American plaice (*Hypoglossoides platessoides*), redfish (*Sebastes marinus*), witch flounder (*Glyptocephalus cynoglossus*), Atlantic halibut (*Hippoglossus hippoglossus*), black halibut (*Reinhardtius hippoglossoides*), yellowtail flounder (*Pleuronectes ferruginaeus*), grenadiers (*Macrouridae*), capelin (*Mallotus villosus*) and shrimp (*Pandalus borealis*).

90. Based on assessments by the Northwest Atlantic Fisheries Organization (NAFO),<sup>50</sup> cod, American plaice, redfish, witch flounder, and Atlantic halibut are depleted; black halibut is overexploited, yellowtail flounder and shrimp are fully exploited, capelin are underexploited and the status of grenadiers is unknown. Stocks of some of the species on the Flemish Cap, such as cod and redfish, may be separate from EEZ stocks, and as such, may be other high seas fish stocks, rather than straddling stocks.

**(b) Northeast Atlantic**

91. The main “traditional” straddling stocks in the Northeast Atlantic Ocean are: blue whiting (*Micromesistis poutassou*), oceanic redfish (*Sebastes mentella*), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), black halibut (*Reinhardtius hippoglossoides*), Atlanto-Scandian (Norwegian spring-spawning) herring (*Clupea harengus*), mackerel (*Scomber scombrus*) and horse mackerel (*Trachurus trachurus*).

92. In addition to these, NEAFC advises that most deep water species for which fisheries have recently developed should also be considered as being straddling. These species are: Baird's smoothhead (*Alepocephalus bairdii*), risso's smoothhead (*Alepocephalus rostratus*), blue antimora (blue hake, *Antimora rostrata*), black scabbardfish (*Aphanopus carbo*), Iceland catshark (*Apristurus* spp), greater silver smelt (*Argentina silus*), alfonsinos (*Beryx* spp.), tusk (*Brosme brosme*), gulper shark (*Centrophorus granulosus*), leafscale gulper shark (*Centrophorus squamosus*), black dogfish (*Centroscyllium fabricii*), Portuguese dogfish (*Centroscymnus coelolepis*), longnose velvet dogfish (*Centroscymnus crepidater*), deep-water red crab (*Chacon (Geyron) affinis*), rabbit fish (rattail) (*Chimaera monstrosa*), frilled shark (*Chlamydoselachus anguineus*), conger eel (*Conger conger*), roundnose grenadier (*Coryphaenoides rupestris*), kitefin shark (*Dalatias licha*), birdbeak dogfish (*Deania calceus*), black (deep-water) cardinal fish (*Epigonus telescopus*), greater lanternshark (*Etmopterus princeps*), velvet belly (*Etmopterus spinax*), blackmouth dogfish (*Galeus melastomus*), mouse catshark (*Galeus murinus*), bluemouth (blue mouth redfish) (*Helicolenus dactylopterus*), blondnose six-gilled shark (*Hexanchus griseus*), orange roughy (*Hoplostethus atlanticus*), silver roughy (pink) (*Hoplostethus mediterraneus*), large-eyed rabbit fish (ratfish) (*Hydrolagus mirabilis*), silver scabbard fish (cutless fish) (*Lepidopus caudatus*), eelpout (*Lycodes esmarkii*), roughhead grenadier (rough rattail) (*Marcrochirus berglax*), blue ling (*Molva dypterygia*), ling (*Molva molva*), common mora (*Mora moro*), sailfin roughshark (sharpback shark) (*Oxynotus paradoxus*), red (blackspot) seabream (*Pagellus bogaraveo*), forkbeards (*Phycis* spp.), wreckfish (*Polyprion americanus*), round skate (*Raja fyllae*), Arctic skate (*Raja hyperborea*), Norwegian skate (*Raja nidarosiensis*), straightnose rabbitfish (*Rhinochimaera atlantica*), knifetooth dogfish (*Scymnodon ringens*), small redfish (Norway haddock) (*Sebastes viviparus*), Greenland shark (*Somniosus microcephalus*), spiny (deep-sea) scorpionfish (*Trachyscorpia cristulata*).

93. Fisheries for deep water species have developed rapidly since 1990 in the Northeast Atlantic Ocean. In October 2005 ICES provided advice for the management of these fisheries.<sup>51</sup> Although the state of exploitation of most species/stocks cannot be assessed with respect to standard criteria, the overall evaluation by ICES is that those fisheries are currently not sustainable. Based on ICES advice in 2005, none of the traditional straddling stocks are under or moderately exploited, herring and oceanic redfish are fully exploited, blue whiting, cod, haddock, black halibut and mackerel are overexploited and the state of horse mackerel is uncertain.

**(c) Eastern Central Atlantic**

94. The analysis identified catches of common cuttlefish, marine fishes nei, octopuses etc. nei, red porgy, West African goatfish, common sole, cuttlefish, bobtail squids nei, European hake, Natantian decapods nei, croakers, drums nei, tonguefish, chub mackerel, European pilchard, jack and horse mackerel nei, alfonsinos, flatfishes nei and Senegalese hake from countries that have fishing agreements with coastal States. It was therefore concluded that there are no significant fisheries for straddling stocks outside of EEZs at present in the eastern central Atlantic.

**(d) Western Central Atlantic**

95. The analysis of catches by non-coastal States was also performed for the western central Atlantic. It identified catches of a mixture of coastal and oceanic species in general categories such as: Sharks, rays, skates, etc. nei, croakers, drums nei, hairtails, scabbardfishes nei, marine fishes nei, natantian decapods nei which suggest that these catches were probably made within EEZs under fishing agreements with coastal States. It seems that there are no significant fisheries for straddling stocks outside EEZs at present in the western central Atlantic.

**(e) Southwest Atlantic**

96. Straddling stocks in the in the Southwest Atlantic include short-fin squid (*Illex argentinus*), common squid (*Loligo* spp.), a flying squid (*Martialia hyadesi* of the Ommastrephidae family), hakes (*Merluccius hubbsi* and *M. polylepis*), the southern blue whiting (*Micromesistius australis*), the pink cusk eel (*Genypterus blacodes*), the Patagonian toothfish (*Dissostichus eleginoides*), the tadpole mora (*Salilota australis*), the Patagonian grenadier (*Macruronus magellanicus*), the grenadier (*Macrourus whitsoni*), the Antarctic cod (*Notothenia rossii*), rockcods (*Notothenia* spp.) and sharks and rays.

97. The state of fisheries for common squid, the flying squid, the tadpole mora, the grenadier the Antarctic cod, the rockcods and the shark and rays is unknown. The Patagonian grenadier is moderately exploited; the Patagonian toothfish<sup>52</sup> and the pink cusk eel are moderately to fully exploited; the short-fin squid is fully exploited, the southern blue whiting is fully to overexploited and the hakes are overexploited or depleted.

**(f) Southeast Atlantic Ocean**

98. The South East Atlantic Fisheries Organisation (SEAFO)<sup>53</sup> identifies the following species as straddling: alfonsinos (Family Bercycidae), orange roughy, horse mackerel (*Trachurus* spp.), lanternfish (Family Myctophidae), mackerel (*Scomber* spp), skates (Family Rajidae), sharks (Order Selachomorpha), armourhead (*Pseudopentaceros* spp), cardinal fish (*Epigonus* spp), deep sea red crab (*Chaceon maritae*), octopus (Family Octopodidae), squids (Family Loliginidae), and wreckfish (*Polyprion americanus*). The state of exploitation is unknown for all of the species except for horse mackerel, which are classified as fully exploited.

### 3. Indian Ocean

99. No fisheries on straddling stocks have been identified in the Indian Ocean. There are straddling resources (e.g. deep water snapper), but they are not fished to any significant extent. As noted above, there are also areas in the Indian Ocean that are suitable for straddling stocks in terms of topography with relatively shallow water extending from an EEZ into the high seas. However, fishing of straddling stocks does not seem significant at present in those areas.

### 4. Southern Ocean

100. The Southern Ocean is considered to be delimited by the Antarctic Convergence where cold Antarctic waters meet warmer waters of the Atlantic, Pacific and Indian Oceans to the north. The location of the Antarctic Convergence varies over time, but it is in the vicinity of 60 degrees S. The Antarctic convergence is generally considered to form the boundary of the Southern Ocean ecosystem, with relatively few species passing through it. Given the unique situation of the Southern Ocean, this review reports on all of the species fished in the convention area of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) as if they were straddling fish stocks or other high seas fish stocks. There are no fisheries for highly migratory species in the Southern Ocean at present.

101. Prior to the mid 1960s, only whale catches were reported to FAO from the Southern Ocean. Since then, the fisheries have targeted various species including marbled rockcod, mackerel icefish, humped rockcod, south Georgian icefish, Patagonian and Antarctic toothfish and Antarctic krill. Reported catches exceeded 600,000 tonnes in the early 1980s, but since the early 1990s, they have been relatively stable around 100,000 tonnes per year, albeit with a tendency to increase. During 1990-2003, the catches have been dominated by Antarctic krill (86%), Patagonian toothfish (6%), a lanternfish (*Electrona carlsbergi*), the subantarctic electron (5%) and the mackerel icefish at less than 2%. More than fifty species are reported in the remaining 1% of the total catches.

102. Information on the state of exploitation of Southern Ocean resources was provided by the CCAMLR Secretariat. Antarctic krill (*Euphausia superba*) is considered underexploited in FAO Areas 48 and 58, while lanternfish (*Electrona carlsbergi*), the sevenstar flying squid (*Martialia hyadesi*), and crab (*Paralomis spinosissima* and *P. formosa*) in FAO Area 48 are also considered underexploited. Patagonian toothfish (*Dissostichus eleginoides*) is considered overfished in parts of FAO Area 58 and fully exploited in FAO Area 48 and other parts of FAO Area 58. Mackerel icefish (*Champsocephalus gunnari*) is fully exploited in both FAO Areas 48 and 58 while the state of marbled rockcod (*Notothenia rossii*), for which the fishery is closed, is uncertain.

### 5. Mediterranean Sea

103. The General Fisheries Commission for the Mediterranean (GFCM) uses the concept of shared stocks, exploited by two or more countries on the high seas and only by the riparian countries in territorial waters. Such stocks in the Mediterranean include hake

(*Merluccius merluccius*) in the gulf of Lions, deep sea shrimps, the blue and red shrimp (*Aristeus antennatus*) and the giant red shrimp (*Aristaeomorpha foliacea*), sardines (*Sardina pilchardus*) in the Sea of Alboran and Adriatic Sea and anchovy (*Engraulis encrasicolus*) in the gulf of Lions and the Adriatic sea. According to the 2005 FAO review,<sup>54</sup> the state of exploitation of giant red shrimp is not known, rose shrimp is fully exploited and hake is overexploited. Sardines and anchovies range from underexploited to overexploited depending on the zone.

#### **D. Other high seas fish stocks**

104. This section considers fish stocks that are not highly migratory species and occur exclusively in the high seas. Most of the currently known high seas stocks are deep water species, but several others may be pelagic species.<sup>55</sup> Most fisheries<sup>56</sup> for these deep water species are relatively recent and the development of a majority of them has outpaced the ability to obtain scientific information and to implement effective management. Relatively little is known about many of the species and most of the fisheries.

105. Deep water species live at depths where there is virtually no light or primary productivity. Most nutrients and production is retained in surface waters above the permanent thermocline. Although many species migrate vertically to feed at night, those that do not, depend (directly or indirectly) on a rain of dead plants and animals from surface waters for food. Some species only inhabit deep waters in their adult stage, and may be exploited during both their shallow and deep water phases. Deep water species have diverse life history strategies, although little is known about their stock structure, migrations, and general biology and ecology. Since they live in low productivity environments, they are expected to be slow growing and to mature late in life, which has been confirmed for some important species.<sup>57</sup> Some species form dense aggregations that are accessible to fisheries on topographic features like seamounts, ocean ridges and canyons. Because of these characteristics deep water species are believed to be particularly vulnerable to over-exploitation and depletion.

106. While most fish families of deep water species occur world-wide, the existence of deep water basins bounded by the continents and oceanic ridges has resulted in regional differences. Another important feature of deep water fishes is that new discoveries continue, e.g. the recent discovery of a 4.5 meter megamouth shark (*Megachasma pelagios*) weighing 750 kg and a six-gilled ray (*Hexatrygonidae*), both representing new taxonomic families.

107. Important species that form deep water aggregations include orange roughy (*Hoplostethus atlanticus*) and the oreos (*Allocyttus* spp., *Neocyttus* spp. *Pseudocyttus* spp., etc), which are often fished together, alfonsinos (*Beryx* spp.) in lower latitude fisheries, Patagonian toothfish (*Dissostichus eleginoides*) in Southern Ocean fisheries, pelagic armourhead (*Pseudopentaceros wheeleri*) and various species of Scorpaenidae found on both coasts of North America.

108. Major fisheries for deep water species (particularly orange roughy) first developed off New Zealand and Australia in the late 1970s and 1980s, and they have developed rapidly elsewhere since 1990. The development of deep water fisheries has been prompted by three related factors: (1) depletion of species and stocks in shallower water, (2) the high value of some deep water species, and (3) advances in technology that make fishing in deep water possible. On the high seas, management of deep water fisheries has lagged behind the development of the fisheries. However, in October 2005 ICES provided precautionary advice for the management of deep water fisheries under the purview of NEAFC. The ICES evaluation is probably broadly applicable (adapted for a more general context): “Most exploited deepwater species are considered to be harvested unsustainably; however, it is currently not possible to provide advice for specific fisheries for deep-sea species. Consistent with a precautionary approach, [...] immediate reduction in established deep-sea fisheries [should occur] unless they can be shown to be sustainable. Measures should also be implemented to reduce exploitation of deep-sea species by fisheries primarily targeting shelf species (hake, anglerfish, and megrim). New deep-sea fisheries or expansion of existing fisheries into new fishing areas should not be permitted unless the expansion is very cautious, and is accompanied by programmes to collect data which allow evaluation of stock status as the basis for determining sustainable exploitation levels [...]. For several species there is a concern that catch rates can only be maintained by sequential depletion of relatively isolated concentrations/sub-units of a stock. The smallest unit for which data are reported at present [...] may not be appropriate for monitoring or managing this type of fishing activity. The depth range within an area may be very wide, and the sizes of the areas are very different.”

## 1. Orange roughy (*Hoplostethus atlanticus*)

109. The orange roughy (*Hoplostethus atlanticus*), is found in the North and South Atlantic, in the southern Indian Ocean, the Tasman Sea, around New Zealand, and in the South Pacific. They are found within EEZs; some are straddling stocks, while others occur entirely on the high seas. The species is mainly caught at depths over 800 m by fisheries on fish aggregations associated with seamounts. The proportion of the resource outside of the fished area is not known. Fisheries appear to have serially depleted fish aggregations that may or not correspond to distinct stock units. Recruitment appears to be irregular. The time lag between spawning and recruitment to the spawning aggregations is so long (about 20 years), that it is difficult to judge the influence of fisheries on recruitment. The theory upon which the concept of a sustainable yield is based, implies that there should be a compensatory response in recruitment as a result of fishing, but there is no evidence so far that this is the case for orange roughy. Sustainable exploitation rates are thus bound to be very low, and may be in the order of 5% of biomass.

## 2. Oreo dories (*Allocyttus* spp. *Neocyttus* spp. and *Pseudocyttus* spp.)

110. The oreo dories (*Allocyttus* spp., *Neocyttus* spp. and *Pseudocyttus* spp.), members of the Oreostomadidae ) occur close to the sea bed in deep waters. They form large aggregations over rough grounds near seamounts and canyons in the Antarctic, the Atlantic, Indian Ocean, and the Pacific.<sup>58</sup> The proportion of the resource outside of the fished area is not known and fisheries appear to have serially depleted fish aggregations

that may or may not correspond to distinct stock units. Recruitment appears at best irregular, and like orange roughy, there is no evidence of a compensatory response in recruitment. Estimates from New Zealand indicate MSY to be of the order of 1.6 percent of initial biomass if the population is not to be reduced by more than 80% with a 20% probability.

### 3. **Alfonsino (*Beryx splendens*)**

111. The alfonsino (*Beryx splendens*), belong to the Bericidae family and are found in the Atlantic, Indian Ocean, western and central Pacific. They inhabit the outer shelf and slope to at least 1,300 m depth, and may make vertical migrations at night. *Beryx splendens* are caught in mid-water trawls over shallower seamounts, underwater ridges and on the slope edges between 300 and 500 m. Genetic studies suggest that alfonsinos may have an ocean-wide population structure, but the relationship between the various fish aggregations is not known. If the hypothesis of an ocean-wide population structure is true, it could be that individual aggregations cannot be exploited sustainably if most recruitment originates irregularly from one or a few areas (which can differ from year to year). If fishing depletes an aggregation that was destined to supply recruits over a large geographic area, the adverse effect on the broader population may be much greater than a localized depletion. Some aggregations may occur in areas that are rarely suitable for recruits to settle and fishing on these aggregations will not be sustainable. Unlike many deepwater species, the growth and mortality rates of alfonsinos are relatively high,<sup>59</sup> which means that the species should be better able to sustain a fishery than other less productive deepwater species.

### 4. **Toothfishes (*Dissostichus* spp.)**

112. Toothfishes (*Dissostichus* spp.), belong to the Notothenidae family and have a circum-polar distribution within Antarctic and Southern Ocean waters. Patagonian toothfish (*D. eleginoides*) are found asymmetrically around southern South America, while Antarctic toothfish (*D. mawsoni*) occurs in high latitudes, in the Pacific region. The two species overlap between 60°S and 65°S and both occur to depths of 3,000 m. The northern limit for most populations of Patagonian toothfish is 45°S, except along the Chilean and Argentinean coasts where they may extend north in deeper, cold water. Significant populations of Patagonian toothfish exist in the waters of, and adjacent to, the various sub-Antarctic islands and in the waters of Chile\*, Argentina\*, Uruguay and Peru\*.

### 5. **Pelagic armourhead (*Pseudopentaceros wheeleri* and *P. richardsoni*)**

113. Pelagic armourhead (*Pseudopentaceros wheeleri* and *P. richardsoni*), belong to the Pentaceroideae family. The species is associated with seamounts, especially in the North Pacific, but the family is distributed throughout the Indian and Pacific Oceans and in the south-western Atlantic. The fishery for pelagic armourhead illustrates the potential evolution of seamount fisheries. Japanese and Soviet Union vessels began trawling in the Emperor Seamount chain and the Northern Hawaiian Ridge areas in 1969. The total catch for the Soviet Union vessels is not known, but is estimated at over 133,400 tonnes in the

period 1967–1977. Between 1969 and 1977, two to five Japanese trawlers a year fished this area averaging catches of 22,800–35,100 tonnes a year. Between 1977 and 1982 catches fell to 5,800 – 9,900 tonnes. Ninety percent of the catch was pelagic armourhead. The once dominant pelagic armourhead were later replaced by alfonsino, although the alfonsino has never been as abundant as the pelagic armourhead. There is no evidence that either of the fish stocks will recover enough to allow commercially viable fisheries in the near future.

## 6. **Hoki (*Macruronus novaezelandiae*)**

114. Hoki (*Macruronus novaezelandiae*) is a benthopelagic Merlucciidae, which usually lives near the bottom in the Southwest Pacific, but the species also form mid-water aggregations for spawning. Large adult fish generally occur deeper than 400 m, while juveniles may be found in shallower water. Mid-water trawl fisheries target aggregations near canyons that are often close to coasts in areas of narrow continental shelves. While fisheries for hoki are generally considered high seas deep water fisheries, most of the catch is from EEZs. The stock structure is uncertain and it is not always clear that total allowable catches (TACs) set for specific geographic areas correspond to distinct biological units.

## 7. **Other species**

115. In addition to the species described above, a number of deep water species have been treated as straddling stocks in the Northeast Atlantic. Some of them potentially make up other high seas fish stocks.

116. A further suite of deepwater, or at least slope species, have been the target of fisheries in many tropical regions. These can be targeted by small-scale deepwater fisheries usually along the shelf break and shelf slope wherever the continental shelf is relatively narrow and the fishing grounds are accessible to fishermen using small fishing boats. The principal species consist of members of the Lutjanidae (snappers), Serranidae (Sea basses: groupers and fairy basslets), and Carangidae (jacks and pompanos) families and mostly importantly include the Eteline snappers (e.g. *Etelis coruscans* and *E. carbunculus*) and the jobfishes (e.g. *Pristomopoides filamemtusus*, *P. typus* and *P. multidentis*). These fisheries are particularly important to small island States, although they are also widely found along the continental margins in tropical and sub-tropical areas.

## E. **Associated Species**

117. As mentioned above, associated species are considered to be impacted species that are not part of the landed catch. Fisheries for straddling fish stocks, highly migratory fish stocks, and other high seas fish stocks, impact other species as a result of (1) discards, (2) physical contact of fishing gear with organisms and habitat that are not caught, and (3) indirect processes. These mechanisms are considered below.

## 1. Discards

118. Although information is still limited, much more is known about discards than the other mechanisms through which fisheries impact associated species. The most recent global information on discards is described in a recent FAO report.<sup>60</sup> It estimates that the rate of discards is about 8% for all marine fisheries combined, with large differences by countries, gear types, target species and statistical areas.

119. Shrimp trawling has the highest estimated average discard rate (62.3%), but the rates vary widely between fisheries (from 0 to 96%). There are a variety of finfish and invertebrate species caught, including juveniles of target species of many fisheries. Most shrimp trawling is on stocks confined to the EEZs, although some straddling or other high seas stocks of shrimp are fished. These are likely to be fisheries in relatively deepwater for coldwater species, such as the fishery for *Pandalus* shrimp on the Flemish Cap off Newfoundland and off Labrador in the Northwest Atlantic (FAO Statistical Area 21). The aggregate discard rate for cold/deepwater shrimp fisheries is 39%, but where use of bycatch reduction devices is mandatory, as in the Northwest Atlantic, the discard rate is relatively low, in the order of 5%.

120. After shrimp trawling, longline fishing for highly migratory species, primarily tuna and tuna like species, has the highest discard rate (averaging 28% with a range of 0 to 40%). Other fisheries for highly migratory species have much lower discard rates: 5% for tuna purse seines, 0.4% for tuna pole and line fishing. The total discards by these highly migratory species fisheries is estimated as about 700,000 tonnes annually. The portion discarded by high seas fisheries is unknown, but it is likely to be substantial.

