CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Fourteenth meeting of the Conference of the Parties
The Hague (Netherlands), 3-15 June 2007

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of *Squalus acanthias* Linnaeus, 1758 in Appendix II in accordance with Article II 2(a).

Qualifying criteria [Resolution Conf. 9.24 (Rev. CoP13) Annex 2 a]

*It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future.*

North Atlantic, Mediterranean, Black Sea and North Pacific *Squalus acanthias* stocks qualify under this criterion because their marked decline in population size meets CITES guidelines for the application of decline to commercially exploited aquatic species. Stocks of this low productivity shark (natural mortality 0.1) have experienced historical extent of declines to <20% of baseline and rapid recent rates of decline.

*It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.*

*Squalus acanthias* is subjected to unsustainable fisheries in several other parts of its range, because of international trade demand for its high-value meat. Other stocks are likely to experience similar declines unless trade regulations provide an incentive to introduce sustainable management.

Annotation

The entry into effect of the inclusion of *Squalus acanthias* on Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues, such as the possible designation of an additional Scientific or Management Authority.

B. Proponent

Germany, on behalf of the European Community Member States acting in the interest of the European Community. (This proposal has been prepared by Germany.)

C. Supporting statement

1. Taxonomy

| | | |
|---|---|---|
| 1.1 | Class: | Chondrichthyes (Subclass: Elasmobranchii) |
| 1.2 | Order: | Squaliformes |
| 1.3 | Family: | Squalidae |

1.4 Genus, species or subspecies, including author and year: *Squalus acanthias* Linnaeus, 1758

1.5 Scientific synonyms: See Annex 2.

1.6 Common names:

| | |
|---|---|
| English: | spiny dogfish, spurdog, piked dogfish |
| French: | aiguillat commun |
| Spanish: | mielga, galludos, cazón espinozo, tiburón espinozo, espineto, espinillo, tollo, tollo de cachos |
| Danish: | pighaj |
| German: | Dornhai |
| Italian: | spinarolo |

1.7 Code numbers:

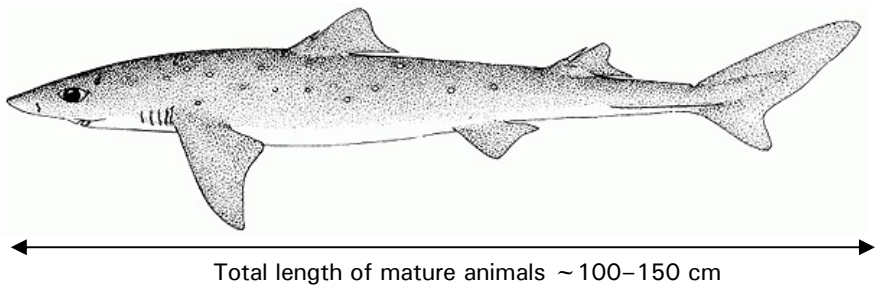


**Figure 1.** Spiny dogfish *Squalus acanthias*
(*Source*: FAO FIGIS 2003)

2. Overview

The spiny dogfish (*Squalus acanthias*) is a small temperate water largely migratory shark of shelf seas in the northern and southern hemispheres. Although naturally abundant, it is one of the more vulnerable species of shark to over-exploitation by fisheries because of its late maturity, low reproductive capacity, longevity, long generation time (25–40 years) and hence a very low intrinsic rate of population increase (2–7% *per annum*). Its aggregating habit makes it vulnerable to fisheries.

*Squalus acanthias* meat is highly valued, particularly in Europe, with European market demand driving fisheries that preferentially target aggregations of mature (usually pregnant) females. It is estimated that around half the supply of *S. acanthias* meat on the European Union (EU) market is sourced from non-EU Member States. Available exports statistics indicate that other markets for *S. acanthias* include China (Hong Kong SAR), Mexico, Thailand, Japan and Australia. The small fins of *S. acanthias* also enter international trade but are of relatively low value. Other products (liver oil, cartilage, skin) are less fully utilised. DNA tests for parts and derivates could be developed rapidly.

Some target *S. acanthias* fisheries have been documented for over 100 years. Stock assessments document a decline of over 95% from baseline in the Northeast Atlantic and a 75% reduction in mature females in the Northwest Atlantic in just ten years. Catch per unit effort and landings data indicate that some other stocks may have experienced a range of similar levels of decline. Elsewhere, increased fishing effort during a period of declining fish stocks and rising international market demand infers that other *S. acanthias* stocks are under similar pressure due to international trade demand for their products.

Management is in place in only a few States in a few regions and, in the majority of these, in only a limited part of the range of highly migratory stocks. In most cases, this management is inadequate to reverse current declining trends and to ensure future sustainable fisheries. No Regional Fishery Organisation (RFO) is managing fisheries for this species.

An Appendix-II listing is proposed for *S. acanthias* in accordance with Article II, 2(a) and Resolution Conf. 9.24 (Rev. CoP13). Past and ongoing marked population declines in several northern hemisphere stocks, combined with high market demand, are driving fishing pressure on other stocks that are now beginning to supply international markets.

*S. acanthias* meets the guidelines suggested by FAO for listing commercially exploited aquatic species. It falls into FAO's lowest productivity category of the most vulnerable species: those with an intrinsic rate of population increase of <0.14 and a generation time of >10 years (FAO 2001) and the extent and rate of population declines have exceeded the recommended qualifying levels for listing.

The purpose of an Appendix-II listing for *S. acanthias* is to ensure that international trade be supplied by sustainably managed, accurately recorded fisheries that are not detrimental to the status of the wild populations that they exploit. This can be achieved if non-detriment findings require that an effective sustainable fisheries management programme be in place and implemented, and by using other CITES measures for the regulation and monitoring of international trade. These trade controls will complement and reinforce traditional fisheries management measures, thus also contributing to implementation of the UN FAO International Plan of Action for the Conservation and Management of Sharks.

3. Species characteristics

3.1 Distribution

*Squalus acanthias* occurs in northern and southern temperate and boreal waters of 7–8°C to 12–15°C (see Annex 1 Figure 2) and has been recorded in the range States and FAO Areas listed in Annex 3. It is most common in coastal waters (10–200m) and fished inside 200-nautical mile Exclusive Economic Zones. Although some stocks undertake long distance seasonal migrations (e.g. NFSC 2003, Hanchet 1988), even crossing ocean basins (Templeman 1954, 1984), its distribution is fragmented into distinct populations separated by deep ocean, tropical waters, or polar regions. Genetic exchange across the Atlantic is considered very limited (Hammond and Ellis 2005). The principal populations occur in the Northwest and Northeast Atlantic (including Mediterranean and Black Seas), Northeast and Northwest Pacific (including Sea of Japan), South Atlantic and Southeast Pacific off South America, and New Zealand, with smaller populations off South Africa and southern Australia.

3.2 Habitat

This is a continental shelf species, occurring from the intertidal to the shelf slope. *S. acanthias* are usually found swimming in large schools just above the seabed, but also move throughout the water column on the continental shelf. They have unusually been recorded to depths of 900m (Compagno 1984), but are most common from 10–200m (McEachran and Branstetter 1989). Segregation by size and sex makes schools of large pregnant females particularly vulnerable to fisheries (Compagno 1984).

Templeman (1944) suggested that mature females were present off Newfoundland (Northwest Atlantic) from January through May, and their pups in inshore areas during the same season, while Castro (1983) reported that, in the North Atlantic, *S. acanthias* pups are found offshore in deepwater wintering grounds. Primarily epibenthic, they are not known to associate with any particular habitat (McMillan and Morse 1999). They are thought to mate in winter (Castro 1983, Compagno 1984). In Australia, breeding occurs in large bays and estuaries (Last and Stevens 1994). Mating and breeding migrations in New Zealand are described by Hanchet (1988) and Ministry of Fisheries 2006. Other mating grounds are unknown.

3.3 Biological characteristics

*Squalus acanthias* is very long-lived, slow-growing and late maturing, with a reproductive cycle that makes it particularly vulnerable to over-fishing. Pregnancy lasts 18–24 months with females giving birth every two years to litters of 2–11 pups, exceptionally 20, at a sex ratio of 1:1. Pups are 18–33cm long at birth; females mature at 75–100cm and 10–23 years old (depending upon stock), males smaller and younger (6–14 years, Compagno 1984, ICES WGEF 2006). Larger older females have bigger litters of larger pups with higher survival rates (Whitehead *et al*. 1984, NFSC 2003). The maximum observed sizes of males and females respectively were 100 and 160cm in the Northwest Pacific, 107 and 130cm in the Northeast Pacific, 86 and 108cm in the Northwest Atlantic, 83 and 110cm in the Northeast Atlantic

(Ketchen 1972, Heessen 2003), 90 and 111cm in New Zealand (Hanchet 1988, Hanchet and Ingerson 1997). Anon. 2002 reported a 90cm male in the Northeast Atlantic, Fischer *et al*. (1987) a 200cm female in the Mediterranean, and *S. acanthias* achieve larger sizes in the Black Sea (Compagno 1984). Maximum age is assumed to be 50 years in the Northwest Atlantic (NFSC 2003), over 60 years in the North Pacific (Fishery Agency of Japan 2004), with some estimates approaching or surpassing 100 years (it is not possible accurately to age large animals) (Compagno 1984). Two tagged male *S. acanthias* recaptured in the Northeast Atlantic in 1999 after 35 and 37 years at liberty had grown an average of only 3.3mm and 2.7mm per year, to 78 and 90cm long respectively (Anon, 2002), suggesting that the larger individual was considerably older than 40 years (growth rates slow markedly after maturity is reached).

These life history parameters (Annex 1 Table 2) result in a limited reproductive capacity and one of the lowest population growth rates calculated for any shark species. Smith *et al*. (1998) considered this species to have the lowest intrinsic rebound potential of 26 shark species analysed, at 2.3% annual rate of population increase from maximum sustainable yield (MSY) in the Northeast Pacific, compared with 4–7% in the Northeast Atlantic (Heessen 2003). Annual mortality is estimated as 0.092 in the Northwest Atlantic (NFSC 2003), or around 0.1, increasing to 0.3 for very old or young fish (ICES WGEF 2006).

3.4 Morphological characteristics

A slender cylindrical-bodied smooth-skinned dogfish with grey to bluish-grey dorsal surface, lighter to white below, often with white spots on its sides. Dorsal fins dusky or plain in adults, but with black apices and white posterior margins and free rear tips in young. First dorsal fin low, origin usually behind or sometimes over pectoral free rear tips, with a very short slender spine with origin well behind pectoral free rear tips. Second dorsal fin much smaller, strongly falcate, with larger, stouter spine. Pectoral fins with shallowly concave posterior margins and narrowly rounded rear tips have light posterior margins in adults. Strong ventral caudal (tail) lobe, strong lateral keels on caudal peduncle. Narrow head, relatively long pointed snout, short transverse mouth, low bladelike cutting teeth. Spiracles large and close to eyes.

3.5 Role of the species in its ecosystem

*Squalus acanthias* feeds mainly on a variety of bony fishes, such as herring, haddock and cod (ASMFC 2002), and some invertebrates (Compagno 1984). It is eaten by some larger sharks and marine mammals (Compagno 1984). Its abundance does not appear to affect the recruitment of groundfish (Link *et al*. 2002 in NFSC 2003, Bundy 2003) and its very slow growth and low metabolic rate imply that it does not consume large quantities of prey compared with warm-blooded shark species.

4. Status and trends

4.1 Habitat trends

Coastal development, pollution, dredging and bottom trawling affect the coastal or benthic habitats on which *S. acanthias* and their prey are dependent (ASMFC 2002). Such environmental threats may have potential impacts on *S. acanthias* stocks associated with areas of habitat degradation and loss.

4.2 Population size

The Northeast Atlantic *S. acanthias* population size has been estimated, at between 500,000 and 100,000 mature individuals in 2000, following a roughly 80% decline from 1980 (Annex 1 Figure 3, Heessen 2003). Northwest Atlantic surveys (Wallace *et al*. 2006) have produced mature female population size estimates for the Scotian Shelf (Nova Scotia, Atlantic Canada) stable at around 3.5 million (less than 3% of the whole population), but a rapid decline to about 78,000 mature females in 2004 on Georges Bank (a stock shared by the United States of America and Canada), and a reduction in distribution and abundance in the Gulf of Saint Lawrence. Other stock assessments have only assessed population biomass or trends (see 4.4), not numbers of dogfish.

