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Agenda Item 25.1.

PROPOSAL FOR THE INCLUSION OF THE ANGELSHARK *(Squatina squatina)* ON APPENDIX I AND II OF THE CONVENTION

Summary:

The Government of Monaco has submitted the attached proposal* for the inclusion of the Angelshark *(Squatina squatina)* on Appendix I and II of CMS.

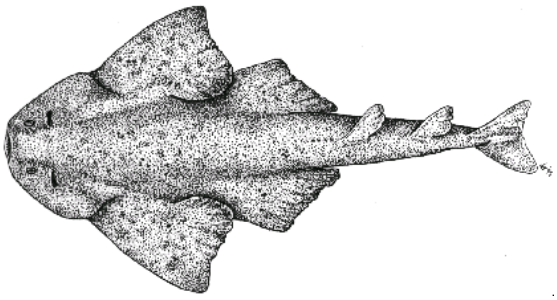
*The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CMS Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.

PROPOSAL FOR THE INCLUSION OF THE ANGELSHARK (*Squatina squatina)* ON THE APPENDICES OF THE CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS

A. PROPOSAL:

Inclusion of the species *Squatina squatina***,** Angelshark, in Appendix I and II.

B. PROPONENT: Government of the Principality of Monaco



C. SUPPORTING STATEMENT

1. Taxonomy

1.1	Class:	Chondrichthyes, subclass Elasmobranchii
1.2	Order:	Squatiniformes
1.3	Family: S	quatinidae
1.4	Genus, species:	*Squatina squatina* Linnaeus, 1758
1.5	Scientific synonyms	
1.6	Common Name:	
	English:	Angelshark, common or European Angelshark, angel ray, shark ray, monkfish
	French:	Ange de mer commun, L'angelot,
	Spanish:	Angelote, Peje angel, tiburón angel
	German:	Meerengel, Engelhai, Gemeiner Meerengel
	Italian:	Angelu, Pesce angelo, Squatru cefalu, Terrezzino
	Portuguese:	Anjo, Peixe anjo, Viola

2. Overview

The Angelshark, *Squatina squatina*, is a medium-sized benthic coastal shark that is endemic to shelf seas in the Northeast and Eastern Central Atlantic, Mediterranean and adjacent seas. It undertakes seasonal north-south and inshore-offshore migrations, but these are poorly documented, partly due to the species' scarcity.

The Angelshark is assessed as Critically Endangered in the IUCN Red List. Although the species was very common during the 19th and early 20th centuries, the global population has been depleted by target fisheries and, more recently, as a fisheries bycatch. The species' last remaining stronghold is around the Canary Islands, but it is still recorded very infrequently across much of its former coastal range. Bycatch in trawl and trammel (tangle) net fisheries pose the greatest and most widespread threats to the species. Recreational angling and disturbance from dive tourism are threats at remaining aggregation sites (Barker *et al.* 2016).

The species is legally protected in part of its range under Monaco, UK and Spanish legislation, and incidentally in some marine protected areas where trawl and net fisheries are prohibited (e.g. in Spain and Turkey). Regional EU and GFCM fisheries prohibitions and listings under regional agreements (OSPAR, HELCOM, Barcelona and Bern Conventions) should provide protection and a framework for further action. However, public and fisher awareness of the Angelshark's threatened status and the existence of these measures is generally poor, and Range State implementation activities and compliance monitoring is often lacking. Hence, the Angelshark would significantly

benefit from a CMS Appendix I and II listing as it would stimulate full protection from the CMS Parties whose waters cover a large part of its range.

Following a listing in the CMS Appendices, the proponent will propose the Angelshark for listing in Annex I to the CMS Migratory Sharks MOU and lead work with range States and other partners to develop a Concerted Action for this species. The East Atlantic and Mediterranean Strategy for Angel Sharks, to be published by the end of May 2017 (Gordon *et al.* 2017 in prep), will provide a sound basis for such initiatives.

3. Migrations

3.1 Migrations (kinds of movement, distance, the cyclical and predictable nature of the migration)

Squatina squatina rests on the seabed by day and is active by night. Seasonal migrations occur, at least in the northern part of its range, with animals moving north as water temperatures warm during the summer and returning south in the autumn, probably favouring coastal migration pathways (Carpenter and de Angelis 2016, Ebert and Compagno 2013; Ebert *et al*. 2013; Fitzmaurice *et al.* 2003, Wheeler *et al.* 1975). There are also reported to be seasonal movements from inshore areas in summer to offshore areas in winter in the north of its range. In the south of its range, in the Canary Islands, the species is observed in shallow inshore waters in winter, but moves into deeper cooler water during the summer months. The deep water surrounding the Canary Islands may be a barrier to movements to the adjacent African coast (Meyers *et al.* 2017).

