Inclusion of Porbeagle *Lamna nasus* in Appendix II

Proponent: Brazil, Comoros, Croatia, Egypt and Denmark (on behalf of the European Union Member States acting in the interest of the European Union)

Summary: The Porbeagle *Lamna nasus* is a large (up to 3.6 m) warm-blooded shark found in the North Atlantic (mostly between 30–70°N), the Mediterranean and in a circumglobal band around ~30–60°S in the Southern Hemisphere. It matures late, has a long life span (25–46 years in the North Atlantic), has small numbers of young (average litter size is four pups) and a long gestation time (8–9 months). Northeast Atlantic sharks are slightly slower growing than those from the Northwest Atlantic. Porbeagles in the southern hemisphere are smaller, slower growing and longer lived (to around 65 years) than those in the North Atlantic. The estimated generation time is at least 18 years in the North Atlantic and 26 years in the Southern Oceans. Natural mortality (0.05–0.2 y^{-1}) indicates that the Porbeagle is a low productivity species in both the Northwest Atlantic and Southwest Pacific.

The species is harvested chiefly for its high-value meat, considered among the most palatable of that of any shark species, similar to and sometimes marketed as Swordfish *Xiphias gladius*. It is taken in targeted fisheries and retained as a valuable secondary catch, particularly in longline pelagic fisheries for tuna and Swordfish, but also in gill nets, driftnets, trawls and handlines. Sports fishers catch Porbeagle in the USA, Canada, New Zealand and in some EU Member States; some are taken for meat or trophies, while others may be tagged and released. Recent global reported Porbeagle landings have decreased from 1700 t in 1999 to 750 t in 2009 and 250 t in 2010.

Porbeagle meat is traded in fresh and frozen form. Prior to 2010, a lack of species-specific landings and trade data made it impossible to assess the proportions of global catches entering international trade. However, market survey findings indicated that the demand for fresh, frozen or processed Porbeagle meat was sufficiently high to justify the existence of an international market at that time.

In 2010, the EU introduced new species-specific Customs codes for fresh and frozen Porbeagle products, excluding fins, allowing some assessment of international trade in the species in the last two years. The EU has historically been both a major harvester and a major user of Porbeagle. EU Member States were responsible for 60–75% of FAO's global records of Porbeagle catch in 2006 and 2007, prior to establishment of a total allowable catch (TAC), which was reduced to zero for EU waters and EU fleets in 2010. EU market demand must now therefore be met by imports, of which just over 50 t were recorded 2010–2011. Reported sources of imports were Faroe Islands, Japan, Morocco, New Zealand, Norway and South Africa. Porbeagle fins are in trade, but they have been reported to be of relatively low value per unit weight. It was reported in 2011 that in New Zealand about half of Porbeagles caught by tuna longliners were processed, and the rest discarded. Of those processed, about 80% were finned only and 20% processed for their flesh and fins. Virtually all shark fins landed in New Zealand are exported to Hong Kong. A fin identification guide is now available that may help to identify Porbeagle fins.

Population trends show declines to between 1–32% of baseline in the Northeast Atlantic, Northwest Atlantic and Mediterranean. The three studies of declines in the Southern Hemisphere are over much shorter time periods; two show trends to 25–30% of baseline and one shows no trend. There are also records of a number of fisheries for Porbeagle that have collapsed in the North Atlantic. Porbeagles are listed globally as Vulnerable on the *IUCN Red List of Threatened Species*, with sub-populations assigned individual listings: North East Atlantic (Critically Endangered), Mediterranean (Critically Endangered), North West Atlantic (Endangered).

Various management measures have been introduced, particularly in the North Atlantic, in addition to the current zero quota for EU fishing fleets. Canada established catch guidelines of 1500 t for Porbeagle up to 1997, reduced to a total allowable catch (TAC) of 1000 t for 1997–1999. Following analytical stock assessments, the TAC was further reduced to 250 t, provisionally for 2002–2007, but was reduced again to 185 t (60 t by-catch, 125 t directed fishery) from 2006. The USA adopted a TAC of 92 t in 1999, reduced in 2008 to 11 t, including a commercial quota of 1.7 t. In 2007, Norway banned all direct Porbeagle

fisheries; from 2007 to 2011 specimens taken as by-catch had to be landed and sold; since 2011, live specimens have had to be released, whereas dead specimens can be landed and sold (though this is not obligatory), and the regulations have been adjusted to include recreational fishing.

In the Southern Hemisphere, Porbeagle has been included in New Zealand's Quota Management System since 2004, with a TAC set at 249 t (considerably higher than recent reported catches). Finning and discard of carcasses is permitted. Discards must be reported, but observer coverage is low and the accuracy of the discard data are therefore unknown.

The lower productivity of Porbeagle in the Southwest Atlantic makes stocks here intrinsically more vulnerable to over-exploitation than the largely depleted northern stocks. With the serial depletion of stocks and increasing restrictions on major fisheries in the North Atlantic, it is believed that harvest pressure will increase on the previously relatively lightly fished Southern Hemisphere populations. While there are few data for this region, the New Zealand catch of Porbeagle has increased from just over 40 t in 2008 to 75 t in 2011, and by-catch over the same period has increased from around 4000 to 10 000 sharks (of which approximately 36% were retained).

The Porbeagle is proposed for inclusion in Appendix II under *Resolution Conf. (Rev. Cop15)* Annex 2 a because of marked historic and recent declines to significantly less than 30% of baseline for the largest Atlantic populations and largely unmanaged smaller stocks in the Southern Hemisphere where fisheries are unlikely to be sustainable. The proposed listing would include an annotation to delay entry into effect of the inclusion by 18 months to enable Parties to resolve related technical and administrative issues.

Analysis: The Porbeagle is the target of fisheries mainly driven by the international trade of their valuable meat to Europe. It is also retained as a valuable secondary catch by longline pelagic fisheries for tuna and Swordfish. A recent change in policy has meant that there is a zero catch quota for EU waters and EU fleets, meaning that all market demand within the EU must now be met by imports. The species is sensitive to exploitation and harvest has led to well-documented, significant declines in a number of North Atlantic stocks. These stocks would appear to meet the criteria for inclusion in Appendix II set out in Annex 2 aA to *Resolution Conf. 9.24 (Rev CoP15);* in some cases, stocks may already be eligible for inclusion in Appendix I. Declines in the Southern Hemisphere are less well documented; however it is known that at least a proportion of the catch enters international trade. Given the serial depletion and closure of fisheries in the North Atlantic, the Southern Hemisphere is likely to become more targeted in the future to meet demand. Furthermore, these stocks are intrinsically more vulnerable to exploitation and in at least some places subject to unregulated fishing. These stocks would appear to meet the criteria for inclusion in Appendix II under the criteria in Annex 2 aB to *Resolution Conf. 9.24 (Rev CoP15).* It seems likely that the species meets the criteria for inclusion Appendix II.

