Inclusion of Atlantic Bluefin Tuna *Thunnus thynnus* in Appendix I

Proponent: Principality of Monaco

Summary: Atlantic (or Northern) Bluefin Tuna *Thunnus thynnus* is the largest member of the family Scombridae, capable of reaching a weight of over 650 kg. It is found throughout the North Atlantic and its adjacent seas, particularly the Mediterranean. The species is generally regarded as comprising two stocks, one spawning in the Gulf of Mexico and the Straits of Florida (the West stock), the other in the Mediterranean (the East stock), with adults showing high rates of natal homing and spawning site fidelity. However, there is evidence of significant trans-Atlantic movement, and members of the western population foraging in the eastern Atlantic. Individuals spawning in the Mediterranean mature at around four years of age, younger than those in the Gulf of Mexico, which mature at around 8–12 years. Life span is 30 years or more. Egg production appears to be age (or size)-dependent: a five-year-old female produces an average of five million eggs, while a female of 15–20 years can carry up to 45 million eggs. There is some disagreement over productivity of the species. Some consider that it is a species of low productivity, while others suggest that the East stock has a higher productivity than the West stock and should be regarded as having medium productivity. The West stock is currently estimated to have a population of more than 170 000 individuals over one year old and the East stock to number more than three million individuals aged one and over.

Atlantic Bluefin Tuna has been fished for many centuries, traditionally consumed fresh in Mediterranean countries (particularly Spain, France and Italy). However, exploitation in the Mediterranean is now mainly driven by the international market for sushi and sashimi, largely in Japan, and nearly all declared fishery production is exported. Traps were the main gear to catch bluefin tuna in the Mediterranean and near Atlantic for centuries, but nowadays most commercial harvest is by longline and more recently by purse seine. In the Mediterranean, around 70% of the catch is now taken by purse seine vessels and then transported live to tuna farms where the fish are fattened for six to eight months before export mainly to Japan; weight is estimated to increase by around 13% in this period. Fish fetch high prices on the international market. In the past, the highest value attached to a bluefin tuna was about USD900 per kg at the Tsukiji market auction in Tokyo, Japan; recent prices are mainly in the range USD200–300 per kg.

The International Commission for the Conservation of Atlantic Tunas (ICCAT), which came into force in 1969, is responsible for the management of the Atlantic Bluefin Tuna. All bluefin tuna fishing and farming nations in the Mediterranean are contracting Parties as are the USA, Canada and Japan. The species has been managed by ICCAT as two separate stocks since 1980; various management measures have been put in place, including Total Allowable Catches (TAC) for the two stocks.

TAC for the East stock was set at 22 000 t in 2008 and 19 950 t for 2009. These quotas exceeded the levels suggested by the Standing Committee of Research and Statistics (SCRS) of ICCAT, which had recommended that a maximum annual catch of between 8500 t and 15 000 t would be needed to prevent stock collapse and enable rebuilding to begin. In 2009, the TAC for 2010 was reduced to 13 500 t with a reduced fishing season and other management measures. For the West stock, TAC inclusive of dead discards was set at 1900 t for 2009 and 1800 t for 2010. The 2010 quota was not adjusted at the 2009 ICCAT Annual meeting. ICCAT have committed to setting science-based catch levels for 2011 to 2013 with a 60% probability of rebuilding the stock to healthy levels by 2023.

It is believed that there is considerable catch above the level set by ICCAT; for the period 1998–2007, ICCAT's SCRS reported that East Atlantic annual catches were likely to be in the region of 50 000 t, despite TACs of around 30 000 t. The committee considered that this apparent lack of compliance with the TAC and underreporting of the catch would undermine conservation of the stock. Although the TAC for the East stock has now been reduced to within the limits recommended by the SCRS, it is thought likely that actual catch will remain higher than TAC.

ICCAT's SCRS have estimated the extent of decline of the two stocks. Decline was estimated for current population size compared to estimates of unexploited population size (SSB_0) as well as for the maximum population size estimated between 1970 and 2007 in the stock assessment (SSB_{max}). The committee also examined decline compared with projected population size estimates under various harvest regimes, again in comparison to the estimated unexploited population size and maximum population size in the period 1970 to 2007. The committee concluded there was a greater than 90% probability that both East and West stocks had declined to less than 15% of their unexploited population sizes (SSB_0). When declines were calculated from SSB_{max}, (i.e. maximum stock estimated in the period 1970–2007), the committee concluded that there was a 30% probability that the West stock was below 15% of this and a 21% probability that the East stock was below 20% of this. In both cases there is believed to have been significant depletion of stocks before this period.

The proposal is accompanied by a draft Resolution that "Appendix I listing would be accompanied by a Conference resolution that would mandate the Animals Committee of the Convention to review the status of the East Atlantic and Mediterranean stock and the West Atlantic stock of *Thunnus thynnus* in light of any intervening actions at ICCAT and, if warranted, ask the Depositary Government (Switzerland) to submit a proposal to a subsequent CoP to downlist the species to Appendix II or remove it from the Appendices". The proponent notes that "a ruling to this effect by the Animals Committee only requires a simple majority of the Committee members and CoPs have a high rate of acceptance of proposals submitted by the depositary Government at the request of a relevant CITES Committee".

