

Inclusion of Spiny Dogfish *Squalus acanthias* in Appendix II

Proponent: Sweden, on behalf of the European Community's Member States acting in the interest of the European Community

Summary: The Spiny Dogfish *Squalus acanthias* is a temperate water, largely migratory shark of the shelf seas in the Northern and Southern Hemispheres. This species is widely acknowledged as the slowest-growing, latest maturing (10–32 years) and longest lived (35–100 years) of the sharks with the lowest known intrinsic rate of population increase for any marine fish (2.3–7%, depending on the stock) and extremely long gestation time (18–22 months). As a consequence, Spiny Dogfish have very low productivity and are exceptionally vulnerable to over-exploitation.

The Spiny Dogfish is one of the few shark species for which some species-specific trade data exist. Strong, persistent demand for highly valued Spiny Dogfish meat, primarily from Europe, is the key driver of international trade and targeted fisheries worldwide. Spiny Dogfish fins and other products are also traded internationally. Many Spiny Dogfish populations have been severely depleted by directed fisheries (which usually target mature females) and the species has been characterized by serial depletion around the globe. As the Spiny Dogfish is migratory and usually strongly aggregated by age and sex, fishers can maintain catches despite stock depletion and they can target the most valuable specimens in the stock (i.e. large females). Spiny Dogfish have undergone marked historic declines in stock abundance and landings in the North Atlantic and North Pacific to <20% of baseline and have also shown high recent rates of decline. Particular concerns for the North West Atlantic stock include a male-biased sex ratio (4–7:1), a decade of poor recruitment, a lack of small and large females (over 100 cm) in the population and declining brood size and mean pup length. Some North East Pacific (Canada) stocks appear relatively stable, some have declined, some are variable. Spiny Dogfish have declined greatly in the West Mediterranean and are now very rare. Data for other stocks are lacking; they are taken as by-catch in the South West Pacific but may be protected in a large part of the Argentinean shelf by management measures for other species; stocks in Alaska and New Zealand are considered to be stable or increasing; little is known about the stocks in South Africa and Australia.

Recent closure of the European Union (EU) and Norwegian Spiny Dogfish target fisheries in the North East Atlantic mean that the majority of future demand for Spiny Dogfish meat in Europe will have to be supplied by imports. The North East Atlantic Fisheries Commission (NEAFC) prohibited high seas fisheries for Spiny Dogfish in the North East Atlantic in 2008 (and 2009). Elsewhere, there has been little improvement in Spiny Dogfish management since 2007 when the Food and Agriculture Organization (FAO) noted that the management record for this species was “poor to extremely poor throughout the world”. Off the east coast of the USA, Spiny Dogfish fishing quotas have notably increased in recent years. There is no management in the North West Pacific despite reported declines in catch per unit effort.

The FAO Committee on Fisheries (COFI) recognized the pressing need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), endorsed by the FAO Council in 2000. Ten years later, FAO reported that out of 68 members responding to a questionnaire, 50% had conducted assessment as to whether a National Plan of Action (NPOA) was needed; 90% of those have gone on to develop and implement an NPOA. To date, there have been no assessments of the effectiveness of NPOAs. The Spiny Dogfish is listed globally as Vulnerable in *The IUCN Red List of Threatened Species*, and regional populations have been assigned individual listings ranging from Vulnerable to Critically Endangered except for South African and Australasian populations, which are considered to be of Least Concern.

The proposed listing in Appendix II would include an annotation to delay entry into effect of the inclusion by 18 months to enable Parties to resolve the related technical and administrative issues.

Analysis: The Spiny Dogfish is a widely distributed and numerically abundant fish. As a species it is inherently highly vulnerable to exploitation, the consequence of a suite of life history characteristics including extremely low productivity and a very long generation time (25–40 years). Demand for its high-priced meat, chiefly in Europe, has driven the exploitation of many stocks and it is believed that a high proportion of Spiny Dogfish meat enters international

trade.