Supporting Statement (SS)	Additional information
Range	
Lamna nasus is found in a circumglobal band of ~30-60°S in the Southern Hemisphere and mostly between 30-70°N in the North Atlantic Ocean and Mediterranean.	
Range States Albania, Algeria, Antarctica, Argentina, Australia, Azores Is., Belgium, Bermuda, Brazil, Canada, Canary Islands, Cape Verde, Channel Islands (UK), Chile, Croatia, Cyprus, Denmark, Egypt, Faroe Islands, Falkland Islands, Finland, France, French Polynesia, Germany, Gibraltar, Greece, Greenland, Iceland, Ireland, Isle of Man, Israel, Italy,	*Range States* *Montenegro.*

Supporting Statement (SS)	Additional information
Kerguelen Is., Lebanon, Libya, Madeira Islands (Portugal), Malta, , Monaco, Morocco, Netherlands, New Zealand, Norway, Portugal, Russian Federation, Slovenia, South Africa, Islas Georgias del Sur y Sandwich del Sur/South Georgia and the South Sandwich Islands, Spain, Sweden, Syria, Tunisia, Turkey, United Kingdom, United States of America, Uruguay. <u>FAO Fisheries Areas</u> 21, 27, 31, 34, 37, 41, 47, 48, 51, 57, 58, 81 and 87.	
<u>IUCN Global Category</u>	
Global: VU. North East Atlantic: CR. Mediterranean: CR. North West Atlantic: EN. Southern Ocean: NT.	*Global species assessment: Vulnerable A2bd+3d+4bd. (Assessed 2006, Criteria version 3.1).* *There is no NT assessment for the Southern Ocean (Stevens* et al.*, 2006).*
Biological and trade criteria for inclusion in Appendix II (Res. Conf. 9.24 (Rev. CoP15) Annex 2 a)	
<u>A) Trade regulation needed to prevent future inclusion in Appendix I</u>	
Lamna nasus matures late, has a long life span (25-46 years; up to 65 years for the Southern Hemisphere stock), large body size (up to 357 cm), small numbers of young (average litter size is four pups), long gestation time (8-9 months), a long generation time (18-26 years) and a low intrinsic rate of population increase (5-7 % in the unfished North Atlantic; 2.6% from MSY in south-western Pacific).	Lamna nasus *is a warm-blooded shark; it grows faster than many cold-blooded sharks (previous proposal).*
<u>Productivity</u> (y^{-1}) Natural mortality calculated for certain sub-populations are indicated below. Most are below that of levels for a medium productivity species (one is equal to) as defined in Annex 5 of *Resolution Conf. 9.24 (Rev. CoP15*) for the application of decline for commercially exploited aquatic species. Therefore this would be defined as a low productivity species. Northwest Atlantic Immature – 0.10 Mature Males – 0.15 Mature Females – 0.2 Southwest Pacific – 0.05-0.1 Northeast Atlantic sharks are slightly slower growing than the north western stock. Both northern stocks are much larger, faster growing and have a shorter life span than the smaller, longer-lived (~65 years old) southern Porbeagles, which are therefore of even lower productivity and more vulnerable to overfishing than the North Atlantic stocks.	*<u>Productivity</u>* *These calculations of natural mortality are only for a certain proportion of the population.* *Cortés* et al. *2010—An ecological risk assessment was used to assess the vulnerability of the most important pelagic shark species subject to ICCAT (International Commission for the Conservation of Atlantic Tunas) surface longline fisheries in the Atlantic Ocean. Of the 11 species assessed* L. nasus *was 9th most vulnerable, or 'less vulnerable' when compared to other species. Median productivity for the species was calculated as 0.048* y^{-1}.

Supporting Statement (SS)	Additional information
<u>Generation Length</u> The estimated generation time for *L. nasus* is at least 18 years in the North Atlantic, and 26 years in the Southern Oceans. The three-generation period against which to assess recent declines is therefore 54 to 78 years, greater than the historic baseline for most stocks.	*<u>Generation Length</u>*
Genetic studies identified two isolated populations, in the North Atlantic and the Southern Oceans. There are possibly separate stocks in the Northeast and Northwest Atlantic (these were historically the largest global stocks), likely also in the Mediterranean, and in the Southeast and Southwest Atlantic.	*The stock structure of Porbeagle Sharks in the Southern Hemisphere is unknown. However, given the scale of movement of tagged sharks, it seems likely that sharks in the Southwest Pacific comprise a single stock. It is not known whether this stock extends to the eastern South Pacific or Indian Ocean (Ministry of Fisheries Science Group, 2011).*
A) Small wild populations The only stock for which population size data are available is in the Northwest Atlantic. Recent stock assessments estimated the total population size for this stock as 188 000–195 000 sharks (22–27% of original numbers prior to the fishery starting; possibly 800 000 to 900 000 individuals) but only 9000–13 000 female spawners (12–16% of their original abundance and 83–103% of abundance in 2001). Stock size elsewhere is unknown.	*A) Small wild populations*
C) Decline in number of wild individuals Where no stock assessments are available, catch per unit effort (CPUE), mean size and landings are used as metrics of population trends for this valuable commercial species in unmanaged fisheries elsewhere, while recognizing that other factors may also affect catchability. Almost all population trend indices (percentage declines from baseline, or recent declines) are clearly within the threshold for at least an Appendix II listing, if not Appendix I.	*C) Decline in number of wild individuals* *Of the 19 examples of decline presented, seven are based on landings or catch that have not been adjusted for effort.*

Supporting Statement (SS)	Additional information

Table 1. Indices of percentage decline (trends recorded as % of baseline) illustrated in Figure 2.

	Index	Trend
Northeast Atlantic		
1	All landings	13%
2	Norwegian landings	1%
3	Danish landings	1%
4	Biomass (surplus production model)	15-39%
5	Biomass (age structured production model)	6%
6	Stock abundance (age structured production model)	7%
Mediterranean		
7	All observations	1%
8	Ligurian Sea catches	1%
9	Ionian Sea CPUE	2%

See Table 3 (Annex) for Table 1 data sources.