Analysis: According to the footnote on the "Application of decline for commercially exploited aquatic species", the historical extent of decline should be the primary criterion of consideration in Appendix I, it should extend as far back into the past as possible and can be estimated or inferred using indirect or direct methods. Guidelines in the footnote suggest that historical declines for species with low productivity should be to within 15–20% of the historical baseline and for species with medium productivity declines to within 10-15% of historical baseline are appropriate for listing in Appendix I. The species is considered of low to medium productivity. On the basis of estimated historical extent of decline from un-fished stock, ICCAT's SCRS considered that there was a greater than 90% probability that both East and West stocks have declined to less than 15% of their unexploited population sizes and therefore it appears that *Thunnus thynnus* meets the biological criteria for Appendix I. The species is clearly affected by trade.

TAC for the East stock, which was decreased at ICCAT in 2009 (13 500 t for 2010), is predicted to lead to some stock recovery, if perfectly implemented. However, SCRS recognize substantial unreported catch (likely to be around 60% or 20 000 t per year above the quota for 1998–2007). Its 2009 summary report for Atlantic Bluefin Tuna states: "Based on the Committee's analysis it is apparent that the TAC was overshot during a decade and was largely ineffective in controlling overall catch" [p 75]. There is no reason to assume that this situation will change in the immediate future. Despite low quotas imposed for the West stock, recovery has not yet been evident.

The resolution proposed to accompany the listing would appear not to be in accordance with *Resolution Conf. 9.24 (Rev. CoP14)* Annex 4 A.1 which directs that "no species listed in Appendix I shall be removed from the Appendices unless it has been first transferred to Appendix II, with monitoring of any impact of trade on the species for at least two intervals between meetings of the Conference of the Parties".

Supporting Statement (SS)	Additional information
Taxonomy	

Supporting Statement (SS)	Additional information
Range	
Found throughout North Atlantic Ocean and its adjacent seas, particularly the Mediterranean Sea, ranging from the "southern boundary of the equator to the northern boundary of the north of Norway", and from the western boundary of the Gulf of Mexico to the eastern boundary of the Black Sea.	
IUCN Global Category	
	Eastern Atlantic stock—Endangered A1bd (assessed 1996, Criteria ver 2.3 - needs updating) *Western Atlantic stock—Critically Endangered A1bd (assessed 1996, Criteria ver 2.3 - needs updating)*

Biological criteria for inclusion in Appendix I

A) Small wild population

(i) Population or habitat decline; (ii) small sub-populations; (iii) concentrated geographically during one or more life-history phases; (iv) large population fluctuations; (v) high vulnerability

The wild population is small and is characterized by at least one of the following: iii) a majority of individuals being concentrated geographically during one or more life-history phases; or v) a high vulnerability to either intrinsic or extrinsic factors.	*The wild population of Eastern Atlantic Bluefin Tuna is not considered small (estimated numbers greater than three million individuals of ages one year and older in 2008) (ICCAT SCRS, 2009a).*
Estimates of the genetically effective population size (Ne) for single subpopulations yield values of 400–700 individuals, which would qualify as low values, straddling the minimum threshold (Ne = 500).	*The wild population of Western Atlantic Bluefin Tuna is not considered small (estimated numbers greater than 170 000 individuals ages one year and older in 2008), nor is its distribution restricted (distributed throughout the Atlantic) (ICCAT SCRS, 2009a).*
Atlantic Bluefin Tuna displays strong aggregating behaviour at the spatial scale, relating to both feeding and spawning. The high concentrations of tuna translate to high vulnerability of stocks to the fishing gears (as for example baitboat fishing in the Eastern Atlantic and purse seining in the Mediterranean).	*Many consider there to be two distinct spawning grounds in the Gulf of Mexico or the Straits of Florida and the Mediterranean Sea (Mather* et al*. (1995) to which adults show high rates of natal homing (Block* et al*., 2005; Boustany* et al*., 2007; Carlsson* et al*., 2007; Rooker* et al*., 2008).*

B) Restricted area of distribution

(i) Fragmented or localized population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment

	Distribution is not restricted (ICCAT SCRS, 2009a).

Supporting Statement (SS)	Additional information

C) Decline in number of wild individuals

(i) Ongoing or historic decline; (ii) inferred or projected decline on the basis of decreasing area or quality of habitat, levels of exploitation, high vulnerability, or decreasing recruitment

The SS proposed the listing of the species on the basis of a marked decline in the population size in the wild, which has been either:
observed as ongoing or as having occurred in the past (but with a potential to resume); or
inferred or projected on the basis of any one of the following:

- levels or patterns of exploitation; or
- a high vulnerability to either intrinsic or extrinsic factors; or
- a decreasing recruitment.

