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Tuna in trouble

The challenges facing the world's tuna fisheries

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1. Summary

The world's tuna fisheries face a number of urgent, common problems that threaten their continued existence and endanger wider marine ecosystems:

- Alarming tuna stock declines
- Poor conservation and management strategies
- High levels of illegal, unreported, and unregulated (IUU) fishing
- Significant bycatch of sharks, marine turtles, seabirds, small cetaceans, juvenile tuna, and other fish

Under the present system of ocean governance, fisheries management organizations (RFMOs) are the primary mechanism established by governments for managing fisheries on the high seas — the 64% of the oceans lying beyond national jurisdiction, and where most tuna catches are made. In addition to being bound to their convention and mandate — which in the case of the five tuna RFMOs includes a general objective to conserve and sustainably manage tuna stocks — RFMOs are also increasingly recognized as the most appropriate bodies for the implementation of various international laws and agreements relating to sustainable fisheries management.

However, as this briefing highlights, the tuna RFMOs have generally failed to meet their own obligations, as well as those set by the international community to prevent overexploitation of tuna, rebuild depleted stocks, or protect the wider ecosystem.

In January 2007, all five tuna RFMOs met in Kobe, Japan, to discuss tuna fisheries management and the trade of tuna products. Despite the tuna industry putting the offer of a cap on global tuna fishing capacity on the table for consideration, the meeting was a disappointment to WWF and others who hoped to see the dawn of a new era in tuna management. Nonetheless, several agreements were made at the meeting, including on:

- Technical work on harmonization of trade management schemes, transshipment controls and lists of legal vessels, and standardizing the presentation of stock assessment results,
- Performance review of RFMOs against a common set of criteria
- The Chairpersons of the tuna RFMOs will meet in January 2008 to progress the Course of Actions agreed at Kobe*

This briefing provided a general background for the Kobe meeting, highlighting the worrying state of the world's tuna fisheries and outlining three urgent issues faced by RFMOs and requiring immediate action — poor conservation and management of tuna stocks, IUU fishing, and bycatch.

These issues are still pertinent and this briefing has now been updated to reflect discussions at Kobe, the discussions at the FAO Committee on Fisheries (COFI27) in March 2007, the evolution of the RFMO reform agenda, the worsening situation of Mediterranean, Eastern Atlantic Bluefin Tuna and WWF's consolidated asks of the global tuna industry. Building on WWF's efforts over recent years to highlight the challenges of managing resources found in the high seas, and incorporating WWF's experience from actually participating in the tuna RFMOs themselves, the briefing also gives specific examples of the few good but mostly poor tuna fisheries management practices, and provides recommendations for more sustainable tuna fisheries based on already available solutions. While the briefing focuses on problems faced by tuna RFMOs, we recognize that the ultimate problem is their member governments, in which the short-term interests of the fishing industry are well entrenched. These interests are the central driver of decision making within RFMOs, with the detrimental long-term economic costs of overfishing as well as the long-term health of marine ecosystems and the tuna fishing and seafood sector rarely being considered.



Raw tuna for preparation of sushi and sashimi. Tsukiji fish market, Tokyo, Japan.
© WWF-Canon / Michel Gunther.

1. Introduction

Tuna are truly one of the ocean's most magnificent fish. Champion long-distance swimmers and amongst the ocean's top predators, these extremely valuable fish are found throughout the Atlantic, Pacific, and Indian Oceans and their adjacent seas. But the world's tuna fisheries face a number of urgent yet common problems that threaten their continued existence and endanger wider marine ecosystems:

- **Alarming tuna stock declines**
- **Poor conservation and management strategies**
- **High levels of illegal, unreported, and unregulated (IUU) fishing**
- **Significant bycatch of sharks, marine turtles, seabirds, small cetaceans, juvenile tuna, and other fish**

However you like your tuna — canned, as a steak, or as sushi or sashimi — you'll find it just about everywhere. Caught, traded, processed, shipped, and eaten around the world, tuna is a global commodity and vitally important for the economies of both developed and developing countries alike.

The fish are big business. In 2002, the value of the tuna export catch was a massive US\$5 billion¹. Bluefin tunas are the most valuable fish in the sea, with one specimen selling for a record-breaking \$US173,600 at Tokyo's Tsukiji fish market in 2001. Together, the seven principle market speciesⁱ — albacore, Atlantic bluefin, bigeye, Pacific bluefin, skipjackⁱⁱ, southern bluefin, and yellowfin (see Appendix I) — are the single-most important resource exploited on the high seas, accounting for over 7% of total marine capture fisheries production, and 11% of the total value of fish landings for consumption².

But tuna are in trouble. All 23 identified, commercially exploited stocks are heavily fished, with at least nine classified as fully fished and a further four classified as overexploited or depleted³. Three stocks are classified as Critically Endangered, three as Endangered, and three as Vulnerable to extinction⁴.

This shouldn't be the case. The first warnings about declining tuna stocks came over 40 years ago, in the 1960s. Since then, five regional fisheries management organizations (RFMOs) — the main mechanism for regulating fishing on the high seas, where most tuna catches occur — have been established with a general objective to conserve and sustainably manage tuna stocks in different oceans. Additionally, a number of international laws and internationally agreed standards and protocols have been developed to guide sustainable fisheries management, all of which are applicable to the tuna RFMOs and their member states.

However, as this briefing highlights, the tuna RFMOs have generally failed to meet their own obligations, as well as those set by the international community to prevent overexploitation of tuna, rebuild depleted stocks, or protect the wider ecosystem. While there are signs of leadership in some areas (as highlighted in the 2006 WWF/ TRAFFIC *Follow the leader— learning from experience and best practice in RFMOs report*⁵), the problems are all too familiar: tuna fishing fleets have been allowed to grow too big; appropriate catch limits have either not been imposed or are not being respected; illegal, unreported, and unregulated (IUU) fishing is a major problem in several tuna fisheries; and large numbers of juvenile tuna are caught before having had the chance to breed.

With a couple of notable exceptions, the tuna RFMOs



Yellowfin tuna (*Thunnus albacares*) in the enclosures of a marine farm in the Canary Islands, Spain. © WWF-Canon / Ezequiel Navío.

ⁱHereafter referred to simply as 'tuna'

ⁱⁱDespite being perhaps the most widely known 'tuna', skipjack are technically not a tuna, belonging instead to the mackerel (*Scombridae*) family

have also generally failed to minimize the incidental capture, or bycatch, of large numbers of small cetaceans, sharks, marine turtles, seabirds, and other fish in purse seine nets and on longlines set for tuna. These incidental mortalities are implicated in the decline of a large number of these marine species, some of which are critically endangered.

In their 2004 review of tuna stocks and fisheries⁶, the United Nations Food and Agriculture Organization (FAO) stated that “it is likely that if the status quo regarding the management of tunas is maintained, the fleets will continue to grow”. This would clearly be a disaster. If the current level of fishing continues or increases, then, sooner rather than later, tuna stocks will collapse. The result will be a huge loss of revenue — and the worrying prospect in some parts of the world of reduced food security for some of the world’s poorest people. The ecosystem damage will also be enormous, both due to continued high levels of bycatch and the effect of collapsed tuna stocks.

The FAO went on to say that “it is clear that maintaining the status quo is not a desirable option for managing fishing capacity or for the conservation of tunas.” WWF could not agree more.

WWF was therefore delighted to learn of the first-ever meeting of member states from all five tuna RFMOs being held in Kobe, Japan in January 2007, where necessary improvements to the management of tuna fisheries and the trade in tuna seafood products were to be discussed. This was the first opportunity to align international tuna fisheries management measures, which is essential given the truly global nature of tuna, tuna fishing, and tuna trade. It was also the first time to try to secure the best common elements – rather than the current ‘modus operandi’ amongst the tuna RFMOs, where the worst are often adopted at commission meeting after commission meeting. Unfortunately, the meeting was not able to rise above the political challenges amongst member states.

This briefing provided background for the Kobe meeting, highlighting the worrying state of the world’s tuna fisheries and outlining key problems faced by the tuna RFMOs with respect to poor conservation and management of tuna stocks, IUU fishing, and bycatch — three urgent issues requiring immediate action. The issues remain pertinent. It gives specific examples of the few good and many poor management practices, and also provides recommendations for more sustainable tuna fisheries management based on already existing solutions.

The briefing builds on WWF’s efforts over recent years to highlight the challenges of managing resources found in the high seasⁱⁱⁱ, and also captures WWF’s experience from actually participating in RFMOs as an observer.

ⁱⁱⁱThis work includes publishing a number of key reports focussing on pirate fishing, new and necessary legal arrangements for the sustainable management of the high seas, and a review of the performance of RFMOs worldwide (available at www.panda.org/marine). In addition to working extensively in the governmental and international policy arena, we are also promoting consumer spending power to reward good fisheries practice.

^{iv}Most recently at the International Commission for the Conservation of Atlantic Tunas (ICCAT) meeting in November 2006 and the Western and Central Pacific Fisheries Commission (WCPFC) meeting in December 2006.

We are the only global conservation organization with a presence in every tuna RFMO, as both an independent observer and often also as a conservation representative on government delegations. However, despite many key member governments agreeing with our detailed technical reviews and recommendations for sustainable fisheries management^{iv}, RFMO management decisions have generally, for many complex and intertwined political and economic reasons, failed to put the long-term health of tuna stocks and marine ecosystems ahead of short-term economic gains.

Ultimately, this failure is due to the fact that the key decisions about how much to fish and who gets to fish are driven by short-term industry interests. Tuna, in its many forms, from bluefin sashimi to a can of skipjack, is now a global commodity. Like all other commodities, the industry is driven by the incentive to produce as much product as possible for the lowest possible price. Even when total allowable catches (TACs) are set, as they currently are in most RFMOs, fishers continue to face profit incentives to invest in fishing technology in order to increase their share of the permissible catch. However, not everyone’s share of a fixed harvest can increase: the fear of lower profits generates pressure to seek a return on investment as quickly as possible, either legally by politicizing decision-making in RFMOs or illegally by not complying with RFMO rules.