4.3 Population structure

*S. acanthias* is migratory and usually strongly segregated by age and by sex. Their aggregating habit makes it easy for fishermen to continue to obtain good catches from a seriously depleted stock, and to target the most valuable part of the stock (large, usually pregnant females) as they undertake predictable seasonal migrations through fishing grounds. Spiny dogfish are also caught as small as 50cm (~4–5 years old), and are fully recruited in the Northeast Atlantic fishery at lengths of approximately 70–80cm (~8 years old) (Heessen 2003). Female *S. acanthias* are, therefore, also exploited before they reach maturity at 74–94cm. This results in a very unnatural population structure in heavily fished stocks, with low mature female biomass, high male abundance, and near absence of juveniles (Annex 1 Figure 4). The removal of the largest females also causes greatly reduced pup production (small recently mature females bear small litters of small pups with low survival rates) and risk of stock collapse (NFSC 2003).

4.4 Population trends

Population trends, summarised in Table 1, are presented in the context of Annex 5 of Resolution Conf. 9.24 (Rev. CoP13). A 'marked historical extent of decline' is a percentage decline to 5%-30% of the baseline, depending upon the productivity of the species. A 'marked recent rate of decline' is a percentage decline of 50% per cent or more within the last 10 years or three generations, whichever is the longer. The estimated generation time for *S. acanthias* is between 25 and 40 years (see 3.3 and Annex 1 Table 2). The three-generation period against which recent declines should be assessed is therefore some 75 to 120 years, greater than the historical baseline for most stocks.

**Table 1.** Summary of population and catch trend data

| Year | Location | Data used | Trend | Source |
|---|---|---|---|---|
| 1905–2005 | Northeast Atlantic | Stock assessment | 93.4–94.8% depletion | ICES WGEF 2006 |
| 1955–2005 | Northeast Atlantic | Stock assessment | 92.9–93.4% depletion | ICES WGEF 2006 |
| 1987–2000 | Iberian coast | Landings | 51% decrease | DGPA, 1988–2001 |
| From 2000 | Iberian coast | Future projections | 80.3% decline over next 3 generations | DGPA, 1988–2001 |
| 1981–1992 | Black Sea | Stock assessment | 60% decline | Prodanov *et al*. 1997 |
| 1988–2002 | Northwest Atlantic | Stock assessment | 75% decline in female spawning biomass | NFSC (2003) |
| 1987–2002 | Northwest Atlantic | Stock assessment | 50% decline in average weight of females | NFSC (2003) |
| 1997–2003 | Northwest Atlantic | Stock assessment | Recruitment failure | NFSC (2003) |
| 1952–2000s | Northwest Pacific | Landings | >99% decline from ~60,000t to ~460t | Fisheries Agency of Japan 2003, 2004 |
| 1970–1990s | Northwest Pacific | CPUE | 80–90% decline in trawl and seine fisheries | |

Globally, the most important 20th-century *S. acanthias* fisheries were in Northeast Atlantic shelf seas (Annex 1 Figure 5); these stocks are now also among the most depleted. According to FAO, 87.5% of *S. acanthias* landings reported in 1950–2004 (excluding miscellaneous sharks, etc.) were taken in this region (Annex 1: Table 3a, Figure 6). Landings were sustained at 30-50,000 tonnes *per annum* during most of the 1960s to 1980s, but have decreased steeply since the mid-1980s (Annex 1 Figure 6). By 2004, Northeast Atlantic reported landings had dropped to 16% of their historical FAO-reported peak of nearly 50,000 t[1], taken in 1972 (Annex 1 Table 3a), and 10% of the peak recorded by ICES. Landings in other regions,

[1] *There are considerable discrepancies between FAO data and data available from States or regional fisheries organisations. FAO data usually lower, presumably due to under-reporting by States or misidentification. FAO reports a peak catch of just under 50,000t in the Northeast Atlantic, whereas the International Council for the Exploration of the Sea (ICES) reports a peak of over 58,000t. National data are more accurate, but harder to obtain.*

particularly the Northwest Atlantic, have mostly increased (Annex 1 Table 3b), although data are often incomplete; FAO FIGIS sometimes records *S. acanthias* landings as 'dogfish nei (Squalidae)' (for example, Atlantic catches of the United States, Annex 1 Figure 7) or in other 'shark' categories.

Other significant landings occur in the Northeast Pacific (off western North America), Southwest Pacific (mainly New Zealand) and Northwest Pacific, where the high landings reported in Japan (e.g. Taniuchi 1990, Fisheries Agency of Japan 2004) are apparently not included in FAO statistics and do not appear in Figures 6 or 7 (Annex 1). Landings reported in 2004 in the Northwest Atlantic, Northeast Pacific and Southwest Pacific were 29%, 93% and 45% respectively of their historic peak landings since 1950 (Annex 1 Table 3a).

Several stock assessments are available. These show a correlation between recent declines in landings and catch per unit effort (CPUE), and relative stock size. CPUE and landings are therefore used here as indicators of population trends in the absence of stock assessments, although the aggregating habit of *S. acanthias* means that CPUE can remain high even when stocks are depleted.

Other descriptions of regional population trends presented here are from Fordham (2005) and the documentation of the current IUCN Red List assessments for *S. acanthias* populations (Fordham *et al*. 2006).

4.4.1 Northeast Atlantic

A single stock ranges from the Barents Sea to the northern Bay of Biscay. Landings data have been recorded since 1906 (Annex 1 Figure 5) and biological investigations undertaken since the 1950s. Holden (1968) first warned that part of this stock was over-exploited. ICES data indicate a 90% decline in landings from their 1970s peak. There has been a decreasing trend of occurrence and frequency of large catches in two fishery-independent surveys around the United Kingdom of Great Britain and Northern Ireland (Annex 1 Figure 8, ICES WGEF 2006). Several assessment methods have been used to estimate population trends (Heessen 2003, Hammond and Ellis 2005, ICES WGEF 2006). These concluded that most landings since 1946 have been above maximum sustainable yield (MSY) and all models have identified likely stock declines to between 2% and 11% of initial biomass in recent years (e.g. Annex 1 Figure 9). In 2005 the ICES Advisory Committee on Fisheries Management (ACFM 2005) reported: "All experimental assessments indicate that the stock is at a record low level. Frequency of occurrence of spurdog in trawl surveys has declined and although large shoals are still caught, the frequency of these has declined. The level of exploitation is unknown, but the continuous decline in landings indicates that fishing mortality has been, and continues to be well above sustainable levels." ICES WGEF (2006) concluded that current depletion levels range from 5.2–6.6% relative to 1905, and from 5.2–7.1% relative to 1955 (Annex 1 Figure 9) and warned that the stock is in danger of collapse.

The Iberian Peninsula stock is likely distinct from the above stock. Landings per unit effort (LPUE) in the Basque trawl fleet have declined steeply in recent years (ICES WGEF 2006). Official fisheries statistics for landings of *S. acanthias* from Portuguese waters have declined 51% between 1987 and 2000 (DGPA, 1988–2001); future projections predict a further 80.3% decline of landed biomass over the next three generations due to stock depletion, without reduced exploitation effort (Rui Coelho in lit, IUCN Red List Assessment documentation, September/October 2003).

It is included as Vulnerable on Germany's Red List (1998). The IUCN Red List assessment for the Northeast Atlantic is **Critically Endangered** (Fordham *et al*. 2006).

4.4.2 Mediterranean Sea and Black Sea

*Squalus acanthias* occurred in 5% of MEDITS trawls. It is very rare in the western Mediterranean, but regularly recorded in the eastern basin, with an estimated biomass of 6,700t throughout the MEDITS area. No statistically significant abundance trend was

identified during 1994–2004 (Serena *et al*. 2005). Jukic-Peladic *et al*. (2001) do not report any significant change in occurrence in the Adriatic between 1948 and 1998. Aldebert (1997) reports a decline in landings from the 1980s in the western basin. Anecdotal evidence from fishermen interviews in the Balearics indicates that 1970s' directed fisheries ceased as a result of significant declines in abundance in bottom longlines and gillnets from the early 1980s (Gabriel Morey, pers. comm. cited in Fordham *et al*. 2006); MEDITS did not record *Squalus* in the Balearics during 1994–2004.

A fishery for *S. acanthias* in the Black Sea harvests ~2,000 t/year, mainly by Turkish vessels (Dr Kotenev, VNIRO, in lit. 22 November 2006). Fishing intensity and landings increased significantly from 1979 as prices rose, mainly targeting fish aged 8–19 years. A stock assessment (Virtual Population Analysis) indicates that the exploited Black Sea stock rose until 1981, when it reached 226,700t, then decreased 60% to about 90,000t in 1992 (Prodanov *et al*. 1997).

FAO data for the above fisheries are presumed to be incomplete and some *S. acanthias* may be reported as 'dogfish sharks nei' (Annex 1 Figure 10). The IUCN Red List assessments for Mediterranean and Black Sea *S. acanthias* populations are **Endangered**, and **Vulnerable** respectively (Fordham *et al*. 2006).

4.4.3 Northwest Atlantic

Foreign fleets (former Soviet Union, former German Democratic Republic, Poland, Japan and Canada) fished off the eastern coast of the United States from the early 1960s to the mid-1970s. Landings peaked at 25,620t in 1974 (Annex 1: Figures 6 and 7). Stocks initially recovered following the establishment of an EEZ. Landings in the United States rose from a few hundred tonnes in the late 1970s to around 4500t during 1979–1989, then to 27,200t in 1996 to meet rising European market demand. Research vessel abundance and biomass survey indices increased from the early 1970s through 1992, then declined by 33% during 1992-2002 (600,000 t to 400,000 t). Most of the decline in overall abundance has been driven by the removal of dogfish greater than 80 cm (Figure 4). Swept-area estimates of the spawning (female) biomass (defined as $\geq$ 80 cm fish) increased six-fold from about 50,000 t in 1968 to 295,000 t in 1989, then declined by about 75% to ~50,000 t in 1998, and have remained relatively constant since at 29% of biomass target. The estimated minimum biomass of females $\geq$ 80 cm has declined more sharply than the combined male-female $\geq$ 80-cm biomass. Length-frequency data from commercial landings in the United States and six separate research vessel survey catches indicate a pronounced and consistent decrease in average length of mature females in recent years (Figure 4). Average weight of females halved from 4kg in 1987 to 2kg in 2000. This is because mature females are targeted (they comprised 99% of 2004 commercial landings). These changes in overall stock size composition since the onset of the intensive fishery suggest marked reductions in present and future reproductive potential. Recruitment estimates from 1997 to 2003 were the seven lowest values in the entire time series (Figure 11). Recent reductions in spawning stock biomass cannot be replaced quickly due to the reproductive biology of spiny dogfish. The current low level of spawning stock biomass is expected to result in low recruitment for the next several years. The long-term projection, when lower survival of pups from smaller females and lower spawning potential are incorporated, leads to stock collapse under current fishing mortality in the region (Figure 12). (NFSC 2003, Fish & Wildlife Service in lit. 1 May 2006).

While landings in the United States have fallen under management, Canadian landings from this shared stock have risen to exceed the latter and are considered unsustainable according to stock assessments of the United States.

The IUCN Red List categorises Northwest Atlantic *S. acanthias* as **Endangered**, on the basis of reductions in population size exceeding 50% (Fordham *et al*. 2006).

4.4.4 Western North Pacific

In the Sea of Japan, *S. acanthias* have been fully exploited since before 1897. Harvests in this region from 1927 to 1929 were 7,500 to 11,250t, accounting for 17–25% of Japan's overall catch. Catches dropped from more than 50,000t in 1952 to 10,000t in 1965 (Taniuchi 1990). There was a decrease in CPUE of around 80–90%, from 8–28 units in the 1970s to 1–5 between 1995 and 2001. Offshore trawl catches of *S. acanthias* were over 700t in 1974–1979, then decreased to 1–200t in the late 1990s and up to 2001. Catch rates for Danish seines and bull trawls fell 90% from 100–200kg per haul in the mid 1970s to 10–20kg per haul in the late 1990s (Fisheries Agency of Japan 2003). There appears to have been a rapid decline in stocks after Japanese catches peaked at ~60,000t in 1952 and another decline after the 1970s. Catches had fallen to ~1000t by 1993 and continued to decline to an average of 458t in recent years (Fisheries Agency of Japan 2004). The current stock level is low and the trend decreasing. These data do not appear in FAO FIGIS. The Russian Federation has no target fisheries for this species, but bycatch is increasing (Dr Kotenev, VNIRO, in lit. 22 November 2006). *S. acanthias* makes up 16.8% of the shark bycatch in salmon gillnet fisheries (Nakano 1999). Dogfish are also landed in the Republic of Korea, but no data are available.