Bluefin tuna are now absent or rare from formerly occupied habitats, such as the North Sea, Norwegian Sea, Black Sea, Sea of Marmara, off the coast of Brazil and Bermuda, and certain locations off the north-eastern American coasts, whereas large catches have been recently made in new areas, such as the eastern Mediterranean, the Gulf of Sirte and the central North Atlantic. The reasons for these changes in spatial and temporal patterns remain unclear and are likely to result from interactions between biological, environmental, trophic and fishing processes. The Atlantic Bluefin Tuna in Norwegian waters was for all practical purposes fished to extinction in little more than a decade.

Atlantic Bluefin Tuna is currently managed by ICCAT as two separate stocks; the Supporting Statement discussed these stocks separately.

A review of relevant information on productivity of the species in Annex 1 supports the SS's assertion that the species has a low productivity.

The large population off the coast of Brazil was extirpated after longline fishing harvested 5000–12 000 t annually 1962–1967 (Porch, 2005; Safina and Klinger, 2008). Bluefin fisheries in the Norwegian Sea and the North Sea collapsed in 1963 (Fromentin, 2009).

Thunnus thynnus *has a long life span and a low population growth rate which makes it more vulnerable to exploitation than tropical tunas (Fromentin and Fonteneau, 2001). Reported estimates of mean fecundity of large* T. thynnus *(>205 cm fork length (FL)) from the western Atlantic ranged from 30 to 60 million eggs (Baglin, 1982). Rodriguez-Roda (1967) estimated fecundity of 20-year-old female bluefin tuna from the East stock at 45 millions eggs, although a lower estimate of 13–15 million eggs was made by Medina* et al*. (2002) for spawning* T. thynnus *from areas in the western Mediterranean and Strait of Gibraltar. There is some disagreement over productivity of the species. Some consider that it is a species of low productivity, while others suggest that the East stock has a higher productivity than the West stock and should be regarded as having medium productivity (Fromentin* et al*., 2009).*

The footnote to Resolution Conf 9.24 (Rev. CoP14) *suggests historical ranges of decline to 10–15% for species with medium productivity and 15–20% for species with low productivity would be appropriate.*

ICCAT's SCRS has estimated the extent of decline of the two stocks. Decline was estimated for current Spawning Stock Biomass (SSB) compared to estimates of unexploited population size (SSB_0) as well as for the maximum historical population

Supporting Statement (SS)	Additional information
Historical decline to present The Atlantic Bluefin Tuna scores as a low productivity species using the criteria set up by the American Fisheries Society and/or the criteria of FAO (from supporting information) and therefore to be subject to the criteria of 20% of the baseline regarding marked decline.	*size estimated in the stock assessment (SSB_{max}). Probabilities were calculated for meeting the declines for high, medium and low productivity species i.e. <10%, <15% and <20%. Probabilities for meeting <15% and <20% are given below, although the report focused on declines to <15%, which was seen as the maximum needed for a species of low productivity and the minimum for a species of medium productivity (ICCAT SCRS, 2009a).*
From virgin stock Atlantic Bluefin Tuna have shown massive declines in standing stock biomass, and the remaining populations represent 10–20% of virgin biomass.	***Historical decline to present from unexploited population size estimates SSB_0 to SSB_{2009}.*** *SCRS estimates of long-term potential spawning biomass are not estimates of historical biomass* per se*, but what the stock size might be if there were no fishing.*
West In 1998, ICCAT adopted a rebuilding programme for the West Atlantic stock that called for rebuilding the spawning stock biomass to the levels needed to achieve maximum sustainable yield (MSY) with at least 50% probability. Since then, the spawning stock biomass has remained relatively stable at approximately 15–18% of its pre-exploitation level biomass.	***West*** *Two scenarios were used to estimate SSB_0 "high recruitment scenario" (SSB_0 ~ 221 000 t) and the "low recruitment scenario" (SSB_0 ~ 80 000 t). The former reflects a hypothesis that potential productivity has shown no trend over the assessment period; the latter reflects the hypothesis that productivity potential has shifted to a lower level after the late 1970s.* • ***under the low recruitment scenario*** *there is a high probability (93%) that SSB_{2009} is less that 15% of SSB_0.* • ***under the high recruitment scenario*** *there is a near 100% probability that the SSB_{2009} is below 10% of SSB_0 (ICCAT SCRS, 2009a).* *These results support the view of Rooker* et al. *(2007), that spawning populations in the western Atlantic are at 10% of the biomass prevailing when industrial fishing began, and recovery is confounded by trans-Atlantic movement across international jurisdictions.* *Block (2009) considers that the figures for declines given for the West stock of 15–18% of its pre-exploitation biomass are in fact for its 1970 level and that the stock continued to decline by an additional 9%, so that the West stock is at less than 10% of the pre-exploitation level.*
East A study by Taylor *et al*. (2009) using the MAST methodology—which integrates the effects of large-scale migrations by Atlantic Bluefin Tuna—suggests that the extent of the historical decline, particularly for the East Atlantic and Mediterranean stock, might be higher than that showed by SCRS (2008a), with current levels for both stocks below 20% of the historical baseline. The studies cited point to a high	***East*** *Long term potential SSB_0 of Eastern Atlantic Bluefin Tuna is even less well defined than that in the West. Estimates ranged from 825 000 t to 2.81 billions t, the wide range being the result of uncertainty in the assumption of steepness. Estimates of SSB_0 between 1 and 11.7 million t were used. The SCRS's summary conclusions are provided here. Results using other scenarios are given in the report.*