WWF seeks to place counter pressure on governments to manage tuna resources with long-term economic and environmental benefits to consumers and society. We urge the tuna RFMOs and their member states to take action on the critical issues outlined in this briefing — and by doing so, promote sustainable tuna fisheries that will both protect the broader marine environment and ensure continued livelihoods and food security for the millions of people who rely on this important resource.

WWF has five short to medium term asks of the tuna management and fishing sectors:

1. Reduce levels of fishing commensurate with scientific advice, in the short term, for critical tuna populations
2. Implement a global cap on capacity in both longlining and purse-seining
3. Mitigate bycatch of juvenile tunas and endangered and threatened species, particularly loggerhead and leatherback turtles
4. Establish and use Catch Documentation Schemes for all tuna
5. In the medium to longer term: achieve Marine Stewardship Council certification for healthy and well-managed tuna populations

3. Tuna in trouble

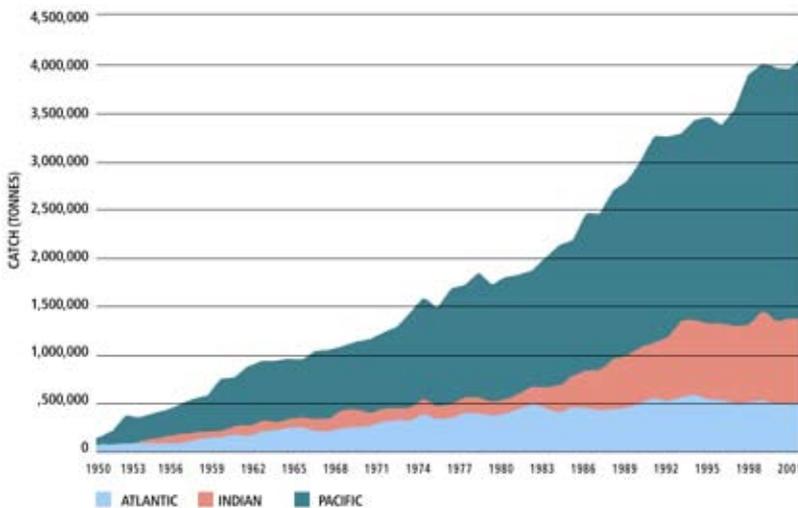
People have been fishing for tuna for at least 4,000 years. Until the second half of the 20th century, most tuna fleets were small and fished in coastal areas. This all changed in the 1940s, when increased demand led to the first large-scale industrial fisheries. This marked the beginning of the large-scale decline of the world's tuna stocks.

Ever-growing fleets and catches

Driven by continued demand and helped by a series of technological developments, industrial tuna fleets grew ever-larger and ever-more efficient from the 1940s onwards⁷. By the 1980s, industrial longline and purse

seine tuna fleets from the EU, US, Japan, Korea, Taiwan, and Venezuela had spread throughout the world's oceans. During the 1980s and 1990s, many coastal states also began to fish for tuna, and today tuna are fished by over 80 countries worldwide. The combined capacity of the world's tuna longline and purse seine vessels has grown so much that it has actually overtaken the capacity needed to take the current levels of catch (Box 1).

The steady growth in tuna fleets has been matched by a steady growth in annual tuna catches — which are now 10 times higher than in 1950, reaching over 4 million tonnes in 2002, 2003, and 2004 (Figure 1).



ICCAT & Mediterranean bluefin tuna - a truly bad example

Mediterranean bluefin tuna is on the brink of collapse. In 2006, ICCAT accepted an EU-backed plan which only reduced the 2007 catch quotas from 32,000 t to 29,500 t, ignoring the advice of its own scientists to reduce catches to 15,000 t. In addition, since Libya and Turkey rejected their assigned quotas and announced self-allocations, total allowable catch would effectively be 32,414 t. Meanwhile estimated illegal fishing brings actual bluefin tuna catch to over 50,000 t in the Mediterranean.

Figure 1 Increased global catches of the principle market species of tuna from 1950–2004

Increased global catches of the principle market species of tuna from 1950–2002. Although some 80 countries fish for tuna, over 70% of all catches were made by just ten countries in 2002: Japan, US, Taiwan, Spain, Indonesia, Philippines, South Korea, France, Mexico, and Venezuela. Source: FAO⁸

Box 1 Excess capacity

The capacity of the world's tuna fleet is now much larger than that needed for current catch levels^{9,10}. In the Eastern Pacific Ocean, for example, the capacity of purse-seine fleets targeting bigeye and yellowfin tuna in 2002 was an incredible 70% higher than that needed to catch the maximum amount recommended scientifically (i.e., the maximum sustainable yield (MSY))¹¹. Most other purse-seine fleets also have large excess capacity, as does the global longline fleet.

These two fishing methods account for nearly three-quarters of global tuna catches.

This capacity increase is due to an increased number of vessels combined with increased vessel size and technological improvements, including on-board refrigeration, easier handling of purse-seine nets, deep fishing longlines, increased vessel carrying capacity, sonar, radar, and fish aggregating devices (FADs) that allow greater purse seine catches¹².

Stocks in decline

Not surprisingly, this enormous fishing pressure has negatively impacted on tuna stocks (Table 1 and Figure 2). The biomass of four stocks has declined by an estimated 65–95% from the original, unfished biomass or population volume, while that of ten^v more is known to have significantly declined in the past 50 years.

Bluefin tuna are the worst affected. The spawning biomass of southern bluefin tuna is currently only 5–12% of its original biomass¹⁴. Similarly, the number of spawning

Atlantic bluefin adults in the western Atlantic is estimated at just 13% of the already depleted number in 1975¹⁵. The larger eastern Atlantic bluefin stock continues to be massively overfished, and is in danger of commercial extinction¹⁶. These three stocks are classified as either Endangered or Critically Endangered by IUCN–The World Conservation Union (Table 1) — meaning they are at high risk of extinction in the near future^{vi}.

Other stocks are similarly at risk. The two albacore stocks in the Atlantic Ocean are classified as Critically Endangered and Vulnerable, while all four bigeye

Table 1 Stock status for the principle market tuna species

Stock	RFMO*	Exploitation state ²⁴	IUCN classification ²⁵	Stock size ^{†26}	Fishing mortality ^{‡27}	FAO recommendation ²⁸
Albacore						
- Mediterranean Sea	ICCAT	Not known	Data Deficient	?	?	-
- North Atlantic Ocean	ICCAT (GFCM [§])	Overexploited	Vulnerable	▶	☠☠?	-
- South Atlantic Ocean	ICCAT	Fully exploited	Critically Endangered	▶▶▶ Substantially decreased since mid-1980s	☠	-
- North Pacific Ocean	IATTC WCPFC	Fully exploited	Data Deficient	?	☠☠☠?	Catches should not be increased and may need to be reduced
- South Pacific Ocean	IATTC WCPFC	Fully exploited	Data Deficient	▶▶▶ 60% of 1950s level	☠	Catch increases could be possible
- Indian Ocean	IOTC	Moderately exploited	Data Deficient	?	?	-
Atlantic bluefin						
- Eastern Atlantic Ocean	ICCAT (GFCM [§])	Overexploited	Endangered	▶ 86% of 1970 level	☠☠☠	Present catch level not sustainable
- Western Atlantic Ocean	ICCAT	Depleted	Critically Endangered	▶ 13% of 1975 level	☠☠☠	-
Bigeye						
- Atlantic Ocean	ICCAT	Fully exploited	Vulnerable	▶	☠☠☠	Sustained catch increases not possible
- Indian Ocean	IOTC	Fully exploited	Vulnerable	▶▶▶?	☠?	Catch increases not advisable
- Eastern Pacific Ocean	IATTC	Overexploited	Endangered	▶▶▶	☠☠☠	Catches should not be increased
- Western and central Pacific Ocean	WCPFC	Fully exploited	Endangered	▶▶? >65% of unfished biomass	☠☠☠?	Catches should not be increased
Pacific bluefin						
- Pacific Ocean	IATTC	Fully exploited	Data Deficient	▶▶?	☠☠☠	Catches should be reduced
Skipjack						
- Eastern Atlantic Ocean	ICCAT	Not known	-	?	?	Catch increases should not be considered until stock status is known
- Western Atlantic Ocean	ICCAT	Not known	-	?	?	Catch increases should not be considered until stock status is known
- Indian Ocean	IOTC	Moderately –fully exploited	-	?	?	Catch increases not advisable unless accompanying catches of juvenile tuna of other species can be reduced
- Eastern Pacific Ocean	IATTC	Moderately exploited	-	?	?	Catch increases not advisable unless accompanying catches of juvenile tuna of other species can be reduced
- Western and central Pacific Ocean	WCPFC	Moderately exploited	-	▶▶▶ 75–80% of unfished level	☠	Catch increases could be possible
Southern bluefin						
- Southern hemisphere	CCSBT (IOTC ICCAT)	Depleted	Critically Endangered	▶ 5–12% of unfished level	☠☠	Catches should be reduced
Yellowfin						
- Atlantic Ocean	ICCAT	Fully exploited	Lower Risk	▶▶ Steadily decreasing since 1970	☠☠	Sustained catch increases not possible
- Indian Ocean	IOTC	Moderately –fully exploited	Lower Risk	? Declining since mid-1980s	? Heavily exploited	Catch increases not advisable
- Eastern Pacific Ocean	IATTC	Fully exploited	Lower Risk	▶▶	☠☠	Catches should not be increased
- Western and central Pacific Ocean	WCPFC	Moderately –fully exploited**	Lower Risk	▶▶▶ 65–80% of unfished level	☠☠	Catches should not be increased ^{††}

^vThis includes stocks assessed as being near or possibly near their reference point, as the reference point is usually lower than the original biomass.