A long-term sports angler tag and recapture study reported 188 sharks recaptured from 1008 adult and sub-adult animals tagged in Ireland during the summer months (May to September) between 1970 and 2002. Significantly more male than female Angelsharks were recorded and juveniles were not reported, suggesting that females may prefer areas further offshore and that the nursery ground for this population may be elsewhere (Fitzmaurice *et al.* 2003). This study identified long-distance trans-boundary migrations from the Irish tagging sites to England, the West of Scotland, France and Spain – the latter a straight-line distance of 720 miles/1160 km (Fitzmaurice *et al.* 2003, Green 2007, Figure 1). About 80% of tagged sharks were recaptured close to the tagging sites, where maximum angling effort occurred. The maximum time at liberty between tag and recapture was 12 years, with three sharks recaptured ten years after being tagged. Reports of recaptures made away from the tagging sites were by commercial fisheries and the longest-distance trans-boundary tag recoveries were recorded during the winter months (October to May – Figure 2).

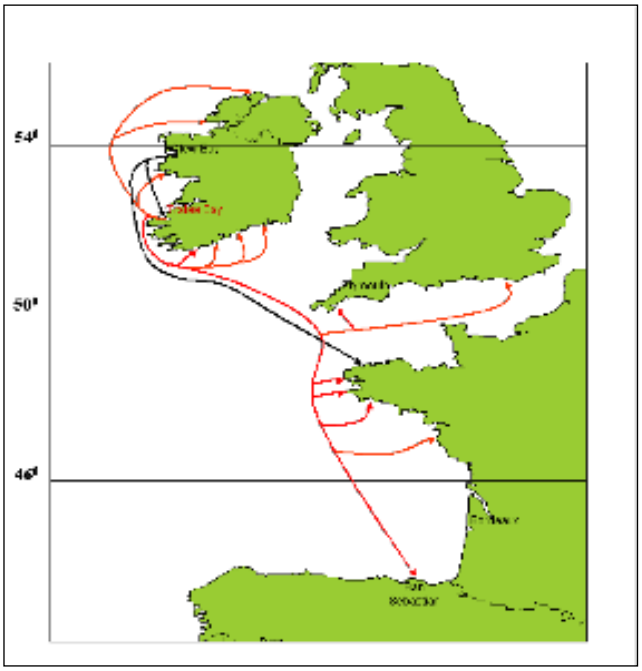


Figure 1: Angelshark *Squatina squatina* migration patterns, 1970–2006. n=190. Source Irish Central Fisheries Board, from ICES WGEF 2007.

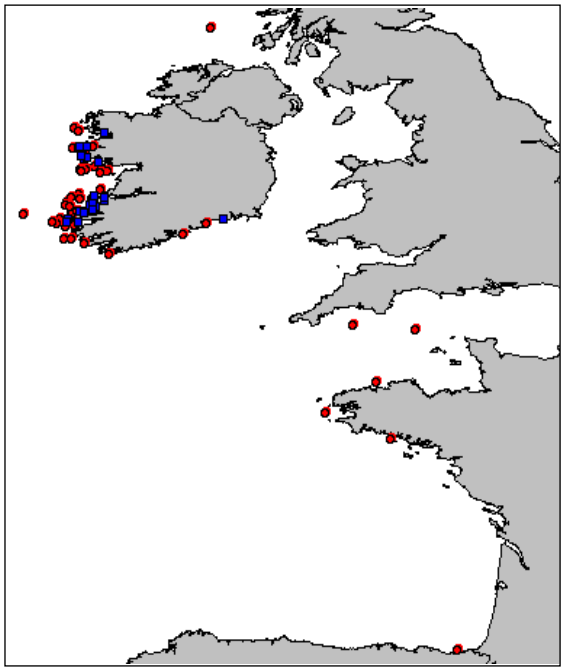


Figure 2: Distribution of Angelshark recaptures from June to September = •, October to May = • (1970-2002), from Fitzmaurice *et al*. 2003.

Although most tagged Angelsharks were recaptured close to their Irish tagging sites, this does not necessarily mean that they are resident. Angelsharks may be philopatric: returning to the same location each year following their seasonal migration to wintering grounds further south or in deep water. In fact, in the Canary Islands, a tagging programme using visual ID tags, recorded three individuals returning to the same areas, after being absent from these areas for 12 months (Angel Shark Project). ICES WGEF (2014) suggested that there may be a deep-water wintering site in the Irish Sea, between Wales, Ireland and England.

There have been a small number of tag returns from the Gulf of Tunis, southern Mediterranean (Quignard and Capapé 1971, Capapé *et al*. 1990). Six of the 38 Angelsharks tagged between 1962 and 1989 were recaptured after between 12 and 231 days at liberty, 10 to 44 km away from the tagging sites.

The studies described above only used visual tags. Electronic tags would be necessary to clarify residency rates and migration patterns, for example whether all or most Angelsharks move out of the tagging area in the autumn and return to this same location the following year. The scarcity of this species will make this form of research into their migratory behaviour difficult to achieve.

3.2 Proportion of the population migrating, and why that is a significant proportion

Inferring from knowledge of better-studied migratory species of elasmobranch, it seems likely that most of the north-east Atlantic Angelshark population undertook the seasonal north-south and/or inshore-offshore migrations described above at some stage during their life history. Too few animals have been tagged in the southern Mediterranean to demonstrate migrations along coasts in the warmer southern part of its range, but the recent records confirmed of adults and juveniles in the Aegean Sea, the Sea of Marmara, Adriatic Sea, Sicily, Corsica, Slovenia and Malta suggest that a proportion of this transboundary population will cyclically and predictably migrate at least to some areas on a scale that may allow crossing of one or more national jurisdictional boundaries. Furthermore, because very few Mediterranean States have claimed an exclusive economic or fishing zone extending beyond their 12-mile territorial sea, the high seas area lies close to the coastline and seasonal angel shark inshore-offshore migrations will cross these jurisdictional boundaries.