The state of stocks, and indeed the state of knowledge of stocks, is highly variable across the range of the species. Some stocks, notably in the Southern Hemisphere, are not known to be heavily exploited at present and appear to be stable. Virtually all Northern Hemisphere stocks have been heavily exploited in the past and many continue to be exploited. In almost all cases where data are available exploited stocks have demonstrated marked or very marked historical declines. Some historically or currently exploited stocks are believed to be stable or increasing although none is believed to be near the historical baseline and in at least one case (North West Atlantic–US) it is predicted that the decline will resume within less than 10 years because of recent poor recruitment.

An indication of trends in the species as a whole can be obtained by summing the best available current estimates for mature females, using relatively conservative figures for historical declines where these are known to have taken place, and assuming no change where these are not known (e.g. South West Atlantic, South West Pacific). On this basis, a very rough estimate would be that the current total population of mature females is around one third (33%) of historical population, historical in this case being more than 10 years ago, but well within three Spiny Dogfish generations.

The guidelines for commercially exploited aquatic species note that there should “rarely be a need for concern for populations that have undergone an historic extent of decline of less than 50%”. Current information indicates that the Spiny Dogfish (in terms of number of mature females) has undergone a decline considerably in excess of this. The guidelines also note that a species may be considered for listing in Appendix II if it is near the extent-of-decline guidelines recommended for inclusion in Appendix I. In the case of a low productivity species, the latter decline is to 15–20% of baseline, while “near” is defined as between 5% and 10%, taking into due account the productivity of the species. Given the extremely low productivity of the Spiny Dogfish, it may be taken that this species is at the top of these ranges, that is, that an extent-of-decline to 30% of baseline could make the species eligible for inclusion in Appendix II. This is close to the (very rough) figure derived above, indicating that the species may meet the criteria for inclusion in Appendix II in *Resolution Conf. 9.24 (Rev CoP14)*.

Supporting Statement (SS)	Additional information
<p data-bbox="161 1018 577 1043">Synonyms: 15 synonyms are provided.</p> <p data-bbox="161 1102 1086 1238">Occurs in temperate and boreal waters of 0–12°C, with 6–11°C preferred. It falls within the jurisdiction of 66 countries and overseas territories. Only part of the North West Atlantic population undertakes regular North-South seasonal migrations, others may only migrate occasionally. Some authors have noted the possibility of a metapopulation of Spiny Dogfish in the North West Atlantic and North East Pacific.</p> <p data-bbox="161 1297 1086 1348">Global distribution of Spiny Dogfish (black) as shown in distribution map of FAO (2003) and major fishing grounds (red circles):</p>	<p data-bbox="1057 951 1178 976" style="text-align: center;"><u>Taxonomy</u></p> <p data-bbox="1079 1061 1155 1086" style="text-align: center;"><u>Range</u></p> <p data-bbox="1122 1102 2056 1209"><i>The principal populations occur in the North West and North East Atlantic (including Mediterranean and Black Seas), North East and North West Pacific (including Sea of Japan), South Atlantic and South East Pacific off South America, and New Zealand, with smaller populations off South Africa and southern Australia.</i></p>

Supporting Statement (SS)	Additional information
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IUCN Global Category

Global—Vulnerable
 Northeast Atlantic—Critically Endangered
 Mediterranean Sea—Endangered
 Black Sea—Vulnerable
 North West Atlantic—Endangered
 North East Pacific—Vulnerable
 North West Pacific—Endangered (it may prove to be Critically Endangered once a full regional review can be undertaken)
 South America—Vulnerable
 Australasia—Least Concern
 Southern Africa—Least Concern

All assessed 2006 ver 3.1.

Biological and trade criteria for inclusion in Appendix II (*Resolution Conf. 9.24 (Rev. CoP14) Annex 2 a*)

A) Trade regulation needed to prevent future inclusion in Appendix I

The Spiny Dogfish is widely acknowledged to be among the slowest-growing, latest maturing (females 15–32 years, males 10–14 years) and longest-lived of sharks (35–100 years), with the lowest known intrinsic rate of population increase (2.3–7% depending on stock) for any marine fish and longest known gestation of any vertebrate (18–22 months). Other life history characters that make Spiny Dogfish particularly vulnerable to over-fishing include long generation time (24–40 years), large body size (83–200 cm). Therefore, the Spiny Dogfish should be considered as a species with low productivity.