121. The most common discard species from longlines is the blue shark. Other sharks, target species damaged by sharks and marine mammals, frigate tuna, kawakawa, Indo-Pacific king mackerel, and narrow-barred Spanish mackerel are also taken and discarded. Albatross, petrels and other seabirds are also caught by longlines. For tuna purse seines, some of the discarded species are bonito, dogtooth tuna, rainbow runner, dolphinfish, jacks, sharks, billfish, mantas and undersize target species (i.e. skipjack and yellowfin tuna). Dolphins are also encircled by purse seines in some areas.

122. Fisheries for straddling demersal fish stocks and other high seas demersal fish stocks are primarily conducted with bottom trawlers. The estimated discard rate for trawlers targeting demersal finfish is 9.6%. There is no basis for judging if the rate is likely to be higher or lower for straddling fish stocks and other high seas fish stocks than for stocks entirely within EEZs. However, as the catch from stocks entirely within EEZs accounts for most of the total catch, such that these EEZ fisheries must account for most of the 1.7 million tonnes of estimated discards by bottom trawlers targeting demersal finfish. Many species are discarded depending on the target species (typically the species composition differs between flatfish and roundfish fisheries), geographic area, and depth. Discards of juveniles of the target species are common, as well as species with low commercial value, such as horse mackerel, long jawed mackerel (*Rastrelliger* spp), elasmobranchs (e.g. dogfish and skates), arrowtooth flounders and flathead sole. Many

benthic invertebrates are discarded, such as molluscs, echinoderms (e.g. urchins and starfish), crabs, rajids, and whelks. Deepwater trawling results in discards of additional species, such as grenadiers, whiptails, rabbitfish, oreos, chondrichthyans (e.g. birdbeak dogfish), batoids and chimaeroids, and cold water corals (*Lophelia sp.*).

123. In addition to bottom trawling, demersal longlining is an important form of fishing in the Southern Ocean in the CCAMLR area (Statistical Areas 48, 58, 88). The discard rate for this type of fishing is estimated as 7.5% (ranging from 0.5 to 57%). The overall discard rate in the CCAMLR area is estimated as 12.7% resulting in about 2,000 tonnes annually.

124. Most discards are of finfish and invertebrate species that are so abundant that there is little risk that their reproduction may become seriously threatened. However, there are some species with abundance so low that they are threatened with extinction. In addition, there are species which significant segments of society want protected regardless of their abundance. They are referred to as “charismatic species.” Some charismatic species also have a significant extinction risk. Marine mammals, sea turtles and sea birds have long standing status as charismatic species and/or species at risk (of extinction). More recently, cold water corals (*Lophelia sp.*) have gained public attention such that they might also be regarded as charismatic. Some species of cold water corals might have extremely small geographic ranges (e.g. on the top of a single seamount), which means they may be vulnerable to localized depletion and possibly extinction, as well as being charismatic.

125. Charismatic species and species at risk of extinction are known bycatch of fisheries for highly migratory fish stocks, straddling fish stocks and other high seas fish stocks. Sea turtles and sea birds are well documented bycatch in longline fisheries for tuna and tuna like species. Sea birds are also taken by longline fisheries for tunas (e.g. as in the southern bluefin tuna fishery) and for demersal species, such as the Southern Ocean demersal longline fishery for toothfish.

126. Concern about longline bycatch of turtles in fisheries for highly migratory fish stocks prompted FAO to hold both an Expert Consultation<sup>61</sup> and a Technical Consultation<sup>62</sup> to consider ways of reducing mortality. Recent experiments aimed at reducing sea turtle bycatch and mortality are promising. For example, changes in hook shape and bait type reduced the catch rate of loggerhead turtles and leatherback turtles by 90% and 75% for the Northwest Atlantic. In general, the impact of sea turtle bycatch by longline fisheries is unknown, but it could jeopardize species that are severely depleted, even if the longline fisheries are not the primary cause of the depletion.

127. Bycatch of marine mammals is known to occur in some trawl fisheries (particularly large high speed pelagic trawls) and to a lesser extent on longlines. It is unclear to what degree marine mammal bycatch by trawlers and longliners occurs in high seas fisheries, but there is probably some. In the case of purse seine fishing for tuna in the eastern Pacific Ocean, dolphins are intentionally encircled in the nets since they are an indicator of the location of schools of tuna. This practice has resulted in a cumulative mortality of several million dolphins since the 1960, jeopardizing some dolphin species. This led to

the negotiation of the Agreement on the International Dolphin Conservation Program (AICDP), which entered into force in 1999, and whose Secretariat is provided by the IATTC. The programme reduced drastically the mortality from 132,000 dolphins in 1986 to about 1,500 in 2003. In spite of this success, dolphin populations appear to have been slow to recover.<sup>63</sup>

128. The recent expansion of trawl fisheries to deepwater into areas previously not fished has resulted in the bycatch of cold water corals (*Lophelia sp.*), sometimes as boulder size pieces. Rarely has the impact of expanding deepwater trawl fisheries been documented from the initiation of fishing, but for the fishery for orange roughy on the South Tasman Rise straddling the Australian EEZ south of Tasmania, observers estimated in the first year of the fishery that 10 tonnes of coral per tow were brought up. This extrapolates to 10,000 tonnes of coral associated with a catch of about 4,000 tonnes of orange roughy.<sup>64</sup>

## **2. Physical contact by fishing gear with organisms that are not caught**

129. Trawling is the primary type of fishing operation that causes physical contact between fishing gear and associated species and their habitat. The bycatch of cold water corals is probably a symptom of a larger impact of trawling as reefs are damaged without traces of corals being hauled up in nets. Trawls also come into physical contact with the bottom in areas where reefs are not present and here the effects are less obvious, but ecosystems are altered and species of benthic organisms will be differently affected.

130. Indirect processes affect the growth, survival and reproduction of species that are the target of fisheries, as well as associated species. When fisheries remove fish from populations, food webs are altered. Some species may suffer from the loss of prey; others may benefit from removal of their predators. Species that compete will be affected differently with cascading impacts on other dependent species.

131. Alteration of the sea bottom resulting from physical contact by fishing gear probably changes habitat suitability thus indirectly affecting associated species. For example, some species depend on complex “three dimensional” biogenic structures, such as reefs, for shelter from predators. When such structures are destroyed, the species may disappear.

132. Impacts through indirect processes are hard to detect, and even harder to predict.<sup>65</sup>

## **3. Finfish and invertebrate species**

133. Longtail tuna (*Thunnus tonggol*), slender tuna (*Allothunnus fallai*), the butterfly kingfish (*Gasterochisma melampus*), the wahoo (*Acanthocybium solandri*) and Spanish mackerel (*Scomberomorus spp.*) are not included in Annex I to the Convention, but they share many characteristics with some of the species included. Here, they are considered associated species.

134. The flying fish (Exocoetidae, genera *Exocoetus*, *Cypselurus*, *Hirundichthys*, *Cheilopogon* and *Prognichthys*) the sunfish or headfish of the family Molidae, the snake

mackerel (*Gempylus serpens*), escolar (*Lepidocybium flavobrunneum*) and oilfish (*Ruvettus pretiosus*) of the Gempylidae family, are species which are caught close inshore but migrate far offshore. They are all part of the regular by-catch of the tuna longliners together with the lancetfish (*Alepisaurus ferox* and *A. brevirostris*).

### **III. Review of the extent to which the Agreement has been incorporated into sub-regional or regional agreements or arrangements to conserve and manage straddling fish stocks and highly migratory fish stocks, as well as national legislation related to the implementation of the Agreement, and also of measures that have been adopted relevant to these stocks**

135. RFMOs have a crucial role to play in implementing the Agreement. There are nine key RFMOs with mandates to manage straddling fish stocks and highly migratory fish stocks: CCAMLR,<sup>66</sup> CCSBT,<sup>67</sup> IATTC,<sup>68</sup> ICCAT,<sup>69</sup> IOTC,<sup>70</sup> NAFO,<sup>71</sup> NEAFC,<sup>72</sup> SEAFO<sup>73</sup> and the Western and Central Pacific Fisheries Commission (WCPFC).<sup>74</sup> The mandates of CCAMLR, NAFO, NEAFC and SEAFO are to manage straddling stocks and high seas discrete stocks, while those of CCSBT, IATTC, ICCAT, IOTC and WCPFC are to manage highly migratory fish stocks.

136. In addition, Alaska pollock on the high seas in the Central Bering Sea is managed by the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (Donut Hole Convention),<sup>75</sup> and eastern Atlantic bluefin tuna and swordfish are managed by the General Fisheries Commission for the Mediterranean (GFCM).<sup>76</sup>

#### **A. Conservation and management of stocks**

137. Article 5 of the Agreement sets out the general principles to be applied by coastal States and States fishing on the high seas in order to conserve and manage straddling fish stocks and highly migratory fish stocks. Article 5 (a)-(c) of the Agreement provides, among other things, that in order to conserve the stocks concerned, States are required to adopt measures to ensure their “long term sustainability” and promote the objective of their optimum utilization, to ensure that such measures are based on the best scientific evidence available and to apply the precautionary approach in accordance with Article 6 of the Agreement. Annex II of the Agreement provides guidance for the application of precautionary reference points in conservation and management of the stocks concerned. Further, Article 10 (d) of the Agreement requires States to obtain and evaluate scientific advice through RFMOs.

##### **1. Adoption of measures**

138. *Scientific advice.* The Agreement provides that States shall adopt conservation and management measures for straddling fish stocks and highly migratory fish stocks based on the best scientific evidence available. Scientific advice for the conservation and management of the stocks concerned is obtained through RFMOs and their scientific bodies. For areas or regions where RFMOs do not exist, States obtain the scientific advice from national research institutions and/or through cooperation with other States.

All RFMOs indicate that catch levels and other regulatory measures are based on scientific advice received from their respective scientific bodies.

139. *Precautionary approach.* Article 6 (1) of the Agreement requires States to apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment. Application of the precautionary approach to fisheries management is aimed at reducing the risk of overexploitation and depletion of fish stocks. The use of precaution is required at all levels of the fishery system, including development planning, conservation and management measures, management decisions, research, technology development as well as legal and institutional frameworks. The precautionary approach recognizes that changes in fisheries systems are only slowly reversible, difficult to control, not well understood, and subject to changing environment and human values, and that the lack of full scientific information should not be used as a reason for postponing cost-effective measures to prevent environmental degradation, where there are threats of serious or irreversible damage.

140. In practice, the precautionary approach entails the setting of reference points that signal objectives for management and threshold levels for spawning stock size and fish mortality. The objectives of management are to ensure that the fish mortality rates and the size of the spawning stock biomass are maintained at or above desired levels. The precautionary approach is, and will remain, a work in progress. Its introduction to practical fisheries management over the last decade has brought experience and lessons that scientists and administrators are now trying to incorporate into future development of the approach. One critical issue is how threshold levels should be set for spawning stock sizes and rates of decline (fish mortality).

141. *RFMOs.* Several RFMOs<sup>77</sup> indicate that they have made efforts to implement new approaches to fisheries conservation and management, especially the precautionary approach. Measures to this effect include the following: collecting and analysing data on target and dependent/related species and weighing up the extent and effect of uncertainties and gaps in such data before making management decisions; limiting fleet capacity at a precautionary level; establishing agreements, action plans/guidelines for the precautionary approach; setting up precautionary quotas; and requesting scientific advice on precautionary buffer zones for reference levels.

142. CCAMLR has for many years incorporated the precautionary approach into stock assessment and decision making. All regulated fisheries in areas under CCAMLR's jurisdiction are subject to precautionary catch limits as advised by its Scientific Committee.<sup>78</sup> In addition, both krill and Patagonian and Antarctic toothfish fisheries are subject to (pre-determined) decision rules. CCAMLR is pioneering efforts to manage marine ecosystems according to the precautionary principle, to ensure that new and exploratory fisheries do not develop faster than the ability of the Commission to evaluate their potential consequences.

143. CCSBT, based on advice from its Scientific Committee,<sup>79</sup> agreed in 2005 to adopt a management procedure for the determination of a TAC for the southern bluefin tuna fishery. The management procedure was selected and constructed to promote the rebuilding of the stock and to ensure that there is a 50% chance that the spawning stock biomass will be above the 2004-level by 2014.

144. IATTC has since the 1980s, taking into account scientific advice,<sup>80</sup> included precaution in the absence of information. IATTC interprets MSY as a limit reference point. If catches for target species reach the MSY limit, management measures are imposed. A Working Group on Reference Points has been established to suggest precautionary limits and targets. A resolution for a multi-annual program (2004 – 2006) on the conservation of tuna, including quotas in the Eastern Pacific has been adopted<sup>81</sup> and IATTC has agreed to freeze the effort for the North Pacific albacore tuna.<sup>82</sup>

145. ICCAT's Scientific Committee<sup>83</sup> created an Ad Hoc Working Group on Precautionary Approach in 1997, which last met in 2001 in conjunction with the Committee. ICCAT reports that the precautionary approach is not adopted as a formal decision-making mechanism. However, the adopted conservation and management measures are designed to maintain or rebuild stocks to levels that can permit the maximum sustainable catch.

146. IOTC has adopted the precautionary approach through the principle of incorporating uncertainty in stock assessments, as advised by its Scientific Committee.<sup>84</sup> Recognising that a reduction in the catches of bigeye tuna from all fishing gears should be implemented as soon as possible, IOTC introduced a resolution to limit the catch of bigeye tuna to recent levels while over the next three year period the Commission develops a mechanism to allocate to all Contracting Parties bigeye tuna quotas for specific time periods.<sup>85</sup>

147. NAFO established a Precautionary Approach Working Group in 1997, comprising participants from the Fisheries Commission and the Scientific Council,<sup>86</sup> which led to the adoption of the concept of a precautionary approach to fisheries management in 1999. In 2004, NAFO agreed to a Precautionary Approach Framework and adopted separate measures to apply this framework initially to two stocks.<sup>87</sup>

148. In 1996, NEAFC requested ICES<sup>88</sup> to include the precautionary approach in advice provided to the Commission. ICES annual advice includes management recommendations on precautionary reference points. Long-term management plans and harvest control rules exist for three stocks.<sup>89</sup> On a precautionary basis NEAFC Parties have also agreed to an overall reduction of 30% in effort in fisheries for deep sea species, as no scientific advice is available on a stock by stock basis for these stocks at present.

149. SEAFO and WCPFC have included the application of the precautionary approach as a management tool in their respective conventions,<sup>90</sup> but so far it has not been

implemented as the organisations have just recently become operative. Work has, however, already started within their respective scientific committees.<sup>91</sup>

150. *States.* Several States, both parties and non-parties to the Agreement, indicate that their conservation and management measures provide for the application of precautionary approach to fisheries management.<sup>92</sup> Many of these statements do not explain, however, how the precautionary approach has been implemented. Other States explain that they have adopted such measures within the precautionary framework established by the body which provides them with scientific advice, including advice based on the use of precautionary reference points such as limit reference points and target reference points.<sup>93</sup> Some also report that they have adopted domestic legislation to implement the provisions of Article 6 of the Agreement.<sup>94</sup> In many cases such legislation requires all management decisions to take into account the best scientific evidence available as well as any uncertain, unreliable, or inadequate information available at the time of decision-making, without allowing the absence or uncertainty of information to be used as a reason for postponing or refraining to take the necessary measures.

151. Canada reports that collapses of major cod stocks in the 1990s gave considerable momentum to new approaches, including the definition of reference points for fisheries management. The precautionary approach was linked to the concept of serious harm, which was defined as recruitment overfishing. For the purpose of national implementation, several workshops were held which subsequently refined the definition and calculation of limit reference points (LRP).<sup>95</sup> Since early 2004, a national study group has been further advancing the work on reference points by using a variety of stocks as case studies. Several stocks have LRP and/or fishing mortality references and targets for healthy biomass levels.<sup>96</sup> The work is ongoing and is to be expanded further into invertebrate stocks as well.

152. ICES has provided precautionary advice on catch levels since the late 1990s. In 2002 the Joint Norwegian-Russian Fisheries Commission decided that from 2004 onwards multi-annual quotas based on a precautionary approach should apply.<sup>97</sup> A new management strategy was adopted in 2003, which ensures that quota levels for any 3 year-period will be in line with the precautionary reference values provided by ICES. Cooperation between the European Community (EC) and Norway involves work on long-term management plans for certain stocks, with a view to reaching agreement on management objectives and the time frame within which they are to be achieved. The development and effective implementation of these plans, as adopted for certain species in the Barents Sea<sup>98</sup> and the North Sea,<sup>99</sup> provide decision-makers with long-term scenarios of the effects of their decisions.

153. The EC, the Faroe Islands<sup>100</sup> and Norway have agreed for 2001 and subsequent years to implement a long-term management plan for the north-Atlantic mackerel stock, consistent with a precautionary approach and designed to provide sustainable fisheries and a greater potential yield.<sup>101</sup> Furthermore, the EC, the Faroe Islands, Iceland and Norway have agreed on a long-term management plan for the blue whiting stock,<sup>102</sup> and

in 1999 the same parties plus the Russian Federation agreed on such a plan for the Norwegian spring-spawning (Atlanto-Scandian) herring.<sup>103</sup> These three plans have also been considered and approved by NEAFC, which manages the high seas components of these stocks.

## 2. Overfishing and capacity management

154. Article 5(h) of the Agreement provides that measures shall be taken to prevent or eliminate overfishing and excess capacity and to ensure that levels of fishing effort do not exceed those commensurate with sustainable use of fishery resources. Overfishing is often caused by excess capacity in the fishing industry. This is a situation where the harvesting capacity of the fleet exceeds the amount of resource available for harvest. Excess capacity is often the result of rapid development without adequate scientific information on available yields from the resource,<sup>104</sup> as well as subsidies extended to the fisheries sector in the form of capital support for vessel purchases, fuel subsidies or related tax exemptions, cheap credit and others.

155. Excess capacity is often caused by open access regimes, particularly those prevailing on the high seas. Such regimes are characterized by an “Olympic fishery”: a race by individual vessels to catch as much fish as possible, as quickly as possible. Other causes of overfishing are uncertain scientific information, and risk-prone decisions in the face of pressure to postpone economic and social hardships. While environmental factors have also adversely affected some fish stocks, excessive levels of fishing capacity are believed to be the primary cause of fisheries declines. Moreover, fishing overcapacity is also known to have contributed to the problem of IUU fishing, particularly in cases where excess capacity has been exported through re-flagging to States which do not comply with their obligations.

156. The high value of tuna, and the global nature of fleets and markets aggravate concerns about excess fleet capacity and increased risk of overexploitation and stock depletion. In recent years, the World Tuna Purse-Seine Organization temporarily limited fishing effort by their vessels in order to decrease the overall supply of fish to increase the price. Also, the number of longline vessels has been reduced in some countries. However, these actions are not regarded as sufficient in the long term to control fishing capacity and exploitation. Most of the RFMOs that manage tuna are attempting to address the issue of tuna fishing capacity in their areas of responsibility, in addition to the management of stocks through catch and fishing effort control. However, the problem of managing tuna fishing capacity is complex involving biological, socio-economic and technological issues, whereas the conventions of most, if not all, of the tuna fishery management organizations do not address the social and economic aspects of fishery management.

157. **RFMOs.** Many RFMOs emphasize that there are clear linkages between fleet overcapacity and IUU fishing, and have also expressed concern about the possibility of solving fishing overcapacity problems in one geographical area only to transfer them elsewhere.<sup>105</sup> Some RFMOs report that they have addressed the issue by introducing measures on a regional level.

158. IATTC has a fleet capacity limitation programme, including among other things a Regional Vessel Register.<sup>106</sup> It is prohibited to register new purse-seine vessels unless a vessel of equal or greater capacity is removed.<sup>107</sup> Some specific exceptions are, however, included in the programme for named parties. IATTC is close to finalizing a regional management plan addressing fishing vessel capacity.

159. IOTC has adopted a resolution to limit the numbers and overall tonnage of vessels longer than 24 metres in length,<sup>108</sup> and CCAMLR indicates that there are measures in place restricting the number of vessels in new and exploratory fisheries.

160. NEAFC has pointed out that management of fishing capacity is the responsibility of individual Parties. However, conservation measures can have an impact on the management of fishing capacity. In this respect, NEAFC notes that the freeze on effort in fisheries for deep sea species in its regulatory area has had a direct effect on fishing capacity. Furthermore, NAFO and NEAFC require Parties to manage their authorised vessels and their fishing effort commensurate to the fishing opportunities available to that Party.<sup>109</sup>

161. *States*. Several States<sup>110</sup> report that they have assessed their fleet capacity and have already taken actions to address overfishing and excess fishing capacity. In the EC, capacity management is undertaken through the structural policy of the Common Fisheries Policy. While this policy has historically been concerned with modernizing the fleet through a subsidy programme, more recently it has been re-designed in light of persistent problems of overexploitation of key stocks, and a new effort-based system has been introduced with stringent regulations on vessel replacement and entry of new vessels. These new measures are: (i) no further financial aid for the construction of new vessels; (ii) capacity whose elimination has benefited from financial intervention may not be replaced; and (iii) the entry of new capacity into the fleet without public aid must be compensated by the withdrawal without public aid of at least the same amount of capacity.<sup>111</sup>

162. Many States underline that their laws and regulations already prohibit overfishing and mandate the adoption of recovery measures for overfished stocks, in areas under national jurisdiction<sup>112</sup> as well as measures to control overcapacity, including the redirection of effort to underexploited fisheries. Kuwait\* and Morocco\* have frozen investments in the fishing sector and prohibited the issuance of new licences, while the Philippines\* is implementing a moratorium on the issuance of new commercial fishing vessel and gear licences, as part of a precautionary approach to fisheries management.

163. Some States have taken measures such as restrictive licensing, vessel and permit buybacks, exclusive quota programmes, or a combination of all these measures.<sup>113</sup>

164. Norway combines access and quota regimes whereby the TACs are distributed annually among qualified vessels, including quotas for individual vessels. It has also established a quota transfer system, which allows for merging quotas determined by the

removal of capacity from the particular fishery.<sup>114</sup> The result has been a significant reduction in numbers of large fishing vessels, and the system will now be expanded to include the small vessels of the coastal fleet.