Supporting Statement (SS)	Additional information
probability that the spawning stock biomass of the Eastern stock of Atlantic Bluefin Tuna is currently (2009) already below 20% of its historical baseline.	▪ *There is a 96% probability that it is **less than 15%** SSB_0.* ▪ *There is a 99% probability that SSB_{2009} is **less than 20%** SSB_0. (ICCAT SCRS, 2009a).*
From maximum historically recorded stock	***Recent rate of decline from maximum historically recorded stock (SSB_{max} to 2009)*** *The SCRS evaluated spawning biomass relative to the maximum estimated during the period 1970–2009 (SSB_{max}).The maximum biomass only reflects historical abundance in the context of the post-1970 period.*
West Stock assessment conducted by the SCRS of ICCAT in 2008 shows an absolute extent of decline of the spawning population of 82.4% over the 38-year historical period (meaning that just 17.6% of the spawning biomass in 1970 would remain). The sharp decline of the Western spawning stock biomass took place between 1970 and 1985 (SSB in 1985 was approximately 18.9% of SSB in 1970). Since then, the stock has remained at relatively constant, but low, levels. Additionally, a decrease in recruitment has been estimated for the West Atlantic stock in the historical series considered by SCRS.	***West*** *SSB_{max} for West population = 45 000 t by ICCAT SCRS (2009)* • *The probability that SSB_{2009} is **less than 15%** of the maximum SSB estimated since 1970 is about 30%* • *There is about a 54% chance that it is **less than 20%** of maximum SSB_{max}.* *The SCRS concluded that the maximum biomass only reflected historical abundance in the context of the post-1970 period and did not reflect higher abundances that probably occurred prior to 1970, in view of the high catches in the 1960s.* *Major exploitation of the West stock took place between 1960 and 1970, with catches peaking at 18 679 t in 1964 (Safina and Klinger, 2008). Sharp declines took place during the 1960s. Taylor* et al*. (in press) estimate that the West stock is now 13% of SSB in 1950 on the basis of new models incorporating mixing (Block, 2009).*
East The absolute extent of the decline of the East Atlantic and Mediterranean stock over the 50-year period from 1957 to 2007 was assessed by ICCAT's SCRS at 74.2% in terms of biomass of the spawning population (meaning that 25.8% of the populations then remained). An estimate for SSB for the East Atlantic and Mediterranean stock in 2007 was 78 724 t This contrasts with the biomass peak estimated for 1958 at 305 136 t and with the 201 479 t estimated for 1997. The bulk of the decline (60.9%) was in the last 10 years.	***East*** *Maximum SSB between 1970 and 2009 (SSB_{max}) for East stock 297 000 t to 309 000 t* ▪ *The probability that SSB_{2009} is **less than 15%** of SSB_{max} is about 21%.* ▪ *The probability that SSB_{2009} is **less than 20%** of SSB_{max} is around 33% (ICCAT SCRS, 2009a).* *In 1963, the leading fisheries targeting Atlantic Bluefin Tuna in the Norwegian Sea and North Sea suddenly collapsed without any warning (Fromentin, 2009). Fromentin considers that SSB_{max} is less subjective than SSB_0.* *Taylor* et al*. (in press) estimate that the East stock is now 15% of SSB in 1950 on the basis of new models incorporating mixing (Block, 2009).*
Projected declines from virgin stock	***Projected declines from virgin or unfished stock (SSB_0) to 2019 (SSB_{2019})*** *Projections were made to estimate SSB in 2019 based on various harvesting regimes*