The Canary Islands, which only represent a very small part of the Angelshark's historic range (Figure 3), are the last known stronghold for this species. This part of the population seems unlikely to undertake transboundary migrations, because the islands are surrounded by deep water that may form a physical barrier to *Squatina* movement. Although this is the only healthy sub-population known to survive, small numbers of *Squatina squatina* are still present, reproducing and presumably still migrating seasonally along the coasts of the British Isles and continental Europe (perhaps also West Africa).

4. Biological data (other than migration)

4.1 Distribution (current and historical)

The Angelshark, *Squatina squatina*, was historically common and widespread in depths of <5–150m over large areas of the coastal, continental and insular shelf of the Western Baltic Sea, North Sea, Mediterranean Sea, Black Sea and the eastern Atlantic, from southern Norway, Sweden and the Shetland Islands to Morocco, Western Sahara and the Canary Islands (Figure 3, Ebert *et al*. 2013, Eschmeyer *et al.* 2017, Feretti *et al.* 2015).

In the southern part of its range, including the Mediterranean and northern African coast, its range overlaps with that of two other Angelshark species: the Sawback Angelshark, *S. aculeata,* and the Smoothback Angelshark, *S. oculata*. These species are also assessed as Critically Endangered; their migratory status is unknown. Catches of around 100 t of Angelsharks (by genus, not species-specific) are reported annually to the General Fisheries Commission for the Mediterranean (GFCM, see Table 1).

The distribution of *Squatina squatina* has contracted significantly over the past 50–100 years; intensive demersal fishing pressure has resulted in local extirpations, some contractions in range, and fragmentation of the remaining populations (ICES WGEF 2016, Feretti *et al*. 2015, Dulvy *et al*. 2003). For example, the species is now considered to be likely absent along much of the coastal shelf of Europe (Rogers and Ellis 2000), in particular in the North Sea (ICES ACFM 2005) and Bay

of Biscay (Quero 1998). There are still infrequent reports along the coasts of Ireland, England, Wales, and France.

Records inside the Baltic Sea, north along the coast of Sweden into the Bothnian Sea (e.g. Ebert and Compagno 2013; Ebert *et al*. 2013) may be mistaken, rather than a former historic distribution. Confirmed Baltic occurrences are recorded only in the Kattegat and Skagerrak (Helcom 2005).

Squatina squatina is no longer encountered in most areas of the northern Mediterranean, including the Catalan Sea, Ligurian and Tyrrhenian Seas, and portions of the Adriatic Sea, where it has been extirpated or at least is commercially-extinct (Froese & Pauly 2006; Feretti *et al*. 2015, Miller 2016). Jukic-Peladic *et al*. (2001) reported that the last record from the Adriatic Sea was in 1948, but the study by Fortibuoni *et al*. (2016) identified one individual sold in Venice in 2005 and four records from the Northern Adriatic during 2015, reporting that Angelshark species were common and supported an important commercial fishery there in the early 1900s, but the genus became commercially extinct in around the 1960s. No recent records have been identified from the former Black Sea range (the last Angelshark catches reported to the GFCM were in 2002). It is also now extremely uncommon throughout most of the remainder of its range for which data are available, except in the Canary Islands, where there is a healthy but possibly geographically isolated population. Its present status in the southern Mediterranean and northwest Africa is unknown, but it may still be more common off parts of the North Africa coastline (e.g. Tunisia (Bradai 2000)) than elsewhere. Records of Angelsharks species from the Mediterranean and other regions where more than one species occurs are not usually identified to species level. Table 1 presents Mediterranean catch data for all Angelshark species for 2005-2014.

Table 1. Reported capture production of all Angelshark spp. from the Mediterranean Sea, 2005-2014. (Source: GFCM Mediterranean and Black Sea Capture Production database. FAO FishstatJ Regionals 2016.)

Country	Fishing area (FAO Division)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Ten year average
Albania	Ionian	68	55	12	23	14	78	12	5	5	4	27.6
Malta	Ionian	-	-	-	-	...	-	-	-	-	-	0
Tunisia	Ionian	14	36	15	52	74	86	...	35	43	122	47.7
Tunisia	Sardinia	-	-	-	...	...	...	...	25	3	3	3.1
Turkey	Aegean	24	48	7	17	16	15	12.4	6.6	11.5	6.4	16.39
Turkey	Black Sea	-	...	...	...	...	...	...	...	...	...	0
Turkey	Levant	10	2	6	8	3	4	3.1	4.7	4.4	1.7	4.69
Turkey	Marmara Sea	4	1	2	9	1	...	0.5	2	1.1	0.2	2.08
Totals - Quantity (tonnes)		**120**	**142**	**42**	**109**	**108**	**183**	**28**	**78.3**	**68**	**137.3**	101.56

Squatina species were common in Russian surveys off Northwest Africa during the 1970s and 1980s (F. Litvinov pers. comm. to IUCN SSG 2006). They are reportedly now very rare in this area, where intensive artisanal and industrial fisheries operate over much of the coastline.