^{vi}The IUCN assessments imply extinction; however, this is a fraught term with respect to fish species. In the case of commercial species, “extinction” is often used to mean “commercial extinction”, where there are insufficient groupings of the species to make it commercially viable to target or catch them. However like extinction, commercial extinction implies significant damage and threat to marine ecosystems.

Key for Table 1 (previous page)

* Regional fisheries management organization; see Appendix II for further information.

† Symbols indicate stock size in relation to either the level corresponding to maximum sustainable yield (MSY; meaning the biomass at which MSY could be attained) or the reference point defined by the relevant RFMO as being the lowest acceptable biomass. Question marks with symbols indicate uncertain assessments.

? Unknown

▶▶▶ Above reference point

▶▶ Near reference point

▶ Below reference point

‡ Symbols indicate fishing mortality in relation to the reference point defined by the relevant RFMO as being the highest acceptable fishing mortality. Question marks with symbols indicate uncertain assessments.

? Unknown

☒ Below reference point

☒☒ Near reference point

☒☒☒ Near-above reference point

☒☒☒☒ Above reference point

§ GFCM endorses ICCAT conservation and management measures for tuna in the Mediterranean.

** The 2005 scientific advice is that overfishing is probably occurring²⁹.

†† WCPFC was urged to take action to halt the occurrence of overfishing. The Scientific Committee advice for a 26% reduction, which was 20% above MSY level, was not heeded. The 10% reduction which was recommended means fishing at a level of MSY.

tuna stocks are classified as either Endangered or Vulnerable.

The size of seven stocks is unknown; however given that industrial fishing has been shown to typically reduce the biomass of large predatory fish such as tuna by 80% within 15 years¹⁷, it seems reasonable to assume that their biomass has also significantly declined.

Other marine life at risk

Heavy fishing of tuna is also having serious impacts on the broader ecosystem. In particular, vulnerable species of turtles, seabirds, sharks, and other fish are severely affected through their incidental capture, or bycatch, in tuna fisheries. Tuna longline fisheries, for example, deployed an estimated 1.2 billion hooks in 2000 alone, which captured and killed a wide range of species including seabirds, marine turtles, marine mammals, sharks, and other fish¹⁸. More than 50% of world tuna catches are now made from schools associated with floating objects¹⁹, including FADs, which suffer from high levels of bycatch due to their tendency to aggregate juvenile and commercially undersize skipjack, yellowfin, and bigeye tuna as well as billfish, sharks, and marine turtles^{20,21,22}.

Continued heavy fishing pressure

All of the world's 23 identified, commercially exploited tuna stocks are heavily fished (Table 1). At least nine are fully exploited, two are overexploited, and two are depleted. Mortality due to fishing is higher than recommended for at least five stocks, four of which are Critically Endangered, Endangered, or Vulnerable. Very few stocks have the capacity for increased catches — and the spread of the use of FADs in purse seine fisheries over the last decade now poses a serious threat to the few-remaining healthy tuna stocks. Widespread IUU tuna fishing is also a problem.

If current fisheries management practices continue, then tuna fleets are predicted to grow²³. WWF believes this would lead to the collapse of at least two tuna stocks in the near future, and most likely to the collapse of many more in the medium term. The result will be a huge loss of revenue — and the worrying prospect in some parts of the world of reduced food security for some of the world's poorest people. The ecosystem damage will also be enormous, both due to continued high levels of bycatch and the effect of collapsed tuna stocks.

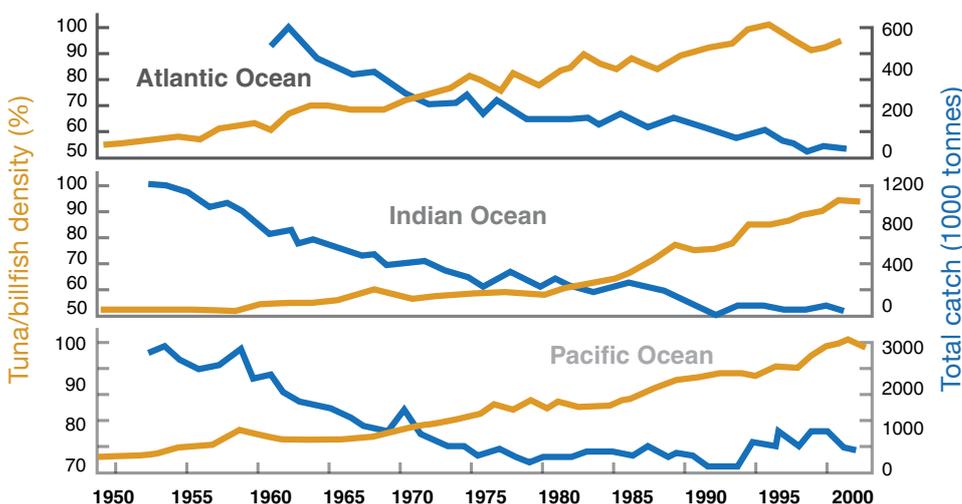


Figure 2 Decreased tuna and billfish density observed since 1952 in longline fisheries for tuna and billfish in the Atlantic, Indian, and Pacific Oceans.

Orange lines show the calculated proportion of species caught per 1,000 hooks; blue lines show the total catch of tuna and billfish. The only plausible factor identified to explain these long-term, global-scale declines in tuna and billfish density is fishing. Adapted from: Worm et al. (2005)¹³.

4. Who is responsible for making tuna fisheries sustainable?

Sustainable management of the world's tuna fisheries should be possible. Fisheries management bodies for tuna stocks have been established, as have legal instruments and internationally agreed protocols and standards that guide sustainable fisheries management.

Regional fisheries management organizations (RFMOs)

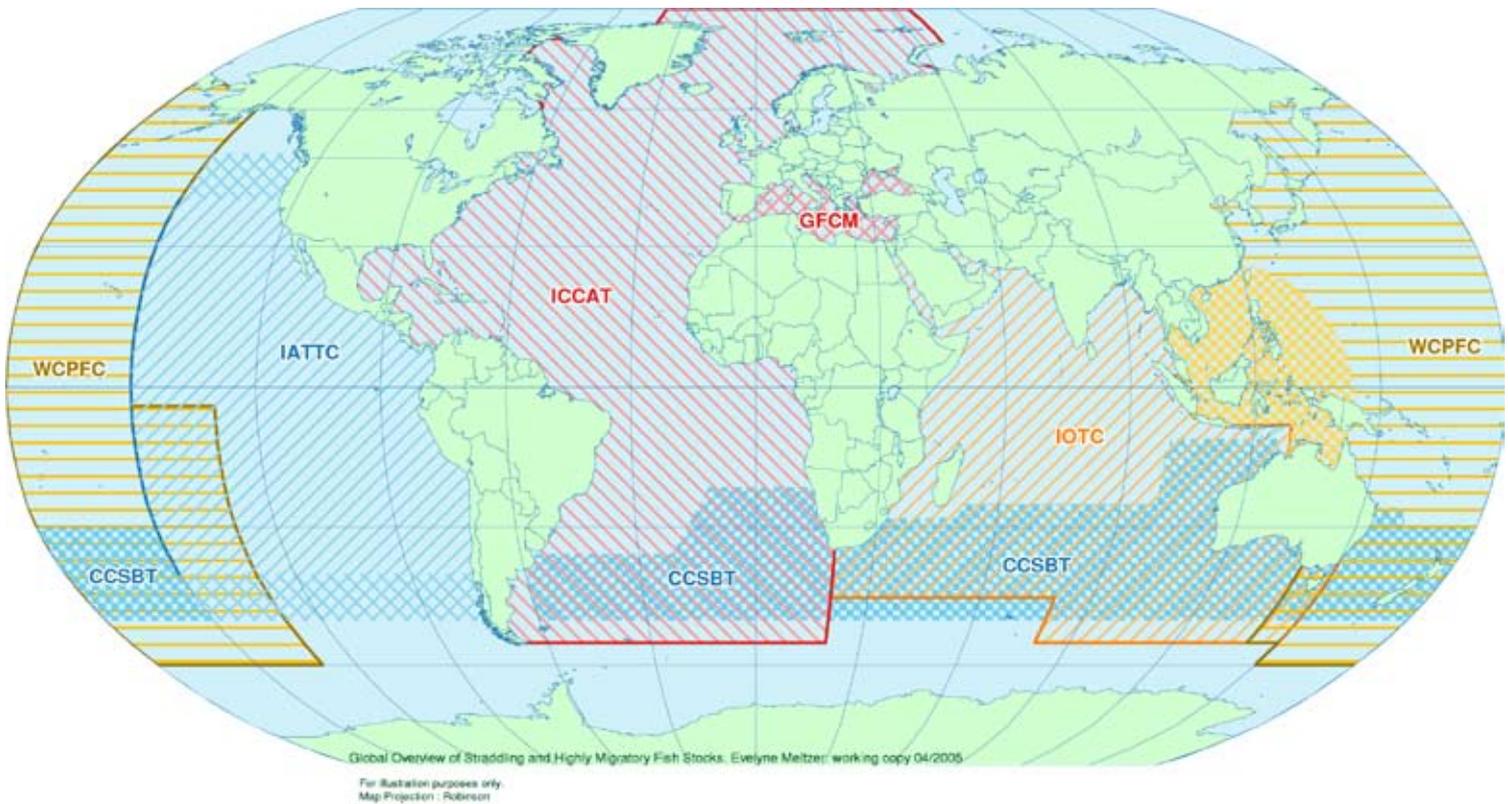
In the current system of ocean governance, regional fisheries management organizations (RFMOs) are the main bodies responsible for managing fisheries targeting fish stocks in the high seas — the 64% of the oceans lying beyond any nation's jurisdiction. These intergovernmental organizations have recognized regulatory power in their

jurisdiction, with the authority to³⁰:

- assess the status of tuna stocks
- set total allowable catch (TAC) quotas for tuna stocks
- set limits on the number of vessels allowed to exploit each tuna fishery
- regulate the types of gear that can be used
- conduct inspections to ensure compliance.