165. Canada reports that through a specific programme comprehensive measures have been implemented to help maintain a balance between fishing capacity and available resources.<sup>115</sup> In the past, when over-capacity problems arose, a series of aggressive policy and programme interventions were implemented, including a licence buy-back and early retirement programs, coupled with retraining and economic diversification measures to assist the affected workers and communities with their transition out of fisheries. Canada uses several different strategies for capacity management. Limiting entry to the fisheries is the most widely used strategy, in addition to input control measures such as gear and area restrictions. There are also vessel replacement rules specific to each fishery to control capacity growth. Canada has seen a reduction in capacity of every fleet where individual quota and enterprise allocations were introduced.<sup>116</sup>

166. The United States indicates that it has completed national plans of action for the management of fishing capacity. New Zealand states that it does not intend to develop such plans as its fisheries are managed through quota management system. It does not use capacity controls, relying instead on output controls to ensure catches are kept within sustainable limits. Under this system, quota holders are free to determine the appropriate level of capacity they require to harvest their quotas.

### **3. Effects of fishing on the marine environment**

167. Fishing activities can affect the functioning and state of marine ecosystems. Over-exploitation of fishery resources, IUU fishing, the use of non-selective fishing gear as well as destructive fishing practices and techniques aggravate effects of fishing on ecosystems. Marine ecosystems, including fishery resources, are also affected by other human activities and other environmental factors.

168. The general principles in Article 5 of the Agreement, *inter alia*, promote the protection of marine ecosystems and the protection of biodiversity in the marine environment. In particular, States are called upon to minimize pollution, waste, discards, catch by lost or abandoned gear; catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques. In the context of the application of the precautionary approach, the Agreement also promotes the development of data collection and research programmes to assess the impact of fishing on non-target and associated or dependent species and their environment and the adoption of plans to ensure the conservation of such species and to protect habitats of special concern.<sup>117</sup> The following paragraphs provide information on actions taken by RFMOs and States to implement the provisions of the Agreement.<sup>118</sup>

(a) **Ecosystem approach to fisheries management**

169. The ecosystem approach is another management tool that can enhance sustainable fisheries. Its use is prescribed by the Agreement, and recommended by the 1995 FAO Code of Conduct for Responsible Fisheries and the WSSD Plan of Implementation. In 2001, the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem enunciated general principles for the incorporation of ecosystem considerations into fisheries management. Furthermore, in 2003 FAO developed Technical Guidelines on the ecosystem approach to fisheries.<sup>119</sup>

170. **RFMOs.** A number of RFMOs have incorporated the ecosystem approach into regulatory measures for the conservation and management of marine living resources in their convention areas.<sup>120</sup> Other RFMOs are moving in that direction.<sup>121</sup>

171. CCAMLR fully incorporates an ecosystem approach into its management regime.<sup>122</sup> The aim is not only to regulate fishing for certain species, but also to ensure that fishing does not adversely impact other species that are related to, or dependent on, the target species. For example, CCAMLR seeks to preserve the 'health' of the ecosystem by setting conservative (i.e. precautionary) krill catch limits to take account of the needs of associated species in a manner which preserves the ecological sustainability of all the species concerned.

172. The CCSBT has created a special advisory group on ecologically related matters, with the mandate to reduce bycatch and evaluate effects on associated species, and has taken measures to reduce the impact of fishing on ecologically related species and bycatch. For example, all vessels fishing for southern bluefin tuna must use tori poles to mitigate seabird mortality; education material on seabirds and sharks was promulgated to fishers in the southern bluefin tuna fishery; and members are required to collect data on bycatch species.

173. The IATTC has adopted a number of conservation measures on the basis of scientific advice which includes information on ecosystem effects of fishing.<sup>123</sup> Furthermore, the Antigua Convention, which was adopted in 2003 in order to strengthen the IATTC, implements the provisions of the Agreement concerning the adoption of measures for species belonging to the same ecosystem or associated with or dependant upon the target stocks; the adoption of measures to minimize waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependant species, in particular endangered species.

174. ICCAT has adopted resolutions calling for the monitoring of interactions between ICCAT fisheries and pelagic sharks, seabirds and sea turtles. The Standing Committee on Research and Statistics has a Sub-Committee on By-catch and a Sub-Committee on Environment, both of which address issues related to the effects of fishing on the environment. At its 2005 meeting, the Committee recommended that the two sub-committees be merged together into an Ecosystems Sub-Committee.

175. IOTC recognizes the importance of considering the impact of fishing on the ecosystems associated with the target tuna species and established a Working Party on By-catch which reports to the Commission via the Scientific Committee. IOTC encourages the participation in its meetings by Parties to the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA Marine Turtle MOU), as well as by relevant non-governmental organizations (NGOs).

176. Until now, NAFO has generally managed stocks on annual stock-by-stock and single species basis. NAFO's development of an ecosystem-based approach is being discussed, and NAFO scientists are tasked to look into areas of marine biological and ecological significance. In addition, fishing vessels will collect, on a voluntary basis, data on seamounts in the NAFO area.

177. NEAFC has decided to take a broader ecosystem approach to fisheries management. In 2005, NEAFC agreed to pursue the ecosystem approach, the protection of biodiversity and the application of the precautionary approach. NEAFC also cooperates with relevant organizations, including the OSPAR Commission for the Protection of the Marine Environment in the North East Atlantic (OSPAR) and the Inter-Organizational Consultation Forum established by the European Union's DG Environment to coordinate work on the management and protection of the marine environment in European waters. In 2004, NEAFC closed to fishing activities five seamounts on the high seas, in order to protect vulnerable deep-water habitats.

178. WCPFC is dedicating specific attention to issues relating to biodiversity, including non-target and associated species. Two fisheries-related regional organizations in the Pacific Islands region, the SPC and the FFA have recently received funding through GEF to work on, among other things, impacts of fisheries on deep-sea benthic ecosystems in the Convention Area, in particular on seamounts. WCPFC will follow this research closely, and in 2006 the SPC will be contracted as the provider of scientific advice to the WCPFC.

179. *States.* Several States have initiated implementation of an ecosystem approach to fisheries management, by adopting fisheries legislation that incorporates strong environmental obligations.<sup>124</sup> New Zealand indicates that the application of an ecosystem approach, including the impact of fishing on ecosystems, has also been incorporated into the annual decision-making process on catch limits and fishing practices. EC is applying ecosystem considerations to the management of fisheries in the North Sea and the Baltic Sea, and has requested ICES to give scientific information for these areas. Some States further advise that they are in the process of developing, either a draft fisheries law that would incorporate ecosystem considerations to their management of fisheries, or a strategy for managing the environmental effects of fishing activities, or a set of guidelines for the implementation of the ecosystem approach to all anthropogenic activities in the marine environment, including fishing activities.<sup>125</sup>

(b) **Fisheries by-catch and discards**

180. **RFMOs.** Within RFMOs, CCAMLR has adopted seabird by-catch mitigation measures,<sup>126</sup> as well as other measures on mesh size regulation, a bottom trawl prohibition around South Georgia, and by-catch limits for several elasmobranch species. By-catch issues are considered by the Working Group on Fish Stock Assessment and the Working Group on Incidental Mortality Associated with Fishing.

181. In 2004 the IATTC adopted a comprehensive resolution on by-catch designed to reduce the by-catch of juvenile tunas and non target species, including dolphins, turtles, seabirds, sharks, and the release of unharmed non-target species.<sup>127</sup> The AIDCP, which came into force in 1999, provides measures to mitigate the effect of purse-seining on dolphin stocks.

182. ICCAT has adopted recommendations on minimum size and time/area closure for several species (yellowfin tuna, bigeye tuna, bluefin tuna, and swordfish) and measures to encourage the release of live discards of billfish and bluefin tuna. The use of driftnets is prohibited in the Mediterranean and discouraged throughout the Convention Area.<sup>128</sup> ICCAT encourages submission of by-catch and interaction statistics as well as development of national action plans for sharks and seabirds.

183. IOTC has not yet established sampling requirements for by-catch and the By-catch Working Group, established in 2002, has only recently released a work plan to address this issue. In 2005, IOTC adopted a resolution on the conservation of sharks caught in association with fisheries managed by IOTC.<sup>129</sup> Recommendations on sea turtles and on incidental mortality of seabirds were also adopted.<sup>130</sup>

184. NAFO has in place a number of regulations to diminish by-catch, including gear and fish size requirements, and area and time restrictions and by-catch requirements obliging fishing vessels to stop fishing and move location when a certain percentage of by-catch species has been reached.<sup>131</sup> Discards have to be recorded in the logbook and are reported by observers.

185. NEAFC has adopted measures to mitigate incidental catch of juvenile haddock in particular areas of Rockall Bank, which have been closed to demersal fishing gear. In the case of deep-sea fisheries NEAFC is also addressing problems relating to non-target species and discards.

186. **States.** Several States report that they have taken technical measures to minimize catch of non-target species.<sup>132</sup> These measures include the adoption of bans on the discard of by-catches of commercially important fish species, the use of mesh size limitations, bans on landings of juveniles, gear restrictions, minimum catch size, and seasonal and area closures of fishing grounds to limit by-catch (juveniles, non-target species, non-fish species) and discards.<sup>133</sup> Morocco\* and the United States report that the permitted levels of by-catch and/or discards have been developed in consultation with the industry. In addition, some States make use of tighter controls to limit by-catch and

discards, including vessel restrictions for some areas<sup>134</sup>, and prohibition of discarding.<sup>135</sup> Croatia\* uses fixed quotas of by-catch, and New Zealand uses administrative penalties when the annual quota of by-catches exceeded the quota allowed under the TACs. The use of selective fishing techniques through financial incentives and the funding of studies on by-catch and possible mitigation measures have also been promoted.<sup>136</sup>

187. Detailed information on national legislation and action on by-catch was provided by the United States. The Sustainable Fisheries Act adopted by the United States in 1996 provides a legal definition of by-catch as fish harvested in a fishery, but not sold or kept for personal use. It also creates a national standard that states that "conservation and management measures shall, to the extent practicable, minimize by-catch and, to the extent by-catch cannot be avoided, minimize mortality of such by-catch."<sup>137</sup> Moreover, a National By-catch Plan<sup>138</sup> was developed on the basis of information stemming from a series of workshops aimed *inter alia* at increasing industry and public understanding of by-catch issues.

188. Some States have developed mechanisms for communicating information on areas of concentration of juvenile fish. The United States operates an observer information programme that provides trawl fishing fleets operating off the Northwest coast with accurate information on concentrations of juvenile fish, to help complying with stringent by-catch regulations associated with the fisheries. Morocco\* and the United Kingdom indicate that similar mechanisms in their countries play an important role in providing information on concentration of juveniles to their fishing fleets.

189. A number of States indicate that they support studies and research aimed at reducing or eliminating by-catch of juvenile fish.<sup>139</sup> Some States are conducting research programmes aimed specifically at the development of gear modifications to improve selectivity of gear<sup>140</sup> and to minimize cetacean mortality.<sup>141</sup>

190. Several States point out that they implement their duty to conserve non-target species taken incidentally in fishing operations by cooperating within sub-regional and regional organizations, the IOSEA Marine Turtle MOU, the Inter-American Convention for the Protection and Conservation of Sea Turtles and their Habitats, the Convention on the Conservation of Migratory Species of Wild Animals, the Agreement on the Conservation of Small Cetaceans of the Baltic Sea and the North Sea, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area, and the Agreement for the Conservation of Albatrosses and Petrels.

**(c) Marine debris and other sources of pollution and waste**

191. **RFMOs.** Measures adopted by RFMOs include CCAMLR's promotion of compliance with the International Convention for the Prevention of Pollution from Ships (MARPOL), in particular its Annex V.<sup>142</sup> CCAMLR Members report annually on both the incidence of marine debris encountered in the Convention Area and its impact, including entanglements, on marine mammals and seabirds.

192. The IATTC has addressed the issue of lost or abandoned fishing gear and related marine debris in its resolution on bycatches, by prohibiting vessels from disposing of salt bags or any other type of plastic trash at sea.<sup>143</sup>

193. *States.* Several States report that they have addressed<sup>144</sup> or are in the process of addressing<sup>145</sup> the issue of lost or abandoned fishing gear and related marine debris. The United States has established an “Inter-agency Marine Debris Coordinating Committee” to allow consideration of the issue from all sectors and sources. The EC funds operators’ initiatives to recover lost gears and compilation of all information required to initiate a programme of recovery of lost gear; while Pakistan\* has introduced a monitoring system to collect data on gear loss, economic costs to fisheries and impact on other sectors and on marine ecosystems.

194. Systems to retrieve lost gears and nets have been adopted by several States. In the United States, federal agencies and private sector groups, have been removing derelict fishing gear from coral reefs and beaches in the North-western Hawaiian Islands. They locate derelict gear by using a tow board method<sup>146</sup> and geographically reference it with GPS. Two major efforts have also been undertaken in the Northwest Straits and in the Gulf of Mexico. In addition, the United States is initiating a new programme to assess the feasibility of a port reception facility for spent and derelict fishing gear. In New Zealand, regional councils have the responsibility for clean-up gear washed ashore. Norway has since the early 1980s undertaken annual cruises in particular areas to collect lost gill nets, retrieving about 500 gears a year using specifically designed trawls. Other States indicate that retrieving lost gear and nets is done by environmentalists and fishermen themselves,<sup>147</sup> or by the fishery enforcement authorities.<sup>148</sup>

195. Some States have taken action to minimize other sources of pollution and waste.<sup>149</sup> This includes the adoption of measures forbidding the disposal at sea of any substance or object which would cause negative effects on the reproduction, development, survival or exploitation of marine living resources. The EC has measures to eliminate priority hazardous substances and achieve concentrations in the marine environment near background values for naturally occurring substances. Norwegian measures include a ban on production and/or systems to reduce discharges for several persistent organic pollutants; close monitoring of levels of other substances that are liable to bio-accumulate; and close attention to the issue of releases of radioactive substances into the environment from domestic sources like hospitals and inputs from overseas sources. Cyprus participates in regional monitoring programmes for the assessment of heavy metals, pesticides, and effluents discharged into the sea from land-based sources.

196. A number of States indicate that they are parties to international instruments dealing with marine pollution, or are about to become parties, including MARPOL 73/78, in particular its Annex V.<sup>150</sup> The EC and New Zealand report that they have taken measures to implement the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, and other relevant international instruments aimed at abating pollution from land-based sources. In this connection, the EC points out

that it is also a party to other regional conventions, such as the Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution, the Convention on the Protection of the Marine Environment of the Baltic Sea Area and the OSPAR Convention.

**(d) Conservation of marine biodiversity**

197. Measures adopted by States for the conservation of marine biodiversity include restrictions and prohibitions in relation to fishing and other marine harvesting activities deemed to affect endangered species and habitats; prohibitions relating to specific harmful practices, such as the use of trawls in certain areas, the use of explosives and harmful or poisonous substances for fishing purposes; and general measures for the conservation and sustainable use of biological diversity.<sup>151</sup> Relevant international efforts in this field include those aimed at the implementation of the Convention on Biological Diversity and the work of FAO to apply the ecosystem-based approach.<sup>152</sup> The EC is preparing guidelines for the implementation of the ecosystem approach in the management of all human activities, including fishing, that affect the marine environment.

198. The opening and closing of fishing areas according to conservation needs remains a critical feature of a regulatory system operating on an ecosystems perspective. Systems of marine protected areas where fishing is restricted or prohibited, are also being established in vulnerable ecosystems.<sup>153</sup> Cyprus is carrying out research projects focusing on the development of marine protected areas.

**(e) Data collection and research programmes on marine ecosystems**

199. *RFMOs*. CCAMLR promotes research in relation to both target and non-target species. Biological information on target species relates mainly to the growth, reproduction and natural mortality of the species being harvested. It is collected by research vessels and on commercial fishing vessels by their crews and by national or international observers. The Ecosystem Monitoring Program (CEMP) aims to detect and record significant changes in selected stocks of species that depend on, or are related to, targeted species, in order to distinguish between changes arising directly from harvesting and those which occur naturally as a result of physical or biological variability in the environment.

200. ICES' Advisory Committee on Fishery Management is responsible for providing scientific information and advice on living marine resources, their harvesting and the interaction between fisheries and ecosystems to NEAFC, the International Baltic Sea Fisheries Commission, the North Atlantic Salmon Conservation Organization and the EC. Amongst the issues addressed, in the context of ICES work on the sustainable use of living marine resources, are the modeling of marine ecosystems and their exploitation, as well as the life history, dynamics and exploitation of living marine resources.<sup>154</sup>

201. *States*. A number of States<sup>155</sup> report that they are conducting scientific research and studies to improve the knowledge basis for addressing the relationship between fisheries and the wider ecosystems and to increase knowledge on single-stock, multi-species and

ecosystems levels. The United States is conducting research on the development of strong indicators of the status of ecosystems and the establishment of an integrated and comprehensive ocean observing system. The EC is addressing several issues with regard to i) a better understanding of the boundaries, structure and dynamics of marine ecosystems; ii) the response of these ecosystems to human activities, with a special emphasis on fishing, and how this response may be monitored by appropriate indicators; and iii) the study of biological interactions of small groups of fish stocks and the forecasting of the effects of fishing when considering such interactions. In the context of preparation of its 7th Framework Programme of Research (2007-2011), the EC is also giving consideration to the establishment of “centres of excellence” in order to improve both scientific personnel and infrastructure. The Norwegian Institute of Marine Research has been reorganized to work on the basis of three ecosystem programs<sup>156</sup> and to facilitate interdisciplinary research into large ecosystems.

#### 4. The collection and sharing of fisheries data

202. Article 5 (j) of the Agreement requires parties to collect, share and complete accurate data concerning fishing activities on, *inter alia*, vessel position, catch and fishing effort, as set out in Annex I, as well as information from national and international research programmes. Furthermore, Article 14 of the Agreement sets out criteria for the collection and provision of such information, both individually or through RFMOs, and cooperation in scientific research. As for the stocks concerned, it is clear that most data collection and sharing are carried out under the auspices of scientific bodies of relevant RFMOs or international institutions providing advice to RFMOs. These bodies are, however, dependent on data provided by national scientists and institutions. In this report the focus will be on data collection and sharing through RFMOs.

203. **RFMOs.** Some RFMOs have signed partnership agreements with the Fisheries Resources Monitoring System (FIRMS), a global aquatic resource monitoring system, comprising core information modules on species, resources, fisheries and fisheries management systems. The information is published through FIGIS, a web-based information and management tool operated by FAO. Its main objective is to raise awareness of policy issues relating to fisheries and their environment, to promote standards and improved practices in the conduct of fisheries and fisheries-related activities, and to provide comprehensive and coherent fisheries information.

204. Although international cooperation in collecting and sharing of data for the stocks concerned is mainly done through RFMOs, some scientific bodies are also important. ICES coordinates and promotes marine research in the North Atlantic. Since its establishment in 1902, ICES has been a leading scientific forum for the exchange of information and ideas on the sea and its living resources, and for the promotion and coordination of marine research by scientists within its nineteen member countries from both sides of the Atlantic.<sup>157</sup> The North Pacific Marine Science Organization (PICES) is an intergovernmental scientific organisation established in 1992 to promote and

coordinate marine research in the northern North Pacific and adjacent areas. Currently there are six members.<sup>158</sup>

205. CCAMLR collects data from fishery catch, effort statistics and data collected by scientific observers on fish bycatch, incidental mortality of seabirds and marine mammals. CCAMLR also uses landing information obtained by the Catch Documentation Scheme (CDS), including trade statistics. The CCAMLR Scheme of International Scientific Observation requires full coverage of all fisheries, except krill, by independent scientific observers. Data collected using a standard format are submitted directly to the CCAMLR database to be used by the Scientific Committee and its working groups. Further biological information and biomass estimates are obtained during fishery-independent scientific surveys. Biological information on dependent species is also collected as part of CEMP. A centralized vessel monitoring system (VMS) was established in the CCAMLR secretariat in 2004 and Parties are required to report positions of their flag vessels operating in finfish fisheries inside the Convention Area. In 2003, the rules for access to data were revised. The underlying principle was retained and the conditions under which data may be exchanged within CCAMLR or used outside of CCAMLR were clarified. Access and use of CDS and VMS data were also considered; these data may be released to CCAMLR Members only under restricted circumstances.

206. CCSBT Parties provide the Commission with scientific information, catch and effort statistics, and other data relevant to conservation of the southern bluefin tuna and ecologically related species. An agreed data set is required to be collected by the Parties. CCSBT has agreed to observer programme standards which Parties must implement for fleets catching southern bluefin tuna. Standards have target observer coverage of 10% and data sets must be collected. Currently, observer data is maintained by the Parties. The Secretariat is implementing a five year tagging programme and maintains a database on tag releases and recoveries. A statistical document programme has been established and summaries are now published on the CCSBT web site and are updated on a six monthly basis. The programme has also been modified to incorporate minimum standards that specify the responsibilities of exporters, importers and the CCSBT Secretariat in relation to completion of documents and the action required in response to missing or inaccurate information. CCSBT has cooperated with FAO in the development of FIRMS. CCSBT signed the FIRMS partnership agreement in late 2003 and submitted a global southern bluefin tuna fact sheet<sup>159</sup> and nominal catch data to FIGIS in late 2004. Most of this nominal catch data is now available from the CCSBT web site.

207. The IATTC Scientific Staff receives fishery dependent data from vessels, managers and processing facilities. Since 1994 all large purse seine vessels must carry observers, who submit data on a weekly basis to the Secretariat. The director is required to report annual catches of species under IAATC purview by flag and gear type to the Parties by 1 June the following year.<sup>160</sup> There is also a tagging programme to collect data on tuna populations. IATTC has changed its main data system, which now readily integrates data from scientific observers or logbooks data into analyses, and observer data will be the primary source of catch information. IATTC has entered into a FIRMS partnership agreement and has identified species and stocks on which it will initially report.

Cooperative reporting arrangements have been agreed with SPC for various species. IATTC continues to work with SPC and FFA to pursue harmonisation of data collection standards. IATTC has also modified its document series reporting the status and trends in fisheries, and detailed information and presentation of scientific analyses is now presented separately in Stock Status Reports.

208. The ICCAT secretariat receives scientific data (primarily current and complete fishery dependant data) from Parties by the end of July prior to the annual meeting.<sup>161</sup> The collection and submission of statistical data is specified in the Convention and reiterated in two resolutions.<sup>162</sup> Tagging data are used for growth rate, movement and abundance estimates. Data assimilation and management is carried out by the ICCAT Secretariat which maintains relational databases. ICCAT has adopted a new data exchange protocol, which includes various electronic forms and a framework for reading, validating and integrating all statistical data received. All fishery data compiled by ICCAT are made available through an annual Statistical Bulletin and through the ICCAT web site.