The IUCN Red List categorises this stock as at least **Endangered**, noting that it may prove to be Critically Endangered once a full regional review can be undertaken (Fordham *et al*. 2006).

4.4.5 Northeast Pacific

Former intensive fisheries for *S. acanthias* apparently collapsed in 1910 and in the late 1940s. This stock has since recovered under low exploitation pressures in most of its range. In 1944, *S. acanthias* supported the most valuable Canadian west coast fishery (Ketchen 1986). British Columbia landings reached 31,000t then fell to <3000t in 1949. Fishable biomass had been reduced by 75% in 1950 (Anderson 1990), when the synthetic production of vitamin A led to the collapse of the oil market. The current quota of ~15,000t is based on a 1987 stock assessment (Saunders 1988) that assumed half to two-thirds of the stock resides in Canada. Catches are ~5,000–7,000t and the stock appears stable (Wallace *et al*. 2006). Washington is now the only Pacific State in the United States with a directed *S. acanthias* fishery, mostly in Puget Sound, where landings had decreased by more than 85% by the late 1990s (Camhi 1999). The population is now at a low level of abundance (Palsson *et al*. 1997). Although *S. acanthias* is the predominant shark species taken off Alaska, which banned directed shark fishing in 1998, this is as bycatch from the region's groundfish fisheries and 90% is discarded (Camhi 1999). Abundance appears stable or increasing (Wallace *et al*. 2006). A stock assessment may take place in the next few years.

The current IUCN Red List categorises Northeast Pacific *S. acanthias* as **Vulnerable**, on the basis of an estimated reduction in population size greater than 30% (Fordham *et al*. 2006).

4.4.6 South America

*Squalus acanthias* has long been a common bycatch species in demersal fisheries in this region, but until recently was primarily discarded (Cousseau and Perrota 2000, Cañete *et al*. 1999). Commercial targeting of *S. acanthias* probably commenced around 2001, replacing declining landings of other seriously depleted coastal shark species, particularly *Mustelus schmittii* and *Galeorhinus galeus* (G. Chiaramonte in lit. to the IUCN Shark Specialist Group, April 2006). Landings are not, however, recorded by species or even by genus, but combined in categories that include these other small sharks, seriously hampering analysis of trends. Massa *et al*. (2003) and García de la Rosa *et al*. (2004) appear to identify a significant drop in abundance of *S. acanthias* in Argentinean waters compared with a study by Otero *et al*. (1982), but the trends are unclear. With rising

market demand in Europe, it is likely that this species will increasingly be targeted on the south-eastern coast of South America (Uruguay and Argentina), where other stocks are in decline while demand and fishing effort are increasing (e.g. Van Der Molen *et al*. 1998).

The IUCN Red List categorises South American stocks of *S. acanthias* as **Vulnerable**, based on an estimated ongoing reduction in population size greater than 30% (Fordham *et al*. 2006).

4.4.7 Australasia

Domestic demand for *S. acanthias* meat is low in Australia (Last and Stevens 1994). Reported New Zealand landings increased from 3,000–4,000 t during the 1980s to 7,000–11,000 t from the mid-1990s to the mid-2000s (Manning *et al*. 2004, Sullivan *et al*. 2005). However, some (if not most) of the apparent increase was probably a result of better reporting. Catch rate analyses and trawl survey biomass indices are largely stable or increasing (Manning *et al*. 2004, Sullivan *et al*. 2005, Ministry of Fisheries 2006). Recognising the cumulative pressure from a targeted fishery exporting to Asian and European markets as well as discarded by-catch and the high vulnerability of the species to over-fishing, *S. acanthias* were introduced to the New Zealand Quota Management System in October 2004 with a TACC (Total Allowable Commercial Catch) of 12,660t. Catches remain below this level (Ministry of Fisheries 2006).

4.4.8 South Africa

Spiny dogfish are considered a nuisance by South African fishermen and are not targeted commercially. Some 99–100% of the trawl bycatch of this species is discarded. (Smale pers. comm., in Fordham 2005).

Australasian and South African stocks of *S. acanthias* are **Least Concern** on the IUCN Red List (Fordham *et al*. 2006).

4.5 Geographic trends

*Squalus acanthias* has vanished from the Western Mediterranean during the past 30 years (see 4.2.2).

5. Threats

The principal threat to this species worldwide is over-exploitation, whether by fisheries that target *S. acanthias*, or by fishing gear that catches the species incidentally as a by-catch. Survival rates are high if bycatch is returned alive to the sea in good condition, but it is often retained and utilised.

5.1 Directed fisheries

This is a valuable commercial species in many parts of the world, caught in bottom trawls, gillnets, line gear, and by sport fishermen using rod and reel. Widely utilized for its flesh, particularly valued for human consumption in Europe, its liver oil and fins are also consumed. Some former fisheries were driven mainly by the demand for oil, until synthetic vitamin A became available and this market collapsed. Despite low quality, *S. acanthias* fins have been routinely traded in East Asia (for shark fin soup) for at least the two last decades of the 20th century (Rose 1996). Cartilage and hides are also utilised, and landings used to produce fishmeal and fertiliser if markets for human consumption are not available (Compagno 1984). They have also been utilized locally as scientific specimens for teaching purposes.

5.2 Incidental fisheries

Because *S. acanthias* occurs in many areas where gill nets, longlines and trawls are used, bycatch in these gears affects its stocks, but is generally unreported and not included in national fisheries statistics. Those with small mesh size may kill young individuals, which will

not reach the retail market and may not appear in catch records if discarded (NFSC 2003, Anon. 2003, Bundy 2003). For example, the deepwater bottom trawl fishery for *Nephrops* and shrimps along the south coast of Portugal has large *S. acanthias* discards (European Parliament 1999). In the Southwest Atlantic, a study undertaken in Argentina and Uruguay estimated that the abundance of *S. acanthias* populations dropped following the intensification of fishing activities on other species (Massa *et al*. 2002). NFSC (2003) noted the high levels of by-catch in the Northwest Atlantic, estimating that the mean of discards (16,700t) was more than double that of reported landings in the United States (7200t). The authors stressed, however, that discards have a smaller impact upon stock status because they affect all size classes, while landings primarily impact mature females, which are the most vulnerable and important component of the population.

6. Utilization and trade

Compared to most other shark species, catch and trade in *S. acanthias* are relatively well documented. This is due to its long history of domestic and international utilization. This is by far the most important shark species landed commercially in the Northeast Atlantic, where it has been of considerable importance to fisheries for 70 years (Annex 1 Figure 5). Formerly also important for liver oil, it is now targeted primarily for its meat. There are, however, no global trade data for the species, with recording by species remaining piecemeal.

6.1 National utilization

Spiny dogfish meat, derived from commercial target fisheries and landed bycatch, is eaten in Europe, Japan, South America and, to a lesser extent, in New Zealand and Australia (where it is considered coarse). It is consumed fresh, frozen or smoked. Markets favour mature females due to their larger size.

In the United Kingdom, *S. acanthias* is known as "rock salmon," "huss" or "huss tail") and used mainly in fish and chips. It retails for around EUR 11/kg (A. Knapp, TRAFFIC–Europe *in litt*. to TRAFFIC–Europe, 4 March 2006). In Germany, meat is sold as "See-Aal" (sea eel) and belly flaps are smoked to make *Schillerlocken* (Rose 1996). The latter is a delicacy retailing at between EUR 45 and 57/kg in Germany (wholesale import price of around EUR 15/kg). Anecdotally, the relatively high price in Germany reflects an increasing shortage in supply, and some consumer resistance to the high price is also reported. (Melisch *in litt*. to TRAFFIC Oceania, May 2006). In France, fresh meat is sold as *aiguillat commun* or *saumonette d'aiguillat* at about EUR 10/kg (Ringuet, S. pers. comm. to TRAFFIC Europe, November 2003). In Sweden fresh dogfish retails at between EUR 9–14/kg but is relatively uncommon on the Swedish market (M. Forslund WWF *in litt*. to TRAFFIC -Europe, April 2006). In the 1990s, industry groups in the northeast of the United States campaigned to create domestic demand for *S. acanthias* under the more palatable name "cape shark" (Fordham 2005) and this, together with promotional activity by seafood associations, has resulted in an increase in the acceptability of dogfish on the market of the United States.

While *S. acanthias* no longer retain their historical importance as a source of valuable liver oil for lighting and vitamin A, the oil is still utilised to some extent, likely mixed with that of other shark species. For example, *S. acanthias* oil was used in the former Soviet Union (Fischer *et al*. 1987). Fins may be utilised nationally in Japan but are of relatively low value because of their small size. The possible use of other parts and derivatives of *S. acanthias*, such as cartilage, leather or curios (teeth or jaws) is not well documented or officially recorded and, if it occurs, it is of negligible importance compared with the utilisation of meat. Although more common in the past, Spanish fishermen still use sharkskin to polish and sand their boats (Rose 1996). *Squalus* heads are used as bait for other fisheries, in Morocco for instance (Fischer *et al*. 1987). An assessment by the United States of the importance of recreational fishing for *S. acanthias* concluded that this became a significant proportion of total landings from 2001 (NFSC 2003). In New Zealand an annual catch allowance of 245t is set aside for recreational use and 245t for customary use when the TACC is set.

6.2 Legal trade

There are no global trade data available for *S. acanthias*. FAO trade data includes the species in its various generic shark trade groupings. The bulk of the trade in *S. acanthias* is included in the categories 'Dogfish (Squalidae) fresh or chilled' and 'Dogfish (Squalidae) frozen'. However the data reported in these categories would contain data for species other than *S. acanthias*[2] and are not meaningful for this analysis.

Some of the major traders, namely the EU as the predominant importer and the United States as a significant exporter, do record imports and exports of spiny dogfish meat. The EU uses the Customs Harmonised System, called Combined Nomenclature in the EU, the two product codes being:

03026520 for 'Fresh or chilled dogfish of the species *Squalus acanthias*'

03037520 for 'Frozen dogfish of the species *Squalus acanthias*'.

The United States records export data by fresh and frozen dogfish categories. These categories appear to include all *Squalus* spp. However, advice from the United States suggests that these data apply to *S. acanthias* (P. Thomas and R. Gabel, United States Department of the Interior, *in litt*. To Dr. von Gadow, 1 May 2006). Other major exporters record *S. acanthias* in classifications that include dogfish and other sharks.

The EU has traditionally been the major market for *S. acanthias*. In addition to the quantities of product imported into EU countries, there is extensive internal trade within the EU. While the catch of these countries has declined (Annex 1 Table 4), their combined catch of ~8,000t (live weight) accounted for around a third of the total catch reported by FAO in 2004. In addition to this internal catch, the EU imported a further 4,500t (processed weight) of *S. acanthias* in 2004. Using a conversion factor of 1.33[3], EU imports in 2004 equated to around 6,000t live weight, suggesting that the total supply on the EU market in 2004 was about 14,000t. Very little product is exported or re-exported from EU Member States.

Between 1995 and 2005, the 25 EU Member States imported 85,000t of *S. acanthias* (fresh, chilled or frozen meat) from non-EU States. EU imports of *S. acanthias* have, however, trended downward over the last decade (Table 5 and Annex 1 Figure 13). In 2005 imports totalled 4,900t, down from 12,300t in 1996. Over this period the three major EU importing countries remained France (45% over the decade), the United Kingdom (16%) and Denmark (16%), however the proportion of total EU imports accounted for by these three countries has declined to 19%, 18% and 13% respectively (Table 6). Countries such as Belgium and Spain have become relatively more significant importers, accounting for 14 and 12% respectively of EU imports in 2005. Over the same period the average unit value of imports has increased from EUR 1.6/kg to EUR 3.86/kg.