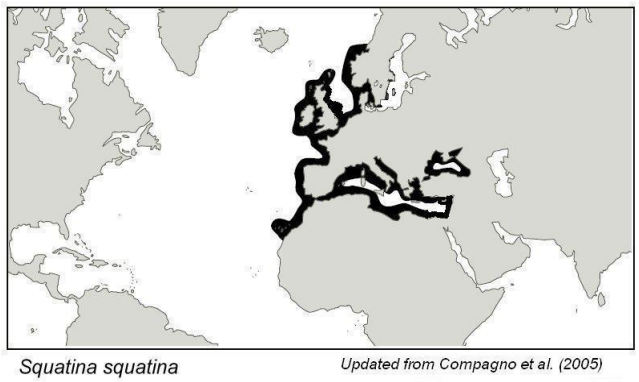


Figure 3: Historic distribution of *Squatina squatina* (updated from Compagno *et al*. 2005 – other sources illustrate a more northerly distribution along the coast of Norway).

4.2 Population (estimate and trends)

There are no population estimates for this north-east Atlantic marine endemic. It was formerly common in coastal areas, but its abundance has declined dramatically during the past 50–100 years during a period of steadily increasing fishing effort and capacity. Available trend data, which have been used to develop the IUCN Red List Assessment of Critically Endangered, indicate significant declines and some local or regional extinctions over most of its range. The species is now absent or only very rarely recorded within most of its historic global distribution. Miller (2016) provides a detailed description of historic occurrence and lists recent records of this species in more detail than provided below.

During the 19th and early 20th centuries, *Squatina squatina* was reportedly common, or at least frequently or regularly recorded, in many areas. For example, in the UK it was particularly common on the south and east English coasts (Yarrell 1835-36, Day 1880-84), and in the North Sea, on the Dogger Bank, in the Bristol Channel and Cornwall, and 'by no means uncommon' in the Firth of Clyde (Day 1880-84). It was still being caught regularly and considered common in the UK at the beginning of the 20th century (Garstang, 1903). During the early 1900s, an average of one specimen was taken during every ten hours of trawl survey on the British coast, but this species has virtually vanished in recent years (Rogers and Ellis 2000).

Steep population declines are also reported from several other parts of this species' North-east Atlantic range, including the North Sea (ICES ACFM 2005) and the French coast (Quero and Cendrero 1996; Quero 1998; Capapé *et al*. 2000).

Commercial landings data compiled by the ICES Working Group on Elasmobranch Fishes demonstrate a decline in Celtic Seas landings from over 30 t in the 1970s to less than one tonne in recent years (ICES WGEF 2016, Figure 4). French landings have declined from > 20 t in 1978 to 1 t in 2000. The WGEF has noted that *S. squatina* is now absent from research vessel surveys (ICES WGEF 2006) and extremely scarce in commercial catches (ICES WGEF 2006).

CEFAS research surveys recorded Angelsharks in low numbers in Cardigan Bay, UK, during the 1980s (Ellis *et al*. 1996), but report just one individual in the last 15 years and the species' virtual disappearance from UK waters.

However, other records have been noted based on angler, research and commercial fisher sightings and captures in UK waters – these have been compiled by UK fisheries biologist D. Herdson (pers. comm. 2017). Most reports in the past ten years were from the Irish Sea and the Bristol Channel including a pregnant female carrying four embryos captured in 2012.

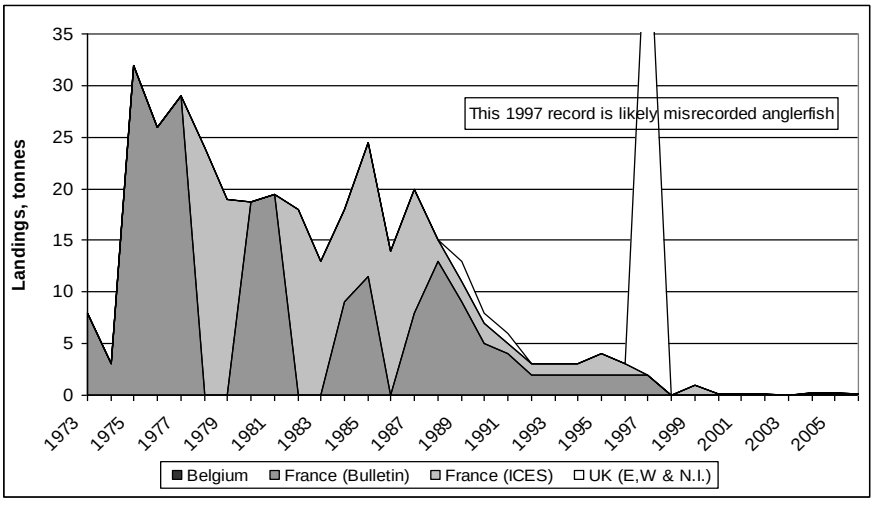


Figure 4: Landings in the Celtic Seas compiled by ICES WGEF (2007) from 1973 to 2006.
(The UK record in 1997 is most likely mis-recorded anglerfish, *Lophius*)