Spiny Dogfish are migratory and usually strongly aggregated by age and sex, making it easy for fishers to maintain catches despite stock depletion and to target the most valuable part of the stock (large, pregnant females). Heavily exploited populations become male-biased with associated reduction in pup production leading to heightened risk of stock collapse.

Estimated number of mature females (5–10% of total population):

North East Atlantic: 25 000 to 125 000
North West Atlantic: around 7.2 million
Mediterranean: 170 000
Black Sea 2.5 million
North East Pacific: 2–3 million
North West Pacific: unknown. perhaps similar to North East Atlantic.
South West Atlantic (Argentinean shelf): 2.5–5 million
South West Pacific (New Zealand): not fully assessed. In three main areas one million.

Summing the best available current estimates for mature females from the SS (taking the mid-points of ranges) and using relatively conservative figures for historical declines where these are known to have taken place, and assuming no change where these are not known (e.g. South West Atlantic, South West Pacific), a very rough estimate would be that the current total population of mature females is around one third (33%) of historical population, historical in this case being more than 10 years ago, but well within three Spiny Dogfish generations.

	Current estimate of female population	% declines observed	Estimate of baseline population of females
Stock			

Supporting Statement (SS)

Many stocks of this low productivity shark targeted by fisheries in the North Atlantic and North Pacific have suffered historical extent-of-declines to <20% of baseline and also rapid recent rates of decline. These stocks meet CITES guidelines for the application of decline to commercially exploited aquatic species.

Severe declines in the Spiny Dogfish stocks identified in the SS as meeting Annex 2a criterion A are summarized below

Year	Location	Data	Trend
1905-2005	NE Atlantic	SA – B	93.4-94.8% depletion
1955-2005		SA – B	92.9-93.4% depletion
1985-2005		CPUE	>75% decline from baseline
1957-1995	W Mediterranean	O	Decline from 1980s
1970s-1980s		O	Fishery closed in 1980s
1988-2005	NW Atlantic – US	SA – FB	75% decline from baseline
1990-2005		SA – B	80% decline from baseline
1987-2005		SA - MFW	50% decline
2010-2017		SA – FB	60-80% decline
1952-2000s	NW Pacific - Japan	L	>99% decline from baseline
1970-1990s		CPUE	80-90% decline from baseline
1970s-2000s	NE Pacific – Straight of Georgia	FC	65-80% decline from baseline
1984-2003	NE Pacific – Hecate Straight	FC	>95% decline from baseline

SA=Stock Assessment, B=Biomass, O=Occurrence, CPUE=Catch Per Unit Effort, FB=Female Biomass, MFW=Mean Female Weight, L=Landings, FC=Female Catches.

Spiny Dogfish have declined greatly in the West Mediterranean and are now very rare. The directed fishery in the Balearics was abandoned in the 1970s following declines. No *Squalus* spp. were recorded in the Balearics by the 1994–2004 MEDITS trawl survey, and very few records elsewhere in the western basin.

A discrete Spiny Dogfish stock in Puget Sound, North East Pacific, underwent a fall in commercial CPUE in the 1990s and is considered to be at a low level of abundance. This stock is also considered in the SS to meet Annex 2a criterion A.

The most important 20th century Spiny Dogfish fisheries were in the North East Atlantic, North West Pacific and North East Pacific shelf areas; all harvested over 50 000 t per year at their peak, prior to collapse. North West Atlantic landings peaked in the mid-1990s at just under 30 000 t per year before management limits were imposed. Mediterranean and Black Seas fisheries were smaller. Most of the Southern Hemisphere fisheries are more recent and smaller scale.

Additional information

<i>North East Atlantic</i>	75 000	95	1 500 000
<i>North West Atlantic</i>	7 200 000	75	28 800 000
<i>Mediterranean</i>	170 000	80	850 000
<i>Black Sea</i>	2 500 000	66	7 500 000
<i>North East Pacific</i>	2 500 000	66	7 500 000
<i>North West Pacific: unknown. Perhaps similar to NE Atlantic.</i>	75 000	95	1 500 000
<i>South West Atlantic (Argentinean shelf)</i>	3 750 000	0	3 750 000
<i>South West Pacific (New Zealand)</i>	1 000 000	0	1 000 000
<i>Totals</i>	17 270 000		52 400 000
<i>Current remaining proportion of baseline</i>		0.33	

Data from the North West Pacific come from fishing areas marginal to the main distribution for Spiny Dogfish in the region and hence may need cautionary interpretation (FAO, 2007).