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2 *A comparison of the import data for spiny dogfish by EU member countries compared to the FAO import data for the two FAO dogfish categories indicated that the FAO data exceed the EU significantly, suggesting that the FAO data include a substantial quantity of product other than spiny dogfish.*

3 *FAO conversion factor for chondrichthyes, fresh, chilled. Gutted.*

**Table 5:** Countries supplying spiny dogfish *Squalus acanthias* (fresh and chilled and frozen combined) to the EU (tonnes). (*Source*: Eurostat, 2006 and National Marine Fisheries Service of the United States)

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Iceland | 31 | 73 | 67 | 48 | 32 | 70 | 107 | 221 | 150 | 95 | 45 |
| Norway | 3,132 | 2,416 | 1,394 | 1,065 | 1,239 | 1,447 | 1,396 | 1,108 | 1,080 | 991 | 937 |
| United States | 7,581 | 8,938 | 8,181 | 6,817 | 6,317 | 3,761 | 1,671 | 1,664 | 909 | 836 | 994 |
| Canada | 469 | 145 | 228 | 370 | 599 | 1,003 | 1,569 | 1,610 | 1,540 | 1,752 | 1,484 |
| Morocco | 0 | 0 | 0 | 0 | 0 | 71 | 206 | 212 | 190 | 388 | 460 |
| Mauritania | 168 | 206 | 52 | 90 | 66 | 292 | 305 | 91 | 61 | 0 | 43 |
| Argentina | 204 | 313 | 68 | 256 | 253 | 232 | 310 | 263 | 341 | 119 | 315 |
| New Zealand | 29 | 5 | 18 | 15 | 71 | 152 | 195 | 448 | 319 | 244 | 250 |
| Others | 312 | 209 | 164 | 116 | 120 | 210 | 106 | 195 | 184 | 192 | 351 |
| Total | 11,926 | 12,305 | 10,171 | 8,778 | 8,696 | 7,238 | 5,863 | 5,811 | 4,774 | 4,617 | 4,879 |

The major sources of *S. acanthias* imports into the EU are Canada, Norway and the United States (Table 5 and Annex 1 Figure 13). In 2005 Canada supplied 32%, Norway 20% and the United States 16% of the EU's imports of *S. acanthias*. Over the last decade the United States was the major supplier to the EU market (supplying around 55%) however imports from the United States have fallen progressively over the last decade from nearly 9,000t in 1996 to just over 700t in 2005. A similar trend is evident in Norway's exports to the EU. However, Canada's importance as a supplier of the EU market grew over the period and has stabilized at between 1400 to 1700t per year since 2001. Morocco and New Zealand also increased their exports to the EU over the last decade. While Morocco's exports continue to grow, reaching 460t in 2005 those of New Zealand have declined from a peak of around 450t in 2002, following the implementation of catch quotas.

**Table 6:** Imports of spiny dogfish *Squalus acanthias* (fresh & chilled & frozen) by EU Importers (tonnes). (Source: Eurostat 2006)

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| France | 5,428 | 6,659 | 5,557 | 4,343 | 3,742 | 2,828 | 1,524 | 1,690 | 1,349 | 1,485 | 877 |
| United Kingdom | 1,728 | 1,692 | 1,772 | 1,699 | 1,579 | 825 | 979 | 1,098 | 759 | 876 | 837 |
| Denmark | 2,456 | 1,970 | 1,259 | 974 | 1,147 | 1,359 | 1,279 | 983 | 908 | 753 | 620 |
| Italy | 699 | 687 | 410 | 623 | 701 | 876 | 688 | 460 | 423 | 137 | 374 |
| Belgium | 417 | 409 | 219 | 271 | 349 | 433 | 359 | 614 | 309 | 191 | 641 |
| Germany | 712 | 503 | 428 | 320 | 404 | 322 | 389 | 241 | 307 | 265 | 249 |
| Netherlands | 18 | 6 | 390 | 459 | 621 | 368 | 293 | 374 | 329 | 180 | 124 |
| Spain | 17 | 48 | 0 | 0 | 39 | 91 | 219 | 233 | 223 | 432 | 535 |
| Sweden | 315 | 265 | 80 | 76 | 72 | 105 | 109 | 107 | 153 | 211 | 301 |
| Greece | 97 | 60 | 54 | 15 | 41 | 31 | 23 | 14 | 0 | 1 | 0 |
| Czech Republic | 0 | 0 | 0 | 0 | 2 | 43 | 37 | 29 | 0 | 0 | 0 |
| Slovenia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 46 |
| Portugal | 41 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Malta | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 |
| Poland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Luxembourg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Latvia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Lithuania | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **Total** | **11,926** | **12,298** | **10,171** | **8,778** | **8,697** | **7,281** | **5,900** | **5,841** | **4,774** | **4,534** | **4,605** |

Total exports of *S. acanthias* from the United States have fallen over the last decade from 10,215t in 1996 to 1,326t in 2005 (Table 7). The EU remains the major destination of exports from the United States, accounting for 70% in 2005. Other significant markets for *S. acanthias* product from the United States over the period have been Japan, China (Hong Kong SAR), Mexico, Thailand and Australia. The Japanese market has declined markedly since 1999.

**Table 7.** United States exports of *Squalus acanthias*, fresh and frozen, 1996–2005 (tonne) (Source: NMFS database)

| Country | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|---|
| Germany | 2,930 | 1,774 | 1,687 | 1,010 | 1,690 | 1,032 | 250 | 350 | 339 | 527 |
| Netherlands | 4 | 359 | 458 | 520 | 350 | 152 | 159 | 154 | 157 | 167 |
| France | 4,930 | 3,760 | 2,002 | 1,951 | 1,518 | 454 | 217 | 196 | 149 | 126 |
| China (Hong Kong SAR) | 4 | 28 | 97 | 303 | 106 | 8 | 326 | 248 | 135 | 0 |
| Mexico | 44 | 37 | 10 | 45 | 21 | 57 | 92 | 30 | 113 | 173 |
| Thailand | 76 | 207 | 13 | 162 | 270 | 421 | 267 | 219 | 104 | 147 |
| Belgium | 632 | 389 | 292 | 461 | 488 | 234 | 299 | 169 | 99 | 35 |
| Australia | 0 | 10 | 0 | 12 | 35 | 79 | 94 | 110 | 69 | 31 |
| United Kingdom | 1,095 | 960 | 974 | 871 | 430 | 120 | 100 | 45 | 57 | 86 |
| Georgia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 |
| Italy | 202 | 117 | 86 | 193 | 149 | 60 | 105 | 3 | 31 | 34 |
| Japan | 298 | 161 | 553 | 254 | 88 | 20 | 95 | 31 | 19 | 0 |
| Others | 769 | 476 | 38 | 418 | 295 | 65 | 23 | 0 | 15 | 66 |
| **TOTAL** | **10,984** | **8,279** | **6,210** | **6,200** | **5,439** | **2,702** | **2,029** | **1,554** | **1,331** | **1,392** |

Of the countries known to have exported spiny dogfish product to the EU over the last decade (Table 5) four of the top eight suppliers (Morocco, Argentina, Iceland and Mauritania) are not recorded by FAO as catching *S. acanthias*. In some cases, this can be explained at least partly by poor identification and recording at the point of capture, which results in landings data not being recorded at the species level. In the case of Argentina, products traded as spiny dogfish *S. acanthias* have also included significant quantities of other small sharks, predominantly *Galeorhinus galeus* and the south American endemic *Mustelus schmitti*. (G. Chiaramonte in litt. 2006). IUCN 2006 (www.iucnredlist.org) has assessed these two species as Critically Endangered regionally and Endangered globally, respectively, as a result of depletion caused by unregulated intensive fishing in the region. The value of *S. acanthias* landings has increased in recent years as the former target species have been depleted. Roughly 40 to 80% of Argentina's 'shark' exports have entered the EU in the past six years (G. Chiaramonte in lit. to the IUCN Shark Specialist Group, April 2006). The extent to which *S. acanthias* product is exported to other markets is unknown.

Spiny dogfish fins are also known to be traded internationally. However, volumes of shark fins in international trade are generally lumped under generic Customs codes that specify form (dried, salted, unsalted, frozen, etc.) rather than species, therefore data on global imports of *S. acanthias* fins are not readily available.

6.3 Parts and derivatives in trade

*Squalus acanthias* meat is the most desirable and important product in trade and the main driver for target fisheries. It is usually transported frozen or fresh, occasionally smoked or dried. Other products are of lesser importance. The fins are utilised and must, therefore, enter international trade in large quantities but because of their relatively small size they are of low value and are generally unrecorded by species. Trade in fins and tails has been reported from the United States to China, Taiwan (province of China) and Canada. Cartilage and livers (or liver oil) are also traded widely, for example being exported from United States to France, Italy, Switzerland and Taiwan, province of China, where they are used for medicinal purposes (NFSC 2003). Vannuccini (1999) reports hides being processed into leather and livers extracted. Teeth and jaws may also, very occasionally, be traded.

6.4 Illegal trade

In the absence of legally binding regulatory measures concerning catch or trade of *S. acanthias* at national or international level (as is the case for the large majority of countries involved in shark catch and by-catch), no fishery activity or trade transaction, including transhipment, is illegal. Even in areas where directed shark fishing has been prohibited, such as in Alaska, related trade measures have not been adopted to restrict trade in products of shark by-catch, which therefore remains legal and unlimited and is composed in large proportions of *S. acanthias* products.

6.5 Actual or potential trade impacts

Since foreign markets are in most cases the driving economic force behind *S. acanthias* fisheries around the world (see 6.2), unregulated international trade into European States is the main threat to inadequately managed populations. The lack of adequate management of *S. acanthias* stocks in the majority of range States, coupled with the long established market demand for its products, has led to a direct impact on this species' populations. Fisheries that formerly caught *S. acanthias* as by-catch and largely discarded it are now moving towards landing and exporting its valuable products, likely driving further stock depletions.

7. Legal instruments

7.1 National

National biodiversity legislation is not known to be in force for the purposes of conserving *S. acanthias* or its habitats, or trade regulation. (See section 8 for fisheries management measures). Some countries (e.g. Sweden (E. Menhert, Swedish Board of Agriculture, *in litt*. to BMU, 23 September 2003) are assessing the need to adopt special conservation measures for species such as *S. acanthias*. Some range States have included the species in their Red List; it is listed as Vulnerable in Germany (Binot *et al*. 1998).

7.2 International

There are no international instruments for the conservation of *S. acanthias*; it is not listed on any international wildlife or fisheries agreement and has no international legal status. Annex V of the OSPAR Convention on the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area requires OSPAR to develop a list of threatened and/or declining species and habitats in need of protection or conservation in the OSPAR maritime area (Northeast Atlantic). Belgium's proposal in 2002 to list *S. acanthias* because of its biological sensitivity and population decline in national waters was not adopted. New nominations are under discussion in 2006 (including *Squalus acanthias*).

8. Species management

8.1 Management measures

The International Plan of Action (IPOA) for the Conservation and Management of Sharks urges all States with shark fisheries to implement conservation and management plans. However, this is voluntary; fewer than 20 States have produced Shark Assessment Reports or Shark Plans. Some RFOs have adopted shark resolutions to support improved recording or management of pelagic sharks taken as bycatch in the fisheries that they manage. *S. acanthias* is not pelagic and will not be covered by these measures.

8.1.1 Northeast Atlantic

The conservation and management of sharks in EU waters falls under the European Common Fishery Policy (CFP). There is no EU shark management plan. The first Total Allowable Catch (TAC or annual catch quota) for *S. acanthias* was established in 1988, but only in the North Sea (a small part of the European waters used by this stock), and based on historic landings, not on scientific advice. Despite regular reductions, the TAC

greatly exceeded recent North Sea landings until end 2004, when it was reduced by 74% after only 25% uptake in 2004 and may have become restrictive in this area in 2005. ICES advice in 2005 was: 'The stock is depleted and may be in danger of collapse. Target fisheries should not be permitted to continue, and by-catch in mixed fisheries should be reduced to the lowest possible level. A TAC should cover all areas where spurdog are caught in the northeast Atlantic. This TAC should be set at zero for 2006' (ACFM 2005). A 15% TAC reduction was implemented in the North Sea but no other management measures introduced. EC Regulation 1185/2003 prohibits the removal of shark fins and subsequent discarding of the body. This regulation is binding on EC vessels in all waters and non-EC vessels in Community waters. Norway manages its *S. acanthias* fishery with a minimum landing size intended to enable sharks to mature before capture. This is of limited value for a migratory stock unmanaged elsewhere in its range.

8.1.2 Northwest Atlantic

In Canada, increasing landings led to the recent introduction of quotas that capped and allocated catches and bycatch at historic levels, pending investigation of sustainable exploitation levels. There is currently a 3,300t quota for fixed gear licenses and scientific sampling, and small quotas for each trawl vessel. A five year commercial data collection programme ends 2006 with a stock assessment in 2007 (Bundy 2003).

