

Las Palmas de Gran Canaria, 13th September 2015

Your Ref: NOAA 80 FR 40969

Maggie Miller
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
SILVER SPRING MARYLAND 20910
UNITED STATES OF AMERICA

Dear Ms Miller

RE: Draft Status Review Report of 3 Species of Angelsharks: *Squatina aculeata*, *S. oculata*, and *S. squatina*

We refer to the 12-Month Finding and Proposed Rule To List Three Angelshark Species as Endangered Under the Endangered Species Act published 14th July 2015 and with public comment period that ends on 14th September 2015.

ELASMOCAN (Asociación Canaria para la investigación y conservación de los elasmobranchios) is concerned that the abovementioned draft report does not refer to the best background knowledge available regarding the angel shark (*Squatina squatina*) in the Canary Islands. We refer specifically to the research of the Ph.D. dissertation Narváez (2012), the content available in the web of Elasmocan www.elasmocan.org, and conservation initiatives by other organizations in the Archipelago.

ELASMOCAN was established by Dr. Krupskaya Narváez and Dr. Filip Osaer, whom conducted research about different aspects of elasmobranchs, and especially of the angel shark (*S. squatina*), in the Canary Islands since 2006. At that time *S. squatina* was listed as a species of fisheries interest, e.g. [Aplica2 2007](#); [Gobierno de Canarias 2007](#). In this sense our PhD dissertations focused on providing biological and ecological key information such as habitat use, reproduction and diet, which was partially made possible thanks to the support of the Shark Foundation. Additional to the in situ and ichthyologic research, the first citizen science program with recreational divers in the Archipelago was organized to validate the potential use of angel shark data sightings by divers to determining presence and habitat use, and to assess the behaviour of the sharks towards the divers. ELASMOCAN is the first registered nonprofit in the Canary Islands with action emphasized in sharks and rays. For more details we refer to the web <http://elasmocan.org/about-us/>.

The comments to the above-mentioned document provided hereafter are written in blue and bold font, in between the lines of citations from the original. We have omitted comments to unpublished regulations, and conclusions or hypothesis that were not quantified.



EXECUTIVE SUMMARY

Presently, the only part of its range where the species is still a common occurrence is off the Canary Islands; however, this area comprises an extremely small portion of the species' range **ElasmoCan: Notwithstanding, the populations off the Canary Islands have been identified by IUCN and ZSL as an important population for protection (Baillie & Butcher 2012).** and its present abundance in this portion remains uncertain.

Reproduction and Growth

For *S. squatina*, the gestation period for individuals in the Canary Islands is estimated to be ± 6 months with a three-year reproductive cycle (Osaer 2009). Elsewhere, gestation period is unknown but possibly lasts from 8 to 12 months, with potentially a two-year reproductive cycle (Tonachella 2010; ICES 2014). Litter sizes range from 7 to 25 pups **ElasmoCan: reported by Tortonese (1956) for populations of the Mediterranean**, with size at birth from 24 cm to 30 cm (Osaer 2009; Tonachella 2010) **ElasmoCan: 24-26cm was reported by Osaer (2009); see personal communication.** Males mature between 80 cm and 132 cm TL, with maximum sizes attained at 183 cm TL and females mature between 126 cm and 169 cm TL **ElasmoCan: This data was provided by Capapé et al. (1990) for the populations from the Tunisian Plateau** and attain maximum sizes of up to 244 cm TL (Compagno 1984; Capapé et al. 1990; Quigley 2006; Tonachella 2010). In the Canary Islands, Osaer (2009) found length at first maturity (Lm50) for males to be 100.9 cm TL and for females to be 102.1 cm TL, which is a bit smaller than the values estimated elsewhere. **ElasmoCan: The smallest mature female of 126 cm TL reported by Capapé et al. (1990) is bigger than the maximum reported TL of 120.8 cm from ichthyology studies (Osaer et al. 2015), and 122 cm from in situ measurements (Osaer & Narváez 2015; Narváez 2012).** Evidently, population sizes from the Canary Islands are significantly different from those reported from the Tunisian Plateau.