	Index	Trend
Northwest Atlantic		
10	All landings	4%
11	Stock biomass (surplus production model)	32%
12	Stock abundance (age structured production model)	22-27%
13	Mature female abundance (age structured production model)	12-16%
14	Stock biomass (Bayesian surplus production model)	3%
Southwest Atlantic		
15	Stock biomass (surplus production model)	18-39%
16	Spawning Stock Biomass (age structured production model)	18%
Southern Oceans		
17	Recent NZ landings (see comments in 4.2.2)	25%
18	Recent NZ longline CPUE (see comments in 4.2.2)	30%
19	Recent Japanese bluefin tuna bycatch CPUE	no trend

Additional population and catch trend data (Table 3 in Annex)

Year	Location	Data used	Trend
1926–2008	NE Atlantic	SA	94% decline in biomass, 93% decline in numbers
1933/37–2004/08	NE Atlantic	L	87% decline
1936–2007	NE Atlantic	L	>99 % decline from historic baseline
1950/54–2004/08	NE Atlantic	L	99% decline from historic baseline
1986–2007	NE Atlantic	CPUE	No trend
1972–2007	NE Atlantic	CPUE	Approximately one third decline in two most recent generations
Various, 1800–2006	Mediterranean	Records of *Lamna nasus*	Virtual disappearance from landings and research survey records
1950–2006	Ligurian Sea, Mediterranean	Abundance &/or biomass of lamnids	>99% decline
1978–1999	Ionian Sea, Mediterranean	CPUE of lamnids	>98% decline
1961–2005	NW Atlantic	SA	84–88% decline
1961–2005	NW Atlantic	SA	73–78% decline

Decline details included in the previous proposal (Cop 15 Prop 17) or previous analysis (IUCN and TRAFFIC, 2010).
1936–2007; NE Atlantic (all targeted catches); Catch; 80% decline since post WWII (Norwegian data; French data; ICES WGEF, 2008)
1982–2002; SW Atlantic; Stock assessment; 60% decline (ICCAT/ICES 2009)
1983–2000; SW Atlantic (Uruguay); CPUE; 80-95% (Domingo et al.*, 2002)*

Supporting Statement (SS)	Additional information

1961–2005	NW Atlantic	SA	68% decline
1961–2004	NW Atlantic	SA	97% decline
1963–1970	NW Atlantic	L	~90% decline
1961–2008	NW Atlantic	Catch	~96% decline
1994–2003	North Atlantic	Catch	Decline, 1000 to near zero/year
1993–2003	North Atlantic	CPUE	Decline with slope -0.6
1961–2008	SW Atlantic	SA	82% decline
1992–2002	SW Pacific (NZ)	CPUE	70% decline
1998–2005	SW Pacific (NZ)	L	75% decline

Northeast Atlantic

The Northeast Atlantic age structured production model stock assessment estimated a decline from baseline of over 90%, to 6% of biomass and 7% of numbers (far below the maximum sustainable yield (MSY)). An alternative surplus production model estimated that biomass had declined to between 15% and 39% of baseline, and by more than 50% from the level in 1972, to well below MSY. During this period, total Northeast Atlantic landings declined to 13% of their 1930s levels, tracking the decline in stock biomass.

Mediterranean Sea

L. nasus has virtually disappeared from Mediterranean records. A review of historic logbook data, reporting declines in tuna traps of >99.99% during a range of time series (135 to 56 years). FAO’s FishStat only records very small landings. In the North Tyrrhenian and Ligurian Sea, just 15 specimens of *L. nasus* were reported during a few decades of observation.

Only 15 specimens were caught during research conducted in 1998–1999 on large pelagic fisheries (mainly driftnets) in the southern Adriatic and Ionian Sea.

Northwest Atlantic

Spawning stock biomass (SSB) is currently estimated to be about 22–27% of the historic baseline in 1961, when fishing commenced. The average size of sharks and catch rates were the smallest on record in 1999 and 2000, catch rates of mature sharks in 2000 were 10% of those in 1992, biomass was estimated as 11–17% of virgin biomass, and fully recruited F as 0.26. Total population numbers have remained relatively stable since quotas were reduced in 2002, although female spawners may have continued to decline slightly. The ICCAT Standing Committee on Research and Statistics (SCRS) and (International Council for the Exploration of the Sea (ICES) estimated that SSB is now about 12–16% of baseline. The estimated number of mature females in 2009 is in the range of 11 000 to 14 000 individuals, or 12% to 16% of its 1961 level and just 6% of the total population. A Bayesian Surplus Production (BSP) model is more pessimistic, estimating the 2004 population to be

Additional information:

Mediterranean Sea

The 15 specimens referred to in the supporting statement were caught using both longlines and driftnets and were caught exclusively in the southern Adriatic and Ionian Sea, while no specimens were caught anywhere else in the Mediterranean (Megalofonou et al.*, 2000).*

Supporting Statement (SS)	Additional information
just 3% of the 1961 biomass. Historical Fisheries Trends (Annex 4 of SS) Northeast Atlantic *L. nasus* has been fished by many European countries, principally Denmark, France, Norway, Faroes and Spain. Norway's target *L. nasus* longline fishery began in the 1920s and first peaked at 3,884t in 1933. About 6000 t were landed in 1947, when the fishery reopened after the Second World War, followed by a decline to between 1200–1900 t from 1953–1960. The collapse of this fishery led to the redirection of fishing effort by Norwegian, Faroese and Danish longline shark fishing vessels into the Northwest Atlantic. Norwegian landings from the Northeast Atlantic subsequently decreased to a mean for the past decade of 20 t. Average Danish landings fell from over 1500 t in the early 1950s to a mean of ~50 t. Reported landings from the historically most important fisheries, around the UK and in the North Sea and adjacent inshore waters (ICES areas III & IV) have decreased to very low levels during the past 30–40 years. Catches from offshore ICES sub-regions west of Portugal (IX), west of the Bay of Biscay (VIII) and around the Azores (X) have increased since 1989. This is attributed to a decline in heavily fished and depleted inshore populations and redirection of effort to previously lightly exploited offshore areas. French longliners have targeted *L. nasus* since the 1970s in the Celtic Sea and Bay of Biscay. The fleet has declined from eleven vessels in 1994 to five in 2008. Mean CPUE fell from 1 to 0.73 kg per hook; from 3 t/vessel in 1994, to less than 1t in 2005. Reported landings fell from over 1092 t in 1979 to 3–400 t in the late 1990s to present. Spanish longliners took *L. nasus* opportunistically in the 1970s and since 1998, as bycatch from the longline swordfish fishery in the Mediterranean and Atlantic and from a target Blue Shark fishery that also catches Mako and Porbeagle. Biomass and numbers have declined 94% and 93%, respectively, from baseline, and by more than 50% from the level in 1972, to well below MSY. Northwest Atlantic Targeted *L. nasus* fishing started in 1961, when the Norwegian and subsequently the Faeroese shark longline fleets moved from the depleted Northeast Atlantic to the coast of New England and Newfoundland. Catches increased rapidly from ~1,900 t in 1961 to > 9000 t in 1964. By 1965 many vessels had switched to other species or fishing grounds because of the population decline. The fishery collapsed after six years, landing less than 1,000 t in 1970. It took 25 years for only very limited recovery to take place. Norwegian and Faroese fleets have been excluded from Canadian waters since 1993. Canadian and US authorities reported all landings after 1995.	