Five RFMOs are currently responsible for the world's tuna fisheries (see Figure 3 and Appendix II). Although the specific mandate and responsibility of each differs, they all have a general objective to conserve and sustainably manage tuna stocks.

Figure 3 Global Overview of the tuna RFMOs



WCPFC note: Northern boundary and most of Western boundary for RFMO are not defined, and Area is not intended to include waters in South-East Asia which are not part of the Pacific Ocean; not is it intended to include waters of the South China Sea.

GFCM note: GFCM endorses ICCAT conservation and management measures for tuna in the Mediterranean.

International laws and agreements

In addition to being bound to the objectives set out in their convention and mandate, RFMOs are also increasingly recognized as the most appropriate bodies for the implementation of international laws and agreements relating to sustainable fisheries management³¹.

These laws are the United Nations Convention on the Law of the Sea (UNCLOS) and the United Nations Fish Stocks Agreement (UNFSA), which oblige signatory states to manage fish stocks sustainably. The core provisions of the UNFSA concern the sustainable management of highly migratory species such as tuna, and it also makes signatories responsible for non-target species associated with the fishery and caught as bycatch.

Internationally agreed standards, protocols, and other instruments to help with the implementation of these laws and guide sustainable fisheries management have been developed, and are specifically aimed at RFMOs. These include the FAO Code of Conduct for Responsible Fisheries (CCRF), the FAO Compliance Agreement, and four International Plans of Action (IPOAs) aimed at eliminating IUU fishing, eliminating excess capacity, and eliminating shark and seabird bycatch. A number of other legal instruments are also relevant to RFMO fisheries management practices (see Appendix III for more details).

With the exception of WCPFC and IATTC (which updated its convention text under the Antigua Convention), these laws and voluntary agreements were created after the tuna RFMOs were established, leading to inconsistencies in management obligations. However, the vast majority of tuna RFMO member states are signatories of UNCLOS and/or the UNFSA, many for over 10 years and some for over 20 years (see Appendix II), as well as other fisheries-related agreements. In addition, these laws and agreements are consistent with the objectives of each tuna RFMO, and there is nothing to prevent the tuna RFMOs from implementing them³². There is also a general expectation that signatory countries to the UNFSA will adhere to its provisions when working through RFMOs, bringing best

practice into the fora responsible for managing highly migratory species.

We know how to improve tuna fisheries management...

By and large, the actions needed for sustainable tuna fisheries management are widely known. Two key needs are that RFMOs adopt conservation and management strategies based on a precautionary, ecosystem approach and the best available scientific advice, and that mechanisms are in place to ensure that all fishers comply with these strategies.

This should be possible. RFMOs with the appropriate objectives exist, and the tools and guidance to achieve sustainable fisheries are largely available — both through the international laws and agreements described above and through a series of assessments and recommendations made by various organizations, including the 2006 WWF/TRAFFIC *Follow the leader— learning from experience and best practice in RFMOs* report³³ and the 2006 High Seas Task Force *Closing the net: Stopping illegal fishing on the high seas* report³⁴.

... so why are tuna fisheries not sustainable?

Clearly, these bodies and tools are not working. The tuna RFMOs are not following their own mandates, and are generally failing to implement UNCLOS, UNFSA, and the internationally agreed standards and protocols for sustainable fisheries management. The root cause of this is a long-standing lack of political will to take serious action on behalf of the member states that make up each RFMO. Instead, countries have favoured short-term gains over the long-term sustainability of tuna fisheries.

The following sections outline key RFMO management problems identified by WWF, related to three of the most urgent issues requiring immediate action — poor conservation and management of tuna stocks, IUU fishing, and bycatch. Recommendations are also provided for more sustainable tuna fisheries management based on already available solutions.

5. Problem: Poor stock conservation and management

Conservation and management strategies based on a precautionary, ecosystem approach and the best available scientific advice are central to sustainable fisheries — and are required by international law. The general failure of tuna RFMOs to develop such strategies is a key reason behind the unsustainably high catch levels for most tuna stocks. This section highlights major problems responsible for this failure.

Failure to adopt an ecosystem approach

An ecosystem approach entails taking into account the impacts of a fishery on the wider ecosystem beyond the target species, as well as addressing human concerns such as food security and livelihoods³⁵. Such a concept is included in UNCLOS and the CCRF, and required by the UNFSA (see Appendix III). It is also included in the Convention on Biological Diversity (CBD), and world leaders agreed to implement the ecosystem approach to fisheries in the 2002 WSSD Plan of Implementation. Furthermore, the FAO has developed technical guidelines for an ecosystem approach to fisheries³⁶, and WWF has produced comprehensive guidelines for ecosystem-based management of fisheries³⁷. But despite these laws and tools, there is little evidence that the tuna RFMOs have adopted a systematic ecosystem approach that is incorporated into fisheries data collection, advisory, and decision-making processes³⁸.

- ☒ RFMOs are at different points on the spectrum in terms of the maturity of approaches to the application of an ecosystem approach to management, with most struggling to reach a common understanding of what is required by the application of the ecosystem approach³⁹.
- ☒ WCPFC and IATTC make explicit reference to the ecosystem and precautionary approaches in their mandate. However, these mentions are only since 2004 and have not yet been fully implemented.

Failure to adopt the precautionary approach

The precautionary approach is an essential component of an ecosystem approach and is required by the UNFSA. It demands that, to minimize the risk of overfishing, conservation and management measures be taken even in the absence of adequate scientific information. However, the precautionary approach is generally not sufficiently followed by the tuna RFMOs, with almost all having delayed or failed to implement conservation measures because of uncertainty in, or lack of, scientific advice³⁹.

- ☒ In 2004 the CCSBT Scientific Committee reiterated a concern that the southern bluefin tuna stock may have suffered from several years of markedly lower recruitment of young fish, and that if this continued and the catch level remained the same, then the stock — which is seriously depleted and classified as Critically

Endangered — would decline. In response, CCSBT said that additional data were needed to confirm if the lower recruitment was “a continuing event”. The total allowable catch (TAC) for southern bluefin tuna was not reduced until 2006⁴¹.

- ☒ No conservation or management measures have been put in place for five of the 11 tuna stocks with unknown fishing mortality and/or unknown status (see Table 1), including the Vulnerable bigeye stock in the Indian Ocean⁴².
- ☒ ICCAT, IATTC, and WCPFC have been slow to identify and respond to new developments in their tuna fisheries — namely the explosive rise in tuna farming and the hugely increased use of FADs in purse seine fisheries — that have led to greatly increased catches, including juvenile tuna, and in the case of FADs, bycatch of associated species such as marine turtles.
- ☒ CCSBT has developed management strategies based on precautionary reference points for target stocks. However, these have not yet been implemented, and WWF is concerned to ensure that these management measures are tuned to a sufficiently precautionary level.

Failure to follow scientific advice

The UNFSA also requires that RFMOs base all conservation and management measures on the best available science. While serious gaps do exist in data on stock status and catches for some tuna stocks, WWF believes that the tuna RFMOs are generally provided with clear and reasonably precautionary scientific advice. However, this advice is routinely ignored, with TACs for many stocks being consistently set higher than recommended and fisheries closures not being implemented.

One particular problem is that even where scientific advice is that stocks are overfished, tuna RFMOs have chosen to increase TACs to accommodate new members rather than reduce the quotas of existing members⁴³. Indeed, a lack of agreement on how to allocate fishing rights amongst members is a major impediment to precautionary and sustainable management of tuna fisheries.

- ☒ Despite scientific advice over many years that the southern bluefin tuna stock is only 5–12% of its unfishable level, CCSBT not only failed to reduce the TAC between 1989 and 2006, but actually increased the TAC to accommodate the existing (and unsustainable) catch levels of new participants that were previously fishing outside the convention. While it was prudent and necessary to bring all catches under the CCSBT TAC, the TAC remained too high for the sustainable health of the stock.
- ☒ In 1994, the ICCAT Scientific Committee recommended that catches of the eastern Atlantic bluefin tuna stock

should be reduced from the 1994 level by 25%, starting in 1996. However, the first TAC for this stock was not established until 1998. Even then, TACs have been consistently higher than recommended. For example, the annual TAC set for 2003–2006 was 32,000 tonnes — 23% higher than the maximum level recommended by the Scientific Committee of 25,000 tonnes. The situation has since become even worse. In response to serious depletion of the stock, in 2006 the Scientific Committee recommended an annual TAC of just 15,000 tonnes and a recovery plan that included closing the fishery during the spawning season. But ICCAT set the 2007–2009 TAC at nearly double this, 29,500 tonnes, and did not ban fishing during the peak spawning season.

☒ The IOTC Scientific Committee has called for reductions in the catch of bigeye tuna since 2001, but it was not until 2005 that any action was taken. This action was to limit catches to recent levels reported by the Scientific Committee, and to request Taiwan (Chinese Taipei) to limit their annual bigeye catch in the IOTC area to 35,000 tonnes — meaning that catches were only limited rather than reduced to sufficiently sustainable levels.

☒ Since coming into force in 2004, WCPFC has failed to establish effective management measures for yellowfin and bigeye tuna stocks despite warnings that overfishing is “probably” and “likely” occurring for these stocks, respectively.

☑ IATTC has maintained the size of the eastern Pacific yellowfin stock near maximum sustainable yield (MSY). However, increased use of FADs in the purse seine fishery has promoted new problems, including negative impacts on the eastern Pacific bigeye stock.