Historically, *S. squatina* has been caught in Tralee Bay and Clew Bay, Ireland, where a small population is still occasionally taken by recreational anglers. The Irish Central Fisheries Board has recorded effort by charter-angling vessels in Tralee Bay since 1981. Catches of Angelshark by two charter vessels have declined from over 100 per year in 1981, to 20 in 1984, before increasing to 100 again in the late 1980s. Catches subsequently declined to very low levels in the 1990s and anglers have only caught about three annually in most recent years (WGEF 2016, Figure 5). The introduction of trammel nets (bottom set nets for entangling large crustaceans) may have caused this decline (Fahy and Carroll 2009). The Angelshark was taken off the Irish Specimen Fish List in 2005, but photos on social media sites indicate a continuing low level of recreational captures. The Irish Specimen Fish Committee reinstated Angelshark to the list in 2016, on a catch and release basis only, with records to be based on length instead of weight, to allow data to be collected.

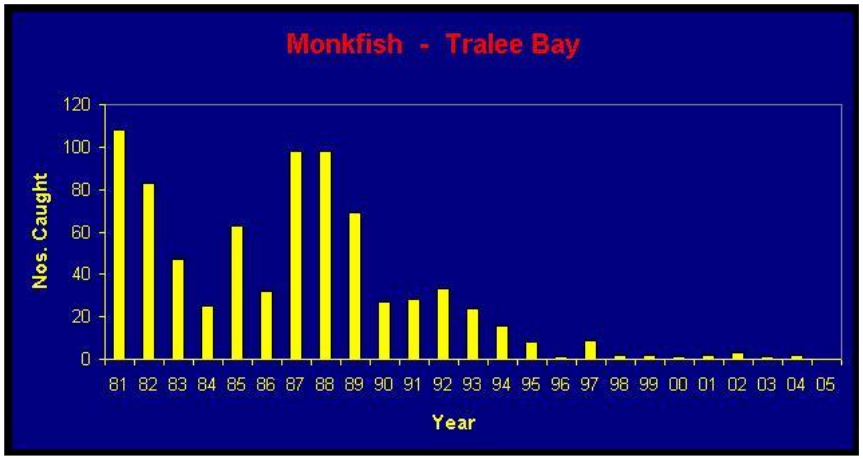


Figure 5: Captures by two charter boats in Tralee Bay 1981–2005 of Angelshark *Squatina squatina*. Source: Irish Central Fisheries Board, from ICES WGEF 2007.

Although more common off the Atlantic Iberian coasts, *S. squatina* was also reported during the first half of the 20th century as frequent in the Mediterranean by Lozano Rey (1928), but declines have also occurred here, in the Black Sea (Feretti *et al*. 2015), and on the Northwest African coast.

Vacchi *et al*. (2002) reported a decline in catches of *Squatina* species in a tuna trap in the Northern Tyrrhenian Sea from an average of 134 specimens from the period 1898-1905, to 95 between 1906-1913, and 15 between 1914-1922. The last record trapped in the Adriatic Sea was in 1948 (Jukic-Peladic *et al*. 2001). Off the Balearic Islands, *Squatina squatina* was historically documented in checklists (Delaroche, 1809; Ramis, 1814; Barceló i Combis, 1868; Fage, 1907; De Buen, 1935). Captures of *Squatina spp.* were relatively frequent until the 1970's, becoming increasingly sporadic during the 1980's in coastal artisanal fisheries (trammel nets and gillnets), lobster tangle nets, trawls and bottom longline fisheries. Since the mid 1990's no reports of *Squatina spp.* have been reported in the area and it may be absent (Gabriel Morey, pers. comm.). Recently, Massutí and Moranta (2003) reported no captures of *Squatina* spp. from four bottom trawl fishing surveys (131 hauls, at a depth range of 46-1,800m) carried out between 1996 and 2001 around the Balearic Islands.

Miller (2016) presents a few recent records of individual Angelsharks bycaught recently in commercial fisheries in the Mediterranean, including the Adriatic (2013), Strait of Sicily (2011), near the Maltese Islands (2005), Alexandrian waters of Egypt (2008), Turkey (Sea of Marmara and Antalya 2013, Gokova Bay 2015), and Syria (2004).

Squatina species were common in Russian surveys off Northwest Africa during the 1970s and 1980s (F. Litvinov pers. comm. to IUCN SSG 2006), but are reportedly now very rare in this area (Feretti *et al*. 2015). Portuguese landings data from the fleet operating off Morocco and Mauritania, aggregated for *S. squatina* and the other two *Squatina* species occurring in this region, peaked at 35 t in 1990. When the fishery was closed in 1998 the total landings had declined to 1.7 t, but the pattern of effort associated with these landings is unknown. Intense fishing pressure appears to have significantly affected other *Squatina* species off Senegal and Sierra Leone, where artisanal fishermen remember

them as common in catches 30 years ago. They have now almost disappeared and catches are very rare, according to artisanal fishermen and industrial demersal trawl fleet observers (M. Ducrocq pers. comm. to IUCN SSG 2006). Although *Squatina squatina* does not occur south of the Western Sahara, intensive fisheries operate throughout the Northwest African coast and this species has presumably been similarly affected there (Feretti *et al*. 2015).