Supporting Statement (SS)	Additional information
Three offshore and several inshore Canadian vessels entered the targeted Northwest Atlantic fishery in the 1990s. Catches of 1,000–2,000 t/year reduced population levels to a new low in under ten years: the average size of sharks and catch rates were the smallest on record in 1999 and 2000, catch rates of mature sharks in 2000 were 10% of those in 1992, and biomass estimated as 11–17% of virgin biomass and fully recruited F as 0.26. The annual catch quota was reduced for 2002–2007 to allow population growth and reduced again in 2006. Landings have since ranged from 139 t to 229 t. Total population numbers have remained relatively stable since 2002, although female spawners may have continued to decline slightly. ICCAT/ICES estimate that SSB is now about 12–16 % of baseline. In addition to the Canadian quota of 185 t, in 1999 a quota of 92 t was set in the US Exclusive Economic Zone (EEZ), which is presumed to share the same stock. The total allowable catch (TAC) for all US fisheries was reduced to 11 t, including a commercial quota of 1.7 t, in 2008. Tuna longliners from Taiwan POC, Republic of Korea and Japan take a largely unknown by-catch of *L. nasus* on the high seas in the North Atlantic. Most of the catch is reportedly discarded or landed at ports near the fishing grounds. It's also been noted that the unreported Porbeagle bycatch observed on Japanese vessels could have amounted to ~200 t in 2000 and 2001. Spanish catches are usually also unreported. These levels of combined Northwest Atlantic landings will prevent stock recovery.	
<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>	
C) Decline in number of wild individuals Declines in the Southern Hemisphere are over time periods less than three generations or 50 years and from three studies.	*C) Decline in number of wild individuals* *Decline details included in the previous proposal (Cop 15 Prop 17) or previous analysis (IUCN and TRAFFIC, 2010).* *1973–2007; NE Atlantic (Norway); Landings; 96% decline (Norwegian data; ICES WGEF, 2008).* *1973–2007; NE Atlantic (Denmark): Landings; 90% decline (ICES WGEF, 2008)* *1973–2007; NE Atlantic (Faroe Islands); Landings; Decline and closure (ICES WGEF, 2008).*
<u>Southern Hemisphere</u> Exploitation of smaller stocks in Southern Hemisphere oceans is largely unmanaged and unlikely to be sustainable. FAO FishStat data have improved in recent years; southern hemisphere catch data are available for several countries since the mid-1990s and are relatively low, with the exception of New Zealand, Spain and Uruguay. However, some of the largest shark fishing nations are still not reporting catches. Japan's *L. nasus* catch in southern ocean fisheries is largely unreported, but must be significant: Porbeagle was the second most abundant shark species after blue shark and comprised 5.5% of observer records of shark catches in the Japanese tuna fishery operating under an access agreement in Australian waters.	*<u>Southern Hemisphere</u>* *Semba* et al*. (2012) provide some figures on catch of Porbeagle in the Japanese Southern Bluefin Tuna fleet (both logbook data and observer data). Observer records suggest 11 954 Porbeagles (by number) were taken by the fleet between 1992 and 2012 and logbook data indicate 24 163 between 1994 and 2011.* *This agreement ceased in 1997 and therefore this information is at least 15 years out of date (AFMA, 2008).*