Decision-making... or the lack thereof

One reason for the adoption of weak and ineffective conservation and management measures is that decisions are almost always made by consensus — which results in the lowest common denominator being catered for⁴⁴ and sometimes leads to no decision being made at all. Part of the problem is the absence of an agreed decision-making framework within most tuna RFMOs. As a result, member states are susceptible to the lobbying of licensed fishers and fish traders who oppose attempts to restrict or monitor catch and/or effort. Another problem is the lack of agreement on how to allocate fishing rights amongst members, and new members in particular, mentioned above.

☒ In 2006, IATTC Scientific Staff recommended extended closures for the purse seine fishery for

yellowfin tuna and a 38% reduction in the purse seine fishing effort on floating objects in order to achieve the management objective for bigeye tuna. IATTC failed to reach agreement on an appropriate management response, and effectively agreed to continue the existing insufficient management measures.

☒ While management decisions can be made by a voting procedure in IOTC and ICCAT, dissenting member states can opt out of any decision reached this way.

☑ WCPFC is the only RFMO with highly prescriptive rules for decision-making in accordance with the UNFSA, and where final and binding decisions can ultimately be made through a qualified majority voting system. However, this has yet to be put to the test.

Failure to reduce fishing capacity

The excess capacity of the global tuna fleet (see Box 1) also frustrates efforts to impose precautionary, sustainable fisheries management, as fishers — who want their vessels to stay in operation — often lobby their governments to resist moves to reduce TACs or vessel licenses. Some governments and tuna RFMOs have successfully reduced the capacity of some tuna fleets, mainly the longline fleet, and the Organization for the Promotion of Responsible Tuna (OPRT) gives the tuna RFMOs a financial mechanism to incentive reductions to large-scale tuna longline capacity. However, reductions to long line capacity have been undermined by even greater increases in purse seine fishing capacity, further exacerbated by increasing use of FADs. Another problem is the lack of agreement on how to allocate fishing rights amongst members, and new members in particular, mentioned above. In addition, the failure to destroy excess capacity has led to export of this capacity to fisheries less capable of addressing the problem, thus actually worsening the problem overall.

☒ All five tuna RFMOs are failing to systematically and meaningfully implement the FAO International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity).

☒ In 2006, IOTC member states failed to agree on a phase-out plan to reduce fishing capacity.

☑ ICCAT slashed Taiwan’s Atlantic bigeye tuna quota by almost 70 per cent, meaning that the size of its Atlantic bigeye tuna fleet should have been reduced from 76 vessels to 15. However, this good progress was reversed in 2006: ICCAT reinstated Taiwan’s original quota, meaning that vessel numbers will increase again.

6. Problem: IUU fishing

Tuna attract intense IUU fishing, which in the worst case accounts for over one-third of the total catch^{45,46,47}. IUU fishing contributes to overfishing, undermines efforts to conserve and manage tuna stocks, and has broader ecosystem impacts through the bycatch of non-target species. The tuna RFMOs have undertaken

a range of measures in recent years aimed at enforcing their member states to comply with conservation and management measures. This section highlights a number of remaining key weaknesses that have allowed IUU fishing to continue.

Box 2 IUU fishing in tuna fisheries

Given that IUU fishers don't report their catches, their level of fishing is hard to quantify. However, estimates have been made for the following tuna fisheries:

- 36% of total eastern Atlantic bluefin tuna catches (and 56% higher than the quota)⁴⁸
- 33% of reported southern bluefin tuna catches⁴⁹
- 10% of reported tuna catches in the Indian Ocean⁵⁰
- 5% of reported bigeye and yellowfin tuna catches in the Atlantic Ocean⁵¹

Overall, the value of IUU tuna caught on the high seas is estimated at US\$581 million annually — nearly half the value of the total high seas IUU catch⁵². IUU fishing also occurs within countries' exclusive economic zone (EEZ), and can be a heavy economic loss to developing countries. For example, illegal incursions into Tanzania's EEZ by high seas tuna longliners in 2001 alone caused estimated lost revenue of around US\$20 million⁵³.

Failure to ensure that membership includes all interested coastal, fishing, port, and market states

An essential prerequisite for RFMOs to effectively manage fish stocks is that all states fishing within, and bordering, their area of competence are members and thus bound by the RFMO's conservation and management measures. However, this is not the case for any tuna RFMO. The membership of developing countries is often particularly crucial to RFMO effectiveness; however, few tuna RFMOs provide assistance to help developing states — which often lack the capacity to ensure they meet their membership obligations — become members.

Port and market states — where fish are landed and traded, respectively — also have an important role to play in the effective implementation of measures to combat IUU fishing; however except where such states are also fishing within the RFMO area, port and market states are not yet necessarily members of tuna RFMOs.

- ☒ During protracted negotiations over fishing entitlements between non-member states in ICCAT, the non-members continued their completely unregulated fishing of tuna stocks. The reluctance of existing members to provide new members with sufficient fishing allocations has also led to some states choosing not to become members.⁵⁴
- ☒ No tuna RFMO has a special provision for allowing for port states and/or market states to become members (although this is possible under the current ICCAT mandate).
- ☒ CCSBT, ICCAT, and WCPFC have provided assistance to developing countries, either to help

them become members or to help them meet their fisheries management obligations.

- ☒ Taiwan is a major fisher of tuna, but is politically difficult to accommodate in RFMOs. However, CCSBT and WCPFC have found innovative solutions to include Taiwan, and IOTC has also moved to facilitate participation by Taiwan.⁵⁵

Failure to implement centralized monitoring, control, and surveillance (MCS) measures

Monitoring, control, and surveillance of fishing vessels and their activities on the high seas are undoubtedly difficult tasks. Nevertheless, as outlined in the FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), a number of MCS tools are available to RFMOs to enable member states to comply with their fisheries conservation and management measures. These include vessel monitoring systems (VMS) that automatically collect, record, and analyse information on the location and activity of fishing vessels; the presence of observers on vessels; and the use of positive/negative vessel lists to establish eligibility to fish within the RFMO area. While all the tuna RFMOs have adopted or recommended at least some MCS measures (see Table 2), serious weaknesses remain.

- ☒ VMS data for the CCSBT and ICCAT is either monitored by the vessel flag state (CCSBT) or sent via the flag state to the commission (ICCAT). In the case of CCSBT, recent experience has shown that not all member states are controlling the operations of their vessels so as to ensure compliance with conservation and management measures⁵⁶.

- ☒ While IOTC has recommended the implementation of a VMS on all authorized fishing vessels, implementation is voluntary.
- ☒ With the exception of ICCAT in 2006, tuna RFMOs have not extended their MCS measures to include regulation of transshipment vessels (also known as tuna reefer vessels). These vessels take catches from longline fleets operating on the high seas, freeze the tuna to -40°C , and later land the deep-frozen tuna, mostly in Japan. At least some at-sea transshipment vessels take fish from IUU vessels and are involved in laundering of illegally caught tuna.⁵⁷
- ☒ IATTC is the only tuna RFMO to have a 100% observer programme in place – but even then, this is only for particular purse seine vessels and additionally, not for the longline fleet.
- ☒ WCPFC explicitly requires VMS data to be sent to the commission, and simultaneously to the flag state if it so desires.
- ☒ There has been a general trend to develop vessel registries of authorized, and in some cases unauthorized, vessels (white and black lists) to allow better monitoring of tuna vessels and information exchange between RFMOs on IUU vessels and vessels not complying with regulations.

Table 2 MCS and trade-related measures adopted by tuna RFMOs

	CCSBT	IATTC	ICCAT	IOTC	WCPFC
Real-time, satellite position-fixing (VMS) vessel monitoring system	No ^a	Partial	Yes	No ^b	Yes
Compulsory 100% observer program	No ^c	No ^d	No ^e	No	No
Catch documentation scheme (CDS)	No	Yes ^f	Yes	Yes	No
Regulation of transshipments	Yes ^g	Yes	Yes	Yes	No
List of vessels authorized to fish in the RFMO area	Yes	Yes	Yes	Yes	Yes
List of suspected or known IUU vessels	No ^h	Yes	Yes	Yes	Yes
Monitoring of landings	Yes ⁱ	Yes	Yes	Yes	Conducted nationally
Monitoring of export/ import data	No	Yes	Yes	Partial	To be developed
Sanctions for breach of conservation and management measures	No	Yes	Yes	Yes	No
Compliance Committee	Yes	No	Yes	Yes	Yes

^a Some member states apply mandatory VMS to their vessels fishing for southern bluefin tuna in their EEZ and/or on the high seas

^b In 2002, IOTC passed a non-binding resolution to establish a pilot programme to implement VMS on 10% of contracting and non-contracting party vessels greater than 24m. However, parties have been encouraged to establish their own national VMS systems, and some have actually implemented this resolution; eg. Seychelles. In 2006, a resolution was passed providing for the establishment of an IOTC observer programme to be funded by the fishing entities.

^c CCSBT has agreed observer program standards, with target observer coverage of 10%. Observer data is maintained by member states and not maintained in data set managed by CCSBT.

^d IATTC has a compulsory 100% observer program for purse seine vessels above a certain size.

^e ICCAT has adopted an observer programme for at least 20% of vessels, and 100% for harvesting of tuna traps..

^f Tuna Tracking System; voluntary for those wanting the official AIDCP dolphin safe label.

^g WWF believes the resolution needs improvement

^h All vessels not on the authorized list are considered to be fishing illegally

ⁱ Landings for international trade only

Failure to implement comprehensive trade- and market-related measures

Various trade- and market-related measures are available to RFMOs to prevent IUU catches from reaching the international market, and indeed the market is beginning to ask for these^{vii}. These include catch documentation schemes (CDS), prohibitions on landings and transshipments from particular vessels, and trade restrictive measures such as import bans (see Table 2). While some of these measures have been used effectively by the tuna RFMOs, others have failed to deter, or even detect, IUU fishing.