209. Parties of IOTC are subject to mandatory statistical reporting and confidentiality procedures. Stock assessment is peer reviewed through species working parties. The Secretariat maintains a capability in stock assessment in order to ensure that Parties without scientific capabilities have access to relevant information.

210. NAFO collects data via Parties, including catch and effort data, VMS, reports from port inspections, at-sea-inspection and an observer program. Since 1998 all vessels fishing in the NAFO-area must carry observers, mainly for monitoring and compliance purposes, but some of the data collected by observers are also used by the NAFO Scientific Committee.<sup>163</sup> NAFO signed the FIRMS partnership agreement in 2004.

211. NEAFC requires Parties to report to the secretariat monthly catches of species, split between areas under national jurisdiction and beyond. The secretariat further receives VMS data, which are shared by all inspecting Parties on a real time basis. After one year the link to individual vessels is severed and the data can be used for scientific analyses. Following the introduction of management measures for deep sea fisheries, NEAFC adopted specific requirements for parties to report on these fisheries. These data will be made available to ICES. However, in general, scientific and survey data is collected by ICES from national institutions. NEAFC joined FIRMS in 2005.

212. SEAFO has established interim arrangements that came into effect by the entry into force of the Convention in 2003. The arrangements will remain in force until the establishment of a system of observation, inspection, compliance and enforcement. They include the reporting of catch and fishing effort and the collection of scientific data for the support of stock assessment. At the annual meeting in October 2005, SEAFO adopted additional measures, including obligations to carry scientific observers, mandatory VMS as from April 2006 and a scheme for the collection of information from landings. The main challenge from a scientific perspective is to collect adequate data for the relevant fish stocks, including vulnerable ecosystems, enabling the Scientific Committee to

provide sound advice to the Commission. The Scientific Committee will cooperate with other relevant scientific bodies in the region.<sup>164</sup>

213. The WCPFC Convention contains a direct reference to Annex I to the Agreement. Parties are obliged to provide annually to the Commission statistical, biological and other data and information in accordance with that annex. As WCPFC has just become operational, information on implementation of these obligations is not available.

214. *Electronic exchange of information among RFMOs.* Work is now proceeding on the harmonization of data formats and procedures for international exchange of information by electronic means. NEAFC and NAFO have developed a format and protocols for electronic exchange of fisheries monitoring, inspection and surveillance information: the North Atlantic Format (NAF).<sup>165</sup> This format is now also used by CCAMLR and SEAFO. A Working Group consisting of members of the FAO Coordinating Working Party on Fishery Statistics (CWP) and coordinated by NAFO is tasked with proposing possible amendments to the present NAF to ensure its usefulness for assessment and scientific purposes. CWP provides a mechanism to coordinate fishery statistical programmes of regional fishery bodies and other inter-governmental organizations collecting fishery statistics.

215. *States.* Some States gave comprehensive overviews concerning national programmes and participation in international programmes for marine scientific research in general.<sup>166</sup> Although stock assessments should take into account a variety of factors, not all of the information provided seems relevant for assessing the implementation of Articles 5, 14 and Annex I to the Agreement.

216. Some States described their national scientific institutions and programmes, including domestic coordination of collected data and findings. For example in Canada there are five core areas of scientific research.<sup>167</sup> In different regions of Canada resource assessment reviews are conducted independently, tailored to regional characteristics and stakeholders needs. A national body<sup>168</sup> facilitates these regional processes, including developing integrated overviews of issues in fish stock dynamics, ocean ecology and use of living aquatic resources.

## **B. Mechanisms for international cooperation**

### **1. Functioning of RFMOs**

217. Part III of the Agreement sets out mechanisms for international cooperation concerning the relevant stocks, and identifies RFMOs as the mechanism through which States can fulfil their obligations to manage and conserve these stocks. Many RFMOs were established prior to the conclusion of the Agreement in 1995.<sup>169</sup> As can be seen from the information above, most of these RFMOs have taken specific actions in order to meet some of the new demands and expectations envisaged in the Agreement. This section reviews to what extent they are fulfilling functions set forth in Article 10, such as determining the participatory rights of new members in accordance with Article 11, and operating in accordance with the transparency provisions of Article 12. In addition, some

RFMOs have taken broader approaches, looking into possible shortcomings in their conventions.

218. Article 10 lists a set of criteria which should be adhered to by States through RFMOs. Information provided by the RFMOs concerning the criteria in paragraphs (a) and (c)-(g) have been examined above. The obligations set out in paragraphs (b) and (j) will be dealt with in a separate section: “Fishing allocations”. No substantial information has been provided by RFMOs concerning paragraphs (j) and (l)-(m).

219. *Review of mandates by RFMOs.* IATTC indicates that the Agreement was thoroughly addressed during the negotiations for the Antigua Convention, which will replace the IATTC Convention when it enters into force. Many of the provisions of the Agreement are incorporated into the Antigua Convention, such as how it deals with new members, assistance to developing countries, transparency, the precautionary approach, the ecosystem approach, the strengthening of conservation and management functions, the collection and provision of information, cooperation in scientific research, flag State duties, IUU fishing, a number of provisions addressing compliance and enforcement, including port State measures.

220. ICCAT decided in 2005 that at its annual meeting in 2006, the Commission should review its conservation and management measures taking into account the provisions set out in relevant international fisheries instruments and, following this review, should develop a work plan to strengthen the organization.<sup>170</sup>

221. NAFO agreed at its annual meeting in 2005 to start a reform process. A working group will meet in April 2006 to examine and recommend changes to the NAFO Convention to reform the decision-making process, to examine the current structure of NAFO and recommend changes to streamline the structure and operation in order to make it a more effective RFMO, and to deliberate on any other matter relating to the provisions of the NAFO Convention.<sup>171</sup>

222. NEAFC decided in 2004 to play a more proactive role in addressing overall ocean management, and gave a mandate to a working group to look into possible restrictions in the NEAFC Convention and the consequent need for interpretation and/or amendment. Based on the recommendations of the working group, at its annual meeting in 2005 NEAFC adopted amendments to its Convention giving a clearer mandate to pursue the ecosystem approach, protect biodiversity and apply the precautionary approach.<sup>172</sup> The NEAFC annual meeting in 2005 also agreed that a performance review of NEAFC should be established. Assessment criteria and procedures will be developed by a working group that will meet in February 2006.

223. *Monitoring, control, surveillance and enforcement.* Article 10(h) requires the establishment of appropriate cooperative mechanisms for effective monitoring, control, surveillance and enforcement. All RFMOs have introduced or are about to introduce mandatory VMS for vessel operating within their areas of competence. In 2004 CCAMLR agreed that, with the exemption of krill fisheries, VMS data are to be

submitted to the Secretariat.<sup>173</sup> As from 2005 IATTC requires parties, where possible, to establish VMS,<sup>174</sup> ICCAT adopted a recommendation in 2003 requiring Parties to implement VMS no later than 1 July 2005 (later extended to 1 November 2005),<sup>175</sup> while IOTC passed in 2002 a resolution for the establishment of a pilot program to implement VMS on 10% of the fishing vessels.<sup>176</sup> NAFO was the first in this field, as a VMS pilot project was agreed already in 1996. From 2002 mandatory VMS have been in place in NAFO, including an obligation to submit VMS data to the Secretariat.<sup>177</sup> NEAFC was, however, the first RFMO to establish a fully-fledged VMS, as a system was operational from 1998, becoming mandatory for all vessels fishing in the NEAFC area on 1 January 2000.<sup>178</sup> SEAFO agreed in 2005 on a VMS, which will come into effect from April 2006,<sup>179</sup> and the WCPFC Convention includes specific provisions for the establishment of such a system.<sup>180</sup>

224. Many RFMOs have observer programmes, most of them for the collection of scientific information only. The function of scientific observers under the CCAMLR's Scheme of International Scientific Observation is also to report on any irregularities while on board the vessel and factual data on other vessels sighted in the CCAMLR area.<sup>181</sup> IATTC has adopted a sighting and reporting system concerning vessels operating in its area of competence.<sup>182</sup> In 1998, NAFO established an observer programme, which requires all vessels to carry at least one observer.<sup>183</sup> Their duties are, among other things, to monitor the vessel's compliance with relevant conservation and management measures and when an infringement is identified, to report within 24 hours to an inspection vessel. Both the SEAFO Convention and the WCPFC Convention include observer programme obligations concerning compliance issues,<sup>184</sup> for which the details have not yet been agreed upon.

225. Enforcement of CCAMLR measures is undertaken through a system of observation and inspection adopted in 1998. This is a nationally operated system with CCAMLR designated inspectors. Results of inspections are reported to CCAMLR. NAFO has established a joint inspection and surveillance scheme,<sup>185</sup> which includes, *inter alia*, surveillance, boarding and inspection procedures, procedures to deal with infringements and serious infringements, which are treated in different ways, and a requirement to follow up on such infringements by the flag State. Serious infringements are to a great extent defined to mean the same as "serious violations" in Article 21(11) of the Agreement. NEAFC adopted a similar joint scheme in 1998,<sup>186</sup> while such schemes are expected to be established in accordance with both the SEAFO Convention and the WCPFC Convention.<sup>187</sup>

226. Most of the RFMOs have established compliance committees,<sup>188</sup> to review, analyse and assess implementation of relevant conservation and management measures, and to provide advice in that regard. ICCAT and NAFO have special committees dealing with non-Contracting Party activities, while the others address issues related to such activities in their compliance committees.

227. *Settlement of disputes.* As provided in Article 10 (k) of the Agreement, in fulfilling their obligation to cooperate through RFMOs, States are required to promote the peaceful settlement of disputes in accordance with Part VIII of the Agreement. Part VIII contains provisions for the peaceful settlement of disputes between States Parties to the Agreement. Article 27 of the Agreement provides that all disputes shall be settled by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means chosen by the parties to the dispute. The Agreement emphasizes that in order to prevent disputes, States shall cooperate with a view to agreeing on efficient and expeditious decision-making procedures within RFMOs and to strengthen existing ones as necessary.<sup>189</sup> Article 29 provides that disputes of technical nature may be referred to an *ad hoc* expert panel established by them without resorting to binding procedures for the settlement of disputes. In addition, Article 30 provides that the procedures for the settlement of disputes set out in Part XV of the Convention apply *mutatis mutandis* to any dispute between States Parties concerning the interpretation or application of the Agreement, as well as to any dispute concerning the interpretation or application of a subregional, regional or global fisheries agreement relating to straddling fish stocks or highly migratory fish stocks, whether or not they are parties to Convention. A number of RFMOs have specific procedures for the settlement of disputes.

228. In the event of a CCAMLR dispute the Convention sets out that Contracting Parties must consult among themselves with a view to resolution by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means.<sup>190</sup> If a dispute is not resolved, it must, with the consent of the Parties, be referred to the International Court of Justice (ICJ), or to arbitration.<sup>191</sup>

229. Article XVI of the CCSBT Convention provides for the resolution of disputes, and its Annex I includes instructions for creating an Arbitral Tribunal if other dispute resolution mechanisms fail. If disputes within IOTC are not settled by the Commission, they will be referred for settlement to a conciliation procedure and if that fails, they may be referred to the ICJ unless the parties to the dispute agree to other methods of settlement.<sup>192</sup>

230. NEAFC agreed in 2004 on a fast track dispute settlement mechanism, by amending its Convention and establishing specific procedures for the settlement of disputes, including the voluntarily use of an *ad hoc* panel if a dispute is not resolved by consultation, negotiation, inquiry, mediation, conciliation, arbitration or judicial settlement. If a dispute is not resolved by the panel's decision, one of the Parties may refer it to compulsory procedures, set out in Part XV of the Convention or, for straddling stocks, by the provisions set out in Part VII of the Agreement. The ratification processes are not concluded yet, but NEAFC Parties have agreed to make use of this mechanism provisionally.

231. The SEAFO Convention includes provisions on dispute settlement,<sup>193</sup> which like NEAFC's include an *ad hoc* panel with the aim of resolving any dispute expeditiously. The references to a possible binding mechanism are also similar to those of NEAFC. In

the WCPFC Convention there is a direct reference to Part VIII of the Agreement, stating that those provisions will apply whether or not WCPFC Parties are parties to the Agreement.<sup>194</sup>

232. *Transparency.* Article 12 requires transparency in the decision-making processes and other activities of RFMOs. All RFMOs have publicly accessible websites, which include meeting minutes, reports and scientific information. Many RFMOs have amended their rules of procedures for commission meetings or agreed on specific guidelines and criteria for observer status in order to meet the obligations under Article 12(2) of the Agreement. Intergovernmental organisations (IGOs) and NGOs may attend CCAMLR meetings if all members agree. If a Member requests, sessions of the Commission at which a particular agenda item is under consideration, are closed to such organisations. CCSBT has established similar, but much more detailed rules, including qualifying criteria for NGOs and time limits for submission of applications. IATTC meetings may be attended by IGOs and NGOs if agreed unanimously by the Commission. The Chair must approve circulation of documents by observers and any oral statements. ICCAT allows for participation by observers, unless one third of the members object in writing 30 days prior to the meetings. NGOs may make oral statements by invitation and distribute documents through the Secretariat. IOTC meetings might be attended by IGOs and NGOs, which must submit an application 30 days in advance. NAFO amended its rules of procedure in 2002 to facilitate participation by observers, including qualifying criteria for NGOs, time limits for application, evaluation and decision making procedures.<sup>195</sup> NGOs may make oral statements upon invitation by the Chair and distribute material through the Secretariat. NEAFC adopted more or less identical rules in 2001. The SEAFO and WCPFC Conventions have provisions similar to Article 12 of the Agreement.<sup>196</sup> Both organisations agreed on the details at the first meetings of their commissions in 2004. SEAFO agreed to rules similar to those of NAFO and NEAFC, while WCPFC does not set out specific qualification criteria for potential observers.

## **2. Integrity of RFMO regimes**

233. It is important that States become members of RFMOs that manage marine resources in areas where vessels flying their flag conduct fishing operations, and that they participate in the work of such organizations. States emphasize that cooperation within RFMOs not only facilitates conservation and management of fishery resources, but also allows them to exchange relevant fisheries data, as well as information on IUU fishing activities.

234. Several RFMOs have approached non-Parties fishing within their area of competence, urging them to accede to their respective conventions or to cooperate with them in conserving and managing stocks under their purview. Some RFMOs have also introduced the concept of cooperating non-Contracting Parties. The SEAFO and WCPFC Conventions include provisions addressing non-Contracting Parties.<sup>197</sup> Such States will enjoy the benefits from participation in the fishery commensurate with their commitment to comply with conservation and management measures in respect of the relevant stocks.

235. There are several Contracting Parties to CCAMLR, which are not members of the Commission.<sup>198</sup> They are, however, bound to apply all conservation and management measures adopted by the Commission. Further China\*, Seychelles and Singapore\* are cooperating with CCAMLR in implementing the CDS for Antarctic and Patagonian toothfish. Namibia joined CCAMLR in 2002, while Mauritius and Vanuatu\* have applied for membership.

236. Two new Members joined CCSBT in recent years: Republic of Korea\* (2001) and Taiwan, Province of China\* (2002). In 2003 CCSBT decided to include the status of cooperating non-members to the Commission and the Scientific Committee. In adopting the resolution, Members noted that cooperating non-Member status was not intended as a permanent arrangement and that cooperating non-members should ultimately accede to the Convention. Currently the Philippines\* has this status, while discussions are being held with Indonesia\* and South Africa.

237. Recent new members of IATTC are Guatemala\* (2000), Peru\* (2002) and Spain (2003). The Republic of Korea\* has been accepted as a new member, but needs to complete some internal procedures. Canada, China\*, the EC and Honduras\* are Cooperating non-Parties and Taiwan, Province of China\* is a Cooperating Fishing Entity. IATTC indicates that Colombia\* also cooperates and applies all of the measures.<sup>199</sup> In addition to current members of IATTC, Canada, China\* and EC have signed the Antigua Convention and have indicated that they will become parties when it comes into effect.

238. ICCAT has seen the number of members increase substantially over the last few years. Thirteen States have acceded to the ICCAT Convention since 2000: Barbados in 2000, Algeria\* and Honduras\* in 2001, Iceland, Mexico\* and Vanuatu\* in 2002, Turkey\* in 2003, Guatemala\*, Nicaragua\*, Norway, Philippines\* and Senegal in 2004 and Belize\* in 2005. Further, ICCAT has granted the special status as Cooperating Non-Contracting Party or cooperating Fishing Entity to Guyana\*, Netherlands Antilles and Taiwan, Province of China\*.

239. Since 2000, seven States have joined IOTC: Oman\* in 2000, Comoros\* in 2001, Iran (Islamic Republic of) and Vanuatu\* in 2002, Kenya and the Philippines\* in 2004 and Guinea in 2005. IOTC established in 1999 and revised in 2003, the category of Cooperating non-Contracting Party. States wanting this status have to submit an application in advance, indicating their commitment to adhere to all regulations of the Commission. Not all applications have been successful in the past. Currently Indonesia\* and South Africa have this status.

240. In contrast, NAFO has in fact seen the number of members decrease over the last few years, mainly due to the enlargement of the EC.<sup>200</sup> Romania\* has withdrawn from the organisation on the ground that it no longer has fishing interests in the region. NAFO has adopted a resolution to guide possible future new members with regard to fishing opportunities.<sup>201</sup>

241. The enlargement of the EC has also had an impact on NEAFC, as Estonia\* and Poland\* have withdrawn.<sup>202</sup> However, the enlargement has had the result that some States previously conducting IUU fishing in the NEAFC area are now obliged to comply with NEAFC measures under EC regulations. NEAFC adopted in 2003 guidelines regarding fishing opportunities for States considering applying for membership, similar to those of NAFO. NEAFC has created the status of Cooperating non-Contracting Parties. Quotas have been allocated annually to those granted the status, which currently are Canada, Japan\* and New Zealand. Belize has applied for status as a Cooperating non-Contracting Party in order to be involved in transshipment operations in the NEAFC area. The Commission has requested additional information before the application can proceed.

242. At its annual meeting in 2005, SEAFO urged States, in particular signatories to the Convention, to ratify or accede to the Convention.<sup>203</sup> These States have been invited to SEAFO meetings as observers, together with States whose vessels are fishing in the SEAFO area. An application from Japan\* to be granted the status as Cooperating non-Contracting Party was examined, and rejected by the Commission, as Parties felt that States fishing in the area should be involved in the decision-making process of SEAFO, and that benefits should be matched by obligations such as contributions to the budget.

### **3. Fishing allocations**

243. The Agreement does not deal specifically with allocation of fishing opportunities. Article 10 provides that in fulfilling their obligations to cooperate through RFMOs, States shall “agree as appropriate, on participatory rights such as allocations of allowable catches and fishing effort.”<sup>204</sup> There is no guidance in the Agreement itself as to how these rights are to be distributed between parties or as to which criteria are to be used in determining such participatory rights. With respect to new members or participants, however, Article 11 of the Agreement sets out detailed criteria for determining participatory rights. Most RFMOs have some guidance in their respective conventions, some more extensive than others, while others have additional criteria in specific guidelines. The information provided by RFMOs does not in all cases specify whether these criteria have been used as a basis for allocation of fishing opportunities.

244. CCSBT has criteria for the allocation of fishing rights set out in its Convention.<sup>205</sup> CCSBT indicates that these criteria were reviewed at the annual meeting in 2004 and found still to be valid. In deciding upon allocations, the Commission must consider the interests of Parties through whose exclusive economic or fishery zones the stock migrates, the interests of Parties whose vessels engage in fishing for the stock, including those historically engaged in such fishing and those which have such fisheries under development, and the contribution of each Party to conservation and enhancement of, and scientific research on the stock.

245. IATTC reports that currently there are two mechanisms for allocating participatory rights, one for the purse-seine fleet<sup>206</sup> and another for catch levels of bigeye tuna taken by longline.<sup>207</sup> With the exception of coastal States, flag States are required to remove

existing capacity for purse-seiners before new entrants are permitted, while longliners are limited to the level of longline catch in 2001.

246. In 2001 ICCAT agreed on detailed criteria for allocation of fishing possibilities,<sup>208</sup> including criteria relating to: past and present fishing activities, the status of the stocks, the status of the Parties and compliance, data submission and scientific research by Parties. Some elements from Article 11 of the Agreement are included. These criteria have so far not been used. IOTC initiated work in 2005 to provide the Commission with a comprehensive assessment of management options, including those related to fishing allocations.<sup>209</sup>

247. The NAFO Convention includes guidance to the Fisheries Commission, which provides that allocation of catches shall take into account traditional fishing by the Parties, and give special consideration to Parties whose coastal communities are primarily dependent on fishing for the stocks concerned and to Parties that have undertaken extensive efforts to ensure conservation of the stocks, in particular by providing surveillance and inspection of the fisheries.<sup>210</sup>

248. NEAFC reports that allocations for the major pelagic fisheries are negotiated within groups of coastal States for the stock in question. The result is brought to NEAFC and included in the management measures agreed by NEAFC. When the Parties to NEAFC negotiated the sharing of the oceanic redfish stock in 1996, for the lack of other guidelines, several of the criteria set out in Article 11 of the Agreement were used. Although historical catches were the most important criteria, the respective contributions to the conduct of scientific research on the stock, to conservation and management of the stock and the needs of coastal States whose economies are overwhelmingly dependent on the exploration of living marine resources were also carefully considered.

249. The SEAFO Convention contains specific provisions for determining the nature and extent of participatory rights in fishing opportunities, which include the criteria listed in Article 11 of the Agreement.<sup>211</sup> In addition, SEAFO Parties must consider the interests of developing States in whose areas of national jurisdiction the stocks also occur and contributions to new and exploratory fisheries, taking into account of the principles set out in Article 6(6) of the Agreement.

#### **4. Fisheries not regulated by a RFMO**

250. Some States indicate that they encourage RFMOs of which they are members to adopt conservation and management measures for fish stocks that fall within their competence, but are not managed by them.<sup>212</sup> In this connection, the United States refers to its contribution in promoting conservation and management measures for previously unregulated North Atlantic skates and other species in the NAFO regulatory area, and a ban on finning two stocks of Atlantic pelagic sharks in the ICCAT area of competence. The EC points out that in the case of unregulated species in the NAFO area, the difficulty is not so much reaching a consensus on the principle of regulating unregulated stocks, but rather agreeing on the individual allocation within the catch limits for such stocks.