Supporting Statement (SS)	Additional information
	Clarke and Harley (2010) note that Porbeagle comprised 1% of observed catches in the Western and Central Pacific Fisheries Commission (WCPFC) tuna longline fleet between 1994 and 2009.
Estimates of tuna longline by-catch of *L. nasus* in New Zealand are not available for all years and are imprecise because of low observer coverage. There has been an 86% decline in the total weight of *L. nasus* reported by New Zealand since 1998–99, to a low of 41 t in 2007-08. This decline was steepest during a four-year period of rapidly increasing domestic fishing effort in the tuna longline fishery, but has stabilised since tuna longline effort dropped during the last four years. Unstandardised CPUE recorded by observers from 1992–93 to 2005–06 varies considerably, but has been extremely low in recent years. This trend may not reflect stock abundance because of low observer coverage and other potential sources of variation (e.g. vessel, gear, location and season), but these data were used to assess the stock as unlikely (<40%) to be at or above MSY.	*There is no target commercial fishery for Porbeagle in New Zealand. The majority of the commercial catch taken is valuable secondary catch by tuna longliners, with the rest largely coming from midwater and bottom trawlers. Catch by gear type indicates that while longline by-catch has trended downwards since about 2003, midwater and bottom trawl catches have trended upwards. Longline by-catch accounted for 50% of the total catch of Porbeagle in 2011, midwater trawl 30% and bottom trawl 20%, compared to percentages of around 95% of the catch by longline and less than 1% each by midwater and bottom trawl in 2003 (Ministry for Primary Industries, 2012).* *New Zealand's annual report to the Western and Central Pacific Fisheries Commission (WCPFC) Scientific Committee (WCPFC, 2012) indicates that:* *- catch of Porbeagle in NZ waters has increased since the low of just over 40 t in 2008 to reach 75 t in 2011.* *- estimated numbers of Porbeagles taken as by-catch in the longline fishery between 2008 and 2011 are 3966, 4244, 4679 and 9929 per year, respectively* *- It is estimated that in 2011, 36% of Porbeagles were retained and that 83% of the catch was taken alive.*
After Blue Sharks, Porbeagle is one of the sharks commonly caught by Japanese Southern Bluefin Tuna longline vessels. Most of the catch is reportedly discarded or landed at ports near the fishing grounds, but do not appear in FAO or most Regional Fisheries Management Organisations' (RFMO) databases. A study reports an increase in catch from very low levels during 1989–1995 followed by a decline in annual landings to around 40% of original levels between 1997 and 2003. Standardised reported CPUE has varied from 1992 to 2002, but recent stock trends were deemed to be stable. There was no reported catch trend of *L. nasus* in the same fishery from 1992 to 2007, but these data are difficult to interpret.	
Different catches for all sharks were reported by Japan to the CITES Animals Committee and to FAO in 2011 and 2012 and the reliability of Japanese catch data has been questioned by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT).	*Questions of reliability of Japanese catch data in CCSBT, raised in the SS, relate to Southern Bluefin Tuna data; care should be taken about inferring that data on other species, such as sharks, are unreliable (Clarke* in litt*., 2012; Lack* in litt*., 2012).*
<u>More detail</u> Recent global reported *L. nasus* landings have decreased from 1 719 t in 1999 to 746 t in 2009 and 252 t in 2010. The highest catches in 2009 and 2010 were from France (305 t, 9 t), Spain (239 t, 70 t), Canada (63 t, 83 t) and New Zealand (63 t, 56 t), although ICCAT/ICES notes that reported landings "*grossly underestimate actual landings*" and FishStat has no *L. nasus* data from Japan, Taiwan POC or Republic of Korea. A zero quota has since been set for EU waters, all EU fleets, and the North East Atlantic Fisheries Commission (NEAFC) area. USA and Canadian	<u>*More detail*</u> *Global catches reported by FAO do not include discards (Lack* in litt*., 2012).* *As a result of the listing of Porbeagle as a migratory species under the* Environment protection and Biodiversity Conservation Act (1999) *in Australia in 2010, interactions with and catches of the species must be reported to the Commonwealth Environment Agency. Reports indicate that in the years 2009/10 to 2010/11, 33 Porbeagles were taken in Commonwealth-managed fisheries in Australia. Of these, 27 were taken in longline fisheries, two in trawl fisheries and four in gillnet fisheries (AFMA, 2012).*

Supporting Statement (SS)	Additional information
fisheries are under strict quota management. However, other fisheries are also declining, even in the absence of management (e.g., in the southern hemisphere).	*It is likely that Porbeagle is also taken in fisheries managed by some Australian States (Lack* in litt*., 2012).* *In March 2012, the Ecologically Related Species Working Group (ERSWG) of the CCSBT agreed that Japan, New Zealand and Australia should work together to progress a stock assessment/ecological risk assessment for Porbeagle (CCSBT ERSWG, 2012). This was in response to the presentation by Japan of a paper describing the distributional pattern and the trend of relative abundance of Porbeagle in the Southern Hemisphere (Semba* et al*., 2012).*
L. nasus is a valuable secondary target of many fisheries, particularly longline pelagic fisheries for tuna and swordfish but also gill nets, driftnets, trawls and handlines. This catch is often inadequately recorded or unreported.	*The statement 'often inadequately recorded or unreported' is from Clarke and Harley 2010 and the proposal refers to the non-reporting of catches to the WCPFC, including by some of the largest shark-catching nations. Clarke and Harley (2010) refer to all sharks, not to Porbeagles* per se*. Furthermore, the overlap between the Southern Hemisphere Porbeagle range and the fishing effort in the WCPFC is small and occurs in the EEZ of Australia and New Zealand, which do report Porbeagles. While underreporting of Porbeagle catch is undoubtedly a problem, it is not clearly so in the WCPFC (Clarke* in litt*., 2012).*
It has been noted that "*effort has increased in recent years in pelagic longline fisheries for bluefin tuna (Japan, Republic of Korea and Taiwan Province of China) in the North East Atlantic. These fisheries may take Porbeagle as a bycatch. This fishery is likely to be efficient at catching considerable quantities of this species.*" It has also been warned that increased effort on the high seas could compromise stock recovery efforts.	
Important but largely unreported secondary fisheries include demersal longlining and trawling for Patagonian toothfish and mackerel icefish around Heard and Macdonald Islands and in the southern Indian Ocean, and the Chilean artisanal and industrial longline swordfish fishery, between 26–36ºS, which records *L. nasus*. It has also been found that *L. nasus* made up 1.7% of all fins tested in the north-central Chilean shark fin trade, and that 98% of fins labelled 'Tintorera' (50 specimens) were *L. nasus* (i.e. were correctly identified by the traders). Overall catches of *L. nasus* by Argentina were 30.1 t, 17.7 t, 19.8 t and 69.7 t between 2003 and 2006 (these data did not appear in FAO FishStat), but *L. nasus* captures by the Argentinean fleet are probably now limited to incidental captures by three Patagonian toothfish fishing vessels, and with strict measures in force to protect sharks in Argentinian waters (live sharks greater than 1.5 m must be released if caught), catches are likely to be minimal.	*The Patagonian Toothfish and mackerel icefish fisheries around Heard Island and MacDonald Island (HIMI) are not "unreported". These fisheries are managed by Australia with two observers on board at all times and all catch is reported to both Australian management agencies and to CCAMLR. No interactions with Porbeagle have been reported from the HIMI fisheries (Lack* in litt*., 2012).* *Clarke (*in litt*., 2012) expects the percentage of the fin trade composed of Porbeagle fins to be considerably lower than that seen in Chile.*
<u>*Lamna nasus* in trade</u> *L. nasus* has long been one of the most valuable (by weight) of marine fish species landed in Europe, similar in value to and sometimes marketed as swordfish. *L. nasus*	<u>*Lamna nasus in trade*</u>