Supporting Statement (SS)	Additional information
	over the next 10 years, including those already set by ICCAT, those recommended by the SCRS of ICCAT and a zero quota. Estimates for harvest quotas set by ICCAT were modelled assuming perfect implementation and with a 20% over-harvest error for the East population. Perfect implementation of the other catch quotas was used to estimate SSB in 2019 (SSB_{2019}).
West Based on one assumption of recruitment, under more restrictive quota limits set in 2008, overfishing could end by 2010 and the West stock could be rebuilt [*the SSB to the levels needed to achieve MSY*] by 2019 with greater than 75% probability, whereas no recovery would take place based on another equally probable hypothesis regarding recruitment.	***West—For Rec 08-04 quotas, see management section below*** • *For perfect implementation of ICCAT Rec 08-04 under **the low recruitment** scenario, the probability that SSB_{2019} would be **less than 15%** of un-fished stock SSB_0 was 4%. Under **the high recruitment model**, the probability was 85% that SSB_{2019} would be **less than 15%** SSB_0.* • *For perfect implementation of a zero quota from 2010 to 2019 (i.e. no catches), SSB_{2019} would almost certainly be **above 15%** of the SSB_0 under **the low recruitment model*** • *For perfect implementation of a zero quota with the **high recruitment model**, there is a 30% probability that the SSB_{2019} would be **less than 15%** of the SSB_0 and 63% chance it would be **less than 20%** of SSB_0.*
East According to SCRS (2008), continued fishing at current fishing mortalities is expected to drive the spawning stock biomass to 6% of the un-fished level.	***East—For Rec 08-05 quotas, see management section below. These estimates were made before the quota for the East stock was reduced in 2009 to 13500 t for 2010*** ▪ *Projections indicate that perfect implementation of [Rec. 08-05] through the year 2019 will result in more than a 85% chance that SSB_{2019} will be **less than 15%** of long-term potential, SSB_0 (91% that it is **less than 20%** SSB_0)* ▪ *If there is imperfect implementation of [Rec. 08-05] through the year 2019 (in the order of 20% overages), then there is a 91% chance that SSB_{2019} will be **less than 15%** of long-term potential, SSB_0. (95% chance that it is **less that 20%** SSB_0).* ▪ *If catches were to be kept at 15 000 t annually from 2010 to 2019, then there would be a 78% chance that SSB_{2019} would be **less than 15%** of SSB_0. (87% chance it would be **less than 20%** SSB_0).* ▪ *If catches were to be kept at 8500 t annually from 2010 to 2019, then there would be a 66% chance that SSB_{2019} would be **less than 15%** of SSB_0. (77% chance it would be **less than 20%** SSB_0).* ▪ *If there were no catch from 2010 to 2019, then there would be a 48% chance that SSB_{2019} would be **less than 15%** of SSB_0. (61% chance that it would be **less that 20%** SSB_0).*
Projected Declines from maximum historically recorded stock	***Projected Declines (SSB_{2019}) from maximum historically recorded stock (SSB_{max})*** ***West*** • *For perfect implementation of ICCAT Rec 08-04 under both **the low and***

Supporting Statement (SS)	Additional information
East According to SCRS (2008), continued fishing at current fishing mortalities is expected to drive the spawning stock biomass in the East to very low levels; i.e. to about 18% of the 1970 level.	***high recruitment*** *scenario there is a less than 4% chance that* ***SSB_{2019}*** *will be* ***less than 15% of SSB_{max}.*** • *For perfect implementation of a zero quota from 2010 to 2019 (i.e. no catches) SSB_{2019} would almost certainly be* ***above 15%*** *of the* ***SSB_{max}*** *under* ***the low and high recruitment models.*** ***East*** ▪ *Projections indicate that perfect implementation of [Rec. 08-05] through the year 2019 will result in a 35% chance that SSB_{2019} will be* ***less than 15%*** *of the maximum SSB_{max}. (38% chance it will be* ***less than 20%*** *SSB_{max}).* ▪ *If there is imperfect implementation of [Rec. 08-05] through the year 2019 (in the order of 20% overages), then there is a 49% chance that SSB_{2019} will be* ***less than 15%*** *of* ***SSB_{max}****. (52% chance it would be* ***less than 20%)*** ▪ *If catches were to be kept at 15 000 t annually from 2010 to 2019, then there would be a 24% chance that SSB_{2019} would be* ***less than 15****% of* ***SSB_{max}*** *(27% chance it would be* ***less than 20%)*** ▪ *If catches were to be kept at 8500 t annually from 2010 to 2019, then there would be a 9% chance that SSB_{2019} would be* ***less than 15%*** *of* ***SSB_{max}*** *(11% chance it would be* ***less than 20%)*** ▪ *If there were no catch from 2010 to 2019, then there would be a 0% chance that SSB_{2019} would be* ***less than 15%*** *of* ***SSB_{max}****. (1% chance it would be* ***less than 20%****) (ICCAT SCRS, 2009a).* ***Projected decline of biomass in 2019 (SSB_{2019}) compared to biomass in 2009 (SSB_{2009})*** ***West*** *With perfect implementation of ICCAT-recommended catch, it is almost certain that the stock in 2019 will be higher than it is in 2009 (ICCAT SCRS, 2009a). No changes were made to TACs for 2010 at the 2009 ICCAT Annual meeting (ICCAT, 2009).* ***East*** ▪ *Projections indicate that perfect implementation of [Rec. 08-05] through the year 2019 will result in a 39% chance that* ***SSB_{2019}*** *will be less than* ***SSB_{2009}****.* ▪ *If there is imperfect implementation of [Rec. 08-05] through the year 2019 (in the order of 20% overages), then there is a 58% chance that* ***SSB_{2019}*** *will be less than* ***SSB_{2009}****.* ▪ *If catches were to be kept at 15 000 t annually from 2010 to 2019, then there would be a 26% chance that SSB_{2019} would be less than SSB_{2009}.* ▪ *If catches were to be kept at 8500 t annually from 2010 to 2019, then there would be a 7% chance that* ***SSB_{2019}*** *would be less than* ***SSB_{2009}****. (ICCAT SCRS, 2009a).*

Supporting Statement (SS)	Additional information

The species is or may be affected by trade

The Atlantic Bluefin Tuna is subject to a massive international trade, including a high incidence of illegal trade of the East Atlantic and Mediterranean stock.