The last stronghold for this species is in the Canary Islands, where hundreds of individuals have been reported by divers in recent years (Meyers *et al*. 2014, Meyers *et al*. 2017). These sightings are most common during the summer (breeding season) and the winter months (mating season), when water temperatures are between 18 and 23ºC (Meyers *et al.* 2017).

4.3 Habitat (short description and trends)

Squatina squatina occurs on or near mud or sandy seabed from close inshore to the outer shelf (<5 m to at least 150 m depth) and may penetrate estuaries and brackish water. It is most commonly reported in coastal waters (Ebert and Compagno 2013; Ebert *et al*. 2013, Myers *et al.* 2014, Meyers *et al*. 2017), but all or part of the population may move into deeper water in winter in the north of its range, and during the summer in the south of its range. The species is recorded in the Canary Islands in water temperatures of between 17 and 22ºC, but water temperatures in the north of the species' range (e.g. on the Irish coast) are much lower during the summer when anglers catch Angelsharks in coastal waters (11–16ºC). The populations in the Canary Islands (Meyers *et al.* 2017) and Ireland (Fitzmaurice *et al.* 2003, Green 2007) appear to be segregated, by depth and geographically, by size and sex.

4.4 Biological characteristics

Squatina squatina is nocturnal. It swims strongly at night, but usually lies buried in sediment by day with only its eyes and dorsal fins protruding. It is an ambush predator, taking bony fishes, cephalopods, skates, crustaceans and molluscs.

This is an ovoviviparous species: the eggs hatch inside the mother and litters of 7–25 pups born live, 24–30 cm long, after a gestation period that may last some 6–12 months. Reproductive parameters, such as size at maturity and maximum size vary significantly across the species' geographic range (Miller 2016). The reproductive cycle may be two or three years long, with a resting period between litters. Pupping (and/or neonates) is reported in December to February in the Mediterranean, April to September in the Canary Islands, and July in the British Isles. Pups occupy shallow water nursery grounds, which provide a refuge from large predators (Meyers *et al.* 2017).

4.5 Role of the taxon in its ecosystem

Squatina squatina is a high trophic level (TL) predator. Cortés (1999) assigned the species a TL of 4.0, which is higher than average for shark species.

5. Conservation status and threats

5.1 IUCN Red List Assessment

Critically Endangered, globally and in the Mediterranean (Feretti *et al*. 2015). This updated a Critically Endangered Assessment in 2006. The listing criteria are A2bcd+3d, based on estimated and suspected past declines of at least 80 per cent over three generations and the likelihood of continuing future declines resulting from fishing pressure.

5.2 Equivalent information relevant to conservation status assessment

Miller (2016) undertook an extinction risk analysis for *S. squatina* using the criteria specified in the US Endangered Species Act, concluding that the species is presently at a high risk of extinction throughout its range.

The Angelshark family (Squatinidae) has been identified as the second most threatened family of all sharks and rays worldwide (Dulvy *et al.* 2014).

5.3 Threats to the population (factors, intensity)

Angelsharks were an important target species for commercial and artisanal fisheries, 50–100 years ago. Set nets were designed specifically to catch Angelsharks in Italy, the Adriatic/Croatia and

France (Miller 2016, Fortibuoni *et al.* 2016), but these went out of use as the population declined dramatically following the introduction of powered trawl vessels and the overall intensification of nearshore benthic fishing effort. Today, capture mortality poses the greatest threat to *S. squatina*, which has become a bycatch species of low or no value in those areas where it has not been completely extirpated. Most of its range is subject to intense demersal fisheries, and this species is highly vulnerable from birth onwards to bycatch in the benthic trawls, set nets (particularly tangle or trammel nets) and bottom longlines which operate through most of its range and habitat. Trawling has been prohibited in the Canary Islands since 1986, which may have helped this isolated Angelshark population to persist.

Survival rates may be relatively high for Angelsharks released promptly from trawls (40%) and gill nets (33–75%) (Miller 2016). These are likely the two most important causes of Angelshark mortality.

Because of the rarity of this species in most parts of its former range, sports angling has the potential to damage relict populations if animals are not carefully released alive. Sports anglers, however, may also provide important data on migrations, growth rates and population size, when engaged in tag and release programmes (see Figure 5). Dive tourism may be a significant cause of disturbance to aggregations of Angelsharks in the Canaries, particularly in pupping and nursery grounds. Relict populations may be targeted for live display in aquaria (Barker *et al.* 2016).

The intensive mobile fisheries that operate over the range of this species have the potential to damage its inshore habitat and to reduce populations of its prey. Coastal developments and the associated degradation of inshore areas adjacent to large industrial and residential areas may also have detrimental impacts on this species' near shore habitat (Barker *et al*. 2016). Climate change is not considered to be a threat (Jones *et al.* 2013).