251. In addition, some RFMOs state that they have taken measures to expand their management coverage to other species. NAFO advises that in 2004 it added three stocks, namely redfish, white hake, and skate, to its quota table, and in 2005 adopted a ban on shark finning. NEAFC indicates that in 2002 it extended its regime to species inhabiting deep waters. However, lack of data and information about the state of these stocks hamper progress in establishing conservation measures. CCAMLR points out that its current conservation measures adequately cover the establishment and development of all new and exploratory fisheries.

252. New Zealand reports that it is a party to the South Tasman Rise Arrangement between Australia and New Zealand for the Conservation and Management of orange roughy on the South Tasman Rise, which establishes measures for the conservation and management of orange roughy in that area. While the Arrangement was agreed in 2000 between Australia and New Zealand, which are now the only parties, any other country with a real interest in its objective is entitled to join. The arrangement requires Members to license vessels to trawl or carry out other demersal fishing for any species in the area, to carry out scientific research, to exchange information and to establish a process for setting catch limits and allocating quotas.

253. In the North East Atlantic, the three major pelagic fish stocks<sup>213</sup> straddle between several EEZs and high seas areas. They are regulated annually through coastal States arrangements, which are followed by the establishment of compatible measures by NEAFC for areas beyond national jurisdiction of the coastal States. Management regimes for high seas areas must therefore await the outcomes of negotiations between the relevant coastal States, implying that if the coastal States fail to agree, NEAFC does not regulate the stocks concerned. This has been the case for two stocks in recent years. In December 2005, the relevant coastal States reached an agreement for one of these stocks, leaving one still unregulated due to disagreement concerning allocation of shares. Some coastal States have, however, entered into bilateral arrangements, while others have set autonomous quotas. These arrangements and unilateral actions have been within the agreed long-term management plans for the stocks concerned, as described above.

## **5. Establishment of new RFMOs**

254. Many States are involved in processes for the establishment of new RFMOs, or appropriate arrangements for the conservation and management of straddling and highly migratory fish stocks. A draft agreement for the management of straddling and high seas discrete stocks (non-tuna species) in the Southern Indian Ocean, the Southern Indian Ocean Fisheries Agreement (SIOFA), was concluded in April 2005 by several interested parties.<sup>214</sup> SIOFA will manage most of the high seas areas north of the CCAMLR area in the Indian Ocean, between the EEZs of the eastern African States and the Australian EEZ. Like other instruments negotiated after the Agreement (for example SEAFO and WCPFC), the draft agreement incorporates many of its provisions. A Diplomatic Conference to adopt the agreement is scheduled for the first half of 2006. Interim arrangements are in place concerning data collection and authorisation procedures for fishing vessels.

255. There is a gap in the international conservation and management of non-highly migratory fisheries and protection of biodiversity in the marine environment in high seas areas of the South Pacific Ocean, from the most eastern part of the South Indian Ocean through the Pacific towards the EEZs of South American States. Non-highly migratory fisheries in this area are mainly discrete high seas stocks, but some are straddling stocks. A first intergovernmental meeting will be convened in New Zealand in mid-February 2006 with the aim to establish a new RFMO with a mandate to manage fish stocks not covered by other RFMOs in the area concerned, consistent with the Convention and the Agreement. It is envisaged that the process will take 3 – 4 years. Australia plans to hold a second meeting in August 2006, while Chile is planning to host the third meeting in late 2006 or early 2007.

## **6. Fishing activities by non-Parties**

256. Article 17 of the Agreement requires non-members of RFMOs to cooperate, in accordance with the Convention and the Agreement, in conservation and management of the stocks concerned, including to refrain from authorising their vessels to conduct fishing operations in areas where RFMOs have established measures. Members of relevant RFMOs are requested to exchange information concerning such activities, and to take measures to deter them. As described above, most RFMOs have in place arrangements for non-parties cooperating with the RFMOs in question. This section examines measures established to deter activities by non-parties without that status.

257. Concerning the magnitude of fishing activities by such non-Parties, several RFMOs point out that estimates are subject to uncertainties due to IUU fishing which cannot be estimated accurately. Although fishing by non-Parties has decreased in the CCAMLR area recently, it still constitutes a major problem and the Commission puts considerable effort into deterring such activities. In the 2004/05 season, it was estimated that about 20% of the total catch of Patagonian and Antarctic toothfish came from IUU fishing.<sup>215</sup> CCSBT indicates that currently there are eight flag States involved in the fishery for southern bluefin tuna, of which six have a legal status with CCSBT. IATTC reports that of the catch by non-Parties almost all was by Cooperating non-Parties or Fishing Entities and Colombia\*. ICCAT indicates that the statistics for recent years suggest that 5% of the catch of ICCAT species in the Atlantic may be attributed to non-Parties that do not have a cooperating status, while IOTC's estimate is that less than 10% of the total catch of the four major tuna species derives from fishing activities outside IOTC arrangements. NAFO states that annually (2004 and 2005) about six to eight non-Party vessels have been sighted fishing in the Regulatory Area, mainly targeting redfish. The same vessels have been sighted in the NEAFC area.

258. In order to address the problem of fishing activities by non-Parties, some RFMOs have established so-called negative lists. CCAMLR was the first to adopt a scheme to promote compliance with CCAMLR conservation measures by non-Contracting Party vessels.<sup>216</sup> The scheme sets out procedures for the establishment and maintenance of lists of fishing vessels (IUU Vessel list) found to have engaged in fishing activities in the CCAMLR area in a manner that has diminished the effectiveness of CCAMLR measures.

Furthermore, Parties to CCAMLR have agreed to take appropriate domestic action against vessels appearing on the IUU Vessel list, such as the refusal to register and to authorise landing or transshipment in ports. IATTC, ICCAT, IOTC, NAFO and NEAFC later established similar systems.<sup>217</sup> Many of the vessels appearing on these IUU Vessel lists are of unknown registry, but some flag States are identified and thus included in lists adopted by the respective RFMOs.<sup>218</sup>

259. IUU vessels could, however, be allowed into legitimate fishing by changing the flag and/or ownership. Norway is going further by targeting the IUU vessel itself by taking specific measures against it even when operated by others than those who participated in the IUU fishing. This implies that all vessels on a negative list established by a RFMO are perpetually prohibited from fishing in the Norwegian EEZ and will not be entitled to fly its flag, irrespective of changes in ownership.

260. RFMOs that manage highly migratory species have established so-called positive lists. In 2002 ICCAT was the first RFMO to adopt a measure concerning the establishment of a record of large scale fishing vessels authorized to operate in the Convention area, a so-called positive list.<sup>219</sup> Only vessels appearing on the list are regarded as being fishing in conformity with applicable ICCAT measures. The record is maintained by the ICCAT secretariat based on information submitted by Parties, co-operating non-Contracting Parties or a fishing Entity. Vessels not entered into the record are deemed not to be authorized to fish for, retain on board, tranship or land tuna and tuna-like species. The measure puts a number of obligations on the Parties concerning their vessels that are included in the record. Parties to ICCAT must take measures, under their applicable legislation, to prohibit, amongst other things, the transshipment and landing of tuna and tuna-like species by large scale fishing vessels that are not entered into the ICCAT record. CCSBT, IATTC and IOTC have adopted similar measures.<sup>220</sup>

261. Many RFMOs have introduced the concept of refusal to allow the landing of catches resulting from IUU fishing. A direct reference to such actions is also set out in Article 23(3) of the Agreement. These measures can be taken by any State individually and do not require collective action. Such measures are also included in schemes targeting non-Party vessels engaged in fishing activities in the areas of competence of a particular RFMO. It is presumed that a non-Party vessel observed fishing in that area is undermining applicable conservation and management measures. Such vessels must be inspected before they are allowed to unload. No landings or transshipments are permitted in the port of a Party unless vessels can establish that the fish were caught outside the area of application or in conformity with relevant conservation and management measures in force. The master of the vessel may, however, rebut the presumption of IUU fishing.

262. A new approach was taken by CCAMLR in 2002. Rather than searching for the genuine link between the flag State and a fishing vessel flying its flag, CCAMLR examined ways to bypass the problems with the traditional definition of “flag of convenience”(FOC). States notorious for having flagged vessels engaged in IUU fishing were identified. Although many IUU vessels tend to be flagged to States with so-called

open registers, in principle States with restricted shipping registers could also be regarded as FOCs in a fishing context if it is “convenient” to fly the flag in the CCAMLR area. In order to distinguish between general FOC States/vessels and this new approach, CCAMLR agreed to use the terminology “flag of non-compliance” (FONC). CCAMLR adopted a resolution on FONC implying that Contracting Parties and non-Contracting Parties cooperating with CCAMLR should prohibit landings and transshipments of fish and fish products from vessels flying a FONC.<sup>221</sup> This implies that all fishing vessels flying a FONC would be regarded as IUU vessels when operating in the CCAMLR area.

263. Several RFMOs have developed and implemented market-related measures aimed at combating activities by non-Parties operating in contravention of relevant conservation and management measures. CCAMLR has established a CDS designed to track the landings and trade flows of toothfish caught in the CCAMLR area, and where possible, in adjacent waters.<sup>222</sup> The objective is to enable the Commission to identify the origin of toothfish entering the markets of all parties to the scheme, and help determine whether the fish are caught in a manner consistent with CCAMLR’s measures. CCSBT requires a statistical document to be completed for all imports of southern bluefin tuna. Trade documents will not be validated, or imports accepted from, vessels not appearing on the positive list.<sup>223</sup> IATTC has introduced a bigeye tuna Statistical Documentation Program, which requires all bigeye imported into a Party to have a statistical document to be validated by the flag State. Furthermore, IATTC has adopted a resolution concerning the use of trade measures to promote compliance.<sup>224</sup> ICCAT was the first RFMO to introduce Statistical Documentation Program in 1994 for Atlantic bluefin tuna, later extended to bigeye tuna and swordfish. ICCAT implements multilateral, transparent trade measures against Parties undermining the effectiveness of conservation measures. IOTC implemented a statistical documentation scheme for frozen bigeye tuna in 2001. A statistical document and prior authorization are needed for at-sea or in-port transshipments.

264. Further, CCAMLR has established a policy to enhance cooperation between CCAMLR and non-Parties. A list is developed comprising such Parties implicated in IUU fishing and /or in trade that undermines the effectiveness of CCAMLR conservation and management measures. The Chairman of the Commission writes annually to the States listed, encouraging them to accede to the Convention, to take actions in conformity with the catch documentation scheme, to comply with their obligations as flag States and to take other appropriate actions to deter IUU fishing in the CCAMLR area. CCAMLR is also developing a specific non-Contracting Party Cooperation Enhancement Programme, focussing on capacity needs to tackle IUU fishing in certain States.<sup>225</sup>

265. Other RFMOs, such as NAFO and NEAFC, have by letters from their respective presidents also approached governments involved in IUU fishing, expressing concern about this activity and referring to the management regimes in place, including possible consequences for IUU vessels on their negative lists.

266. Several States have, individually or jointly delivered letters to non-Contracting Parties involved in IUU fishing, as diplomatic demarches.

## C. Monitoring, control and enforcement

### 1. Implementation of flag State duties

267. Articles 91-94 of the Convention provide the legal basis for flag States to exercise effective jurisdiction and control over ships flying their flag, including fishing vessels. At the core of these provisions is the obligation to ensure a genuine link between a fishing vessel and the flag State, a link that makes it possible to exercise effective flag State jurisdiction. Flag State responsibilities concerning fishing vessels on the high seas are spelled out in Article 18 of the Agreement, which sets out specific obligations which the State must fulfil before allowing its vessels to conduct fishing operations on the high seas, including in areas under the competence of RFMOs. The essential obligation of the flag State is to ensure that vessels flying its flag comply with RFMO conservation and management measures and do not undermine their effectiveness. To this end, a flag State should not authorize its vessels to fish on the high seas unless it is able to exercise effectively its responsibilities in respect of such vessels under the Convention and the Agreement. The flag State is required to take measures to control its vessels fishing on the high seas by means of licences, authorizations or permits, and to adopt regulations that include: the prohibition of fishing on the high seas without authorization, the prohibition of fishing in contravention of the terms of the licences or permits; the obligation to carry on board vessel the licence, authorization or permit; and the prohibition of fishing without a permit in areas under the national jurisdiction of other States. The flag State must establish a national record of fishing vessels flying its flag authorized to fish on the high seas and provide information on request to interested States.

268. **RFMOs.** As outlined above, all RFMOs have agreed to specific and detailed measures that place obligations on flag States, such as the recording and timely reporting of fisheries data and the implementation of observer programmes, inspection schemes and MCS, including VMS. Further, some RFMOs have agreed to specific measures for the supervision of transshipment, including restricting transshipments to Parties to the RFMO concerned and detailed reporting requirements.<sup>226</sup> The SEAFO and WCPFC Conventions include specific provisions on flag State duties, which to a considerable extent comprise the elements set out in Article 18 of the Agreement.<sup>227</sup> The WCPFC Convention contains provisions on transshipment, encouraging it to take place in ports of the Parties, and imposing terms and conditions for transshipment at sea in the Convention Area beyond areas under national jurisdiction.<sup>228</sup>

269. **States.** Several States report that they have incorporated Article 18 of the Agreement into their domestic legislation.<sup>229</sup> National laws and regulations include requirements for fishing vessels to obtain an authorization, licence or a permit from the flag State authorities before they are allowed to engage in high seas fishing.<sup>230</sup> Decisions by New Zealand and the United States to grant authorizations are conditioned by the compliance history of the applicant with international fishery regulations and with conditions in the permits or authorizations. In New Zealand authorizations are granted after consultation with the RFMO concerned and in the United States, authorization is given only if it is established that the activities proposed would not undermine conservation and management measures. In Norway a licence will be granted only if the vessel will have fishing rights within a RFMO where Norway is a party. Laws and regulations may also provide for the flag State to keep a national

record or permit register of vessels authorized to fish on the high seas<sup>231</sup> or, in the case of the EC, a register of all EC fishing vessels, while Member States retain their own national registers of vessels. The EC explains that while it has the responsibility to incorporate into its laws and regulations all of its obligations under international agreements, Member States have to implement the law through the necessary controls over their vessels.<sup>232</sup>

270. Most of the fishery laws and regulations require operators to mark vessels conducting fishing operations on the high seas, to maintain a logbook and to submit catch and effort reports. Others require that vessels carry on board VMS<sup>233</sup> and/or observers,<sup>234</sup> as well as implementing port inspection requirements.<sup>235</sup>

271. Many States report that they exercise effective control over fishing activities of vessels flying their flag,<sup>236</sup> while Cambodia\*, Croatia\* and the Philippines\* declare that they are taking measures to improve such control. Those that exercise control over vessels on the high seas indicate that they either also prohibit transshipment at sea or require close monitoring or prior authorization for this practice.

272. New Zealand and the United States report that they have ensured compliance by their vessels with conservation and management measures adopted by RFMOs, of which they are members by providing general information to industry on requirements for fishing on the high seas and specific information on obligations in areas covered by RFMOs.

273. Some States actively discourage nationals intending to register fishing vessels in non-members of RFMOs identified as undermining their conservation and management measures.<sup>237</sup> For instance, New Zealand has prohibited its nationals from using a vessel to take or transport fish on the high seas unless the vessel is flying the flag of a "responsible" State.<sup>238</sup> Spain has imposed penalties on its nationals working on vessels flying flags of non-compliance.<sup>239</sup> Many States have joined the International Monitoring, Control and Surveillance Network (MCS Network), a global, informal arrangement among national institutions with the objective to improve the efficiency and effectiveness of fisheries-related MCS-activities, through enhanced cooperation, coordination, information collection and exchange.

## **2. Use of port State measures**

274. Article 23 of the Agreement recognizes the wide discretion of States to exercise jurisdiction over vessels voluntarily present in their ports. The underlying principle formulated in Article 23(1) is "the right and the duty" of a port State to take non-discriminatory measures in accordance with international law, in order to "promote the effectiveness of sub-regional, regional and global conservation and management measures". Paragraph 2 specifies, *inter alia*, inspections of documents, fishing gear and catch on board which the port State may take on vessels voluntarily in port. It is recognized that emphasis needs to be put not only on the "right" in Article 23 of the Agreement, but also on the "duty". FAO has taken the initiative to develop some minimum standards for port state measures.

275. COFI agreed in March 2005 on an international instrument (a model scheme) describing basic and minimum port State measures for subsequent implementation through the adoption of regional memoranda of understanding, through RFMOs, or by individual port States. It was emphasised that concerted action at the regional level should be encouraged and that these principles and guidelines did not prevent the adoption of additional and eventually stricter measures. The model scheme includes information to be required by a port State prior to allowing access to a foreign fishing vessel, port inspection procedures, result indicators of port inspections, elements of training programmes for port State inspectors and an outline of an information system on port State inspections. Strong support was expressed in principle for programmes of assistance to facilitate human development and institutional strengthening, including legal assistance, in developing countries to promote the full and effective implementation of port State measures. COFI also supported the establishment of an FAO database containing measures that have been adopted by regional fisheries management organisations and FAO Members in implementing port State measures.

276. **RFMOs.** As described above, several RFMOs have adopted market-related measures,<sup>240</sup> requiring specific actions by port States. These RFMOs have implicit port State control regimes due to their resolutions on the establishment of positive vessel lists, according to which members will not allow the import and implicitly also the landing of catch by vessels not listed on the record. In addition, many RFMOs have adopted measures targeting activities by non-Parties, implying among other things the refusal to allow landings of fish caught in violation of applicable regulations.

277. Some RFMOs have established schemes for general port State control, while others have established measures dealing with specific issues. For instance, CCAMLR has agreed to a specific scheme for toothfish, requiring Parties to inspect all vessels carrying toothfish entering their ports.<sup>241</sup> A prior notification, including a declaration that they have not been engaged in IUU fishing, must be provided by the vessels. Fishing vessels failing to make such a declaration will be denied port access. If there is evidence that the vessel has fished in contravention of CCAMLR conservation measures, the catch will not be landed or transhipped.

278. Port State obligations also derive from established trade measures and the positive lists, which entail some port State obligations. In 1997 ICCAT established a Port Inspection Scheme,<sup>242</sup> which includes some minimum standards in order to monitor landings and transhipments, check compliance with ICCAT management measures, including quotas, and collect data and other information. In 1998 it was agreed to ban landings and transhipments of vessels from non-Parties identified as having committed a serious infringement.<sup>243</sup>

279. In 2002 IOTC established a programme of inspection in port, instructing members to inspect documents, fishing gear and catch on board fishing vessels in port and to adopt regulations in accordance with international law to prohibit landings and transhipments by non-Party vessels.<sup>244</sup>

280. NAFO has established measures for port inspection procedures obliging port States to inspect vessels landing fish from the NAFO Convention Area. Such an inspection includes: (a) verification of the species and quantities caught, (b) cross-checking with the quantities

recorded in logbooks, catch reports on exit, and reports of any inspections carried out, as well as (c) verification of mesh size of nets on board and size of fish retained on board.

281. NEAFC is in the process of developing a comprehensive and harmonized scheme for the north east Atlantic region, based on the FAO Model Scheme. SEAFO agreed at its annual meeting in 2005 on an interim Port State Inspection Scheme that requires port States to inspect foreign fishing vessels, and transmit information and results to the SEAFO Secretariat. The interim scheme includes some elements of the FAO Model Scheme. Parties are considering a full-fledged scheme, based on the same model, which will be discussed at the annual meeting in 2006.

282. *States.* Many States have, either individually or through their participation in RFMOs, addressed the issue of port State control of foreign fishing vessels calling at their ports. Several States report that they carry out inspections when fishing vessels are docked in their ports or at offshore terminals.<sup>245</sup> Should inspections establish that IUU fishing violations have occurred, landings and transshipments of catches are prohibited,<sup>246</sup> and violations are reported to the flag State of the vessel and the RFMO or the coastal State where the fishing took place.<sup>247</sup> The EC, France and Pakistan\* agree that enhanced port State control through cooperation among States at the regional level and implementation of the FAO Model Scheme on port State measures would be important in combating IUU fishing.

283. Norway prohibits the landing of catches originating from IUU fishing.<sup>248</sup> The ban is on landing of fish caught in contravention of rules established by RFMOs or other arrangements, including catches taken by nationals of States that are not Parties to the relevant RFMO. These prohibitions apply irrespective of whether the fish has been caught in an area under the jurisdiction of a particular State or on the high seas.

284. Canada has regulations dealing with access by foreign fishing vessels to its waters and ports, that take into account the vessels' compliance with relevant conservation and management measures. Canada grants access to its waters and ports only to fishing vessels from a State with which it has favourable fishery relations. Listed States are those that consistently co-operate with Canada on international fisheries conservation objectives, including sound conservation and management of fish stocks off its coasts.

### **3. Investigation and penalization**

285. Article 19 of the Agreement places a series of obligations on flag States concerning compliance and enforcement, including immediate and full investigation of alleged violations, prompt reporting on the progress and outcome of the investigation to the relevant RFMO, and if a serious violation has been proven, the requirement not to allow the vessel to fish on the high seas until such time as sanctions imposed by the flag State have been complied with. Further, the flag State must ensure that applicable sanctions are adequate in severity to secure compliance and to discourage violations and deprive offenders of the benefits accruing from IUU fishing.

286. As indicated above, CCAMLR, NAFO and NEAFC have established inspection and enforcement schemes, which also include regulations for the response by Parties whose vessels are alleged to have violated the relevant conservation and management measures.<sup>249</sup> To some extent these provisions contain elements from Article 19 of the Agreement. All three schemes put clear obligations on flag States to institute proceedings, to impose adequate sanctions and to report to the RFMO concerned on developments or conclusions. Actions taken (or not taken) by flag States are annually examined by the respective compliance committees, and the case will remain on the agenda for the committee concerned until it is satisfied with the response by the flag State.

287. A number of States indicate that they have taken action to enforce their own fisheries laws and regulations and to ensure that fishing activities of vessels flying their flag on the high seas and in areas under the jurisdiction of other States were reported, monitored and carried out in a responsible manner.<sup>250</sup> Several States require the use of VMS to monitor fishing activities in areas under their national jurisdiction or to ensure compliance by their vessels with international conservation and management measures.<sup>251</sup>

288. Some States indicate that their legislation provides for severe penalties for fishing violations.<sup>252</sup> Many fisheries laws and regulations provide for aerial and maritime surveillance, and other surveillance schemes under the aegis of RFMOs, and impose sanctions for violations of RFMO's conservation and management measures, including severe penalties and forfeiture of fishing vessels and equipment.