Supporting Statement (SS)	Additional information
meat can be a very high value product, one of the most palatable and valuable of shark species, and is traded in fresh and frozen form. All international trade in *L. nasus* products is unregulated and legal, unless involving those States that have prohibited the possession of and/or trade in shark products.	
However, prior to 2010, a lack of species-specific landings and trade data made it impossible to assess the proportions of global catches that supply national demand and enter international trade, although the high commercial value of the species has been documented through market surveys. Survey findings indicated that the demand for fresh, frozen or processed *L. nasus* meat and fins was sufficiently high to justify the existence of an international market. The extent of national consumption *versus* export by range States can vary considerably, depending upon local demand.	*The proposal and SS suggest that the value of fins is sufficiently high to justify the existence of an international market. However, Clarke (*in litt*., 2012) states that the value of the fins is very low, based on anecdotal information from shark fin markets in Hong Kong.*
In 2010, the EU introduced new species-specific Customs codes for fresh and frozen *L. nasus* products (excluding shark fins) and amended previous codes covering most shark species accordingly. Other countries/territories still do not have species-specific codes in place for trade in this species, and continue to report its trade under general shark commodity codes, preventing analysis.	
There is a considerable market for *L. nasus* products within the European Union. EU Member States were responsible for 60–75% of FAO's global records of *L. nasus* catch in 2006 and 2007, prior to establishment of a TAC (which was reduced to zero for EU waters and EU fleets in 2010). EU market demand must now therefore be met by imports. The following range States (excluding other EU countries) were the principal suppliers of fresh and frozen *L. nasus* meat to the EU in 2010 and 2011 (the EU importer is shown in brackets): South Africa (Italy), Japan (Spain), Morocco (Spain), Norway (Germany and Denmark), the Faroe Islands (Denmark) and New Zealand (Bulgaria). A total of 50 500 kg of *L. nasus* meat, worth EUR 128 425, was imported during this two-year period.	*It is possible that the reduced availability of Porbeagle meat from EU sources may see any domestic demand met through substitution by other products rather than necessarily looking to import larger quantities of Porbeagle (Lack* in litt*., 2012).* *The level of imports 2010-2011 does not necessarily imply an increase over import levels in previous years, since data for those years are not available (Lack* in litt*., 2012).*
The EU also reported significant exports of *L. nasus*, totalling 141 300 kg in 2010 and 2011. These may have been exports of catches landed and frozen in 2009, before the zero quota, or re-exports. Morocco was by far the largest destination of *L. nasus* exported from the EU, followed by Afghanistan.	*The fact that these were exported, despite the zero TAC (introduced in 2010), may suggest that domestic demand in the EU is not that strong (Lack* in litt*., 2012).*
Earlier studies had reported that Canada exports *L. nasus* meat to the US and the EU, Japan exports to the EU, EU Member States export *L. nasus* to the US, where it is mainly consumed in restaurants and that it is also imported by Japan. The new EU trade data confirm exports from Japan to the EU, but there were no records of the EU importing *L. nasus* from Canada, or of the EU exporting (or re-exporting) it to the US, as reported in earlier studies.	
South Africa does not have any directed fisheries for *L. nasus*, which is only occasionally caught in the South African pelagic long-line fishery. Therefore, the high	

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quantities imported from South Africa into the EU are likely to be derived from foreign flagged vessels fishing outside South Africa's EEZ and landing in South African ports, including vessels form Japanese, Republic of Korean and Taiwan POC targeting tuna and tuna-like species.	
Porbeagle appears in the list of preferred species for fins in Indonesia, but it has been reported to be of relatively low value. The large size of *L. nasus* fins nonetheless means that these are a relatively high value product. They have been identified in the fin trade in Hong Kong and are one of six species frequently used in the global fin market. The raw fins are also readily recognised to species level by fin traders in Chile.	*Porbeagle appears on a list of preferred species for fins in Indonesia from 1999 (Vannuccini, 1999). However, Clarke (*in litt.*, 2012) doubts that Porbeagle fins are now traded to a large extent through Indonesia because 1) the range States are far away, and 2) Indonesia produces a large number of shark fins from other more valuable species.*
	The proposal suggests that the Porbeagle is one of the six species frequently used in the global fin market. However, the publication cited actually refers to a set of six species (which include Porbeagle) as frequently utilized but in fact it is the other species that are common (Shivji et al*. 2002; Clarke* in litt.*, 2012).*
	In a study of the Hong Kong shark fin market (Clarke et al*. 2006) Porbeagle fins were so uncommon that they could not be quantified.*
	Fin traders are aware of the low needle count in Porbeagle fins, which means that they are less valued than other shark species' fins, despite their large size, meaning that they are less desirable and rarely appear in trade (Clarke 2009, as cited in previous proposal analysis).
	Fins are exported from Norway to Asian countries as by-products of meat processing (Fleming and Papageogiou 1997, as cited in IUCN and TRAFFIC 2010). *Of the landings of Porbeagle in New Zealand, 85% were fins (with the carcasses discarded at sea), and virtually all shark fins landed in New Zealand are exported (mainly to Hong Kong) (Francis 2007, IUCN and TRAFFIC 2010).*
	In New Zealand, about 50% of Porbeagle sharks caught by tuna longliners are processed, and the rest are discarded. Of the sharks that are processed, about 80% are finned only and 20% are processed for their flesh and fins (New Zealand Ministry of Fisheries Scientific Committee, 2011). No mention is made of the retention or rate of finning in the midwater trawl/bottom trawl fisheries in which Porbeagle are taken and which now account for 50% of the catch (Lack in litt.*, 2012).*
Porbeagle hides can be processed into leather, and liver oil extracted, but trade records are not kept. Cartilage is probably also processed and traded. Other shark parts are used in the production of fishmeal, which is probably not a significant product from *L. nasus* fisheries because of the high value of its meat. There is limited use of jaws and teeth as marine curios.	

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Inclusion in Appendix II to improve control of other listed species

A) Specimens in trade resemble those of species listed in Appendix II under Res. Conf. 9.24 (Rev. CoP15) Annex 2 a or listed in Appendix I

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

n/a

Other information

Threats

The principal threat is from over-exploitation in target and by-catch fisheries, which catch both adults and juveniles of all life stages (in the absence of management). Intensive directed fishing for valuable *L. nasus* meat was the major cause of 20th century population declines (see Annex 4 of proposal). ICES (2005) noted: "*The directed [Northeast Atlantic] fishery for Porbeagle stopped in the late 1970s due to very low catch rates. Sporadic small fisheries have occurred since that time. The high market value of this species means that a directed fishery would develop again if abundance increased*."

As well as meat, Porbeagle may also be utilised nationally in some range States for liver oil, cartilage and skin, however no significant national use of *L. nasus* parts and derivatives has been reported, partly perhaps because records at species level are not readily available, and partly because quantities landed are now so small, particularly in comparison with other shark species.

A target fishery for the meat of *L. nasus* still operates in Canada.

Porbeagle meat is a valuable secondary target of many fisheries, particularly longline pelagic fisheries for tuna and swordfish, but also gill nets, driftnets, trawls and handlines.