The tissues of marine animals bioaccumulate persistent pollutants (such as heavy metals and slowly degraded organic chemicals) that are present in the marine environment and are taken up in food or from sediments. The top predators also bioamplify such contaminants, as they feed on prey that have themselves accumulated these contaminants. Thus, concentrations of pollutants such as methylmercury and polychlorinated biphenyls (PCBs) are increased as they pass up the food chain. Some of the highest levels of bioaccumulated organochlorine contaminants (OCs) recorded in marine organisms have been found in sharks, possibly because of their longevity and low metabolic rate (Fisk *et al*. 2000). The sharks most likely to accumulate high levels of contamination in their tissues include those confined to the inshore marine environment adjacent to heavily developed coasts, where high levels of pollution occur as a result of discharges from coastal industries and rivers. No studies of contaminant levels in Angelsharks have been identified, but Stevens *et al*. (2005) summarise some of the some of the relevant scientific literature for other species, including infertility potentially linked to high levels of endocrine-disrupting OCs. It is possible that bioaccumulation and biomagnification of pollutants pose an indirect threat to Angelsharks, particularly along developed coastlines within its range.

5.4 Threat connected especially with migrations

Fishers may, in the past, have taken advantage of Angelshark migrations to their feeding or breeding grounds in order to target this species, but this is now unlikely to be taking place because of the rarity of the species. The main problem associated with migrations is that this species is so far only protected in a small part of its range (e.g. in Monaco, Spain, Israel and UK territorial waters and through EU Fisheries Regulation). Any national conservation initiative intended to prevent this Critically Endangered species from being driven further towards extinction is unlikely to be successful if the animal is not protected during its seasonal migrations through other range States' waters.

5.5 National and international utilisation

The meat of *S. squatina* is/was consumed fresh, salted or dried, its skin used as sand-paper, and its liver used for oil (Lozano Rey 1928; Notarbartolo di Sciara and Bianchi 1998). It is also sometimes taken as 'curios' for fishmonger stalls and by trophy anglers. The fins may enter international trade to East Asia. Non-consumptive utilisation includes catch and release sports angling (e.g. in Ireland) and dive ecotourism in the Canary Islands. Bycaught specimens are sometimes delivered to public

aquaria for display. The Angelshark is also likely to be targeted for display in public aquaria –this will most likely take place in the Canary Islands where the species is easily obtained and there is also local demand for display animals.

6. Protection status and species management

6.1 National protection status

Squatina squatina has been protected in the UK since 2008, through a listing on Schedule 5 (legally protected animals) of the Wildlife and Countryside Act (1981). This conferred protection from intentional killing, injuring, collecting or disturbance (without a license) up to 6 nautical miles from English coastal baselines. In 2011, these measures were extended out to 12 nautical miles and the species was added under section 9(2) and 9(5), protecting it from being possessed or traded.

In 2006, the Irish Specimen Fish Committee, which verifies and publicizes the capture of specimen (trophy) fish caught by Irish anglers, removed *S. squatina* from its list of eligible “specimen status” species due to its declining status. The species was returned to the list in 2016 in order to allow catch data to be collected, with the proviso that specimens should not be weighed, but their length recorded before release.

In 2012, Spain added all three Angelshark species in the Mediterranean to the national List of Wild Species under Special Protection. Listed species are protected from capture, injury, trade, import and export, and require periodic evaluations of their conservation status. The Canary Islands population may have survived due to Royal Decree 2200/1986, which prohibited trawling within the territorial seas of the Canary Islands and Spanish EEZ. However, currently the Atlantic population of Angelshark is not protected under Spanish law or in the Canary Islands.

In the Principality of Monaco, the Article O.230-1 of the Monaco's Maritime Code does prohibit the capture, import, possession, killing, trade, transport and exhibition for commercial purposes of endangered or threatened species as referred to in Annex II of the the Specially Protected Areas and Biological Diversity (SPA/BD) Protocol to the Barcelona Convention.

All species of sharks and rays are protected in Israel’s waters.

6.2 International protection status

All three Mediterranean species of *Squatina* were listed in 2009 on Annex II of the Specially Protected Areas and Biological Diversity (SPA/BD) Protocol to the Barcelona Convention. This “requires Mediterranean countries to undertake maximum, cooperative efforts for their protection and recovery, including controlling or prohibiting their capture and sale, prohibiting damage to their habitat, and adopting measures for their conservation and recovery.” In 2012, the GFCM adopted recommendation GFCM/36/2012/3, which prohibits those sharks on Annex II of the SPA/BD Protocol from being retained on board, transhipped, landed, transferred, stored, sold or displayed, or offered for sale by Contracting Parties and Cooperating non-contracting Parties (CPCs) of the GFCM. It also requires CPCs to release the species unharmed and alive.

ICES advised in 2007 and 2008 that a zero quota be adopted for *S. squatina*. In 2009, *S. squatina* received full protection in EU waters under European Council Regulation (EC) 43/2009. This prohibits EU fishing vessels from fishing for, retaining, trans-shipping, or landing *S. squatina* in EU waters (EU 2016/72). ICES has advised since 2010 that *S. squatina* should remain on this list of Prohibited Species, and that any incidental bycatch should be returned to the sea.

Squatina squatina is listed on Appendix III (protected fauna) of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979), and the OSPAR List of Threatened and/or Declining Species and Habitats (since 2008). HELCOM listed the species as Endangered in the Baltic Sea in 2006.