289. Several States report that they have developed policies and strategies to address IUU fishing,<sup>253</sup> and some indicate that they have already adopted a national plan of action on IUU fishing.<sup>254</sup> States that have developed policies state that these are often included in their fisheries laws and regulations, or that IUU fishing is often addressed as an integral part of their national fisheries policy. Other States indicate that their policies were being revised in order to conform to their obligations under international law, taking into account the need for harmonization at the regional level through relevant RFMOs. Several States have carried out awareness campaigns through government agencies or stakeholder organizations to fully inform their nationals of the negative impacts of IUU fishing.<sup>255</sup> These States have pointed out that their nationals commit an offence under their domestic legislation when they violate fishery laws and regulations of other States,<sup>256</sup> or when they are found to undermine conservation and management measures of RFMOs.<sup>257</sup>

290. The EC states that fishing anywhere without a licence, permit, or any other required authorization is a serious infringement of the rules of the Common Fishery Policy.<sup>258</sup> The United States indicates that it is a violation of its law for persons subject to its jurisdiction to conduct fishing operations in violation of foreign law.<sup>259</sup> Norway reports that it carries out immediate and full investigation of alleged violations of regional conservation and management measures, and that benefits accruing from such activities are confiscated, fines are imposed, including refusal, withdrawal or suspension of fishing licences.

291. Canada indicates that vessels that fish without a required licence or in breach of their licence conditions are subject to sanctions under Canadian law. Maximum penalties for non-

compliance may vary with the offence and range up to CAD 750,000 plus forfeiture of catch and/or the vessel.

#### **IV. Issues affecting implementation of the Agreement by developing States Parties, taking into account Part VII of the Agreement**

292. Implementation of the provisions of Part VII, in particular, assistance to developing countries for the realization of their rights and fulfilment of their obligations under the Agreement, has been recognised as fundamentally important to the successful implementation of the Agreement as a whole.<sup>260</sup> The lack of/or limited capacity in many developing countries is a serious impediment to the implementation of the Agreement. The Agreement acknowledges this problem and emphasizes the need to build capacity and provide technical assistance to developing countries, including financial assistance, assistance relating to human resource development, technical assistance, transfer of technology and advisory and consultative services. Just a few major programmes of bilateral or multilateral assistance specifically focus on the implementation of the Agreement, although the assistance provided in many cases also helps developing State Parties in its implementation.

293. The United Nations General Assembly decided in 2003 to establish the “Assistance Fund under Part VII of the Agreement” (the Fund).<sup>261</sup> The purpose of the Fund is to provide financial assistance to developing States Parties in the implementation of the Agreement in accordance with its Part VII. Financial support may be sought for: a) facilitating participation in meetings of RFMOs; b) assisting with travel costs in relevant meetings of global organisations dealing with high seas fisheries; c) supporting ongoing and future negotiations to establish new RFMOs, to renegotiate founding agreements and to strengthen existing RFMOs; d) building capacity for effective exercise of flag State duties, MCS, data collection and scientific research; e) facilitating exchange of information and experience on the implementation of the Agreement; f) assisting with human resources development, technical training and technical assistance in relation to conservation and management of the relevant stocks and development of fisheries for such stocks, consistent with the duty to ensure the proper conservation and management of such stocks; and g) assisting in meeting costs involved in proceedings for the settlement of disputes.

294. Norway and the United States have contributed USD 100,000 and USD 200,000 respectively to the Fund. Canada has announced that it would contribute CAD 500,000 over three years to the Fund.

295. Some States report that they are providing assistance to developing States in the conservation and sustainable use of their fishery resources,<sup>262</sup> and in fostering cooperation at the regional or sub-regional level.<sup>263</sup>

296. The EC states that it assists developing States, in accordance with obligations under Part VII of the Agreement, for the purposes of capacity-building for fisheries management by actions, initiatives and programmes in the framework of bilateral fisheries partnership programmes, the European Development Fund (EDF) and direct contributions. The EC supports, through EDF assistance, a range of activities both at national and regional level, and

is currently financing about fifteen fisheries activities in African coastal States, with a total financial envelope of roughly €140 million. Key themes are: management of aquatic resources, including MCS and research (stock assessment), sanitary control, and artisanal fisheries. The EC has further voluntarily contributed to two processes for the establishment or reinforcement of RFMOs in order to facilitate the participation of developing States.<sup>264</sup>

297. New Zealand supports training and capacity-building for developing countries, including small island developing States, particularly in the Pacific. New Zealand has been active in supporting technical assistance and capacity-building in the areas of fisheries legislative framework and MCS regimes, including funding of regional MCS workshops convened by the FFA, funding of FFA itself and participation of Pacific Island States in WCPFC meetings. New Zealand has also assisted some Pacific Island States by providing fisheries surveillance capacity. It also works with regional institutions<sup>265</sup> and through other mechanisms to provide assistance to developing Pacific Island coastal States to improve the financial returns from fisheries resources in their waters.

298. Norway has provided assistance to several developing countries in Africa through the Nansen Programme, with a long-term objective of self-sufficiency in research and management in partner countries, through the development and strengthening of their institutions.<sup>266</sup> Assistance in collecting, reporting, verification, exchange and analyses of fisheries data and related information has been provided in North West Africa, South West Africa, South East Africa<sup>267</sup> and in China\*. Norway has assisted in drafting new fisheries legislation, which takes into account the fundamental principles set out in the Agreement, in Namibia, South Africa and Vietnam\*. Further financial assistance has been given for a number of workshops in MCS (convened by FAO), and Namibia has received support in establishing a national MCS-system, including training and capacity-building. Norway also provided legal assistance to developing countries in the negotiations for SWIOFC and SIOFA, and has provided technical support to Namibia for the establishment of the SEAFO Secretariat.

299. Mexico\* indicates that, in conformity with Part VII of the Agreement, it is promoting exchange and cooperation programmes with Central American countries in order to provide assistance to developing States. The Republic of Korea\* has provided assistance to developing States through various programmes offered by the Korea International Cooperation Agency. Croatia\* reports that although it is working on its own capacity-building, it nonetheless assists developing countries, either directly or through relevant RFMOs. Saudi Arabia\* indicates that it contributes to capacity-building for developing countries by contributing to international assistance funds.

300. The United States has provided direct financial assistance to developing States for their participation in the WCPFC, as well in improving data collection and sharing within ICCAT. It is currently exploring opportunities for cooperation in West and North Africa in the areas of fisheries enforcement and management.

301. As mentioned above, CCAMLR developed in 2005 a non-Contracting Party Cooperation Enhancement Program<sup>268</sup>, noting that some non-Contracting Party States wished to cooperate with CCAMLR but lacked the capacity to do so and that members will need to

commit support and be willing to deliver technical assistance, advice and training to non-Contracting Parties. In 2006 CCAMLR will operationalise the programme, including: focusing on technical cooperation, flexibility to tailor cooperation on a case-by-case basis, a partnership model, matching of sponsors and recipients and a central repository of information and training material. Furthermore, a priority list of States that may benefit from technical cooperation will be established.

302. CCSBT meets the cost of certain developing States sending observers to its meetings. CCSBT has invited Indonesia\* to become a Cooperating non-Member, given financial support for participation in CCSBT activities, and has provided assistance to build fisheries administration in relation to southern bluefin tuna. ICCAT states that the recently adopted Madrid Protocol reduces the financial cost to developing States of being a Party to ICCAT, and that data and reporting improvement projects are funded by several Parties. In addition, funds from special research programmes established by the Commission are often used to provide assistance in data collection and submission. IOTC indicates that there are numerous examples of IOTC having due regard to the circumstances and requirements of developing States in the Indian Ocean rim.<sup>269</sup>

303. The SEAFO Convention and the WCPFC Convention both contain specific provisions concerning the recognition of special requirements of developing States, including cooperation through financial assistance, assistance relating to human resource development, technical assistance, transfer of technology, and activities directed specifically towards improved conservation and management, stock assessment and scientific research and MCS.<sup>270</sup> The WCPFC Convention also requires the Commission to establish a fund to facilitate effective participation of developing States in its work. The Antigua Convention provides for measures relating to technical assistance, technology transfer, and other forms of cooperation to assist developing States that are members of the Commission to fulfil their obligations under the Convention.<sup>271</sup> In this connection, the Commission has recently conducted a stock assessment training course.

304. FAO states that the Fish Code Programme serves as a principal means through for facilitating the implementation of the Code of Conduct for Responsible Fisheries and related international fisheries instruments. Fish Code Programme activities at national, regional and interregional levels include, *inter alia*, technical assistance missions, training and human-capacity development, workshops, and specialized survey and study missions. During 2004 and the first half of 2005, the Programme has supported a wide range of activities falling under the Code of Conduct thematic areas.

305. FAO has participated in processes for the establishment of several new RFMOs including WCPFC, and the new FAO regional fishery body, SWIOFC. SWIOFC is an advisory body promoting the sustainable development and utilization of coastal fishery resources off the shores of East Africa and several island States of the region, as well as responsible management and regional cooperation on fisheries policy. The commission's members include fourteen coastal States whose territories are situated wholly or partly within the SWIOFC area of competence. Other States may participate as observers. In addition FAO has been participating in work on the development of SIOFA.

306. The Global Environment Facility (GEF) indicates that it helps developing countries fund projects and programs that protect the global environment, including sustainable management of marine living resources, through its projects in the “International Waters (IW) and Biodiversity (BD)” focal areas. In the IW focal area, 108 countries have received assistance to address marine and coastal issues, of which fisheries is the primary one. Assistance also includes the implementation of the Agreement; reduction of by-catch and discards; and responsible fisheries. With particular reference to the “African Process”, GEF is preparing to assist the outcomes of the process by funding the establishment of the “Strategic Partnership for Sustainable Fisheries Investment Fund for Large Marine Ecosystems of Sub-Saharan Africa”.

307. The African Development Bank provides funding for many fishery projects in Sub-Saharan Africa. Its main areas of assistance focus on the strengthening of the legal, institutional and managerial capacity of these countries to address conservation and sustainable use of fishery issues

## **V. Information on straddling fish stocks and highly migratory fish stocks for which no measures have yet been adopted**

308. With the exception of a few species producing large catches (e.g. tunas and swordfish), knowledge of the biology and state of exploitation of highly migratory species (such as billfishes and sailfishes) remains limited. Knowledge is even more limited for most shark species included in Annex I to the Convention.

309. Fisheries for highly migratory tuna and tuna-like species as defined by Annex I to the Convention, are all under some form of management. However, the global nature of some highly migratory species fishing fleets and of markets make it more difficult for RFMOs to manage fisheries of these species than more local ones.

310. Unlike fisheries for tuna and tuna-like species, management of fisheries for oceanic sharks and other highly migratory species listed in Annex I to the Convention is incomplete. The International Plan of Action for the Conservation and Management of Sharks is a non-binding instrument that should guide management of oceanic sharks, but that does not implement conservation measures. RFMOs having competence to manage jurisdiction over fisheries that interact with oceanic sharks and other highly migratory species are aware of the bycatch problem, but it is mostly unregulated.

311. Fisheries for pomfrets, sauries and dolphinfish are sometimes included in national fishery management plans, either as a component of the plans for other species or on their own, but generally speaking, a more systematic treatment of these species is necessary before it could be said that the fisheries exploiting them are properly managed.

312. Most fisheries for straddling fish stocks are either managed, or in the process of being managed, by existing RFMOs, or organizations and arrangements that are in the process of being formed.

313. The situation is more variable for fisheries for other high seas fish stocks. While some of these are within the competence of existing RFMOs, not all of them are being

managed by the organisation concerned. In addition, some high seas fish stocks are not covered by any RFMO.

## **VI. Issues that have prevented some States from becoming party to the Agreement**

314. As of 21 December 2005, 55 States and the EC have ratified/acceded to the Agreement. More ratifications/accessions from coastal States and distant-water fishing nations are needed in order to secure more comprehensive and effective implementation of the Agreement. Although the Agreement might never reach the quasi-universality of adherence achieved by the Convention since it is not necessarily of direct interest to all States, participation of all key coastal States and high seas fishing States is crucial to ensure wide acceptance of the new approaches to fisheries management it contains.

315. Some States, in particular developing coastal States, have not become parties to the Agreement due to the misconception that the Agreement addresses the conservation and management of fish stocks on the high seas only and therefore does not have any relevance to the conservation and management of fishery resources in the EEZs. While the Agreement applies to the conservation and management of straddling fish stocks and highly migratory fish stocks beyond national jurisdiction, Articles 5 (general principles for the conservation and management of straddling fish stocks and highly migratory fish stocks), 6 (application of the precautionary approach) and 7 (compatibility of conservation and management measures) nevertheless apply to the conservation and management of such stocks in areas under national jurisdiction.<sup>272</sup> Implementation of Part VII of the Agreement, and the recent establishment of the Assistance Fund under that Part for the benefit of developing States Parties may provide important incentives for those States to consider possible ratification of /accession to the Agreement.

316. More interestingly, some coastal States and high seas fishing States have refrained from becoming parties to the Agreement because of their concerns over specific provisions. These concerns are not new and were expressed throughout the negotiations of the Agreement during the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (1993-1995). They are related to the implementation of Article 7 on compatibility of conservation and management measures and Article 21 on sub-regional and regional cooperation in enforcement. Some States have reiterated these concerns in their replies to the Secretary-General's request for information on impediments that have prevented States from becoming parties to the Agreement.

### **A. Compatibility of conservation and management measures**

317. The Agreement provides that, without prejudice to the sovereign rights of coastal States over resources within areas under national jurisdiction, and the rights of all States to fish on the high seas, coastal States and States fishing on the high seas are required to "seek to agree" on the measures necessary for the conservation of straddling fish stocks in the adjacent high seas areas as well as to cooperate with a view to ensuring conservation and promoting the objective of optimum utilization of highly migratory fish stocks throughout the region, both within and beyond the areas under national jurisdiction. These measures must be compatible

“in order to ensure conservation and management of straddling fish stocks and highly migratory fish stocks in their entirety”.<sup>273</sup>

318. In determining those compatible measures, the following factors need to be considered: (a) coastal States’ conservation and management measures for the stocks in their EEZs in accordance with Article 61 of the Convention; (b) high seas agreed measures already established by coastal States and high seas fishing States for the stocks; (c) agreed measures established by RFMOs for the same stocks; (d) the biological unity and other biological characteristics of the stocks concerned and the relationships among the distribution of the stocks, the fisheries, and the geographical particularities of the region concerned, including abundance of the stocks in areas under national jurisdiction; (e) the respective dependence of the coastal States and high seas fishing States on the stocks concerned; and (f) the impact of measures on the living marine resources as a whole.<sup>274</sup> Pending the adoption of compatible measures, the Agreement requires States to make every effort “to enter into provisional arrangements of a practical nature”, and where they are unable to agree on such arrangements, to resort to the procedures for the settlement of disputes provided under Part VIII of the Agreement.

319. Adoption of compatible conservation and management measures is essential because straddling fish stocks and highly migratory fish stocks may occur simultaneously within and beyond the EEZ or may be available outside at one time and inside at another, with the consequence that amounts taken within areas under national jurisdiction may affect the catches beyond and vice versa. To be effective, conservation measures for the two types of stocks should apply throughout their migratory range, irrespective of the legal regimes applicable to the ocean areas in which the stocks migrate. Measures should therefore be concerned with the whole stock unit in its area of distribution, and should be harmonized among all States involved. As far back as in 1989, the General Assembly, in its resolution 44/225 on large-pelagic driftnet fishing and its impact on the living marine resources of the world’s oceans and seas, noted with concern that the “[...] overexploitation of living marine resources of the high seas adjacent to the exclusive economic zones of coastal States is likely to have an adverse impact on the same resources within such zones, [...]”<sup>275</sup>

320. While the importance of compatible measures is obvious, modalities for the adoption of such “compatible measures” have raised difficulties for some coastal States as well as some high seas fishing States. While these two categories of States agree that the measures applied for the two types of stocks in the EEZ and on the adjacent high seas must be compatible in order to ensure proper conservation and management of the stocks concerned, they have fundamentally different interpretations of the practical implementation of compatible conservation and management measures for straddling fish stocks in the adjacent high seas area and for highly migratory fish stocks throughout the region, both within and beyond areas under national jurisdiction, despite the listing of criteria in the Agreement to assist States in devising such measures.

321. The difficulty of determining compatible measures is compounded by the fact that the EEZ and the high seas are governed by two distinct legal regimes, where the rights and

obligations of all States with respect to the natural resources, including marine living resources are clearly defined.<sup>276</sup>

322. On the one hand, some coastal States consider that Article 116 of the Convention, by subjecting the freedom of fishing on the high seas to, among other constraints, the rights and duties, and interests of coastal States provided for, *inter alia*, in Article 63(2) and 64, obliges States fishing on the high seas not to jeopardize the interests of coastal States with regard to the conservation and management of straddling fish stocks and highly migratory fish stocks.<sup>277</sup> They believe that in light of the close relationship between the high seas and the EEZ, in terms of both biological and ecological interactions, conservation and management measures on the high seas should be adopted by agreement among coastal States and fishing States and need to take into account measures adopted by coastal States in their EEZs. Therefore, to ensure that coastal States' rights, duties, and interests are not ignored, the management regime for straddling fish stocks and highly migratory fish stocks on the high seas should be consistent with the management regime of coastal States with respect to those stocks in their EEZs, if no consensus can be reached on compatible measures.<sup>278</sup> These coastal States indicate that implementation of the relevant provisions of the Agreement should not allow conservation and management measures to be taken in the EEZ without the consent of the coastal State concerned.<sup>279</sup> They also stress that it is necessary to fully acknowledge the preferential status conferred by Article 116 of the Convention on coastal States with respect to associated species and their conservation regime, as well the rights of port States under international law.<sup>280</sup>

323. On the other hand, some high seas fishing States have indicated that in implementing compatible measures, conservation measures taken within the EEZ and those applied in the adjacent high seas for straddling fish stocks and highly migratory fish stocks should be assessed on an equal basis, to ensure that measures are complimentary to each other, taking into account scientific evidence,<sup>281</sup> and that a joint management regime based on the scientific assessment of the two types of stocks be established, under the joint sponsorship of the States concerned.<sup>282</sup> For these purposes, "due regard" to the needs, interests and practices of both distant-water fishing States and coastal States is the point of departure for discussion on how to establish the fundamental principles of achieving compatibility and coherence.<sup>283</sup> In this respect, they believe that Article 7 of the Agreement puts too much weight on the measures adopted by coastal States, when it requires coastal States and high seas fishing States to cooperate in establishing compatible conservation and management measures for the stocks concerned, giving the impression that the Agreement seems to be structured to serve more the interests of coastal States than those of States fishing on the high seas.<sup>284</sup>

## **B. Sub-regional and regional cooperation in enforcement**

324. The Agreement establishes a cooperative scheme for enforcement of sub-regional and regional conservation and management measures for straddling fish stocks and highly migratory fish stocks. Article 21(1) provides that in any high seas area covered by an RFMO, a State Party which is a member of such organization or a participant in such arrangement may, through its duly authorized inspectors, board and inspect fishing vessels flying the flag of

another State Party to the Agreement, whether or not such State Party is also a member of the RFMO, in order to ensure compliance with conservation and management measures for the two types of stocks. Article 21 also states that following boarding and inspection, where there are clear grounds for believing that a vessel has violated conservation and management measures, the inspecting State shall secure evidence and notify the flag State. The flag State must respond within three working days and either take action or authorize the inspecting State to investigate. In the latter case, the inspecting State is required to communicate the results of the investigation to the flag State, which must, if evidence so warrants, take enforcement action or authorize the inspecting State to take such enforcement action as the flag State may specify. Where the flag State has failed to respond or take action in case of “serious violation” as defined in Article 22(11) of the Agreement, the inspectors may remain on board for further investigation and, where appropriate, may request the master to bring the fishing vessel to the nearest port. The name of the port must be communicated immediately to the flag State.<sup>285</sup>

325. As safeguards, the Agreement provides that the decision of the flag State to fulfil its responsibilities under the Agreement supersedes any action taken by an inspecting State with respect to a vessel suspected of having committed a violation, and that all States are liable for damage or loss caused to fishing vessels due to unlawful or excessive enforcement actions taken by them.<sup>286</sup> In addition, Article 21(15) indicates that members of an RFMO which have established an alternative mechanism within their organization or arrangement that allows them to discharge effectively their obligations under the Agreement may agree to limit the provisions of the boarding and inspection under Article 21 (1) as between themselves.

326. In spite of those safeguards, some high seas fishing States have indicated that they still have difficulties with respect to the provisions of Article 21 of the Agreement dealing with sub-regional and regional cooperation in enforcement. They considered that those provisions constitute a violation of the well-established principle of flag State exclusive jurisdiction over vessels flying their flags on the high seas and could affect the sovereign rights of the flag State, and have stated that this is among the issues preventing them from becoming parties to the Agreement.<sup>287</sup> Those States are of the view that obtrusive inspection of fishing vessels by non-flag States may cause unnecessary inconveniences and impediments to legal fishing activities on the high seas.<sup>288</sup>

327. Non-State Parties have indicated that the Review Conference should offer an opportunity to clarify the provisions of the Agreement that have made it difficult for some States to ratify this instrument, including the provisions of Articles 7 and 21. They hope that the Conference will address these issues of concern, which undermine the effectiveness and universality of the Agreement.<sup>289</sup>

## **VII. Conclusions**

328. Information obtained for this report indicates that while most of the straddling fish stocks are generally well studied, knowledge about some of them and many highly migratory fish stocks is uncertain. For discrete high seas fish stocks and associated species information is very limited. In consequence, more scientific research is needed to ascertain the status of these stocks to provide a solid basis for the adoption of conservation and management measures.

Information provided by States and RFMOs indicates that substantive work has been undertaken in order to implement the Agreement. However, this is an ongoing process and much remains to be done.

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<sup>1</sup> The Agreement, Article 5.

<sup>2</sup> The Agreement, Article 8(4).

<sup>3</sup> The Convention, Articles 61 (3) and 119 (1) (a).

<sup>4</sup> UN General Assembly resolution 60/31 of 29 November 2005, paragraph 12.

<sup>5</sup> Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, in *International Fisheries Instruments with Index*, Food and Agriculture Organization of the United Nations, Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations, New York, 1998, United Nations publication Sales No. E.98.V.11, Article .36 (1).