Supporting Statement (SS)	Additional information
<p>Landings of Spiny Dogfish reported from FAO fishing areas, 1950–2007 EU target fisheries for Spiny Dogfish in the North East Atlantic closed in December 2006.</p> <p>There are a number of concerns for the North West Atlantic Spiny Dogfish stock, including:</p> <ul style="list-style-type: none"> - Concentration of the female size range between 75–90 cm, with few over 100 cm or under 75 cm - Male-biased sex ratio (4-7:1) - Declining brood sizes and mean pup length, reducing survival rates - Recruitment failure in the period 1997-2003 and only slight recovery since. <p>In 2008, scientists associated with the Atlantic States Marine Fisheries Commission (ASMFC) warned that the spawning stock in the North West Atlantic was projected to decline sharply around 2017, owing to persistent low recruitment since 1997. This projection may include optimistic assumptions about pup survival and gear selectivity.</p> <p>In the North East Pacific, intensive fisheries in the 1940s caused a 60% decline in abundance within three years and reduced the stock by an estimated 40–70%. Following commencement of the fishery in 1975 to supply the meat to Europe, current stock levels are uncertain with biomass estimates for 2004 ranging from <30% of 1935 stock, to substantial recovery from the 1940s fishery.</p> <p>Spiny Dogfish has long been a commonly discarded by-catch of demersal fisheries in the South West Atlantic. Very few landings are reported under the recently introduced logbook code for Spiny Dogfish. Some regional and localized declines in Spiny Dogfish have been identified although trends are unclear.</p>	
	<p><i>Spiny Dogfish are caught as by-catch in various fisheries off the coast of Argentina although not always in substantial numbers and with no clear trends in abundance yet identified (Chiaramonte, 2009). The declines mentioned in the proposal for the</i></p>

Supporting Statement (SS)	Additional information
<p><u>B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences</u></p> <p>The following Spiny Dogfish stocks are reported to meet criteria for listing under Annex 2a criterion B:</p> <p><u>Eastern Mediterranean</u>—Surveys of the eastern basin showed no statistically significant trends in Spiny Dogfish abundance. Data for this region are incomplete with considerable underreporting.</p> <p><u>Black Sea</u>—Biomass declined by 40–60% in 11–13 years; reported landings declined by 65–95% in 13–24 years. Data for this region are incomplete.</p> <p><u>North West Atlantic, Canada</u>—Biomass increased from early 1980s to early 1990s then declined by 40% to present with an unquantified decline in female biomass. The shared Georges Bank stock declined steeply after 1992. The Scotian shelf stock is relatively high but variable. The small isolated southern Gulf of St Lawrence stock is declining and may disappear owing to lack of recruitment.</p> <p><u>North West Pacific, Russia</u>—Spiny Dogfish are not currently targeted here but by-catch is increasing.</p> <p>Dogfish are landed in Korea, but no species-specific data are available.</p> <p>Spiny Dogfish are currently not highly valued in South Africa and are not targeted; 99–100% of trawl by-catch is discarded.</p> <p>Spiny Dogfish are subjected to unsustainable target and by-catch fisheries in several parts of their range because of international demand for their high value meat (EUR9–36/kg). Other stocks are likely to experience similar declines unless trade regulations provide an incentive to introduce sustainable management.</p>	<p><i>Argentinean shelf are based on unclear and potentially problematic methodologies (Ibid).</i></p> <p><i>Spiny Dogfish were identified as the fourth-most important species of seven shark species caught as by-catch in Patagonian coastal trawl fisheries (Van Der Molen et al., 1998). Spiny Dogfish were found year-round throughout the area of the Argentinean hake fishery during studies in 1998 and were present and discarded in 37.91% and 16.53% of the freezers and ice trawlers' tows, respectively, representing 0.57% and 0.13% of the freezers' and ice trawlers' catches (Cañete et al., 1999). Average annual by-catch of Spiny Dogfish in the Patagonian red shrimp fishery corresponds to the 0.04% of the total average biomass reported by surveys between 1992 and 2001 (Mari et al., 2005).</i></p> <p><i>While few export statistics are available to indicate volumes of Spiny Dogfish traded internationally, various reports describe trade routes; 1990–1994 Spain imported from Portugal, Africa, Central and South America and Asia; 1985–1991 Italian shark imports consisted of 38% Spiny Dogfish by weight; South Korea is the major market for New Zealand's Spiny Dogfish; the UK imports fresh Spiny Dogfish from the Faroe Islands; since 2001 EU import data include import 10 t per years of Spiny Dogfish from Namibia (Rose, 1996; Fleming and Papageorgiou, 1997; Lack, 2006).</i></p> <p><i>Spiny Dogfish may not be currently targeted in South Africa but “experience suggests that the deteriorating status of stocks elsewhere and the introduction of catch limits in some fisheries, together with continued strong international demand, may drive development of such a fishery” (Lack, 2006).</i></p> <p><i>The proportion of global landings that enter the international market is unknown but is likely to be high, as suggested by comparison of landings reported to FAO and imports to EU (data in SS) between 2004 and 2006; Norway and Iceland exported 91–94% and 55–67% of their reported landings, respectively, to the EU.</i></p> <p><i>Spiny Dogfish fins are small and consequently are of low value in the fin trade with some</i></p>