6.3 Management measures

There is limited compliance monitoring for some of the management measures mandated through the species protection actions and recommendations listed above, making it difficult to determine which are being implemented effectively. This may be a significant problem in the Mediterranean,

where the capture of around 100t of Angelshark species is reported annually to the GFCM. A range of conservation management and public awareness activities for Angelsharks are now being pursued in the Canary Islands under an Action Plan for this species (Barker *et al.* 2016). A Conservation Strategy for Angel Sharks (three species) in the Northeast Atlantic and Mediterranean is under development (Gordon *et al.* 2017 in prep).

6.4 Habitat conservation

Miller (2016) identifies several marine protected areas that may (incidentally) protect important Angelshark habitat, including in the Balearic Islands and the Canary Islands. The same pregnant female was captured by trammel nets twice in two days in 2015 in Gokova Bay, Turkey, which is a protected area with some no-fishing zones (Akyol *et al.* 2015). Some measures have now been proposed for Angelsharks in Natura 2000 Special Areas of Conservation (SACs) management plans.

6.5 Population monitoring

The Angelshark is a species of high concern because of its scarcity and is therefore reported if identified in routine fisheries research monitoring programmes. Species-specific monitoring is underway using citizen science (divers) and a tagging programme in the Canary Islands and recreational anglers in Ireland and Wales. Furthermore, genetic analysis is also underway to determine connectivity among populations in the Canary Islands and the rest of the range, including West Africa.

7. Effects of the proposed amendment

7.1 Anticipated benefits of the amendment

There is widespread concern that this rare species could be driven to extinction by incidental bycatch in coastal fisheries, unrestricted recreational angling, targeted collection and habitat destruction, if all its range States do not provide legal protection for this species. This species is therefore a high priority for a CMS Appendix I listing, which has the potential to yield important benefits for this species since it would stimulate strict legal protection from the CMS Parties whose waters cover a large part of its range. The Appendix II listing would improve collaborative management between the CMS Parties sharing Angelshark stocks and migration pathways.

The CMS Scientific Council agreed in March 2007, following consideration of a taxonomic review prepared by the IUCN SSC Shark Specialist Group (2007), that this threatened migratory species meets the criteria for listing on the Appendices and should be considered by the Conference of Parties to CMS.

7.2 Potential risks of the amendment

None identified.

7.3 Intention of the proponent concerning development of an Agreement or Concerted Action

The Principality of Monaco is already a Signatory to the CMS Memorandum of Understanding for the Conservation of Migratory Sharks (Sharks MOU) and Party to some of the regional agreements that list the Angelshark (see section 6.2). Following a listing in the CMS Appendices, the proponent will propose the Angelshark for listing in Annex I to the Sharks MOU and lead work with range States and other partners to develop a Concerted Action for this species. The Eastern Atlantic and Mediterranean Angel Shark Conservation Strategy, to be published by the end of May 2017 (Gordon *et al.* 2017 in prep), will provide a sound basis for such initiatives.

8. Range States

Country	Range State	CMS Party	Sharks MOU Signatory
Albania	yes	yes	no
Algeria	yes	yes	no
Belgium	extinct?	yes	yes

Country	Range State	CMS Party	Sharks MOU Signatory
Bosnia & Herzegovina	yes	no	no
Bulgaria	uncertain	yes	no
Croatia	yes	yes	no
Cyprus	yes	yes	no
Denmark	uncertain	yes	yes
Egypt	yes	yes	yes
European Union	yes	yes	yes
France	yes	yes	no
Gambia	yes	yes	no
Georgia	uncertain	yes	no
Germany	extinct?	yes	yes
Greece	yes	yes	no
Guinea	extinct?	yes	yes
Guinea-Bissau	extinct?	yes	no
Ireland	yes	yes	no
Israel	yes	yes	no
Italy	yes	yes	no
Lebanon	yes	no	no
Liberia	yes	yes	yes
Libya	yes	yes	yes
Malta	yes	yes	no
Mauritania	yes	yes	yes
Monaco	extinct?	yes	yes
Montenegro	extinct?	yes	no
Morocco	yes	yes	no
Netherlands	extinct?	yes	yes
Norway	extinct?	yes	no
Portugal	yes	yes	yes
Romania	uncertain	yes	yes
Russian Federation	uncertain	no	no
Senegal	yes	yes	yes
Slovenia	yes	yes	no
Spain	yes	yes	no
Sweden	extinct?	yes	yes
Syrian Arab Republic	yes	yes	yes
Tunisia	yes	yes	no
Turkey	yes	no	no
Ukraine	uncertain	yes	no
United Kingdom	yes	yes	yes

9. Consultations

A consultation was launched by the Principality of Monaco to all range States listed above as well as the European Union. Due to time constraints, not all consulted States were able to respond on time, a part from Algeria, Italy, and Ukraine who have indicated that they were supportive of the proposal.

On 23 May 2017, no substantive comments or objections had been received.

10. Additional Remarks

Following a listing in the CMS Appendices, the proponent will propose the Angelshark for listing in Annex I to the CMS Migratory Sharks MOU and lead work with range States and other partners to develop a Concerted Action for this species. The Eastern Atlantic and Mediterranean Angel Shark Conservation Strategy, to be published by the end of May 2017, will provide a sound basis for such initiatives.

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