Atlantic Bluefin Tuna has been fished for many centuries with catches from the Mediterranean in the first half of the 20th Century estimated at between 10 and 20 000 t annually (Fonteneau, 2009). Ravier and Fromentin (2002) estimated that mean historical (catches were around 110 000 tunas/year (± 50 000), i.e. 15 000 t/year in the early 20th Century.

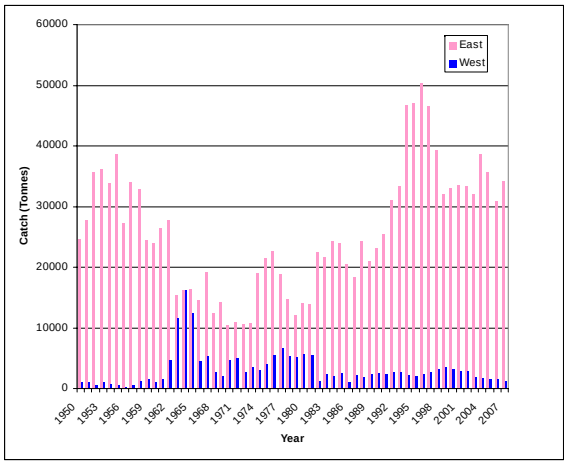


Figure: Total capture production (t) (Source: FAO Fisheries and Aquaculture Information and Statistics Service, 2009)

ICCAT SCRS estimated real catches of Atlantic Bluefin Tuna in 2007 potentially reaching 61 000 t, which contrast with the quota of 29 500 t for that year. However, comparisons should be made with caution since trade data for 2007 include some farmed fish caught in 2006, and trade information refers to processed presentations. The maximum annual catch recommended by ICCAT's SCRS to prevent collapse and initiate rebuilding for that stock was estimated at between 8500 t and 15 000 t.

The overshooting of the TAC is very likely for the period 1998–2007, with roughly a catch closer to 50 000 t and a TAC at around 30 000 t (Fromentin, 2009b). Worm et al*. (2009) consider that the biomass of bluefin tuna in 2007 was approximately a third of that predicted as equilibrium biomass when harvested as MSY and that the 2007 harvest rate was near to 10 times that predicted to result in MSY.*

For 2007, Japan reported to ICCAT the import of 32 356 t of processed Atlantic Bluefin Tuna (ICCAT Circulars 1951/07 and 500/08), in contrast with the TAC of 29 500 t for that year.

A single bluefin tuna was sold for USD174 000 in 2001 at the Tokyo market (Fromentin and Powers, 2005). At the start of 2010 a single tuna of 233 kg was sold in Japan's first auction of the year for JP6.28 million (USD177 000) (The Times, 2010).

Supporting Statement (SS)	Additional information
	It appears from figures provided in the SS that weight increases by approximately 13% during holding within tuna farms.

Other information

Threats

Overfishing including by-catch.

Atlantic Bluefin Tuna has been fished in the Mediterranean for hundreds of years (Fromentin and Ravier, 2005; Formentin, 2009a).

Conservation, management and legislation

Management of Atlantic Bluefin Tuna is under the competence of ICCAT, established in 1966. At ICCAT's annual meeting, legislation with management measures is adopted and is binding for the 48 contracting Parties. All bluefin tuna fishing and farming nations in the Mediterranean are contracting Parties.

Recommendations made by ICCAT shall be applicable to contracting Parties (ICCAT, 2007). EU Member States are contracting Parties through accession of the European Community in 1997.

Atlantic Bluefin Tuna is listed in Annex I of the 1982 Convention on the Law of the Sea as a highly migratory species (FAO Fisheries Department, 1994).

Adults showed high rates of natal homing to both eastern and western spawning areas (Block et al*., 2005; Boustany* et al*., 2007; Carlsson* et al*. 2007; and Rooker* et al*., 2007) although there is also evidence of significant trans-Atlantic movement (east to west) which appears to be size-dependent, with individuals of Mediterranean origin mixing with the western population in the US Atlantic (Rooker* et al*., 2008). The species displays highly migratory behaviours and trans-oceanic movement is well documented (Mather* et al*., 1995; Turner and Powers, 1995; Block* et al*., 2005 and Rooker* et al*., 2006a). There is still debate over the population structure of the species and whether there is a panmictic population, two stocks with overlapping foraging grounds, or a metapopulation. This uncertainty is currently one of the major uncertainties in the stock assessment (Fromentin, 2009b).*