☒ In 2000, CCSBT adopted a Trade Information Scheme (TIS) to track landings of southern bluefin tuna entering international trade. However, the TIS does not track tuna destined for the domestic market of CCSBT member states — and so failed to detect significant overfishing by Japan, which was accused of taking 1,800 tonnes over its 6,065-tonne annual quota in 2005⁵⁸. The Stock Assessment Group of CCSBT also presented scenarios of massive

unreported catches supplying the Japanese market from the 1980s to 2005, based on a still confidential Market Review Report⁵⁹.

☒ A lack of consistency between the various trade-related measures undertaken by different tuna RFMOs provides a way for IUU operators — whose fleets are highly mobile, moving from one ocean to another — to get their catch to the market. For example, ICCAT has catch limits and a well-established trade-related mechanism for bigeye tuna caught in the Atlantic Ocean. No such mechanisms exist for bigeye caught in other oceans, resulting in the systematic laundering of bigeye caught illegally in the Atlantic Ocean through the Indian and Pacific Oceans⁶⁰.

☒ In 1996, ICCAT imposed an import ban on its members on Atlantic bluefin and bigeye tuna from Belize. The ban was lifted in 2004 after Belize took steps to strengthen control of its fleet and removed a significant number of vessels from its register⁶¹.

^{vii}For example, the European Fish Producers Association (AIPCE), a trade association that developed a voluntary protocol to exclude IUU-caught cod from the Barents Sea.



Yellowfin tuna (*T. albacares*), Philippines. © WWF-Canon / Jürgen Freund.

7. Problem: Bycatch

The incidental capture of non-target species and juvenile tuna in tuna fisheries – on longlines and in purse seines, in particular – is a major problem linked with population declines of many species and threatening the survival of several endangered species. The CCRF has several objectives with respect to reducing bycatch, and two IPOAs developed within this code specifically address bycatch of sharks and seabirds. Governments are also legally obliged to

manage shark stocks sustainably under UNCLOS and the UNFSA, and the FAO has developed guidelines for reducing interactions between marine turtles and fisheries. In addition, the UNFSA makes signatories responsible for non-target species associated with the fishery and caught as bycatch. The tuna RFMOs have an important role to play in meeting these objectives; however, as outlined in this section, little progress has been made.

Box 3 Bycatch in tuna fisheries

The level of bycatch in many tuna fisheries is difficult to estimate, as data are generally not recorded on incidental catches. However, examples of estimates for various fisheries and oceans include:

- An estimated 4.4 million sharks, billfish, marine turtles, seabirds, and marine mammals injured or killed on longlines each year in the Pacific Ocean⁶³
- Up to 80,000 loggerhead turtles and 10,000 leatherback turtles caught on longlines in 2000 in the Mediterranean Sea⁶⁴
- An average of 0.5 seabirds caught per 1,000 hooks set by longline tuna fisheries in the Indian Ocean; this rate is 10-fold higher than recommended by the FAO and killed an estimated 10,500 seabirds between 2000 and 2005, including vulnerable and endangered species⁶⁵
- An estimated 44,000 albatrosses killed annually by the Japanese southern bluefin tuna fishery⁶⁶
- An estimated 45,000 blue sharks caught as bycatch by the New Zealand tuna longline fishery between 1997 and 1998⁶⁷
- An estimated 50% of bigeye tuna caught in the Atlantic Ocean from 1980–2004 being juveniles⁶⁸

- Around 10% by weight of catches on FADs being bycatch (compared to 1–2% for purse seine catches on free tuna schools), amounting to 100,000 tonnes per year^{69,70}, and comprising juvenile and undersized tuna, sharks, marine turtles, and a wide variety of other fish species, most commonly including dolphin fish, billfish, wahoo, triggerfish, barracuda, and rainbow runners; more than 50% of world tuna catches are made from schools associated with floating objects⁷¹, including FADs

The effect of this on several marine species is devastating. For example:

- Since 1980, the number of nesting female leatherback turtles in the Eastern Pacific population has declined by 95%, largely due to longlines, and the population could become extinct in 5–30 years⁷²
- Longlining is the main threat to 23 species of threatened seabirds in the Pacific, including the critically endangered black-footed albatross⁷³
- Purse seine fisheries using FADs have contributed to bigeye stock declines in the Pacific Ocean
- 95% or more of all caught white and blue marlin are taken as bycatch in longline fisheries targeting swordfish and tuna⁷⁴; white marlin are severely overfished and declining⁷⁵

Failure to adopt an ecosystem approach

The ecosystem approach for fisheries described in section 5 involves mitigating bycatch. However, as discussed, there is little evidence that the tuna RFMOs have adopted a systematic ecosystem approach⁷⁶.

Failure to collect and provide data

Data on bycatch of non-target species in tuna fisheries are vital for any effort to reduce and mitigate this bycatch, and indeed, the collection of such data is one of the CCRF objectives and is included in the IPOA-Sharks and IPOA-Seabirds. However, few tuna RFMOs have made the collection of such data obligatory, let alone begun systematically collecting such data⁷⁷.

- CCSBT has not passed any resolutions on the collection of bycatch data.

- While IATTC, ICCAT, IOTC, and WCPFC have passed resolutions that encourage the collection of marine turtle bycatch data, none are systematically collecting data across gear types or across the conventions' entire geographic area. ICCAT and IOTC have similarly passed resolutions that urge or encourage, respectively, the collection of seabird bycatch data, but are not collecting such data.

- IATTC has passed resolutions requiring the collection of dolphin bycatch data in purse seine fleets and urging the collection of shark bycatch data, ICCAT has passed a resolution requiring the collection of shark bycatch data, and WCPFC has passed a resolution requiring the collection of seabird bycatch data; these data are required to be systematically collected.

Failure to release captured animals alive

Marine turtles, small cetaceans, and sharks are often still alive when landed on board, and could be released alive. Indeed, the FAO has developed guidelines to reduce marine turtle mortality, including advocating widespread use of marine turtle release and resuscitation techniques⁷⁸. However, the tuna RFMOs are mostly failing to require member countries to take measures to release such species caught as bycatch⁷⁹.

- ☒ Not one tuna RFMO has passed a resolution requiring that sharks be released alive or is undertaking research to develop methods for releasing live sharks (although ICCAT urges both, and IATTC requires the encouragement of purse seine fishers to address this).
- ☒ IATTC requires the release of dolphins and sharks caught in purse seine fisheries, the release of marine turtles caught in all fisheries, and the development of technology for releasing juvenile tuna caught in purse seine fisheries.

Failure to develop and implement bycatch mitigation measures

The ultimate aim to reduce bycatch mortality should be the implementation of more selective fishing gear or spatio-temporal measures that avoid capturing non-target species altogether. A couple of tuna RFMOs, IATTC in particular, have had enormous success in reducing bycatch of particular species; however, there is still a long way to go⁸⁰.

- ☒ While all tuna RFMOs have undertaken numerous discussions on the need to perform research on shark, seabird, and marine turtle bycatch mitigation, most of it has not yet been published.
- ☒ As of 2006, IOTC required the adoption of measures to reduce seabird bycatch in longline fisheries.
- ☒ IATTC and ICCAT are carrying out research on shark and marine turtle bycatch mitigation measures.
- ☒ CCSBT is distributing educational materials on seabird, shark, and marine turtle bycatch mitigation measures, and IATTC and WCPFC are distributing educational materials for marine turtle and other bycatch species identification, and for marine turtle release methods.
- ☒ Member countries in the ICCAT, IATTC and WCPFC areas are trialling circle hooks to reduce marine turtle bycatch on longlines.
- ☒ IATTC has a longstanding successful programme of successful management measures for mitigating dolphin bycatch in the purse seine fishery.

8. Conclusions and Recommendations

As outlined in this briefing, tuna fisheries face common and urgent problems: severe and alarming tuna stock declines; poor fisheries conservation and management strategies; high levels of IUU fishing; and unsustainably high levels of bycatch that further threaten several already endangered marine species. WWF believes that the solutions for these problems are available to the tuna RFMOs and their member states. Key recommendations based on these solutions are provided below.

Tuna fisheries are undoubtedly difficult to manage⁸¹. Tuna are highly migratory, and predominantly fished in the international waters of the high seas. The large industrial fleets targeting tuna often move from one ocean to another in response to changing markets, fishing regulations, and/or tuna availability, and the fish they catch are often taken to another part of the world for processing and trade. Tuna fisheries also suffer from high levels of bycatch and attract a high level of IUU fishing, which further complicates their management. Nevertheless, a number of international laws, agreements, guidelines, recommendations, and other tools are available to the tuna RFMOs — the main mechanism for regulating fishing on the high seas — and their member states to help achieve sustainable tuna fisheries.

Whilst the Kobe Action Plan takes some small but important steps towards ensuring the future health of tuna fisheries, WWF's key recommendations for a global tuna action plan — and to ensure the future of these magnificent fish, their associated marine life, and the communities both in developing and developed countries that depend upon them — are:

1. The development and application of ecologically-based management strategies for targeted species

Tuna RFMO Member States need to include a commitment to the implementation of management strategies based on precautionary reference points for all target stocks and, where stocks are over-fished, management strategies must include rebuilding targets and measures to assess progress towards them.

2. Addressing bycatch issues

Tuna RFMO Member States need to include a commitment: to the immediate implementation of precautionary management and mitigation measures to avoid the bycatch of turtles, small cetaceans, seabirds, and sharks; to the establishment and adequate resourcing of stock and ecosystem data collection; and to the establishment of advisory processes to support conservation and management measures.

3. The resolution of issues surrounding the allocation of participatory rights

Tuna RFMO Member States need to include a commitment to resolve allocation disputes by the use of independent arbitrators and to the establishment of agreed, transparent, and consistent processes which give special recognition to developing states and to accommodate new entrants. Further, where allocations are made, RFMOs must ensure that their MCS measures are adequate to enforce compliance with these allocations and that appropriate sanctions are established and applied when non-compliance occurs.