Federal agencies of the United States and the US Atlantic State Commission manage *S. acanthias*. The first US management plan, developed by the Mid-Atlantic and New England Fishery Management Councils in response to a decade of intense unregulated fishing (Bonfil 1999), took effect in 2000. The National Marine Fisheries Service (NMFS) has imposed low, science-based trip limits and quotas ever since, but federal management measures are not compulsory in state waters and directed fishing has been occurring at unsustainable levels nearshore, particularly in Massachusetts. While significant rebuilding was anticipated by 2003, there have been no signs of recovery of mature females or improvement in recruitment (ASMFC and MAFMC 2005) and rebuilding will now take from 15 to 30 years. The 2004 spiny dogfish fishing year was the first during which the same quota and possession limits were in place in both Federal and State waters. The resultant harvest of only 1.5 million pounds (37.5% of the quota and a 50% decrease from landings in the 2003 year) suggests that these restrictions effectively discouraged commercial fishing for spiny dogfish. A subsequent increase in the State waters quota and high trip limits have encouraged target fishing to recommence. Scientific advice for 2006 included a 50% quota reduction, low trip limits and measures to reduce discarding, but NMFS decided to retain the 2005 quota unchanged until 2008.

8.1.3 Northeast Pacific

The United States and Canada conduct cooperative surveys for Northeast Pacific *S. acanthias*, but there is no coordinated, international management for the stock (Camhi 1999). Stocks of the west coast of the United States are minimally managed despite increasing interest in fisheries off Alaska and Washington State. Federal management of *S. acanthias* fisheries in the North Pacific of United States commenced in 2006 with trip limits pending stock assessment (possibly in 2007) and development of quotas. Off Alaska, they are regulated under an "other species" TAC (Alaska NMFS report 2000). Washington State includes *S. acanthias* in bottomfish management plans, but there are few species-specific measures. The directed fishery is subject to mesh restrictions but not quotas and a pupping ground has been closed to fisheries. The Canadian quota, 2–3 times higher than recent catches, is based on a stock assessment undertaken in 1987 (Wallace *et al*. in prep.)

8.1.4 Northwest Pacific

No management. Japan monitors shark stocks and will recommend, when necessary, the introduction of measures for the conservation and management of shark resources (Japanese Fisheries Agency 2003).

8.1.5 Southern hemisphere

New Zealand has included *S. acanthias* in its Quota Management System (QMS) since 2004.

8.2 Population monitoring

Population monitoring requires routine monitoring of catches, collection of reliable data on the indicators of stock biomass and good knowledge of biology and ecology. In most States, however, catch, bycatch and discard data for *Squalus* and most other shark and ray species are not recorded at species level, making stock assessments and population evaluation almost impossible. Relatively good landings data for *S. acanthias* are available for only a few major fisheries in the North Atlantic, North Pacific and New Zealand. Commercial landings, research data and stock assessments indicate many stocks are seriously depleted.

8.3 Control measures

8.3.1 International

Current international trade regulations concerning trade controls of *S. acanthias* are almost non-existent, being limited to the usual hygiene measures for fishery products and/or to facilitate the collection of import duties. The specific customs codes for frozen and fresh or chilled *S. acanthias* (see 6.2) were established primarily to monitor exports and imports and enable tariffs to be collected (these are 6% in the EU). However, these codes are used by Customs services on a voluntary basis. While in the EU *S. acanthias* codes are used for economic reasons, in most importing and exporting States, import of frozen *S. acanthias* is lumped with other shark products under a less specific code, No. 0303 7500, which does not allow estimation of trade at species level.

8.3.2 Domestic

A few domestic fisheries management measures are delivering sustainable *S. acanthias* harvests; others have failed to do so (see 8.1). Even where catch quotas are established, no trade measures prevent the sale or export of landings in excess of quotas and international trade demand appears to drive unsustainable exploitation in US Atlantic State waters. Otherwise, only the usual hygiene regulations apply to control of domestic trade and utilisation. Although an Appendix-II listing would not prevent unsustainable fisheries for *S. acanthias*, it would prevent the export of products from such a fishery and restrict incentives for unsustainable exploitation where domestic market demand is limited.

8.4 Captive breeding

Not economically viable for commercial purposes, due to the slow reproductive and growth rates of this species. Some breeding may be occurring in specimens on public display in aquaria.

8.5 Habitat conservation

No efforts have been made to identify and protect critical *S. acanthias* habitat, although some is incidentally protected from disturbance inside in marine protected areas or static gear reserves.

8.6 Safeguards

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9. Information on similar species

Whole *Squalus acanthias* are readily identifiable from other members of this genus. With regard to meat, the product most commonly traded for this species, in Europe *S. acanthias* is found in the same processing and retail markets as catsharks *Scyliorhinus* spp. and smooth-hounds *Mustelus* spp., although the former are primarily marketed in the north and the latter in the south of Europe. It also appears to be replacing *Mustelus* and *Galeorhinus galeus* imports from South America, where the latter is now Critically Endangered. There are likely to be difficulties associated with the identification of some *S. acanthias* 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 the most common meat products of *S. acanthias* and other species. These can readily be backed by the development of genetic identification tools for enforcement purposes; several research laboratories are working on elasmobranch species and stock identification (Pank *et al*. 2001, Shiviji *et al*. 2002, Chapman *et al*. 2003, Keeney and Heist 2003, Stoner *et al*. 2002).

10. Consultations

Range States and other bodies were consulted twice in 2006. Responses were received from Albania, Argentina, Australia, Austria, Bulgaria, Canada, China, Croatia, Cuba, the Czech Republic, Estonia, the Faeroe Islands (Denmark), Finland, France, Georgia, who had offered to cosponsor the proposal, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Madagascar, Monaco, Morocco, New Zealand, Norway, Poland, the Republic of Korea, Romania, the Russian Federation, Serbia, Spain, Turkey, the United Kingdom, Uruguay and the United States; also from the European Commission as well as the International Council for the Exploration of the Seas (ICES), International Scientific Committee for Tuna and Tuna-like Species in the Pacific Ocean (ISC), Northwest Atlantic Fisheries Organization (NAFO), Ocean Conservancy and the UNEP Mediterranean Regional Activity Centre for Specially Protected Areas (RAC/SPA).

11. Additional remarks

11.1 CITES Provisions under Article IV, paragraphs 6 and 7: *Introduction from the sea*

This provision does not apply to *S. acanthias* catch, which occurs within countries' EEZ and will therefore not involve introduction of specimens from offshore fishing grounds.

11.2 Implementation issues

11.2.1 CITES Authorities

It would be most appropriate for the Scientific Authority for this species to be a fisheries expert. It would need to be capable of making a non-detriment finding based upon stock assessments and a fishery management plan that defines sustainable harvest levels (e.g. quotas).

11.2.2 Identification of products in trade

It will be important to utilise species-specific commodity codes and identification guides for this species' meat and distinguish it from other small sharks, which may be marketed as highly prized *S. acanthias* (particularly in Europe). In addition to visual guides for *S. acanthias* trunks, a DNA test can rapidly be developed if this species is listed, using existing research tissue sample collections. Cost per sample processed starts from USD 20–60, depending upon condition of sample, less for large numbers. Turn-around time is in the region of 2–7 days from receipt of sample, depending upon urgency (M. Shivji in litt. July 2006). Such tests are not suitable as initial screening tools, but could be used to confirm identification and product origin for enforcement purposes.

11.2.3 Non-detriment findings

NDFs can be declared for species that are the subject of a management plan, as long as the proposed export is consistent with the sustainable management provisions of that

plan (CITES AC22 Doc. 17.2). Management for *S. acanthias* would ideally be based upon stock assessments and scientific advice on sustainable fisheries harvest levels (e.g. quotas) or technical measures. This is standard fisheries management practice and already applied in New Zealand and some North American waters. Other States wishing to export *S. acanthias* products would also need to develop and implement sustainable fisheries management plans if NDFs are to be declared.

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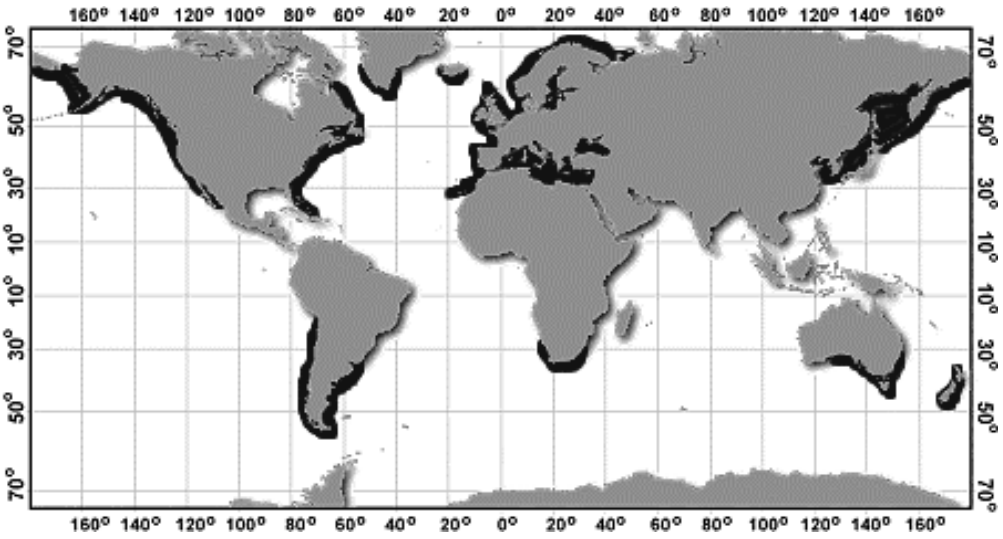



**Figure 2.** Global *Squalus acanthias* Spiny Dogfish distribution (Source: FAO 2003)

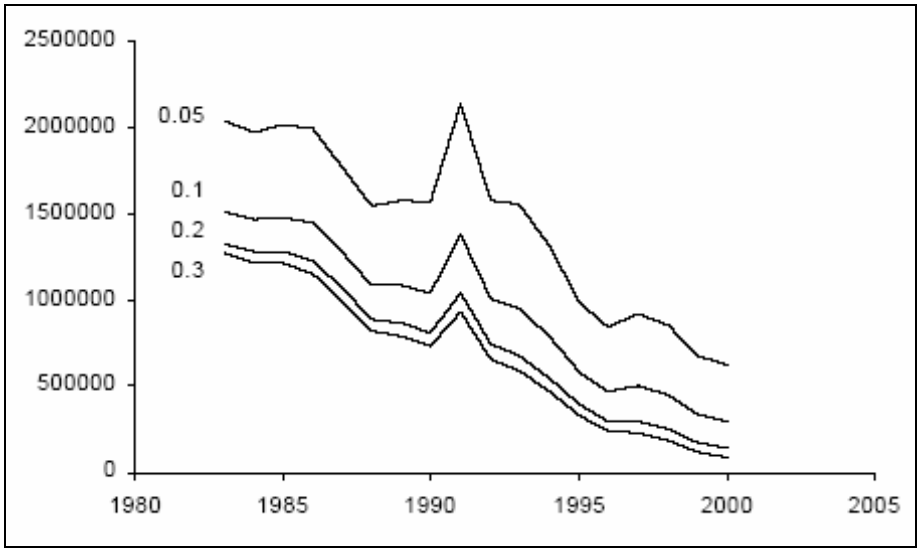



**Figure 3.** Trends in total population numbers of mature fish in the Northeast Atlantic estimated using a Separable VPA analysis of the catch numbers at age data. Each line represents a different assumption for terminal F (0.05–0.3) on the reference age in the final year.
Source: Figure 6.4.1.14, Heessen 2003.