Supporting Statement (SS)	Additional information
<p>In 2007, EU Member States (traditionally the major market for and predominant importer of Spiny Dogfish) imported 4177 t of Spiny Dogfish (processed weight) from non-EU States including the USA, Canada, Norway, Morocco, New Zealand, Argentina, Mauritania, Iceland, and Chile. Supplies from Norway and the USA have declined, while exports from Canada, Morocco and New Zealand have increased. EU market demand for Spiny Dogfish must be met from imports in coming years, following the closure of the European fishery.</p> <p>US exports of Spiny Dogfish in 2007 also went to Thailand, China (Hong Kong), Mexico, Japan and Australia.</p> <p>Spiny Dogfish fins are traded internationally but species-specific global import data are not readily available. Cartilage and liver (oil) are also traded widely, hides can be processed into leather, and teeth and jaws may occasionally be traded.</p> <p>Mortality rates for Dogfishes caught as by-catch are 30-55% in gillnets and 0-50% in trawls. Given survival is often high in non size-selective by-catch fisheries, these may have a smaller impact on stock status than target fisheries for mature females.</p>	<p><i>traders not bothering to deal in them (Clarke, 2009). Nevertheless, owing to the large volume of Spiny Dogfish caught in the USA and Europe, the fins have been routinely traded for several decades up to at least the late 1990s, and may potentially constitute a significant proportion by volume of the shark fins reported in trade (Rose, 1996). Norway and Canada are also known to export Spiny Dogfish fins (Ibid.).</i></p> <p><i>Out of 112 range States or countries/territories/entities involved in the trade in Spiny Dogfish, only 10 are not Parties to CITES and they do not have significant catch and/or trade in this species (Lack, 2006).</i></p> <p><i>In 2004, 94% of the reported catch of Spiny Dogfish came from six States: Canada (38%), the UK (24%), New Zealand (15%), the USA (6%), France (6%) and Norway (5%) (Lack, 2006).</i></p>

Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Resolution Conf. 9.24 (Rev. CoP14) Annex 2 a or listed in Appendix I

It is proposed that all stocks of Spiny Dogfish that do not qualify for listing in Appendix II under Annex 2a are listed under Annex 2b criterion A, because of look-alike issues.

Accordingly, the SS identifies the following stocks that meet this criterion:

North East Pacific, Alaska; South West Atlantic, Argentina; South West Pacific, New Zealand.

Complex patterns of export, processing and re-export of meat make it difficult to distinguish products from different stocks, unless DNA analysis is used to confirm the origin of processed products. A split-listing could facilitate illegal, unreported and unregulated fishing for stocks listed in Appendix II.