4. Efforts to ensure that membership fully reflects the range of interested coastal, fishing, port and market states

Tuna RFMO Member States need to include a commitment: to introduce mechanisms to identify relevant coastal, fishing, port, and market states (e.g., trade monitoring or catch documentation schemes) and any others with an interest in the conservation and management of the living marine resources of a region; to facilitate full membership of all such states; and to provide assistance where necessary to developing states to facilitate their transition to full membership and, subsequently, to improve their capacity to meet their obligations as RFMO members.

5. Efforts to improve the extent, accuracy and reliability of data for both stock and ecosystem management purposes

Tuna RFMO Member States need to include agreement to:

- ensure that data provision for target stock management purposes reflect the requirements of the UNFSA
- expand data collection programmes to provide adequate data for ecosystem-based management
- establish and apply effective sanctions against members which fail to comply with the data submission provisions, including suspension of fishing rights
- introduce centrally managed systems to validate catch data in all sectors of the fishery (i.e., all methods and all forms of capture (including live capture for farming)):
 - centrally managed observer programmes that place independent observers both on fishing vessels and on vessels engaged in transshipment, for providing confidence in catch data, reporting on bycatch, and contributing to MCS of conservation and management measures
 - centrally managed vessel monitoring systems (cVMS)

- electronic catch documentation schemes (eCDS) to validate landings and to assist in tracking States/entities involved in the catch, transshipment, landing, processing, export, import, re-export and marketing of the relevant species and products derived from them

- collaborate to ensure that conservation and management measures for target species are applied consistently across RFMOs to minimize opportunities for the laundering of products and maximize the effectiveness of these measures
- collaborate to ensure that conservation and management measures for bycatch species are coherent elements of cost-effective management arrangements applied throughout the range of impacted species
- assist members and cooperating non-parties to comply with the data provisions and to implement associated data validation mechanisms where they lack the capacity to do so. Where assistance is provided by individual states the process should be transparent and priority given to assisting such compliance.

6. Effective containment of overcapacity

Tuna RFMO Member States need to include measures to:

- cap purse seine capacity and further deployment of FADs, as well as longline effort
- effectively preclude the entry of any additional fishing capacity
- ensure mechanisms are in place to permanently reduce capacity from tuna fisheries to levels commensurate with scientific advice on catch levels
- provide for the rights and aspirations of developing states to participate in high seas fisheries, within ecologically based catch limits, as and when they develop the capacity to do so
- remove subsidies that encourage the creation of additional capacity
- facilitate the removal and elimination of excess fishing capacity by individual governments and through regional arrangements
- establish a fully funded multilateral global overcapacity reduction fund by the end of 2007 with, as its primary objective, the permanent destruction of excess fishing capacity in any fishery deemed to be suffering from overcapacity and resultant management problems.

7. Minimizing IUU fishing

WWF endorses the proposals of the Ministerially-led Task Force on IUU Fishing on the High Seas (HSTF) and recommends that Tuna RFMO Member States elaborate on how the member governments of the tuna RFMOs intend to address them in order to strengthen their capacity to address IUU fishing.

8. The establishment of regular, independent reviews of performance

Tuna RFMO Member States need to include agreement to develop a common performance review framework that provides regular, independent and transparent review of the performance of each RFMO against its objectives and obligations.

9. Fully utilising modern trade related management measures

Tuna RFMO Member States need to commit to the introduction of a package of tuna trade related measures that support:

- adoption of catch certification schemes for fish and fish products that reliably track fish and fish products from fishing vessels to retail markets.
- adoption of trade monitoring and reporting protocols that allow trade information to be promptly reconciled against catch information with a view to improving early detection and quantitative estimation of levels of IUU fishing.
- adoption of best practice comprehensive MCS regimes for licensed fishing vessels (including observers on all vessels, cVMS, eCDS, use of positive/negative vessel lists to establish eligibility to fish, notification requirements that identify operators and beneficial owners as well as vessels) to support the use of catch documentation schemes.
- extension of such MCS regimes to include regulation of refrigerated cargo vessels to require that they must only receive catch from fishing vessels able to establish the provenance and legality of their catch
- adoption by importers, retailers and seafood sector associations of protocols to exclude IUU caught seafood including third party certification systems, such as the recent European Fish Processors Association protocol for IUU cod from the Barents and Baltic Seas.
- adoption by market states of legislation that provides for adequate enforcement and compliance measures to deter the handling of fish and fish products derived from IUU fishing activities.
- adoption by port states of port control measures as allowed under international law while urgent steps are taken to negotiate an UNCLOS Implementing Agreement that elaborates port states powers and obligations (using the FAO Model Scheme as a guide to minimum provisions)

For more detailed information, please see the WWF Statement *Improving the conservation and management of tuna*, prepared for the Kobe meeting.

Appendix I. Know your tuna

Species	Scientific name	Local names in main catching countries* and markets**	% of global catch	Used for
Albacore	<i>Thunnus alalunga</i>	Chinese languages: chang chi we French: germon German: weisser Thun Indonesian: tuna albakora Italian: alalonga Japanese: binnaga, shiro maguro, tonbo Korean: nal-gae-da-raeng-i Spanish: atún blanco, albacore, bonito del norte, bonito del Pacifico Other English: white tuna, longfin tunny, tombo	6%	Canning, sashimi, sushi, steaks
Atlantic bluefin	<i>T. thynnus</i>	Chinese: cá chan, thu, hay we French: thon rouge de l'Atlantique German: roter Thun Italian: tonno Japanese: hon maguro Korean: cham-da-raeng-i Spanish: atún rojo del Atlántico, atún aleta azul, tonyina vermella Other English: northern bluefin tuna, tunny	<1%	Sashimi, sushi, steaks
Bigeye	<i>T. obesus</i>	Chinese languages: tha mu we French: patudo, thon aux grands yeux, thon obèse, thon ventru German: Grossaugenthun Indonesian: tuna mata besar Italian: tonno obeso Japanese: bachi, daruma, darumeji, mebach, mebuto Korean: Nun-da-raeng-i Spanish: patudo, atún ojo gordo	10%	Sashimi, sushi, steaks
Pacific bluefin	<i>T. orientalis</i>	Chinese languages: cá chan, thu French: thon rouge German: roter Thun Indonesian: tuna sirip biru Pasifik Italian: tonno Japanese: hon maguro Spanish: atún rojo, atún aleta azul Other English: northern bluefin tuna (previous name)	<1%	Sashimi, sushi, steaks
Skipjack	<i>Katsuwonus pelamis</i>	Chinese languages: then chien, thang chien French: bonite à ventre rayé, bounicou, listao German: Bauchstreifiger, echter Bonito Indonesian: ikan cakalang, skipjack Italian: tonnetto striato Japanese: hongatsuo, katsuo, katsuwo, katuwo, magatsuwo, mandagatsuwo, mandara, takami Korean: da-raeng-i, ga-da-raeng-i, ga-da-ri, gang-go-deung-so, mog-maen-dung-i, so-young-chi, yeo-da-raeng-i Philippine languages: bankulis, bonito, gulyasan, palawayan, pundahan, puyan, sobad, tulingan Spanish: atún de altura, barrilete, bonita, bonito de altura, bonito de veintre rayado, bonito del sur, bonito, listado Other English: Arctic bonito, bonito, oceanic bonito, skippy, striped bellied tunny, striped tuna, striped tunny, watermelon	51%	Canning, sashimi, sushi, steaks, dried flakes (katsuobushi)
Southern bluefin	<i>T. maccoyii</i>	Chinese languages: nan fang hay we French: thon rouge du Sud Indonesian: tuna sirip biru selatan Italian: tonno rosso del Sud Japanese: bach maguro, indo (goshu) maguro, minami maguro Korean: in-do-da-raeng-i Spanish: atún rojo del Sur	<1%	Sashimi, sushi, steaks
Yellowfin	<i>T. albacares</i>	Chinese languages: huang chi we French: albacore, thon a nageoires jaunes German: gelbflossenthun Indonesian: tuna ekor kuning, tuna madidihang Italian: tonne albacora Japanese: hamachi, hatsu, kihada, kimeji, kiwada Korean: huang-da-raeng-i Philippine languages: albaeora, badla-an, buys, tambakol Spanish: atun aleta amarilla, rabil Other English: yellowfinned albacore	32%	Canning, sashimi, sushi, steaks

* Main catching countries (2002): Japan, US, Taiwan, Spain, Indonesia, Philippines, South Korea, France, Mexico, Venezuela⁸³
** Key markets: Japan, US, Europe (particularly Spain, Italy, the UK, France, and Germany)⁸⁴

Appendix II. RFMO overview

CCSBT

Full name:	Commission for the Conservation of Southern Bluefin Tuna
Objective:	To ensure, through appropriate management, the conservation and optimum utilization of the global southern bluefin tuna fishery
Entry into force:	1994
Area of jurisdiction:	Southern Pacific Ocean, Indian Ocean (with IOTC), Atlantic Ocean (with ICCAT)
Members*:	<u>Australia</u> , Chinese Taipei (member of the Extended Commission), <u>Japan</u> , <u>New Zealand</u> , <u>South Korea</u>
Cooperating non-members*:	<u>Philippines</u> , <u>South Africa</u> , <u>European Community</u>

IATTC

Full name:	Inter-American Tropical Tuna Commission
Responsible for:	The conservation and management of fisheries for tunas and other species taken by tuna-fishing vessels in the eastern Pacific Ocean
Entry into force:	1950
Area of jurisdiction:	Eastern Pacific Ocean
Members*:	<u>Costa Rica</u> , Ecuador, El Salvador, <u>France</u> , <u>Guatemala</u> , <u>Japan</u> , Mexico, <u>Nicaragua</u> , <u>Panama</u> , Peru, <u>South Korea</u> , <u>Spain</u> , <u>United States</u> , <u>Vanuatu</u> , Venezuela
Cooperating non-parties or cooperating fishing entities*:	<u>Belize</u> , <u>Canada</u> , <u>China</u> , Chinese Taipei, <u>Cook Islands</u> , European Union, <u>Honduras</u>