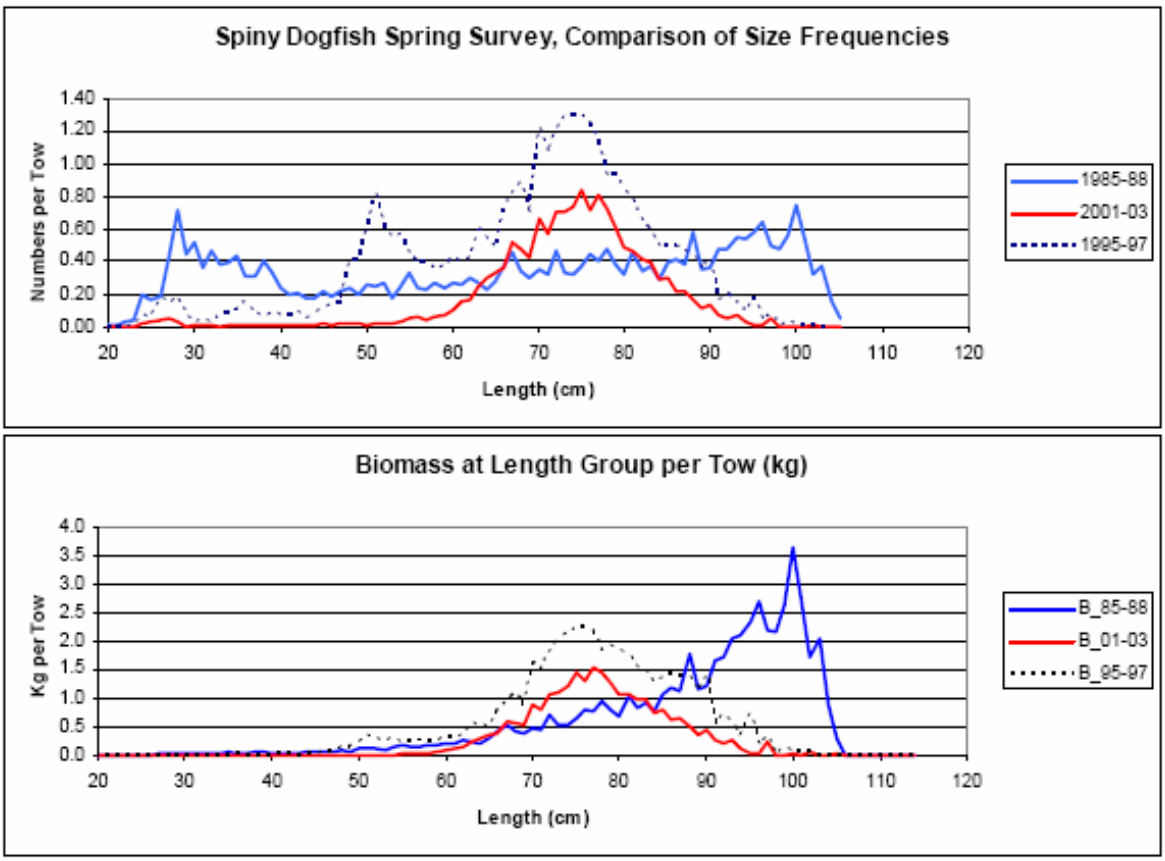



**Figure 4.** Comparison of length frequency distributions and biomass at length for Northwest Atlantic *Squalus acanthias* in the NEFSC R/V spring trawl survey for three time periods. (Source NFSC 2003)

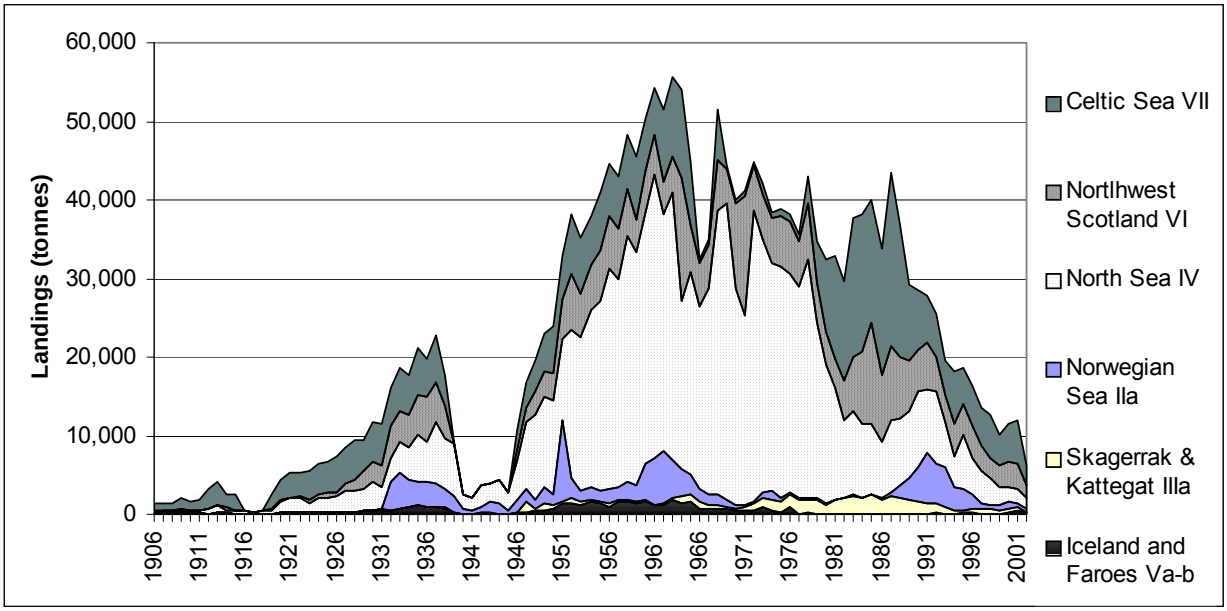



**Figure 5.** *Squalus acanthias* landings in ICES areas, 1906-1999. (Source ICES WGEF)

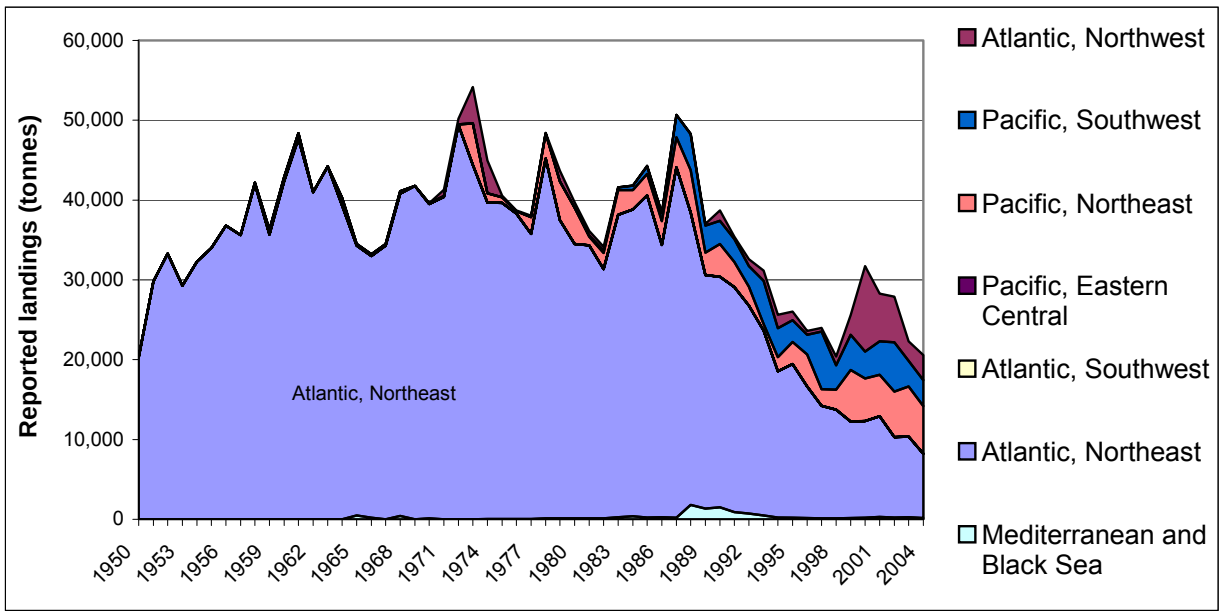



**Figure 6.** Landings of *Squalus acanthias* (tonnes) reported by FAO fishing area from 1950 to 2004 (*Source*: FAO FIGIS. Reported Eastern Central & Southwest Atlantic landings are negligible)

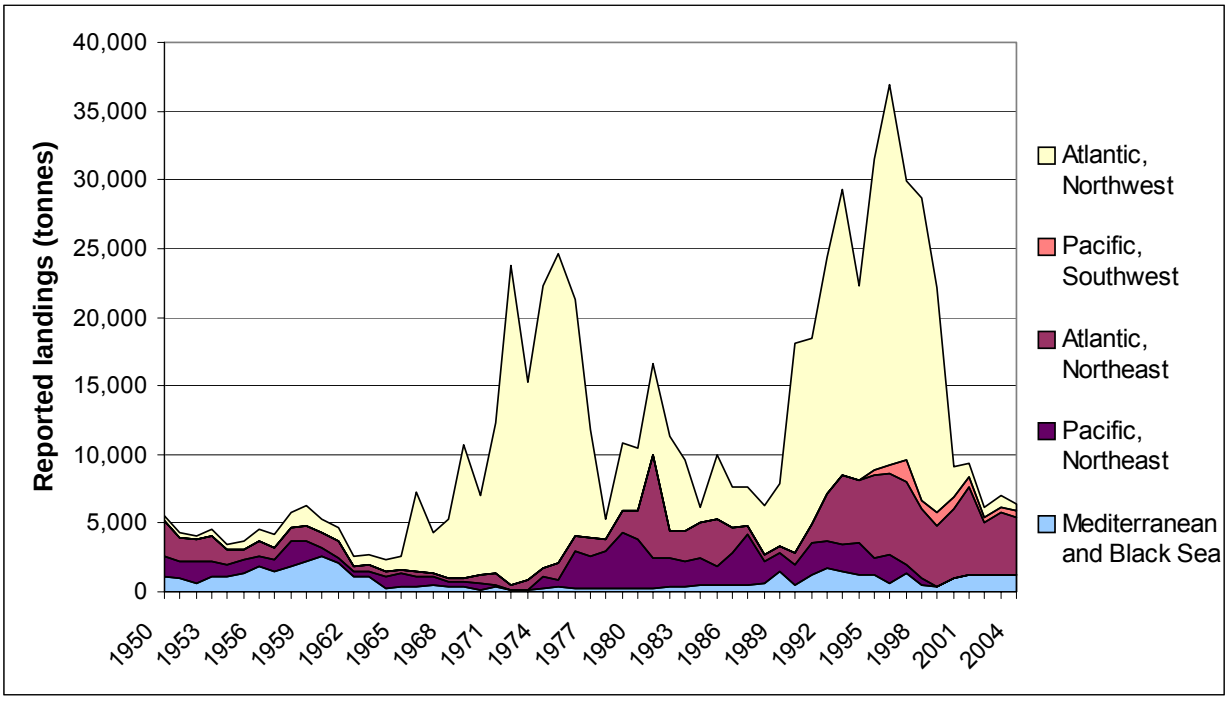
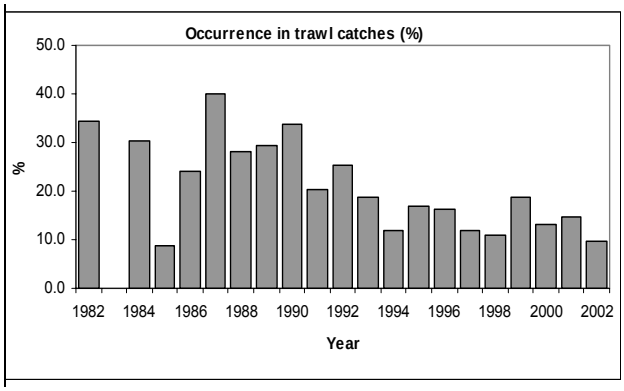
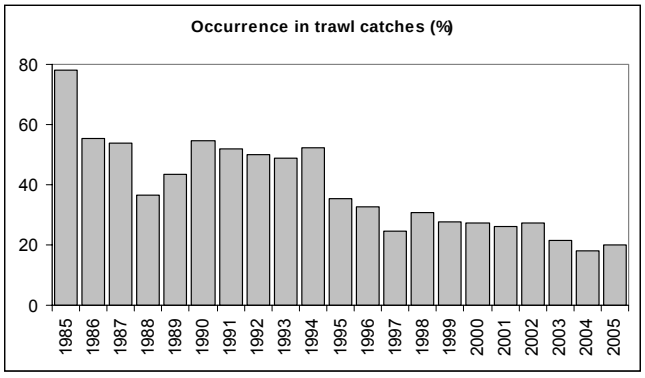


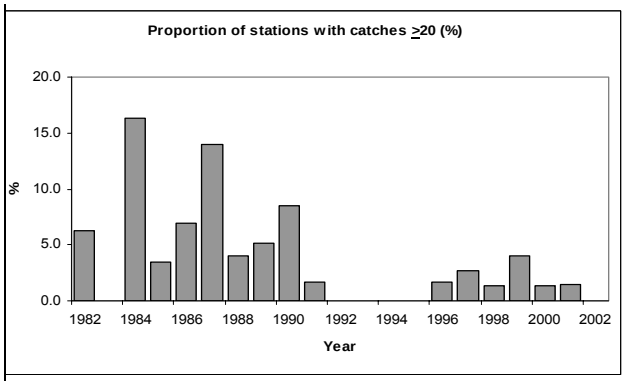

**Figure 7.** Landings of 'dogfish nei (Squalidae)' reported by FAO fishing area from 1950 to 2004. (*Source*: FAO FIGIS. Northwest Atlantic data are mainly *Squalus acanthias* landings in the United States.)