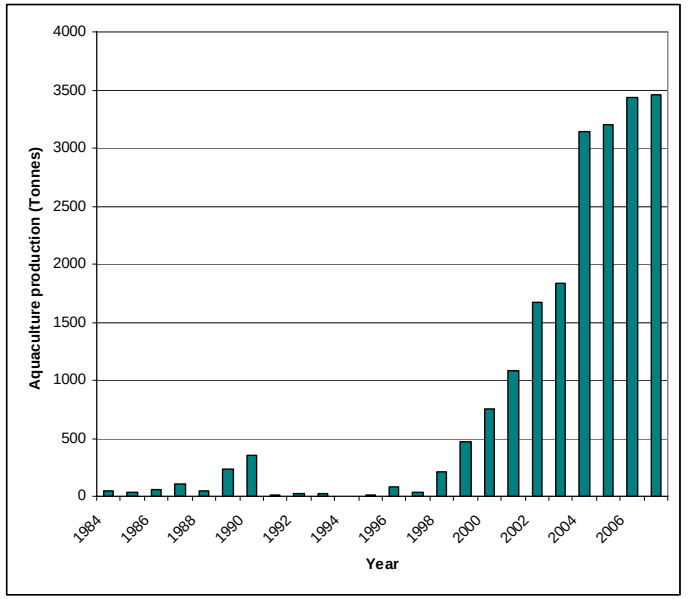
Large-scale movements between foraging and spawning grounds often result in Thunnus thynnus *crossing international management boundaries. Exchange rates show that US fisheries for bluefin tuna appear dependent, to some extent, upon recruits from the Mediterranean Sea.*

Management measures
ICCAT currently manages Atlantic Bluefin Tuna as two stocks, the West and the East stocks, with the boundary between the two spatial units being the 45°W meridian. ICCAT has consistently set catch quotas for the East Atlantic and Mediterranean stock above levels recommended by its scientists (SCRS). The continuously decreasing population trends of the East Atlantic and Mediterranean stock are evidence of the failure of ICCAT's management measures to date

Management measures
ICCAT has set fisheries quotas since 1998. However, ICCAT's SCRS report (p. 75) in 2009 noted that "based on the Committee's analysis, it is apparent that the TAC was overshot during a decade and was largely ineffective in controlling overall catch" (ICCAT SCRS, 2009b).

Supporting Statement (SS)	Additional information
East In 2006,scientists advised that the only scenarios which have the potential to address the decline and initiate recovery are those which include, among other measures, the closure of the Mediterranean to fishing during the spawning months (May, June and July) and a TAC of 15 000 t or less. The SCRS estimated that catches were 56% over the TAC. However, in November of the same year, ICCAT, in its plenary session, adopted the first "Recovery plan for bluefin tuna in the Eastern Atlantic and Mediterranean" which did not take into account any of the mentioned essential *Thunnus thynnus* Appendix-I listing proposal requirements for rebuilding the stock. The TAC was fixed at 29 500 t for 2007, decreasing gradually to 25 500 t by 2010; and the seasonal closure included only one month of the three-month spawning season advised. In July 2008, a new stock assessment for the East Atlantic and Mediterranean stock was made by the SCRS (SCRS, 2008a). At this time, the SCRS advised that the maximum TAC should be between 8500 and 15 000 t, and that fishing should be banned during the spawning season (May, June and July). ICCAT established TAC limits of 22 000 t, 19 950 t and 18 500 t for the years 2009, 2010 and 2011, respectively.	***East*** *ICCAT Recommendation [08-05](superseded in 2009)* *TAC* *2007: 29 500 t* *2008: 28 500 t* *2009: 22 000 t* *2010: 19 950 t* *2011: 18 500 t* *Closed seasons have been set for different areas and for gear types. Sanctuaries are to be created in the Mediterranean.* *Minimum size 30 kg except for baitboats, trolling boats, artisanal fisheries and for farming where eight kilogrammes is the minimum size.* *In 2009, TAC for 2010 was reduced to 13 500 t with a reduction in fishing season and other increased management measures. TACs for future years will be determined on the basis of SCRS stock assessments in 2010 (ICCAT Secretariat, 2009). Other measures include adjustments to fishing capacity, reporting requirement, measures for farming activities and enforcement measures by contracting Parties. This is the first time the TAC set by ICCAT is within the range of the SCRS recommendations, after more than 10 years of a TAC set far above SCRS recommendations.* ***West*** *ICCAT Recommendation [08-04]* *TAC inclusive of dead discards 1900 t in 2009, 1800 t in 2010. TAC for future years will be determined on the basis of SCRS stock assessments in 2010. No changes were made to these catch limits at the 2009 ICCAT meeting (ICCAT Secretariat, 2009). Minimum size for capture is 30 kg or fish having fork length of less than 115 cm. No directed fishery is allowed in the spawning areas, e.g. Gulf of Mexico.* *Despite over 20 years of strict regulations on fisheries in the Western Atlantic, population estimates are far below reference levels (SCRS, 2003; 2006) in Rooker 2007). The disparity between the eastern and western population sizes and the continued decline of the western stock suggests that some added level of protection is needed to ensure the sustainability of the smaller western component (Rooker, 2008).*
<u>Similar species</u>	
Tuna species are widely traded at the international level, including Pacific Bluefin Tuna *Thunnus orientalis*, Southern Bluefin Tuna *Thunnus maccoyii*, Bigeye Tuna *Thunnus obesus,* Yellowfin Tuna *Thunnus albacares*, Albacore *Thunnus alalunga* and Skipjack *Katsuwonus pelamis*. Morphologically, all three bluefin tuna species	*The Commission for the Conservation of Southern Bluefin Tuna has put in place mandatory requirements for tagging of product of Southern Bluefin Tuna in trade so there is no look-alike problem with that species (Sant, 2009). DNA techniques have been developed to differentiate Atlantic Bluefin Tuna from Southern Bluefin Tuna and*