ICCAT

Full name:	International Commission for the Conservation of Atlantic Tunas
Responsible for:	The conservation of tunas and tuna-like species in the Atlantic Ocean and adjacent seas
Entry into force:	1969
Area of jurisdiction:	Atlantic Ocean
Members*:	<u>Algeria</u> , <u>Angola</u> , <u>Barbados</u> , <u>Belize</u> , <u>Brazil</u> , <u>Canada</u> , <u>Cape Verde</u> , <u>China</u> , <u>European Community</u> , <u>Ivory Coast</u> , <u>Croatia</u> , <u>Equatorial Guinea</u> , <u>France</u> (St-Pierre and Miquelon), <u>Gabon</u> , <u>Ghana</u> , <u>Guatemala</u> , <u>Guinea</u> , <u>Honduras</u> , <u>Iceland</u> , <u>Japan</u> , <u>Libya</u> , <u>Morocco</u> , <u>Mexico</u> , <u>Namibia</u> , <u>Nicaragua</u> , <u>Norway</u> , <u>Panama</u> , <u>Philippines</u> , <u>Russia</u> , <u>Saint Vincent & The Grenadines</u> , <u>Sao Tome & Principe</u> , <u>Senegal</u> , <u>South Africa</u> , <u>South Korea</u> , <u>Syria</u> , <u>Trinidad & Tobago</u> , <u>Tunisia</u> , <u>Turkey</u> , <u>United Kingdom</u> (Overseas Territories), <u>United States</u> , <u>Uruguay</u> , <u>Vanuatu</u> , Venezuela
Cooperating non-contracting parties, entities, or fishing entities*:	Chinese Taipei, Guyana

IOTC

Full name:	Indian Ocean Tuna Commission
Objective:	To promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of [tuna and tuna-like] stocks [in the Indian Ocean and adjacent seas] and encouraging sustainable development of fisheries based on such stocks
Entry into force:	1996
Area of jurisdiction:	Indian Ocean
Members*:	<u>Australia</u> , <u>China</u> , Comoros, Eritrea, <u>European Community</u> , <u>France</u> , <u>Guinea</u> , <u>India</u> , <u>Iran</u> , <u>Japan</u> , <u>Kenya</u> , <u>Madagascar</u> , <u>Malaysia</u> , <u>Mauritius</u> , <u>Oman</u> , <u>Pakistan</u> , <u>Philippines</u> , <u>Seychelles</u> , <u>South Korea</u> , <u>Sri Lanka</u> , <u>Sudan</u> , Thailand, <u>United Kingdom</u> , <u>Vanuatu</u>
Cooperating non-contracting parties*:	<u>Indonesia</u> , <u>South Africa</u>

WCPFC

Full name:	Western and Central Pacific Fisheries Commission
Objective:	To ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the 1982 United Nations Convention on the Law of the Sea and the 1995 UN Fish Stocks Agreement
Entry into force:	2004
Area of jurisdiction:	Western and Central Pacific Ocean
Members*:	<u>Australia</u> , <u>Canada</u> , <u>China</u> , <u>Cook Islands</u> , <u>European Community</u> , <u>Federated States of Micronesia</u> , <u>Fiji</u> , <u>France</u> (extends to French Polynesia, New Caledonia, and Wallis and Futuna), <u>Japan</u> , <u>Kiribati</u> , <u>Marshall Islands</u> , <u>Nauru</u> , <u>New Zealand</u> (extends to Tokelau), <u>Niue</u> , <u>Palau</u> , <u>Papua New Guinea</u> , <u>Philippines</u> , <u>Samoa</u> , <u>Solomon Islands</u> , <u>South Korea</u> , <u>Tonga</u> , <u>Tuvalu</u> , <u>Vanuatu</u>
Cooperating non-members and fishing entities*:	Chinese Taipei ^a , <u>Indonesia</u> , <u>United States</u>

^a Chinese Taipei as a fishing entity is treated as a full member and recognized as so under Annex 1 of the WCPF Convention.

* Underlined countries have ratified UNCLOS; italicized countries have ratified the UNFSA (see Appendix III)

Appendix III. Key international obligations and agreements for sustainable tuna fisheries management

United Nations Convention on the Law of the Sea (UNCLOS)

Entering into force in 1994, UNCLOS is an international law that attempts to regulate all aspects of the resources of the sea and uses of the ocean, including management of living marine resources. It requires signatory states to, amongst other things, cooperate to:

- conserve the living resources of the high seas
- take measures to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield
- take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of these species above levels at which their reproduction may become seriously threatened.

United Nations Fish Stocks Agreement (UNFSA)

Entering into force in 2001, the UNFSA is a subsequent provision of UNCLOS that was expected to become the blueprint for the conservation and management of high seas fisheries targeting straddling fish stocks and highly migratory fish stocks, including tuna. A key feature is that it allows signatory states to control the activities of their nationals on the high seas regardless of the flag or ownership of the vessel on which they are working. UNFSA requires that signatory states, individually and collectively through RFMOs,:

- apply the precautionary approach to management of both target and non-target species
- implement management strategies that seek to maintain or restore populations of target and non-target species at levels consistent with previously agreed precautionary reference points
- where the status of target or non-target stocks is of concern, implement enhanced monitoring of those stocks in order to determine the effectiveness of conservation and management measures
- develop data collection and research programmes to assess the impact of fishing on non-target species.

The FAO Code of Conduct for Responsible Fisheries (CCRF)

Adopted by over 170 member governments of the FAO Conference in 1995, this voluntary code provides principles and standards applicable to the conservation, management, and development of all fisheries. It applies to all States, fishing entities, and relevant subregional, regional, and global organizations, and identifies RFMOs

as key players in the implementation of its objectives and principles. Like the UNFSA, it specifies the application of the precautionary approach.

International Plans of Action (IPOAs)

IPOAs are voluntary instruments elaborated within the framework of the FAO CCRF. Four IPOAs have been developed to date:

- **IPOA on Illegal, Unreported and Unregulated Fishing (IPOA-IUU):** aims to prevent, deter, and eliminate IUU fishing by providing all States with comprehensive, effective, and transparent measures by which to act, including through appropriate RFMOs established in accordance with international law.
- **IPOA for the Management of Fishing Capacity (IPOA-Capacity):** aims for States and regional fisheries organizations to take measures to prevent or eliminate excess fishing capacity and ensure that levels of fishing effort are commensurate with sustainable use of fishery resources.
- **IPOA for the Conservation and Management of Sharks (IPOA-Sharks):** aims to ensure the conservation and management of sharks and their long-term sustainable use.
- **IPOA for Reducing International Catch of Seabirds in Longline Fisheries (IPOA-Seabirds):** to reduce the incidental catch of seabirds in longline fisheries where this occurs.

Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement)

Entering into force in 2003, the FAO Compliance Agreement is intended to improve the regulation of fishing vessels on the high seas by strengthening the responsibility of flag states (i.e., the countries which register fishing vessels). It requires parties to:

- ensure that they maintain an authorization and recording system for high seas fishing vessels
- ensure that these vessels do not undermine international conservation and management measures.

Plan of Implementation of the World Summit on Sustainable Development

An output of the 2002 World Summit for Sustainable Development (WSSD), the Plan of Implementation outlines actions to achieve sustainable development. Key actions relating to RFMOs include:

- strengthening regional cooperation and coordination between the relevant regional organizations and

programmes, the United Nations Environment Programme (UNEP) regional seas programmes, regional fisheries management organizations and other regional science, health and development organizations

- encouraging the application by 2010 of the ecosystem approach
- maintaining or restoring stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis, where possible not later than 2015
- implementing the CCRF's IPOAs and Technical Guidelines
- maintaining the productivity and biodiversity of important and vulnerable marine and coastal areas
- developing and facilitating the use of diverse approaches and tools, including the ecosystem approach, eliminating destructive fishing practices, establishing marine

protected areas consistent with international law and based on scientific information, including representative networks by 2012 and implementing time/area closures for the protection of nursery grounds and periods.

Other legal instruments

Other legal instruments relevant, but not specific, to RFMOs are the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). These conventions impose obligations on their parties to ensure the conservation of biological diversity through individual or cooperative, including regional, action. The targets of the CBD's Global Outcome-oriented Targets for the Programme of Work on Marine and Coastal Biological Diversity include indicators related to the performance of RFMOs in halting unsustainable fishing.

Abbreviations

CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CCRF	Code of Conduct for Responsible Fisheries
CBD	Convention on Biological Diversity
CDS	Catch documentation scheme
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
cVMS	Centrally managed vessel monitoring systems
eCDS	Electronic catch documentation schemes
EU	European Union
FADs	Fish aggregating devices
FAO	Food and Agriculture Organization
GFCM	General Fisheries Commission for the Mediterranean
HSTF	High Seas Task Force
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
IPOA-Capacity	IPOA for the Management of Fishing Capacity
IPOA-Seabirds	IPOA for Reducing International Catch of Seabirds in Longline Fisheries
IPOA-Sharks	IPOA for the Conservation and Management of Sharks
IPOA-IUU	IPOA on Illegal, Unreported, and Unregulated Fishing
IUU	Illegal, unreported, and unreported
MCS	Monitoring, control, and surveillance
MSY	Maximum sustainable yield
RFMO	Regional fisheries management organization
TAC	Total allowable catch
TIS	Trade Information Scheme
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
US	United States
VMS	Vessel monitoring systems
WCPFC	Western and Central Pacific Fisheries Commission
WSSD	World Summit on Sustainable Development
WWF	World Wide Fund For Nature

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*Yellowfin tuna caught in a French purse-seine fishery, Atlantic Ocean. © WWF-Canon / H el ene Petit.
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