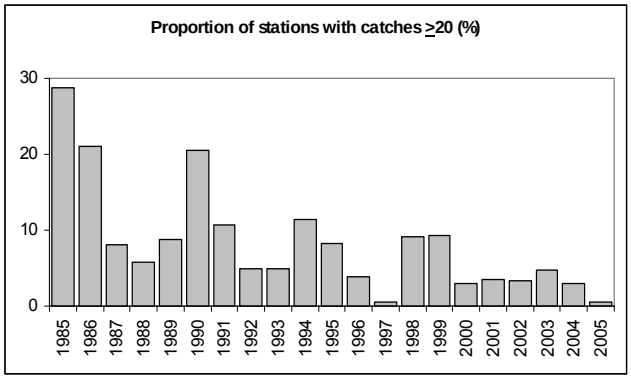

a) Percentage occurrence in trawl catches




c) Percentage occurrence in trawl catches




b) Stations with catches ≥20 fish/hr (%)




d) Stations with catches ≥20 fish/hr (%)

**Figure 8.** Fishery-independent trends in the Northeast Atlantic *Squalus acanthias* stock. a–b: English Celtic Sea groundfish survey (1982-2002). c–d survey hauls in the Scottish west coast survey (1985-2005). (Source: ICES WGEF 2006.)

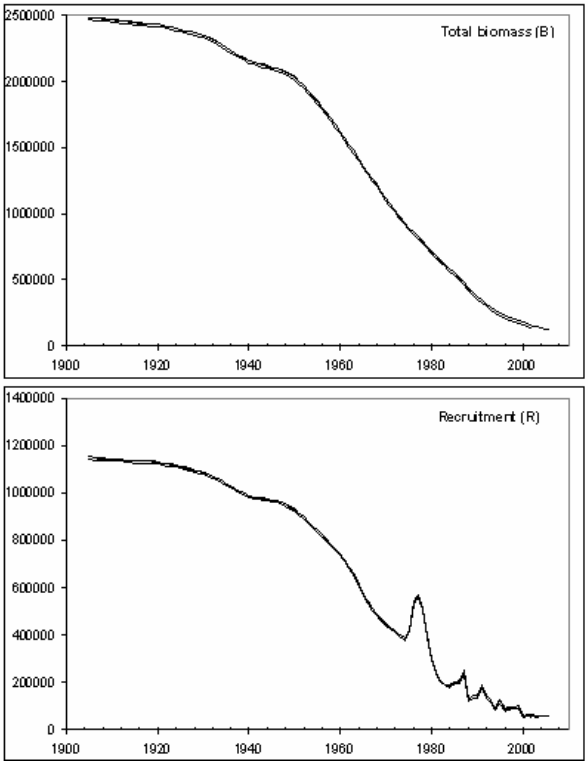



**Figure 9.** Typical biomass (above) and recruitment (below) trends for Northeast Atlantic *Squalus acanthias*, 1900–2005, from a population dynamic model (Source: ICES WGEF 2006)

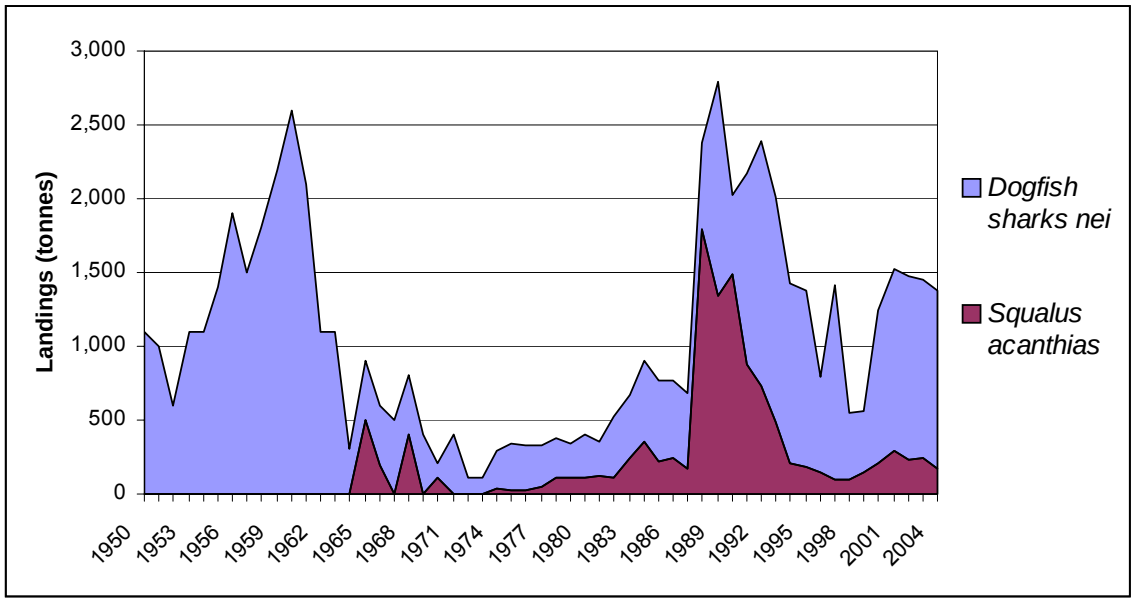



**Figure 10.** FAO records of landings of *Squalus acanthias* and 'dogfish sharks nei' from the Mediterranean and Black Sea (Source FAO FIGIS).

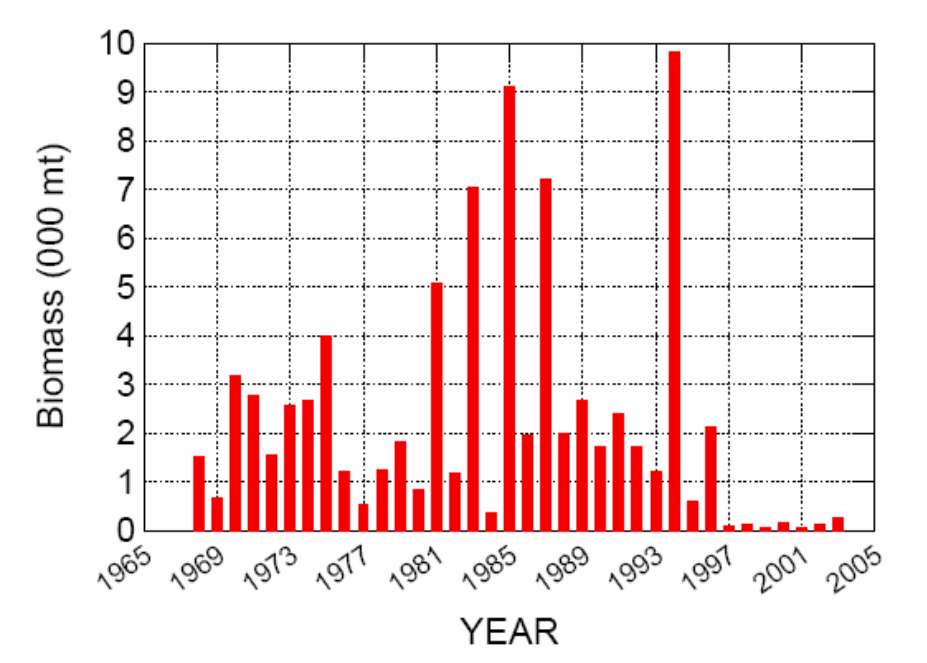



**Figure 11.** Swept area estimate of dogfish biomass (000 mt) recruits in spring R/V trawl survey, 1968-2003. Recruits defined as individuals less than 36 cm. (Source NFSC 2003).

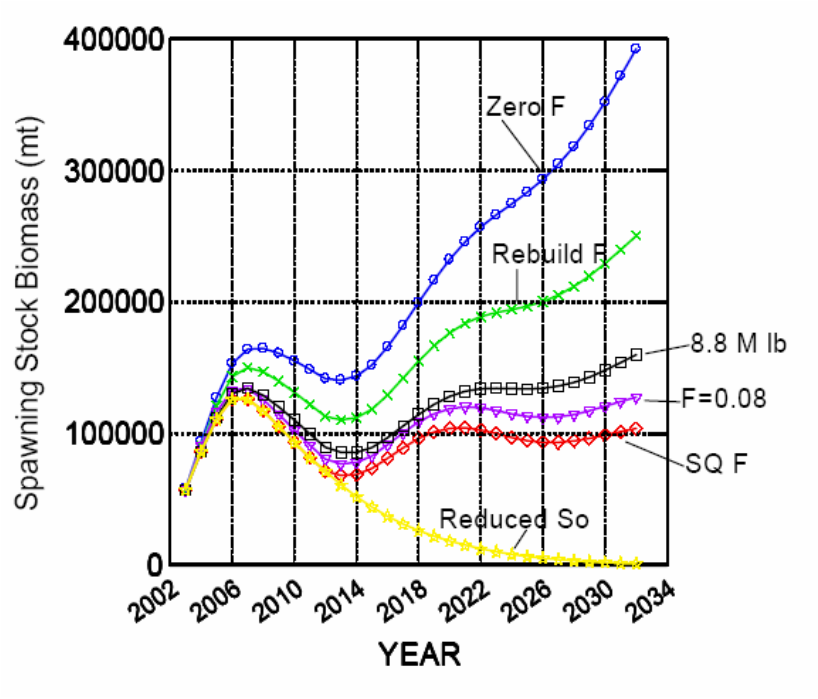



**Figure 12.** Long-term Spawning Stock Biomass Projections for *Squalus acanthias* in the Northwest Atlantic (Source NFSC 2003). Scenarios include Fishing Mortality (F) = 0.08, as called for in the current Fishery Management Plan; FSQ, a continuation of current F (0.09); a constant harvest strategy of 8.8 million pounds annually; application of FREBUILD (F=0.03); and 'Reduced So', a scenario formally accounting for lower survival of smaller pups under *status quo* F (0.09).

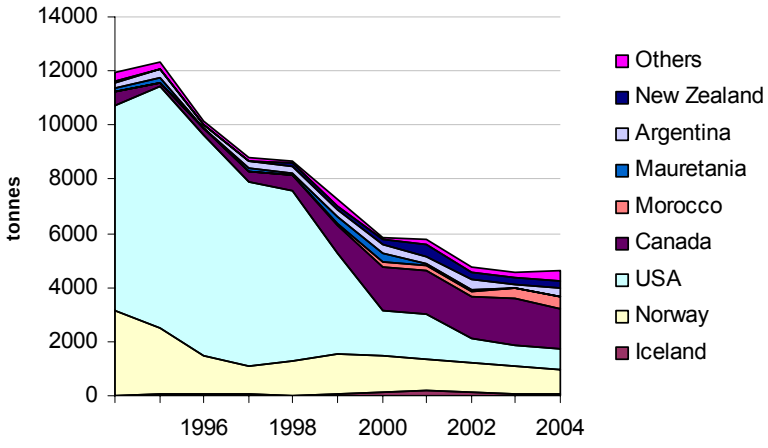



**Figure 13.** Origin of EU imports* of fresh or chilled (CN Code: 0302 6520) and frozen (CN Code: 0303 7520) 'Dogfish of the species *Squalus acanthias*' (Source: Eurostat 2006). *Excluding EU MS

**Table 2.** *Squalus acanthias* life history parameters (various sources in text)

| | | |
|---|---|---|
| Age at maturity (years) | female: | 12 (NW Atlantic); 23 (NE Pacific); 15 (NE Atlantic) |
| | male: | 6 (NW Atlantic)/ 14 (NE Pacific) |
| Size at maturity (total length cm) | female: | 75 (NWA); 93.5 (NEP); 83 (NEA); 70–100 (Mediterranean) |
| | male: | 60 (NW Atlantic); 59 (Australia); 59–72 (Mediterranean) |
| Longevity (years) | female: | 40–50 (NW Atlantic), >60 yrs (NW Pacific), or up to 100 years |
| | male: | 35 (NW Atlantic) |
| Maximum size (total length cm) | female: | 110–124 (N Atlantic); 130–160 (N Pacific); 200 (Med), 111 (NZ) |
| | male: | 83–100 (N Atlantic); 100–107 (N Pacific); 90 (NZ) |
| Size at birth (cm) | | 18–33 |
| Average reproductive age * | | Unknown, but over 25 years; ~40 years in NE Pacific. |
| Gestation time | | 18–22 months |
| Reproductive periodicity | | Biennial (no resting stage, litters are born every two years) |
| Average litter size | | 1–20 pups (2–15 NW Atlantic, 2–11 Med), increases with size of female |
| Annual rate of population increase | | 2.3 % (N. Pacific); 4–7% (NE Atlantic) |
| Natural mortality | | 0.092 (NW Atlantic), 0.1 (0.3 for very old/young fish) (NE Atlantic) |