<sup>6</sup> *Ibid.*, Article 36 (2).

<sup>7</sup> UN General Assembly resolution 56/13, paragraph 8.

<sup>8</sup> UN General Assembly resolutions 56/13, 57/143, 58/14, 59/25 and 60/31.

<sup>9</sup> UN General Assembly 59/25, paragraphs 16 and 17.

<sup>10</sup> UN General Assembly A/RES/60/31, paragraph 21.

<sup>11</sup> In this report non-Parties to the Agreement are indicated with an asterisk.

<sup>12</sup> A/60/189.

<sup>13</sup> Of particular importance was the study “the Global Overview of Straddling and Highly Migratory Fish Stocks” by Evelyne Meltzer (later published in *20 International Journal of Marine Coastal Law*, 577, 2005) and the contribution by Terje Lobach, a consultant, involved in the preparation of this report.

<sup>14</sup> “World review of highly migratory species and straddling stocks”, FAO Fisheries Technical Paper N. 337, FAO, Rome.

<sup>15</sup> “Review of the state of world marine fishery resources”, FAO Fisheries Technical Paper no.457, FAO, Rome, 2005.

<sup>16</sup> For information on RFMOs, including their web addresses, see: <http://www.fao.org/fi/body/rfb/index.htm>

<sup>17</sup> FAO Yearbook. Fishery statistics – Capture production 2003. Vol. 96/1. Rome, FAO (2005), see <http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp>

<sup>18</sup> FAO 2003. Strategy for Improving the Information on the Status and Trends of Capture Fisheries, see [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/DOCREP/006/Y4859T/Y4859T00.HTM](http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/Y4859T/Y4859T00.HTM)

<sup>19</sup> More information about FIGIS see: <http://www.fao.org/figis/servlet/static?dom=root&xml=index.xml>

<sup>20</sup> Except for tunas where catches by stocks are included in the FIGIS database.

<sup>21</sup> FAO Fisheries Technical Paper No. 457.

<sup>22</sup> FAO statistical area 21.

<sup>23</sup> Discards in the world’s marine fisheries. An update. *FAO Fisheries Technical Paper* No. 470. Rome, FAO, 2005.

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- <sup>24</sup> The web address for SIDP is: <http://www.fao.org/fi/SIDP>
- <sup>25</sup> The web address for FIGIS information fact sheets is:  
[http://www.fao.org/figis/servlet/static?dom=root&xml=speciesgroup/data/tunalike/species\\_search.xml](http://www.fao.org/figis/servlet/static?dom=root&xml=speciesgroup/data/tunalike/species_search.xml)
- <sup>26</sup> The web address for Fishbase is: <http://www.fishbase.org>
- <sup>27</sup> FAO Fisheries Technical Paper No. 457, *op.cit.*
- <sup>28</sup> Second Meeting of the Technical Advisory Committee of the FAO Project Management of Tuna Fishing Capacity: Conservation and Socio-economics. Bayliff, W.H.; Leiva Moreno, J.I. de; Majkowski, J. (eds). Madrid, Spain, 15-18 March 2004. FAO Fisheries Proceedings, No. 2, Rome, 2005.
- <sup>29</sup> The following RFMOs are source of information on tuna and tuna-like species: CCSBT (<http://www.ccsbt.org/>), IATTC (<http://www.iattc.org/>), ICCAT (<http://www.iccat.es/>), IOTC (<http://www.iotc.org/>) and the SPC (<http://www.spc.org.nc/>).
- <sup>30</sup> Since the adoption of the Convention, bluefin tuna in the northern Pacific has been identified as a different species, Pacific bluefin tuna (*Thunnus orientalis*), while bluefin in the Atlantic has been re-named Atlantic bluefin tuna.
- <sup>31</sup> At present, *Euthynnus alleteratus* is called little tunny and *E. affinis* is called kawakawa
- <sup>32</sup> At present, *Auxis thazard* is referred to as frigate tuna and *A. rochei* as bullet tuna.
- <sup>33</sup> At present, *Tetrapturus* are referred to as spearfishes.
- <sup>34</sup> The family Lamnidae is listed in Annex I to the Convention as Isurida, using an old family name.
- <sup>35</sup> A preliminary evaluation of the status of shark species. *FAO Fisheries Technical Paper* No. 380. Rome, FAO 1999. Available at <http://www.fao.org/DOCREP/003/X2352E/X2352E00.htm>
- <sup>36</sup> [http://www.fao.org/figis/servlet/static?xml=CCRF\\_prog.xml&dom=org&xp\\_nav=2,3](http://www.fao.org/figis/servlet/static?xml=CCRF_prog.xml&dom=org&xp_nav=2,3)
- <sup>37</sup> FAO species catalogue. Vol. 4. Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Part 2. Carcharhiniformes *FAO Fish Synop*, 1984.
- <sup>38</sup> Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes). *FAO Species Catalogue for Fishery Purposes* No. 1, Vol. 2. Rome, FAO, 2001.
- <sup>39</sup> For example SIDP.
- <sup>40</sup> <http://www.fao.org/figis/servlet/FiRefServlet?ds=species&fid=2801>
- <sup>41</sup> <http://www.iccat.int/Documents/SCRS/SCRS/202005/20ENG.pdf>
- <sup>42</sup> <http://www.ices.dk/committe/acfm/comwork/report/2005/oct/nea%20porbeagle.pdf>
- <sup>43</sup> This section is adapted from FAO. Fisheries management. 1. Conservation and management of sharks. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 1. Rome, FAO, 2000.
- <sup>44</sup> SIDP web site, Fishbase and other FAO information resources were used as sources of information on the biological characteristics and geographical distribution of the species of other highly migratory species.
- <sup>45</sup> The list contains three species and one subspecies belonging to one of the species cited. The species *Scomberesox saurus* has two subspecies: *S. saurus saurus* and *S. saurus scombroides*. It is assumed that *Scomberesox saurus* in Annex I to the Convention is *Scomberesox saurus saurus*.
- <sup>46</sup> FAO Fisheries Technical Paper No.337, *op.cit.*
- <sup>47</sup> FAO Fisheries Technical Paper No.457, *op.cit.*
- <sup>48</sup> *Ibid.*

<sup>49</sup> *Ibid.*

<sup>50</sup> <http://www.nafo.ca/science/advice/nafo-stocks.html>

<sup>51</sup> <http://www.ices.dk/advice/icesadvice.asp>

<sup>52</sup> FAO notes that “there is a general perception that Patagonian toothfish is in a very critical situation due to high non-reported catches in international waters”.

<sup>53</sup> <http://www.seafo.org/>

<sup>54</sup> FAO Technical Paper No. 357, *op.cit.*

<sup>55</sup> Information in this section is drawn/adapted from the chapter on Deepwater fisheries in the Review of the State of World Marine Resources (*FAO Fisheries Technical Paper No. 457*); Deep Sea 2003: An International Conference on Governance and Management of Deep-Sea Fisheries, (*FAO Fisheries Report No. 772*); advice and information from the Advisory Committee on Fisheries Management of ICES; and RFMOs.

<sup>56</sup> There is no rigorous definition of a deep water fishery, but in general, they range from depths of 500-2,500 m.

<sup>57</sup> Eg. orange roughy which do not mature until age 20 or older, and can live to more than 100 years old.

<sup>58</sup> Reported primarily off South Africa, New Zealand and southern Australia.

<sup>59</sup> Natural mortality is estimated to be around 0.23.

<sup>60</sup> FAO Fisheries Technical Paper No. 470, “Discards in the world’s marine fisheries. An update”, Rome, FAO, 2005.

<sup>61</sup> Expert Consultation on the Interactions between Sea Turtles and the Fisheries within an Ecosystem Context. Rome, Italy, 9-12 March 2004. *FAO Fisheries Report No. 738*. Rome.

[http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/007/y5477e/y5477e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/007/y5477e/y5477e00.htm)

<sup>62</sup> Technical Consultation on Sea Turtles Conservation and Fisheries. Bangkok, Thailand, 29 November-2 December 2004. *FAO Fisheries Report No. 765*. Rome, FAO.

[http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/007/y5887e/y5887e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/007/y5887e/y5887e00.htm)

<sup>63</sup> See <http://www.iattc.org/DolphinSafeENG.htm> for the IATTC conservation programme and <http://swfsc.nmfs.noaa.gov/PRD/> for the Southwest Fisheries Science Center (US National Marine Fisheries Service) research programme on dolphin conservation.

<sup>64</sup> Anderson, O.F. and M.R. Clark. 2003. Analysis of the bycatch in the fishery for orange roughy, *Hoplostethus atlanticus*, on the South Tasman Rise. *Marine and Freshwater Research*. 54: 643-652.

<sup>65</sup> Further information on the ecosystem effects of fishing can be found at the ICES web site:

<http://www.ices.dk/pubs/crr/crr272/CRR272.pdf> ). The US National Research Council has published a report on the effects of trawling on the seafloor: <http://www.nap.edu/catalog/10323.html>

<sup>66</sup> CCAMLR has twenty-four members, of which nineteen are parties to the Agreement (Argentina\*, Australia, Belgium, Brazil, Chile\*, the EC, France, Germany, India, Italy, Japan\*, Republic of Korea\*, Namibia, New Zealand, Norway, Poland\*, Russian Federation, South Africa, Spain, Sweden, Ukraine, the United Kingdom, the United States, Uruguay). Key species are Antarctic krill, Antarctic rock cod, Antarctic toothfish, crabs, mackerel icefish, Patagonian toothfish, sevenstar flying squid and sub-Antarctic lantern fish. The main gears used are bottom trawls, longlines, pots and squid jigs.

<sup>67</sup> CCSBT has five members, of which two are parties to the Agreement: Australia, Taiwan, Province of China\*, Japan\*, Republic of Korea\* and New Zealand. The organization manages Southern bluefin tuna and the gears used are longlines and purse seines.

<sup>68</sup> IATTC has fifteen members, of which four are parties to the Agreement: Costa Rica, Ecuador\*, El Salvador\*, France, Guatemala\*, Japan\*, Mexico\*, Nicaragua\*, Panama\*, Peru\*, Spain, the United States,

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Vanuatu\*, Venezuela\*. The Commission manages albacore tuna, bigeye tuna, billfishes, bonito, marlin, Pacific bluefin tuna, sailfish, skipjack tuna, swordfish and yellowfin tuna. The main gears used are longlines, pole-and line, purse seines and trolling. It should be noted that a new convention, which will manage the same species, popularly known as the “Antigua Convention”, was open for signature until 31 December 2004, and it will enter into force fifteen months after the deposit of the seventh instrument of ratification or accession of the Parties to the 1949 Convention establishing the IATTC. As of November 2005, thirteen countries had signed the Antigua Convention and two had ratified it (Bolivia\*, Colombia\*, Costa Rica, Ecuador\*, El Salvador\*, the EC, Guatemala\*, Honduras\*, Mexico\*, Nicaragua\*, Panama\*, Peru\*, the United States, Vanuatu\*, Venezuela\*).

<sup>69</sup> ICCAT has forty-one members from five continents, of which fifteen are parties to the Agreement: Algeria\*, Angola\*, Barbados, Belize, Brazil, Canada, Cape Verde\*, China\*, Côte d’Ivoire\*, Croatia\*, Equatorial Guinea\*, the EC, France, on behalf of St. Pierre and Miquelon, Gabon\*, Ghana\*, Guatemala\*, Guinea Conakry\*, Honduras\*, Iceland, Japan\*, Republic of Korea\*, Libya\*, Mexico\*, Morocco\*, Namibia, Nicaragua\*, Norway, Panama\*, Philippines\*, the Russian Federation, Senegal, Sao Tome and Principe\*, South Africa, Trinidad and Tobago\*, Tunisia\*, Turkey\*, the United Kingdom, for overseas territories, the United States, Uruguay, Vanuatu\*, Venezuela\*. It manages about thirty highly migratory fish stocks, including albacore tuna (north and south Atlantic, Mediterranean stocks), Atlantic bluefin tuna (east and west Atlantic stocks), bigeye tuna, blue marlin, blue shark, bonito, porbeagle, shortfin mako, skipjack tuna, swordfish (North and South Atlantic, Mediterranean), white marlin, and yellowfin tuna. The major gears used are longlines and purse seines.

<sup>70</sup> IOTC has twenty-three members, of which twelve are parties to the Agreement: Australia, China\*, Comoros\*, the EC, Eritrea\*, France, on behalf of its overseas territories, Guinea, India, Iran, Japan\*, Kenya, Republic of Korea\*, Madagascar\*, Malaysia\*, Mauritius, Oman\*, Pakistan\*, Philippines\*, Seychelles, Sri Lanka, Sudan\*, Thailand\*, Vanuatu\*, the United Kingdom, on behalf of its overseas territories. The key stocks managed by IOTC are albacore tuna, bigeye tuna, black marlin, bullet tuna, frigate tuna, Indo-Pacific blue marlin, Indo-Pacific king mackerel, Indo-Pacific sailfish, kawakawa, longtail tuna, narrow barred Spanish mackerel, skipjack tuna, striped marlin swordfish and yellowfin tuna. IOTC also manages southern bluefin tuna, but CCSBT has primary responsibility. The main gears used are longlines and purse seines.

<sup>71</sup> NAFO has thirteen members, of which nine are parties to the Agreement: Bulgaria\*, Canada, Cuba\*, Denmark, on behalf of Faroe Islands and Greenland, the EC, France, on behalf of St. Pierre and Miquelon, Iceland, Japan\*, Republic of Korea\* Norway, the Russian Federation, the United States, Ukraine. The straddling stocks managed by NAFO are American plaice, capelin, cod, Greenland halibut, redfish skates, shrimp, squid, white hake, witch flounder and yellowtail flounder. Further the following discrete stocks are under management: American plaice, cod, redfish and shrimp. The major gears used are bottom and mid-water trawls, gillnets and longlines.

<sup>72</sup> NEAFC has seven members, of which five are parties to the Agreement: Denmark, on behalf of Faroe Islands and Greenland, the EC, Estonia\*, Iceland, Norway, Poland\*, the Russian Federation. The straddling stocks managed by NEAFC are Atlanto-Scandian (Norwegian spring-spawning) herring, blue whiting, mackerel, redfish (oceanic) and Rockall haddock. Several deep sea species are also regulated, but it is unclear whether these stocks, or some of them, are straddling or only occur on the high seas (alfonsinos, arctic skate, baird’s smoothhead, birdbeak dogfish, black cardinal fish, black dogfish, black scabbardfish, blackmouth dogfish, blondnose six-gilled shark, blue hake, blue ling, bluemouth, common mora, conger eel, deep-water crab, eelpout, frilled shark, forkbeards, greater lanternshark, greater silver melt, Greenland halibut, Greenland shark, gulper shark, Iceland catshark, kitefin shark, knifetooth dogfish, large-eyed rabbit fish, leafscale gulper shark, ling, longnose velvet dogfish, mouse catshark, Norwegian skate, orange roughy, Portuguese dogfish, rabbit fish, red seabream, risso’s smoothhead, roundnose grenadier, roughhead grenadier, round skate, sailfin roughshark, silver roughy, silver scabbard fish, small redfish, spiny scorpionfish, straightnose grenadier, tusk, velvet belly and wreckfish). The main gears used are bottom and mid-water trawls, gill nets, longlines and purse seines.

<sup>73</sup> SEAFO has four members, of which three are parties to the Agreement: Angola\*, the EC, Namibia, Norway. The stocks managed are alfonsino, armourhead, cardinal fish, deep water hake, horse mackerel, mackerel, octopus, orange roughy, red crab, sharks, squid and wreckfish. It is unclear if some of the stocks that occur in

the SEAFO area, are straddling stocks or discrete stocks. The main gears used are bottom trawls and purse seines.

<sup>74</sup> WCPFC has sixteen members, of which twelve are parties to the Agreement: Australia, China\*, Cook Islands, Federated States of Micronesia, Fiji Islands, Republic of Korea\*, Kiribati, Marshall Islands, Nauru, New Zealand, Niue\*, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu\*. The key stocks managed by WCPFC are albacore tuna, bigeye tuna, skipjack tuna and yellowfin tuna. The gears used are artisanal gears, longlines, pole and line, purse seines and trolls.

<sup>75</sup> The Donut Hole Convention has six members, of which two are parties to the Agreement: China\*, Japan\*, Republic of Korea\*, Poland\*, the Russian Federation, the United States. It manages Alaska Pollock. Gears used are mid-water trawls.

<sup>76</sup> GFCM has twenty-four members, of which seven are parties to the Agreement: Albania\*, Algeria\*, Bulgaria\*, Croatia\*, Cyprus, Egypt\*, the EC, France, Greece, Israel\*, Italy, Japan\*, Lebanon\*, Libya\*, Malta, Monaco, Morocco\*, Romania\*, Serbia and Montenegro\*, Slovenia\*, Spain, Syria\*, Tunisia\*, Turkey.\* It manages eastern Atlantic bluefin tuna, swordfish and several transboundary stocks (hake, red mullet, striped mullet, blue and red shrimp, Norway lobster, anchovy, sardine and dolphinfish). Gears used are bottom trawls, dredges, purse seines, surface longlines, driftnets and artisanal gear.

<sup>77</sup> CCAMLR, CCSBT, IATTC, IOTC, NAFO, NEAFC.

<sup>78</sup> The Scientific Committee of CCAMLR provides the Commission with summaries of its discussions, including the rationale for findings and recommendations. The Scientific Committee establishes permanent working groups (working groups include Fish Stock Assessment, Ecosystem Modeling and Management, and Incidental Mortality associated with Fishing) and recommends research programs, conservation and other measures to the Commission. The CCAMLR Ecosystem Monitoring Programme monitors key life-history parameters of selected dependent species.

<sup>79</sup> The Scientific Committee of CCSBT includes an Advisory Panel. Stock assessment is conducted by the Stock Assessment Group established to separate technical evaluation and advisory roles. The Advisory Panel was created to assist national scientists with stock assessment, to provide support to processes, and to comment on papers submitted by national scientists. If members cannot agree on scientific advice, the Advisory Panel will prepare independent advice, which is considered by the Scientific Committee, followed by final advice to the Commission.

<sup>80</sup> IATTC has not established a particular scientific committee, but there is a Permanent Scientific Staff with offices in major fishing ports. For scientific inputs, three working groups provide advice on Stock Assessments, on Bycatch and on Limit Reference Points. IATTC collaborates on stock assessment for bigeye tunas and billfish with SPC and with Chile and the EC for swordfish pursuant to the Southeast Pacific Swordfish Arrangement.

<sup>81</sup> IATTC Resolution C-04-09.

<sup>82</sup> IATTC Resolution C-05-02.

<sup>83</sup> ICCAT has a Standing Committee on Research and Statistics mandated to advise on conservation and management measures, to address specific ICCAT requests and to produce annual reports on stock status and that serve as the scientific basis for ICCAT decisions. The Committee has sub-Committees on Statistics, on Bycatch and on Environment, Species Groups and Working Groups. Further, the Committee coordinates national research activities and develops plans for cooperative research programs. The committee has established a Sub-Committee on Bycatch and a Sub-Committee on Environment.

<sup>84</sup> IOTC's Scientific Committee reviews the work of several Working Parties (WP) (a meeting of scientists, in their individual capacity who conduct stock assessment and proposes management recommendations, which is to be convened if necessary: WP on Tropical Tunas, WP on Tagging, WP on Billfish, WP on Temperate Tunas, WP on Neritic Tunas, WP on Bycatch and WP on Methods) and advises the Commission on research, data collection, status of stocks and management issues. It examines management options and recommends to the Commission appropriate management measures for particular stocks.

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<sup>85</sup> IOTC Resolution 05/01.

<sup>86</sup> The Scientific Council of NAFO, which has four standing committees (Fisheries Science, Publications, Research Coordination and Fisheries Environment), acts upon requests from the Fisheries Commission and coastal States for advice on stock assessments. The work of the Scientific Council forms the foundation upon which the Fisheries Commission determines management measures for areas beyond the national jurisdiction of Contacting Parties.

<sup>87</sup> Yellowtail flounder in division 3LNO and shrimp in division 3M.

<sup>88</sup> NEAFC receives advice from ICES concerning all stocks under its purview in the Convention Area, pursuant to Article 14 of the NEAFC Convention. The cooperative arrangement with ICES was formalized under a Memorandum of Understanding in 1999.

<sup>89</sup> Blue whiting, mackerel and Norwegian spring-spawning (Atlanto-Scandian) herring.

<sup>90</sup> SEAFO Convention, Article 7 and WCPFC Convention, Articles 5c and 6.

<sup>91</sup> The inaugural meeting of the SEAFO Scientific Committee was held in late September 2005. The Committee provides the Commission with scientific advice and recommendations for the formulation of conservation and management measures for fishery resources covered by the Convention. WCPFC's Scientific Committee met for the first time in mid-August 2005. Several working groups (WG on Technology, WG on Methods, WG on Statistics, WG on Biology, WG on Stock Assessment and WG on Ecosystem & Bycatch) met, providing recommendations to the Commission concerning research planning and coordination, data and modelling priorities for 2006 and the development of a medium research plan.

<sup>92</sup> Belize, Canada, Cyprus, the EC, Finland, Ireland, Republic of Korea\*, Kuwait\*, Mexico\*, Morocco\*, Myanmar\*, New Zealand, Norway, Philippines\*, Pakistan\*, Portugal, Saudi Arabia\*, Qatar\*, Serbia and Montenegro\*, the United States, Uruguay.

<sup>93</sup> Precautionary reference points used are *Bpa* (biomass threshold below which precautionary action should be taken) and *Fpa* (fishing mortality threshold above which management action should be taken).

<sup>94</sup> Canada, the EC, New Zealand, Norway, the United States, Uruguay.

<sup>95</sup> In 2001, 2002, 2003 and 2004.

<sup>96</sup> So far, four Atlantic cod stocks, pollock on Georges Bank, Atlantic herring, Atlantic salmon, harp seals, four stocks of Beluga whales, Pacific cod, sablefish and Pacific herring.

<sup>97</sup> Protocol from the 31<sup>st</sup> session of the Joint Norwegian-Russian Fisheries Commission.

<sup>98</sup> For North Arctic cod, North Arctic haddock and North Arctic capelin.

<sup>99</sup> For shared stocks in the North Sea: cod, haddock, herring, plaice and saithe.