Not considered further as the whole species has been assessed against criteria in Annex 2 a.

B) Compelling other reasons to ensure that effective control of trade in currently listed species is achieved

Other information

Threats

The principal threat to this species worldwide is over-exploitation in directed and by-

Supporting Statement (SS)	Additional information
<p>catch fisheries, particularly when mature females are targeted.</p>	
<p><u>Conservation, management and legislation</u></p>	
<p>Northern Hemisphere stocks are listed in Appendix II of the Convention on the Conservation of Migratory Species (CMS).</p>	
<p>Spiny Dogfish are listed on Annex V of the OSPAR Convention. Proposals for actions, measures and monitoring will be considered in 2009.</p>	
<p>The IPOA–Sharks urges all States with shark fisheries to implement conservation and management plans.</p>	
<p>Population monitoring for Spiny Dogfish is limited by the general lack of species-specific reporting of landings and by-catch in shark fisheries. Relatively good landings data are available for a few major fisheries in the North Atlantic, North Pacific and New Zealand.</p>	
<p><u>North East Atlantic:</u> The large North Sea Spiny Dogfish target fishery was closed in December 2006, following ICES recommendations. In 2009, a 1422 t by-catch total allowable catch (TAC) was in place throughout EU waters. A 100-cm total length (TL) maximum landing size has been imposed since January 2009 in an attempt to protect mature females.</p>	<p><i>In 2009, FAO reported that, of 68 members responding to a questionnaire, 50% had conducted assessments as to whether an NPOA was needed; 90% of those had gone on to develop and implement an NPOA (Lack and Sant, 2009). FOA member States with NPOAs include several with important Spiny Dogfish fisheries, including Canada, the EU, New Zealand, and the USA.</i></p>
<p>In 2007, Norway banned fishing and landing of Spiny Dogfish in the Norwegian EEZ and international waters in ICES areas I-XIV, although by-catch must be landed. Small inshore vessels (<28m) are permitted to fish for Spiny Dogfish with traditional gear and in territorial waters. The fishery may be closed when catches reach the previous year's level. There is also a 70-cm minimum landing size.</p>	<p><i>There have been no assessments of the effectiveness of any NPOAs to date and no regional fisheries management organization (RFMO) has yet adopted a regional plan of management for sharks (Lack, 2009).</i></p>
<p>In 2008, the North-East Atlantic Fisheries Commission (NEAFC) prohibited Spiny Dogfish fisheries within the NEAFC Regulatory Area.</p>	<p><i>In line with the EU's recently adopted shark action plan, the EU Council authorized a zero TAC for targeted fisheries on Spiny Dogfish for 2010 and a limited by-catch TAC (142 t), with a commitment to zero catches for 2011 (EU Press release IP /09/1948, 15 December 2009).</i></p>
<p>The Community Plan of Action (CPOA) for the Conservation and Management of Sharks (2009) sets the stage for rebuilding depleted shark stocks, including Spiny Dogfish, fished by the EU fleet. Measures outlined by the CPOA will be implemented at Community and Member State level; the Community will also seek their endorsement for consistent EU shark proposals at all relevant RFMOs.</p>	<p><i>ICES gave the following advice for Spiny Dogfish in 2009–2010 in the North East Atlantic (ICES areas I-XI): “The stock is depleted and may be in danger of collapse. Targeted fisheries should not be permitted to continue, and by-catch in mixed fisheries should be reduced to the lowest possible level. The TAC should cover all areas where spurdog are caught in the northeast Atlantic and should be set at zero (...).” (ICES, 2008).</i></p>
<p>Management outside the North East Atlantic has improved little since 2007 when FAO noted that the Spiny Dogfish fisheries management record was “poor to extremely poor throughout the world”.</p>	
<p><u>North West Atlantic:</u> Canadian Spiny Dogfish fisheries have been subjected to a quota in the NW Atlantic</p>	