Sports fishers catch Porbeagle in the USA, Canada, New Zealand and in some EU Member States. Catches may be retained for meat and/or trophies, or tagged and released.

Conservation, management and legislation

No species-specific legislation has been adopted by range States or trading nations to regulate national or international trade in *L. nasus*.

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International Porbeagles are listed in: - Annex I (Highly Migratory Species) of the UN Convention on the Law of the Sea	*International* *Porbeagles are listed as a high priority species on the Convention on the Protection of the Marine Environment of the Baltic Sea Area (the Helsinki Convention), although no*

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(UNCLOS) - Appendix II of the Convention on the Conservation of Migratory Species (CMS) and the Annex to the Migratory Sharks Memorandum of Understanding - Annex II (Endangered or Threatened Species) of the Barcelona Convention Protocol (Mediterranean population only) – uplisted since last Proposal/CoP15. In May 2012, GFCM prohibited the retention on board, transhipment, landing, transfer, storage, sale or display for sale of all shark species listed in Annex II of this Protocol. - Appendix III of the Bern Convention (Mediterranean population only) as a species whose exploitation must be regulated in order to keep it out of danger - Annex V list of Threatened and /or Declining Species and Habitats of the OSPAR Convention for the Protection of the Marine Environment of the North-east Atlantic.	*management action to address this has been taken (Lack and Sant 2009, as cited in IUCN and TRAFFIC 2010).* *A Conservation Plan for sharks was adopted by the signatories to the CMS Memorandum of Understanding (MOU) on Sharks in September 2012.*
L. nasus is listed as a "High Priority" species in Uruguay's Shark Action Plan.	
Many RFMOs have banned shark finning.	*While prohibitions on finning have recently been established by a number RFMOs, the effectiveness of these prohibitions to reduce shark catch has not been definitively demonstrated and a number of loopholes can remain that allow nations to continue this practice. For example, in the WCPFC (Clarke* et al.*, 2012), coastal nations are allowed to establish their own alternative measures in their EEZ, and implementation of the prohibition is the responsibility of the coastal state: of all 32 WCPFC members, only half had confirmed full implementation of the finning prohibition and few were able to provide information on the degree of compliance. Furthermore, in the WCPFC there is evidence that even if a prohibition were fully implemented, it would not actually lead to a reduction in catch.* *Alternatively, some RFMOs have established prohibitions on the retention of sharks. While these measures "are likely to reduce shark mortality to a greater extent than finning prohibitions, gear-retrieval practices can have a large effect on shark mortality…It would therefore not be correct to assume that no retention will result in no mortality" (Clarke* et al*. 2012).*
ICCAT has required Parties since 2007 to reduce the mortality of *L. nasus* in directed Atlantic fisheries where a peer-reviewed stock assessment is not available, but compliance is not monitored. Parties to the NEAFC, which covers fisheries not under ICCAT's remit, have agreed since 2010 not to target *L. nasus* and to release incidental catches alive. Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). CCAMLR (2006) adopted a moratorium on directed shark fishing until data become available to assess the impacts of fishing on sharks in the Antarctic region. Live release of sharks taken as bycatch is encouraged (not mandated). The WCPFC has not yet addressed *L. nasus*, even though it has been identified as a	

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key species. Commission Members, Cooperating non-Members, and participating Territories are required to report catch, effort and discard data since 2011.	
National *L. nasus* range and/or fishing States with an International Plan of Action (IPOA) for the Conservation and Management of Sharks include Argentina, Australia, Canada, the EU, Japan, New Zealand, Spain, Taiwan POC, Uruguay and USA. The list below is based upon consultation with range States and may be incomplete. Argentina - requires live by-catch of large sharks to be released alive. Canada - Pelagic shark Fisheries management plans in Atlantic Canada established non-restrictive catch guidelines of 1500 t for *L. nasus* prior to 1997, followed by a provisional TAC of 1000 t for 1997–1999, based largely on historic reported landings and observations of decreased recent catch rates. Following analytical stock assessments, the Shark Management Plan for 2002–2007 reduced the TAC to 250 t, followed by a further reduction to 185 t (60 t bycatch, 125 t directed fishery) from 2006. Stock projections indicate that the population will eventually recover if harvest rates are kept under 4% (~185 t.). Finning is prohibited. Canada - The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated *L. nasus* as Endangered in 2004. The Federal Government of Canada declined to list it under Schedule 1 of Canada's Species at Risk Act because recovery measures were being implemented. Europe - EC Regulations have prohibited fishing for *L. nasus* in EU waters since 2010, and EU vessels may not fish for, retain on board, tranship or land *L. nasus* from international waters (EU Regulation 43/2012 and Council Regulation 44/2012). Fisheries management measures are described under 8.1. Europe - The conservation and management of sharks in EU waters falls under the European Common Fishery Policy, which manages fish stocks through a system of TACs or annual catch quotas and reduction of fishing capacity. The Community Action Plan for the Conservation and Management of Sharks (CPOA) sets out to rebuild depleted shark stocks fished by the EC fleet within and outside EC Waters. The CPOA's Shark Assessment Report pays particular attention to *L. nasus*, which has been under legally-binding EU management in EC and international waters since 2008. Malta - *L. nasus* is listed in appendices to the Flora, Fauna and Natural Habitats Protection Regulations 2006. New Zealand - *L. nasus* has been included in New Zealand's Quota Management System since 2004, with a TAC set at 249 t. Finning and discard of carcasses is	*National* *Croatia has listed Porbeagle as a strictly protected species within waters under Croatian jurisdiction (Soldo, 2009, as cited in IUCN and TRAFFIC 2010).* *Following the listing of Porbeagle on the Convention on Migratory Species, Australia listed Porbeagle as a migratory species under the* Environment Protection and Biodiversity Conservation Act 1999*. Porbeagles are caught as by-product in pelagic longline fisheries, although the numbers caught are low due to reductions in longline effort since the late 1990s. Targeted commercial fishing of Porbeagle is prohibited. Porbeagles may be retained as by-catch if caught in accordance with approved management arrangements, but if landed alive they must be returned to the water. Recreational targeting of Porbeagle sharks is permitted,* *General shark management in Australian longline tuna fisheries specifies:* *- a ban on the use of wire trace. Australia implemented a ban on wire traces to minimize the retention, incidental catch of sharks, and consequently the number of sharks that die on the longlines;* *- licence holders' permission to process (trunked, headed and gutted) at sea but prohibition from removing, carrying, retaining, or landing all shark (Class Chondricthyan) livers and fins (dorsal, pectoral, caudal, pelvic and anal) that are not attached in/to the carcass;* *- in the Australian exclusive economic zone, licence holders have a trip limit of a maximum of 20 pelagic sharks;* *- on the high seas, licence holders are permitted to take up to 100 pelagic sharks of which no more than 80 can be Blue Whaler Sharks* Prionace glauca *and no more than 20 can be sharks or rays from the following species: Crocodile Shark* Psuedocarcharias kamoharai *Shortfin Mako* Isurus oxyrinchus *Porbeagle Shark* Lamna nasus *Silky Shark* Carcharhinus falciformis *Oceanic Whitetip Shark* Carcharhinus longimanus *Smooth Hammerhead Shark* Sphyrna zygaena *Pelagic Stingray* Dasyatis violacea. *(Department of Sustainability, Environment, Water, Population, and Communities, 2012; IOTC, 2012).* *In New Zealand, the latest advice to the Minister for 2012/13 is that the Porbeagle TAC be reduced from 249 t to 129 t, of which commercial fisheries could take a maximum of 110 t. The reduction reflects "concerns that fishing under the current TAC/TACC would put the stock under considerable pressure should the full allocation be reached" (Ministry for Primary Industries, 2012). The Minister's decision is yet to be announced—129 t remains substantially above the most recent catches. At the same time, however, the Minister has been advised almost to double the TAC for Southern Bluefin Tuna. The Southern Bluefin Tuna fishery is one of the longline*