Supporting Statement (SS)	Additional information
look similar, particularly Atlantic and Pacific Bluefin Tuna. As whole adult fish, Bigeye Tuna, Yellowfin Tuna, Albacore and Skipjack are easily identifiable from bluefin tunas, based on external attributes (body shape and other morphometrics, characteristics of the fins, etc.). Trade in these species involves different kinds of presentation: for example, gilled and gutted, or transformed into loins or belly meat. All of these might be fresh/chilled or frozen. Once transformed into loins or belly meat, the three bluefin species, Bigeye Tuna and Yellowfin Tuna are very difficult, if not impossible, to distinguish from each other visually. Genetic techniques provide precise tools to identify Atlantic Bluefin Tuna from any other tuna species and can be used for tissue from fresh or frozen whole individuals, fin clips and even dried tissue and larvae.	*Pacific Bluefin Tuna (Lowenstein* et al*., 2009).*
<u>Artificial propagation/captive breeding</u>	
East Most tuna caught by the industrial purse seine fleets operating in the Mediterranean are transferred live to farms for farming/fattening purposes (usually for a period of a few months). This activity qualifies as capture-based aquaculture according to FAO Standards, but does not involve the breeding in captivity of the animals. Farming capacity abruptly increased from a few hundred tonnes in 1997 to 30 000 t in 2003 (WWF, 2006) and around 64 000 t in 2008, representing approximately 51 000–57 000 t round weight of (large) fish at time of capture (SCRS, 2008a). As previously noted, the current farming capacity in the Mediterranean is estimated by the SCRS to be around 64 000 t (SCRS, 2008a). **West** No harvesting for captive raising, captive breeding, or artificial propagation is currently taking place from the West Atlantic stock.	***East*** *Figure 2 shows FAO data on bluefin tuna "aquaculture" (fattening/farming) production. This is not strictly captive breeding according to the CITES definition, rather fish are caught in purse seines and grown on for six to eight months. Fish raised under these conditions have higher oil content and are preferred.*

Supporting Statement (SS)	Additional information
The similar species, Pacific Bluefin Tuna, is subject to true, closed lifecycle captive breeding in Japan, where a small production is entering the local market and known as *kindai*. The EU-funded project SELFDOTT is currently investigating the breeding of Atlantic Bluefin Tuna in captivity.	 ***Figure 2: Aquaculture production of bluefin tuna between 1964 and 2009 Source: FAO Fisheries and Aquaculture Information and Statistics Service. 2009*** *It appears from figures provided in the SS that weight increases by approximately 13% during holding within tuna farms.* *Many problems remain with the development of aquaculture of Atlantic Bluefin Tuna and this will take, if it succeeds, at least 10 to 20 years of intensive research (Fromentin, 2009b).* *Clean Seas, an Australian initiative, is also farming Southern Bluefin Tuna.*

Other comments

Supporting Statement (SS)	Additional information
Appendix-I listing would be accompanied by a Conference Resolution that would mandate the Animals Committee of the Convention to review the status of the East Atlantic and Mediterranean stock and the West Atlantic stock of *Thunnus thynnus* in the light of any intervening actions at ICCAT and, if warranted, ask the Depositary Government (Switzerland) to submit a proposal to a subsequent CoP to downlist the species to Appendix II or remove it from the Appendices. A ruling to this effect by the Animals Committee only requires a simple majority of the Committee members and CoPs have a high rate of acceptance of proposals submitted by the depositary Government at the request of a relevant CITES Committee.	*This would appear not to be in accordance with Resolution Conf. 9.24 (Rev. CoP14) Annex 4 A.1 which directs that "no species listed in Appendix I shall be removed from the Appendices unless it has been first transferred to Appendix II, with monitoring of any impact of trade on the species for at least two intervals between meetings of the Conference of the Parties".* *Based on long-term trap data Ravier and Fromentin (2001) showed that the eastern Atlantic Bluefin Tuna population displayed fluctuations with a period of 100–120 years and also cyclic variations of about 20 years.*

Reviewers:
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