<sup>100</sup> Denmark has transferred the legislative and administrative competence concerning fisheries to the Faroe Islands Home Rule Authorities.

<sup>101</sup> For 2000 and subsequent years, the Parties have agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality in the range of 0.15 – 0.20 for appropriate age groups as defined by ICES. Should the spawning stock biomass (SSB) fall below *Bpa*, this fishing mortality rate shall be adapted in the light of scientific estimates of the conditions then prevailing.

<sup>102</sup> For 2006 and subsequent years they will fish on the basis of a TAC consistent with a fishing mortality less than 0.32 for appropriate age groups as defined by ICES. Should the SSB fall below *Bpa*, this mortality rate shall be adapted in the light of scientific estimates of conditions then prevailing.

<sup>103</sup> For 2001 and subsequent years, the parties have agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of less than 0.125 for appropriate age groups as defined by ICES. Should the SSB fall below *Bpa*, this mortality rate shall be adapted in the light of scientific estimates on the basis of at least a linear reduction in the fishing mortality rate from 0.125 at *Bpa*, to 0.05 at *Blim*.

- <sup>104</sup> FAO Fisheries Technical Paper 313, op.cit., p.6.
- <sup>105</sup> Report of the Fourth Meeting of Regional Fishery Bodies, op.cit.
- <sup>106</sup> IATTC Resolution C-02-03 (revised).
- <sup>107</sup> Only purse-seine vessels that have fished in the Eastern Pacific Ocean before 28 June 2002 are included.
- <sup>108</sup> IOTC Resolution 03/01 on the limitation of fishing capacity of Contracting Parties and Cooperating non-Contracting Parties.
- <sup>109</sup> Article 13(4) of the NAFO Conservation and Enforcement Measures and Article 3, paragraph d) of the NEAFC Scheme of Control and Enforcement.
- <sup>110</sup> Cambodia\*, Canada, the EC, Norway, Portugal, the United States.
- <sup>111</sup> Council Regulation (EC) No.2792/1999 of 17 December 1999, Council Regulation (EC) No.2371/2002 of 20 December 2002.
- <sup>112</sup> Canada, the EC, Morocco\*, Norway, Saudi Arabia\*, the United States.
- <sup>113</sup> Canada, the EC, Norway, Pakistan\*, the United States.
- <sup>114</sup> When two quotas are merged under this system, the vessel will be allowed to fish this “double” quota for 13 years if the “donor” vessel is removed from Norwegian fisheries, and 18 years if that vessel is scrapped.
- <sup>115</sup> Integrated Fisheries Management Plans, which contain commitments to the long-term objective of developing large-scale and local integrated management plans for all of Canada’s oceans, starting with priority areas and building on experience as resources and capacity permit.
- <sup>116</sup> Between 1992 and 2002, the number of commercial fishing vessels decreased by 31 per cent.
- <sup>117</sup> See Article 5 (d)-(g) and Article 6(3)(d) of the Agreement.
- <sup>118</sup> See also relevant sections of A/60/189.
- <sup>119</sup> FAO Technical Guidelines for Responsible Fisheries No. 4, Suppl. 2 (Fisheries management: the ecosystem approach to fisheries), Rome, 2003.
- <sup>120</sup> CCAMLR, IATTC, NEAFC, SEAFO, WCPFC.
- <sup>121</sup> CCSBT, ICCAT, IOTC, NAFO.
- <sup>122</sup> Article II of the CCAMLR Convention.
- <sup>123</sup> Resolutions C-04-09 and C-05-02 provide conservation measures for tunas; Resolutions C-04-05, C-04-07, and C-05-03 provide measures for by-catches.
- <sup>124</sup> Canada, the EC, Kuwait\*; Myanmar\*, New Zealand, Norway, Philippines\*; Portugal, Qatar\*, the United States.
- <sup>125</sup> The EC, Morocco\*, New Zealand, the United States.
- <sup>126</sup> CCAMLR Conservation Measure 25-02 (2003) and Conservation Measure 25-03 (2003).
- <sup>127</sup> IATTC Resolution C-04-05.
- <sup>128</sup> ICCAT Resolutions 03-14 and 96-15.
- <sup>129</sup> IOTC Resolution 05/05.
- <sup>130</sup> IOTC Recommendations 05/08 and 05/09.
- <sup>131</sup> Articles 9-12 of the NAFO Conservation and Enforcement Measures.

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- <sup>132</sup> Belize, the EC, Myanmar\*, Morocco\*, New Zealand, Norway, Pakistan\*, Philippines\*, Portugal, Qatar\*, Saudi Arabia\*, Serbia and Montenegro\*, the United Kingdom, the United States.
- <sup>133</sup> Croatia\*, the EC, Morocco\*, New Zealand, Norway, Pakistan\*, Philippines, Portugal, Saudi Arabia\*, Serbia and Montenegro\*, the United Kingdom, the United States.
- <sup>134</sup> New Zealand, Norway, the United Kingdom.
- <sup>135</sup> New Zealand, Norway, Pakistan\*.
- <sup>136</sup> The EC Action Plan on Discards (COM (2002) 656 final) and Council Regulation (EC) No 2792/1999 of 17 December 1999.
- <sup>137</sup> National Standard 9.
- <sup>138</sup> “Managing the Nation’s By-catch: Priorities, Programs, and Actions for the National Marine Fisheries Service”.
- <sup>139</sup> Belize, Croatia\*; the EC, Kuwait\*, Myanmar\*, New Zealand, Philippines\*; Portugal, Qatar\*, Saudi Arabia\*, Serbia and Montenegro,\* the United States.
- <sup>140</sup> Kuwait\*, Myanmar\*, Norway, the United States.
- <sup>141</sup> The EC, France.
- <sup>142</sup> CCAMLR Conservation Measure 25-01 (1996).
- <sup>143</sup> IATTC Resolution C-04-05.
- <sup>144</sup> Croatia\*; Morocco\*, New Zealand, Norway, Pakistan\*; Philippines\*, Qatar\*, Saudi Arabia\*; the United States, Venezuela\*.
- <sup>145</sup> The EC, New Zealand, Pakistan\*.
- <sup>146</sup> The method involves for a person pulling on a board behind a boat.
- <sup>147</sup> Myanmar\*, Pakistan\*, Philippines\*.
- <sup>148</sup> Qatar\*, Saudi Arabia\*, Venezuela\*.
- <sup>149</sup> Cyprus, the EC, Norway.
- <sup>150</sup> Croatia\*, the EC’s 25 Member States are Parties to MARPOL 73/78 and Annex, Morocco\*, New Zealand, Pakistan\*, Saudi Arabia\*, the United Kingdom, the United States, Venezuela\*.
- <sup>151</sup> Cyprus Fisheries Regulations, the EC (Council Regulation No 1626/94 of 27 June 1994), Norway (1983 Sea-water Fisheries Act, Section 4).
- <sup>152</sup> The EC, Norway.
- <sup>153</sup> Canada (Oceans Act and Federal Marine Protected Areas Strategy), Norway.
- <sup>154</sup> ICES Annual report for 2004 (May 2005).
- <sup>155</sup> Canada, Croatia\*, Morocco\*, Myanmar\*, Norway, the United Kingdom, the United States
- <sup>156</sup> The Barents Sea, the Norwegian Sea and the North Sea.
- <sup>157</sup> Belgium, Canada, Demark, Estonia\*, Finland, France, Germany, Iceland, Ireland, Latvia\*, the Netherlands, Norway, Poland\*, Portugal, the Russian Federation, Spain, Sweden, the United Kingdom, the United States. There are also a number of States that have affiliate status with ICES: Australia, Chile\*, Greece, New Zealand, Peru\*, South Africa.
- <sup>158</sup> Canada, China\*, Japan\*, Republic of Korea\*, the Russian Federation, the United States.
- <sup>159</sup> The fact sheet is based upon a summary stock status report that CCSBT produced in 2004 for other RFMOs

with an interest in southern bluefin tuna. This will be updated annually.

<sup>160</sup> IAATC Resolution C-04-10.

<sup>161</sup> Task I: annual catch by gear, region and flag; Task II: catch and effort statistics for each species by small area.

<sup>162</sup> ICCAT Resolutions 16-01 and 66-01 16-01.

<sup>163</sup> NAFO is currently carrying out a Pilot Project on Observer, Satellite Tracking and Electronic Reporting to test real time electronic reporting system, including catch reporting, by observers and vessel masters.

<sup>164</sup> The Bengula Environment Fisheries Training Interaction Programme and the Bengula Current Large Marine Ecosystem.

<sup>165</sup> The format includes category, data element, field code, type, content and definitions. More information can be found at <http://www.neafc.org/measures/docs/Scheme-2005>.

<sup>166</sup> Production of hydrographic data, climate, indices, plankton data, sea level data, meteorological data etc.

<sup>167</sup> Aquaculture Science, Environmental Sciences, Hydrography, Ocean Science and Fisheries Research.

<sup>168</sup> The Canadian Science Advisory Secretariat, which coordinates the peer review of scientific issues for the Department of Fisheries and Oceans.

<sup>169</sup> CCAMLR(1980), CCSBT(1993), IATTC(1949), ICCAT(1966), IOTC(1993), NAFO(1978), NEAFC(1980).

<sup>170</sup> ICCAT Resolution 05-10.

<sup>171</sup> The work will include issues related to scientific advice, precautionary approach, ecosystem considerations, allocation criteria, compatibility and dispute settlement procedures.

<sup>172</sup> Final adoption will take place when two Contracting Parties have finalized internal procedures. The Parties have agreed to apply the amendments provisionally until ratification procedures have been concluded.

<sup>173</sup> CCAMLR Conservation Measure 10-04(2004).

<sup>174</sup> IATTC Resolution C-04-06.

<sup>175</sup> ICCAT Resolution 03-14.

<sup>176</sup> IOTC Resolution 02/02.

<sup>177</sup> Article 21 of the NAFO Conservation and Management Measures.

<sup>178</sup> Article 9 of the NEAFC Control and Enforcement Scheme.

<sup>179</sup> SEAFO Conservation Measure 01/05.

<sup>180</sup> Article 24 (8) of the WCPFC Convention.

<sup>181</sup> Annex I of the CCAMLR Scheme of International Scientific Observation.

<sup>182</sup> IATTC Resolution C-04-03.

<sup>183</sup> Article 23 of the NAFO Conservation and Management Measures (amended in 2003).

<sup>184</sup> Article 16 of the SEAFO Convention and Article 28 of the WCPFC Convention.

<sup>185</sup> Articles 24-37 of the NAFO Conservation and Management Measures.

<sup>186</sup> Articles 13-25 of the NEAFC Scheme of Control and Enforcement.

<sup>187</sup> Article 16 of the SEAFO Convention and Article 25-27 of the WCPFC Convention.

<sup>188</sup> CCAMLR, CCSBT, IATTC, IOTC, ICCAT, NAFO, NEAFC.

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<sup>189</sup> *Ibid.*, Article 28.

<sup>190</sup> Article XXV of the CCAMLR Convention.

<sup>191</sup> If a dispute goes to arbitration, the tribunal must be constituted as provided for in the Annex to the Convention.

<sup>192</sup> Article XXIII of the IOTC Convention.

<sup>193</sup> Article 24 of the SEAFO Convention.

<sup>194</sup> Article 31 of the WCPFC Convention.

<sup>195</sup> If one or more of the Contracting Parties object, the matter will be put to a vote by written procedure. A positive outcome for the applicant requires support by the majority.

<sup>196</sup> Article 8 of the SEAFO Convention and Article 21 of the WCPFC Convention.

<sup>197</sup> SEAFO Convention, Article 22 and WCPFC Convention, Article 32.

<sup>198</sup> Bulgaria\*, Canada, Finland, Greece, Mauritius, the Netherlands, Peru\*, Vanuatu\*.

<sup>199</sup> Except for one vessel which does not comply with the Resolution C-02-03 (capacity restrictions).

<sup>200</sup> Estonia\*, Latvia\*, Lithuania\* and Poland\* have withdrawn.

<sup>201</sup> NAFO Resolution 1/99 that, among other things, states that “new members should be aware that presently and for the foreseeable future, stocks managed by NAFO are fully allocated, and fishing opportunities for new members are likely to be limited”.

<sup>202</sup> With effect on 15 July 2006 and 11 March 2006 respectively.

<sup>203</sup> Iceland, Republic of Korea\*, South Africa, the United Kingdom (on behalf of St. Helena and its dependencies of Tristan da Cunha and Ascension Island), the United States.

<sup>204</sup> Article 10(b) of the Agreement

<sup>205</sup> Article 8, paragraph 4 of the CCSBT Convention.

<sup>206</sup> IATTC Resolution C-02-03.

<sup>207</sup> IATTC Resolution C-04-09.

<sup>208</sup> ICCAT Resolution 01-25.

<sup>209</sup> IOTC Working Party on Management Options.

<sup>210</sup> Article XI.4 of the NAFO Convention.

<sup>211</sup> Article 20 of the SEAFO Convention.

<sup>212</sup> The EC, New Zealand, Norway, Pakistan\*, Qatar\*, the United States.

<sup>213</sup> Blue Whiting, mackerel and Norwegian Spring-spawning (Atlanto-Scandian) herring.

<sup>214</sup> Australia, Union des Comoros\*, the EC, France, Kenya, the Republic of Korea\*, Mauritius, the Republic of Maldives, Mozambique\*, New Zealand, Seychelles, Somalia\*, South Africa, Tanzania\*.

<sup>215</sup> In fact some of these IUU catches came from vessels flying the flag of CCAMLR Members, but the non-Member vessels counted for vast majority of the catch.

<sup>216</sup> CCAMLR Conservation Measure 10-07 (2003).

<sup>217</sup> IATTC Resolution C-05-07, IOTC Resolution 02/04, ICCAT Recommendation 02-23, Chapter VI of the NAFO Conservation and Enforcement Measures, NEAFC Scheme to Promote Compliance by non-Contracting Party vessels with Recommendations established by NEAFC.

- <sup>218</sup> See the following: [www.ccamlr.org/pu/E/sc/fish-monit/iuu-vessel-list.htm](http://www.ccamlr.org/pu/E/sc/fish-monit/iuu-vessel-list.htm), [www.iccat.es.iiu.htm](http://www.iccat.es.iiu.htm), [www.iotc.org/English/iiu/search.php](http://www.iotc.org/English/iiu/search.php), [www.neafc.org/measures/iiu\\_b.htm](http://www.neafc.org/measures/iiu_b.htm)
- <sup>219</sup> ICCAT Recommendation 02-22 (entered into force 3 June 2003).
- <sup>220</sup> CCSBT10 Resolution (2003), IATTC Resolution C-03-07, IOTC Resolution 02/06.
- <sup>221</sup> CCAMLR Resolution 19/XXI.
- <sup>222</sup> CCAMLR Conservation Measure 10-05.
- <sup>223</sup> CCSBT Resolution adopted 19-22 October 2004.
- <sup>224</sup> IATTC Resolution C-05-04 (adopted 20-24 June 2005).
- <sup>225</sup> CCAMLR Resolution 24/XXIV.
- <sup>226</sup> For example Article 3(2) and Article 10(1)(d) of the NEAFC Scheme on Control and Enforcement.
- <sup>227</sup> Article 14 of the SEAFO Convention and Article 24 of the WCPFC Convention.
- <sup>228</sup> Article 29 and Article 3 of Annex III to the Convention.
- <sup>229</sup> Belize, Canada, Cyprus, the EC, Republic of Korea\*, Kuwait\*, Mauritius, Mexico\*, Morocco\*, New Zealand, Norway, Portugal, Pakistan\*, the United States, the United Kingdom, Uruguay.
- <sup>230</sup> Belize, Canada, the EC, Kuwait\*, Morocco\*, New Zealand, Norway, Pakistan\*, Portugal, the United Kingdom, the United States, Uruguay.
- <sup>231</sup> Canada, Croatia\*, the EC, Morocco\*, New Zealand, Norway, the United Kingdom, the United States, Uruguay.
- <sup>232</sup> Council Regulation No. 2847/1993 of 12 October 1993, as amended, and related subsidiary texts; Council Regulation (EC) No. 2791/1999 of 16 December 1999 (NEAFC – amended), Council Regulation (EC) No. 1936/2001 (ICCAT, IOTC, IATTC), Council Regulation (EC) No. 601/2004 of 22 March 2004 (CCAMLR).
- <sup>233</sup> Belize, Canada, the EC, Croatia\*, France, Morocco\*, New Zealand, Norway, Pakistan\*, Portugal, the United Kingdom, the United States, Uruguay.
- <sup>234</sup> Canada, Morocco\*, New Zealand, the United States, Uruguay.
- <sup>235</sup> Canada, the EC, Morocco\*, New Zealand, Norway, Uruguay.
- <sup>236</sup> Canada, Kuwait\*, Morocco\*, Myanmar\*, New Zealand, Norway, Pakistan\*, the United States, Venezuela\*.
- <sup>237</sup> Kuwait\*, Myanmar\*, New Zealand, Venezuela\*.
- <sup>238</sup> New Zealand Fisheries Act 1996.
- <sup>239</sup> Spanish Royal Decree No.1134/2002.
- <sup>240</sup> Catch Documentation Schemes and Statistical Documentation Programs.
- <sup>241</sup> CCAMLR Conservation Measure 10-03 (2002).
- <sup>242</sup> ICCAT Recommendation 97-10.
- <sup>243</sup> ICCAT Recommendation 98-11.
- <sup>244</sup> IOTC Resolution 02/01, amended by Resolution 05/03.
- <sup>245</sup> Canada, the EC, Kuwait\*, Morocco\*, New Zealand, Norway, Pakistan\*, Portugal, the United Kingdom, the United States.
- <sup>246</sup> Kuwait\*, Myanmar\*, New Zealand, Norway, Portugal, the United States, Venezuela\*.

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- 247 Kuwait\*, Morocco\*, Myanmar\*, New Zealand, Pakistan, the United States, Venezuela\*.
- 248 Norwegian Regulation of 6 August 1993, amended 29 June 1999.
- 249 Articles XI-XIV of the CCAMLR System of Inspection, Articles 33-36 of the NAFO Conservation and Enforcement Measures and Articles 21-24 of the NEAFC Scheme on Control and Enforcement.
- 250 Canada, the EC, Kuwait\*, Myanmar\*, New Zealand, Norway, Pakistan\*, Philippines\*, Portugal, the United States.
- 251 Canada, the EC, France, Myanmar\*, New Zealand, Norway, Pakistan\* Portugal, the United States.
- 252 Cambodia\*, Canada, Kuwait\*, Morocco\*, New Zealand, the United States.
- 253 Canada, Kuwait\*, Morocco\*, Myanmar\*, New Zealand, Philippines\*, Saudi Arabia\*, the United States.
- 254 The EC, New Zealand, the United Kingdom, the United States.
- 255 Kuwait\*, Morocco\*, Myanmar\*, New Zealand, Pakistan\*, Saudi Arabia\*, the United States.
- 256 Cambodia\*, Morocco\*, Myanmar\*, New Zealand, Pakistan\*, the United States.
- 257 Morocco\*, Myanmar\*, New Zealand, Pakistan\*, the United States, Venezuela\*.
- 258 Council Regulation 2371/2002,art.23.2, Council Regulation 3317/94, art.1.2, Council Regulation 3690/93, art.1.2, Council Regulation 1447/99.
- 259 Lacey Act amendments of 1981.
- 260 Report from the first Informal Meeting of the State Parties, July 2002.
- 261 UN General Assembly Resolution 58/14 of November 2003.
- 262 European Community, New Zealand, Norway, Portugal.
- 263 The EC, Mexico\*, New Zealand, Norway, the United States.
- 264 South West Indian Ocean Fisheries Commission (SWIOFC), and the preparatory conferences of WCPFC.
- 265 The SPC and FFA.
- 266 The Programme also carries out field work through surveys with the research vessel “Dr. Fritjof Nansen” and produces basic information on resource abundance and distribution to satisfy immediate management needs.
- 267 In particular, Mozambique\*.
- 268 CCAMLR Resolution 24/XXIV.
- 269 IOTC Resolutions 99/01, 03/01, 05/01, 05/05, 05/08, 05/09.
- 270 SEAFO Convention, Article 21 and WCPFC Convention, Article 30 respectively.
- 271 Antigua Convention, Article XXXIII.
- 272 The Agreement, Article 3.
- 273 The Agreement, Article 7(1) and (2).
- 274 *Ibid.*, Article 7(2) .
- 275 General Assembly, Official Records: Forty- fourth session, Suppl. No.49 (A/44/49),United Nations, New York, 1990, p. 147.
- 276 The Convention, Parts V and VII, Section 2.
- 277 Declarations upon ratification of the Convention by Argentina\* and Chile\*, DOALOS *Law of the Sea*

*Bulletin*, Nos. 30 (1996) and 35 (1997).

<sup>278</sup> Working Paper submitted by the delegations of Chile\*, Colombia\*, Ecuador\* and Peru\*, “Elements of International Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks on the High Seas”, 16 July 1993, (A/CONF.164/L.114), *United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, Selected Documents*, Martinus Nijhoff, p.197.

<sup>279</sup> Statement of Chile in ICSP-4, report on DOALOS website; and communication by Mexico\* on “Impediments that prevent Mexico from becoming a party to the 1995 Agreement”, dated 5 October 2005.

<sup>280</sup> *Ibid.*

<sup>281</sup> List of issues submitted by the delegation of Japan\*, Organization of Work, 8 June 1993 (A/CONF.164/L.6), *United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks*, op.cit., p.130.

<sup>282</sup> List of issues submitted by the delegation of the Republic of Korea\*, Organization of Work, 10 June 1993 (A/CONF.164/L.7), *ibid.*, p.133.

<sup>283</sup> “Comments on compatibility and coherence between national and international conservation measures for the same stocks”, submitted by the delegation of Japan (A/CONF.164/L.28), 27 July 1993, *ibid.*, p. 245.

<sup>284</sup> Communication from the Republic of Korea\* on “Impediments that prevent the Republic of Korea from becoming a party to the Agreement”, dated 12 September 2005.

<sup>285</sup> The Agreement, Article 21 (5), (6), (7), and (8).

<sup>286</sup> *Ibid.*, Article 21(12) and (18).

<sup>287</sup> Communications by the Republic of Korea\* and Mexico\*.

<sup>288</sup> Communication by the Republic of Korea\*.

<sup>289</sup> Reports of ICSP-1, paragraph 13; and ICSP-3, paragraph 49. See report on DOALOS website.