**Table 3.** Landings of spiny dogfish (*Squalus acanthias*) (tonnes) by FAO fishing area (Source: FAO FIGIS).

**a) From 1950 to 2004**

| FAO Area | No. of fishing countries | Total catch (tonnes) | % of world total catch | 2004 catch as % of period peak |
|---|---|---|---|---|
| **Atlantic, Northeast** | 16 | 1,749,889 | 87.5% | 16% |
| Atlantic, Northwest | 8 | 53,226 | 2.5% | 29% |
| Atlantic, Southwest | 1 | 1 | 0% | 0% |
| Mediterranean & Black Seas | 7 | 11,892 | 1% | 6% |
| Pacific, Eastern Central | 1 | 170 | 0% | 100% |
| Pacific, Northeast | 3 | 110,876 | 5.5% | 93% |
| Pacific, Southwest | 1 | 71,522 | 3.5% | 45% |
| **Total** | **37** | 1,997,576 | 100% | 38% |

**b) From 1995 to 2004**

| FAO Area | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| Atlantic, Northeast | 19,281 | 16,508 | 14,101 | 13,634 | 12,098 | 12,093 | 12,616 | 10,065 | 10,109 | 8,021 |
| Atlantic, Northwest | 1,085 | 494 | 452 | 1,081 | 2,456 | 10,701 | 5,995 | 5,697 | 2,422 | 3,132 |
| Atlantic, Southwest | - | - | - | - | - | - | - | - | - | - |
| Mediterranean and Black Sea | 182 | 143 | 95 | 97 | 143 | 204 | 287 | 231 | 245 | 166 |
| Pacific, Eastern Central | 1 | - | <0.5 | 5 | 24 | 8 | 3 | 17 | 11 | 28 |
| Pacific, Northeast | 2,744 | 4,000 | 2,100 | 2,501 | 6,439 | 5,363 | 5,181 | 5,691 | 6,268 | 5,974 |
| Pacific, Southwest | 2,753 | 2,477 | 7,232 | 3,064 | 4,409 | 3,362 | 4,192 | 6,186 | 3,233 | 3,241 |
| **Total** | **26,046** | **23,622** | **23,980** | **20,382** | **25,569** | **31,731** | **28,274** | **27,887** | **22,288** | **20,562** |

**Table 4.** Landings of spiny dogfish (*Squalus acanthias*) (tonnes) reported to FAO, by country and territory in the Northeast Atlantic. (Source: FAO FIGIS)

**a) From 1995 to 2004**

| Country or territory | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 14 | 16 | 15 | 17 | 10 | 11 | 13 | 23 | 12 | 13 |
| Channel Islands | - | - | - | - | - | - | - | - | - | - |
| Denmark | 146 | 142 | 196 | 126 | 131 | 146 | 156 | 256 | 233 | 219 |
| Faeroe Islands | 308 | 51 | 212 | 356 | 484 | 354 | . | . | . | . |
| France | 1,349 | 1,719 | 1,708 | 1,410 | 1,192 | 1,097 | 1,333 | 1,138 | 1,110 | 1,129 |
| Germany | - | - | - | - | 45 | 188 | 303 | 119 | 98 | 140 |
| Iceland | 166 | 157 | 106 | 78 | 57 | 109 | 136 | 276 | 231 | 141 |
| Ireland | 2,435 | 2,095 | 1,407 | 1,259 | 962 | 880 | 1,301 | 1,293 | . | . |
| Netherlands | - | - | - | - | - | 28 | 39 | 27 | 9 | 25 |
| Norway | 3,939 | 2,749 | 1,567 | 1,293 | 1,461 | 1,644 | 1,425 | 1,130 | 1,119 | 1,054 |
| Poland | - | - | - | - | - | - | - | - | - | - |
| Portugal | 5 | 2 | 2 | 2 | 21 | 2 | 3 | 4 | 4 | 9 |
| Romania | - | - | - | - | - | - | - | - | - | - |
| Spain | - | - | <0.5 | 27 | 94 | 372 | 363 | 359 | 201 | 17 |
| Sweden | 104 | 154 | 197 | 140 | 114 | 124 | 238 | 270 | 275 | 244 |
| United Kingdom | 10,815 | 9,423 | 8,691 | 8,926 | 7,527 | 7,138 | 7,306 | 5,170 | 6,817 | 5,030 |
| **TOTAL** | **19,281** | **16,508** | **14,101** | **13,634** | **12,098** | **12,093** | **12,616** | **10,065** | **10,109** | **8,021** |

**b) From 1950 to 2004**

| Country or territory | Total catch (tonnes) | % of regional catch | 2004 catch as % of period peak |
|---|---|---|---|
| Belgium | 37,761 | 2.16 | 0.68 |
| Channel Islands | 2 | 0.00 | 0.00 |
| Denmark | 50,283 | 2.87 | 8.11 |
| Faeroe Islands | 1,975 | 0.11 | 0.00 |
| France | 159,833 | 9.13 | 7.61 |
| Germany | 20,862 | 1.19 | 11.67 |
| Iceland | 2,152 | 0.12 | 51.09 |
| Ireland | 89,495 | 5.11 | 0.00 |
| Netherlands | 8,931 | 0.51 | 3.59 |
| Norway | 693,056 | 39.61 | 3.05 |
| Poland | 0 | 0.00 | 0.00 |
| Portugal | 84 | 0.00 | 0.00 |
| Romania | 3 | 0.00 | 0.00 |
| Spain | 1,433 | 0.08 | 4.57 |
| Sweden | 16,113 | 0.92 | 26.12 |
| United Kingdom | 667,906 | 38.17 | 25.86 |
| **Total** | 1,749,889 | 100.00 | 16.22 |

SCIENTIFIC SYNONYMS OF *SQUALUS ACANTHIAS*

(Source: FAO Species Identification Sheet, 2003)

- *Squalus spinax* Olivius, 1780 (not Linnaeus, 1758 = *Etmopterus spinax*);
- *Squalus fernandinus* Molina, 1782;
- *Acanthias antiguorum* Leach, 1818;
- *Acanthias vulgaris* Risso, 1826;
- *Acanthias americanus* Storer, 1846;
- *Spinax mediterraneus* Gistel, 1848;
- *Spinax (Acanthias) suckleyi* Girard, 1854;
- *Acanthias sucklii* Girard, 1858 (error for *suckleyi*?);
- *Acanthias linnei* Malm, 1877;
- *Acanthias lebruni* Vaillant, 1888;
- *Acanthias commun* Navarette, 1898;
- *Squalus mitsukurii* Tanaka, 1917 (not Jordan & Fowler, 1903);
- *Squalus wakiyae* Tanaka, 1918;
- *Squalus kirki* Phillipps, 1931;
- *Squalus whitleyi* Phillipps, 1931;
- *Squalus barbouri* Howell-Rivero, 1936.

RANGE STATES AND AREAS WHERE *SQUALUS ACANTHIAS* HAS BEEN RECORDED

(Source: based on Compagno 1984 and feedback by consultation with range States)

Albania
Algeria
Angola
Argentina
Australia
Belgium
Bosnia and Herzegovina
Canada
Canary Islands (Spain)
Chile
China
Croatia
Cuba
Cyprus
Democratic People's Republic of Korea
Denmark
Egypt
Faeroe Islands (Denmark)
Falkland Islands (Islas Malvinas)*
Finland
France
French Polynesia (France)
Gabon
Georgia
Germany
Greece
Greenland (Denmark)
Iceland
Ireland
Israel
Italy
Japan
Kerguelen Islands (France)
Latvia
Lebanon
Libyan Arab Jamahiriya
Lithuania
Malta
Mauritius
Mexico
Monaco
Montenegro
Morocco
Namibia
Netherlands
New Zealand
Norway
Philippines?
Poland
Portugal
Republic of Korea
Romania
Russian Federation
Slovenia
South Africa
Spain
Sweden
Syrian Arab Republic
Tunisia
Turkey
Ukraine
United Kingdom
Uruguay
United States (including Alaska)
Western Sahara

**FAO Fisheries Areas**: 21, 27, 31, 34, 37, 41, 47, 57, 61, 67, 77, 81 and 87

* *A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Islas Malvinas).*

The following comments by the Russian Federation were received late and could not be incorporated into the proposal:

Dear Dr. von Gadow,

Many thanks for preparation of proposal regarding the inclusion of porbeagle shark and spurdog to Annex II of CITES. We share your concern over the decline in fishing. Many sharks and skates are long-living species having low growth and reproduction rates which makes their stocks most vulnerable to fishing. Besides, as the top predators, the elasmobranchs are tremendously important in the global ocean ecosystems. That is why their intensive harvesting may both deteriorate some populations of these species and restructure individual ecosystems, perhaps irreversibly. The cause of conservation of cartilaginous fish stocks today is a matter of concern not only among some conservation bodies like IUCN, WWF and Greenpeace but for regional fishery management and scientific organizations (ICES, NAFO, NEAFC, CCAMLR, ICCAT, etc.). This year only, the problems relating to conservation of cartilaginous fish stocks in Northeast Atlantic were the subject of discussions at expert meetings of the Shark Specialists Group (SSG) of the Survival Species Commission (SSC) of IUCN (February 13-15, Peterborough, UK) and the ICES Working Group of Elasmobranch Fisheries – WGEF (June 14-21, Copenhagen, Denmark). This problem was also discussed at the recent annual scientific Conference of the European Elasmobranch Association in Hamburg, Germany on November 11-12.

As is known, the present Annex II of CITES includes three species of sharks whose stocks globally, as experts believe, are in a more dramatic state compared to those of the porbeagle shark and spurdog: great white shark, whale shark and basking shark. We agree that the resources of the two species in question were reduced by many times after several recent decades which compelled the SSG to refer the spurdog and porbeagle shark to VU category (Vulnerable) in global terms, i.e. the highly endangered species (by IUCN classification). However, the status of these species throughout the global ocean is not uniform. Hence, as that very SSG sees it, the most deplorable situation with the spurdog is in the Northwest Atlantic where it is in the group of critically endangered species (CR). In the Mediterranean Sea, Northeast Atlantic and Northwest Pacific the species is regarded to be endangered (EN). At the same time, there are some regions where the stock condition of spurdog is a matter of least concern (LC) (Australasia and South Africa). Placing of the Northwest Pacific spurdog into this category is, in our view, unjustified, and it was

probably referred to this group on the basis of information from the waters of Japan where there has been a target fishery for this species for a long time which caused a significant decline in these stocks. Russia has no target fisheries for spurdog in Pacific waters, though, as our studies show, its incidental catch in the last several years in the fisheries employing various gears (trawls, bottom long-lines, driftnets) rose considerably off Kamchatka and the Kuril Islands which indicates that its abundance is going up in the Pacific waters of Russia. The presence of a large number of juveniles and gravid females in catches is an evidence of reproduction of this species in the area. In Russia there has been a limited spurdog fishery in the Black Sea for several recent years with an annual catch of 20-30 tons; this species' stocks in the Russian waters are 10-20 thousand tons. Meanwhile, the total catch of spurdog in the Black Sea is about 2,000 tons of which 85% is taken by Turkey; the overall stocks are nearly 100,000 tons.

The status of porbeagle shark stocks in various parts of its range is dissimilar as well. For example, the most threatening situation with these stocks is in the Northeast Atlantic and Mediterranean Sea where this is a critically endangered species (CR), whereas it is an endangered (EN) species in the case of the Northwest Atlantic.

It was recognized by the SSG that the main reason for such a decline in the abundance of the spurdog and porbeagle shark was the unregulated fishing (target and incidental catch), and that it is the main threat to those species. ICES WGEF is of a similar view, and they have worked out quite specific advice for conservation of the spurdog and porbeagle shark stocks which are to restrict their fishery: banning target fishing, and reducing their bycatch in other fisheries. That was approved by ACFM. We believe that the ICES – recommended measures for conservation of the spurdog and porbeagle shark stocks are quite adequate, effective and capable of protecting the populations considered from the adverse effect of fishing. Hence, there is no need to put them into CITES Annex II. On the other hand, the introduction of these species to CITES lists would limit the commercial exploitation of the populations which are in a satisfactory condition. Consequently, we share the view of ICES regarding the measures being proposed by it to conserve the stocks of spurdog and porbeagle shark,

and we do not consider it reasonable to have them in Annex II of CITES. This discussion about putting these species on CITES lists may be resumed if the existing regulations fail to be effective.