Supporting Statement (SS)	Additional information
<p>since 2002; the limit was reduced to 2500 t in 2004. Future management decisions will be based on a joint Canada-US stock assessment scheduled for January 2010. Canada's National Shark Plan was adopted in 2007.</p> <p>In the USA, federal Spiny Dogfish fisheries have been managed since 2000. The National Marine Fisheries Service (NMFS) imposes science-based trip limits and quotas for Spiny Dogfish, but federal management measures are not compulsory in State waters (out to three nautical miles from shore). The ASMFC adopted its Spiny Dogfish plan in 2002, but has allowed continued directed fishing in State waters at levels higher than scientists' advice. Federal and State dogfish limits have been significantly increased in recent years.</p> <p><u>North East Pacific:</u> Although US and Canada conduct co-operative surveys for Northeast Pacific Spiny Dogfish, there is no co-ordinated, international or bilateral management for the stock. The Canadian Spiny Dogfish fishery has been managed since 2006 with catch and by-catch quotas based on historic biomass estimates and incorrect rates of population increase. Recent landings have been approximately 30% of quotas. In the US, federal management began in 2006 with trip limits (aimed primarily at other protected species), pending stock assessment and development of quotas which have been postponed repeatedly. In Alaska, Spiny Dogfish are included in a by-catch TAC for "other species". In Washington State, Spiny Dogfish are loosely managed within bottomfish management plans, with mesh restrictions and closure of a pupping ground.</p> <p><u>North West Pacific:</u> No management.</p> <p><u>Southern Hemisphere:</u> Spiny Dogfish have been regulated under New Zealand's Quota Management System since 2004. Landings have never reached the 12 660 t TAC. Shark Plans have been adopted by Argentina (2009), Chile and Uruguay (2008) although none of these plans include specific limitations on Spiny Dogfish. Large areas of fisheries closures established by Argentina for other species encompass much of the known maximum concentration of Spiny Dogfish.</p>	<p><i>In 2006, the Atlantic States Marine Fisheries Commission (ASMFC) adopted a commercial quota 50% higher than NMFS quotas and has allowed individual States to set their own trip limits at several times the scientific advice of 50–600 lbs (22–297 kg) (ASMFC, 2006). For example, Massachusetts, Rhode Island and North Carolina allow 2000 lbs per trip (900 kg) and Virginia allows 4000 lbs per trip (1800 kg) (Fordham, 2007). These increases were implemented in the interest of reopening directed fisheries (ASMFC, 2006). The States of Massachusetts and North Carolina have expressed their intent to continue to press for higher Dogfish limits in Federal waters (Fordham, 2007).</i></p> <p><i>A long closed season on the Argentinean shelf, implemented to regulate the hake fishery, also encompasses the main spring–summer aggregations of pregnant female Spiny Dogfish (Di Giacomo, 2009).</i></p> <p><i>Management of Spiny Dogfish fisheries in New Zealand anticipates the expansion of the Spiny Dogfish fishery to meet European demand for meat (Fowler et al, 2004).</i></p> <p><i>There is no specific management in place for Spiny Dogfish in Australia and, owing to a lack of clarity at the species level in catch data, it remains unclear to what extent it may be caught (TRAFFIC International, 2007).</i></p>
<p><u>Captive breeding/artificial propagation</u></p> <p>Not economically viable for commercial purposes, owing to slow reproductive and growth rates. Possibly some breeding taking place in public aquaria.</p>	

Supporting Statement (SS)	Additional information
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Other comments

There are likely to be difficulties associated with the identification of some Spiny Dogfish products, where fillets and trunks are marketed and transported with those of other small sharks. It will be necessary to prepare identification guides to differentiate between most common meat products of Spiny Dogfish and other species. These can readily be backed by the development of genetic identification tools. Several research laboratories are working on elasmobranch species and stock identification.

The annotation to the proposal provides for the delay by 18 months of the entry into effect of the inclusion of Spiny Dogfish in Appendix II of CITES, to enable Parties to resolve related technical and administrative issues, such as the development of stock assessments and collaborative management agreements for shared stocks and the possible designation of an additional Scientific or Management Authority.

Reviewers:

S. Clarke, G. Chiaramonte, E. Di Giacomo, S. Fordham, E. McManus, TRAFFIC Europe.

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