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permitted, but discards must be reported. Norway - In 2007 adopted ICES advice and banned all direct fisheries for *L. nasus*. From 2007–2011 specimens taken as bycatch had to be landed and sold. From 2011, live specimens must be released, whereas dead specimens can (not must) be landed and sold. Reporting was extended to include the number of specimens landed in addition to weight. From 2011, the regulations also include recreational fishing. Spain - Included in Spanish National List of Endangered Species (RD 139/2011) Sweden - Illegal to catch and land *L. nasus* since 2004. US - There is quota management for *L. nasus* in US Atlantic waters. A 92 t TAC was adopted in US waters in 1999 and reduced in 2008 to 11 t for all US fisheries, including a commercial quota of 1.7 t. When exceeded, the fishery is closed. An increasing number of States are prohibiting all trade in shark products or just trade in shark fins – none are *L. nasus* range States. Others have prohibited all shark fishing in their waters but the benefit of these prohibitions has not been established. Other There are no controls or monitoring systems to regulate or assess the nature, level and characteristics of trade in *L. nasus*.	*fisheries in which Porbeagle is taken, so it might be expected that increased by-catch of Porbeagle would result from any increase in the SBT TAC (Lack* in litt.*, 2012).* *Even where TACs (zero or otherwise) are in place, this does not ensure that mortality is restricted to this level. In target fisheries this will depend on the level and effectiveness of enforcement and in by-catch fisheries the reduction in mortality may only be equivalent to the proportion of the catch that was previously caught alive (Lack* in litt.*, 2012).*
Captive Breeding/Artificial Propagation	
L. nasus is not known to have been bred in captivity.	
Other comments	
L. nasus is one of five species in the family Lamnidae (mackerel sharks), including White Shark *Carcharodon carcharias* and two species of mako, genus *Isurus*. Salmon Shark *L. ditropis* occurs in the North Pacific. Porbeagle and Mako *Isurus oxyrinchus* may be confused in some fisheries, despite good keys being available. Stocks segregate (at least in some regions) by age, reproductive stage and sex and undertake seasonal migrations within their stock area. Stock assessment models in the Canadian fishery have determined that recovery is possible, but there have been warnings that the trajectory is extremely low and sensitive to human-induced mortality. Human-induced mortality of ~2 to 4% of the vulnerable biomass of 4 500 t to 4 800 t (equivalent to catching the 2005 quota of 185–192 t) should allow recovery to 20% of virgin biomass ($SSN_{20\%}$) in 10–30 years. Recovery to maximum sustainable yield (SSN_{msy}) will take much longer: between 2030 and 2060 with no human-induced mortality, or into the 22nd century (or later)	*An ecological risk assessment process conducted by the Secretariat of the Pacific Community on behalf of the WCPFC identified Porbeagle as at higher risk from Western and Central Pacific Oceans fisheries than most other shark species encountered in those fisheries (Kirby and Molony 2006, as cited in IUCN and TRAFFIC, 2010).* *An ecological risk assessment calculated risk values for the species taken in Atlantic pelagic longline fisheries. Of the 10 species assessed, Porbeagle was ranked as 6th most vulnerable, with moderately high levels of risk (Simpfendorfer* et al.*, 2008)*

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with an incidental harm rate of 4%. At an incidental harm rate of 7% of the vulnerable biomass, corresponding to a catch of only 315 t, the population will not recover to SSN_{msy}, but there have been warnings that the high seas fisheries exploiting this stock jeopardize Canada's fisheries management and recovery plan – the population would crash at these exploitation rates. Tuna longliners from Taiwan POC, Republic of Korea and Japan take a largely unknown catch of *L. nasus* on the high seas in the North Atlantic. Most of the catch is reportedly discarded or landed at ports near the fishing grounds. Stocks and catches are "under investigation". Estimates for Japan's mostly unreported high seas North Atlantic catch ranged from 15 t to 280 t annually during 2000–2002, or ~200 t in 2000 and 2001. Furthermore, estimates have shown that about 30 t/yr of *L. nasus* die following discard from commercial Canadian fisheries alone. Stock assessments indicate that these levels of combined North Atlantic landings will prevent stock recovery.	
A fin guide exists for the identification of the fins in trade.	*The fin identification guide has not been validated for its use to allow the unique identification of Porbeagle fins from all potentially similar fins. It only distinguishes between a small number of species, which in the case of Porbeagle, are not the most similar species (Clarke* in litt*., 2012).* *Climate change (changes in sea temperature, changes in oceanography and ocean acidification) and marine debris have been identified as sources of potential concern for Porbeagle in Australian waters (Department of Sustainability, Environment, Water, Population, and Communities 2012).*
The latest review of trend data for the Porbeagle indicates that populations formerly proposed for listing under the criterion of Annex 2b A ("look-alike") qualify for listing under Annex 2 aB.	

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