Within the Canary Islands, shark biologist Eva Meyers (Principal Investigator of Angel Shark Project, personal communication 2015) identified nursery grounds off Puerto del Carmen, Lanzarote and Narváez et al. (2006) **ElasmoCan: The reference of this communication is not mentioned: "Preliminary results of habitat use of the angel shark *Squatina squatina* and other elasmobranchs on the northern coast of Gran Canaria In: Programme & Abstracts from the 10th European Elasmobranch Association Science Conference, 11th-12th November 2005, Zoological Institute & Museum, University of Hamburg"** suggest that the Bay of Sardina, off the northern coast of Gran Canaria Island, also currently serves as a nursery area and possible mating ground for *S. squatina* based on observations of female aggregations. **ElasmoCan: This might be a wrong interpretation of the abstract. We cannot find any of these conclusions in** Narváez et al. (2006). **Narváez (2012) identifies Sardina del Norte as a nursery ground based on the prevalence of females with total lengths above Lm50 and the total length of the observed neonates.** Additionally, Teresitas beach, in Tenerife (Canary Islands), is also thought to be a nursery ground based on the accounts of Teresitas beachgoers who have reported being bitten by small angelsharks over the past several years (Alianza Tiburones Canarias 2014). **ElasmoCan: The presence of angel shark pups and bites by those in Las Teresitas are a periodic recurring issue in the local news, with a peak in the summer of 2014. The**



oldest digital communication, reporting both issues, in our possession dates back from the year 2000 (El Dia Digital 2000). This communication contains confirmation from researcher Mr Luis López Abellán (Instituto Espanol de Oceanografia) of the use of this location by angel shark pups.

Distribution and Historical and Current Abundance

S. oculata

Mediterranean Sea

In 2015, an individual was landed near Akyaka (Turkey) by local fishermen (Joanna Barker, UK & Europe Project Manager Conservation Programmes, ZSL, personal communication 2015). [ElasmoCan: A similar event is available at <http://www.akdenizkoruma.org.tr/medya/gokovada-melek-kopek-baligi-squatina-squatina>.](http://www.akdenizkoruma.org.tr/medya/gokovada-melek-kopek-baligi-squatina-squatina)

Eastern Atlantic

Presently, the only part of its range where *S. squatina* is still relatively common is in the Canary Islands (Muñoz-Chapuli 1985; OSPAR Commission 2010). Much of the information on *S. squatina* presence and abundance from this area comes from diver observational data. [ElasmoCan: In 2006, Krupskaya Narváez collected sightings data from recreational divers in view of the Ph.D. dissertation 'Aspectos biológicos y ecológicos del tiburón ángel "Squatina squatina" \(Linnaeus 1758\) en la isla de Gran Canaria'. The aim of the program was to validate the potential use of angel shark data sightings by divers for determining presence and habitat use, and to assess the behaviour of the sharks towards the divers. On the other hand, education and awareness of the public was improved about the angel shark activities and its conservation status. The program was promoted through popular diver forums, e.g. on July 7th 2006 in \[Forobuceo\]\(#\) \(Forobuceo 2006\), visits to dive centers and workshops. Between June 2006 and September 2007 a total of 458 sightings were obtained through dive centers, recreational divers \(personal and oral\) and diver forums, from different dive sites around the island. The Davy Jones Diving dive center was an outstanding contributor providing 41% of the reports. To improve education and awareness, and to meet one of the aims of the study, the sighting results were yearly made available to the dive center and its clients by means of a poster, e.g. \[Narváez et al. \\(2007\\)\]\(#\), and Narváez et al. \(2008\).](#)

[Narváez \(2012\)](#) analysed and described the population structure and habitat use of visual census between July 2006 and June 2008, in the locations of Sardina del Norte and Caleta (Gran Canaria Island). Population structure was characterised by size composition, sex ratio, monthly sighting variation, and resighted individuals. Habitat use was characterised by depth, substrate & activity, social structure, substrate selection, site fidelity and sighting probability related to temperature. Individuals were identified based on a photo-identification protocol developed by [Narváez \(2012\)](#). In Sardina del Norte 219 individuals were observed in 226 sightings, and 152 individuals in 169 sightings for Caleta. Five individuals were resighted In Sardina del Norte and 13 in Caleta. In 2013, the Zoological Society of London (ZSL), Universidad de Las Palmas de Gran Canaria (ULPGC) and Zoological Research Museum Alexander König (ZFMK) created the "Angel Shark Project" (ASP) with the overall goal of securing the future of the angelshark in Europe. The first phase of the ASP was to



raise awareness of the importance of the Canary Islands for angelshark conservation and to gather public sighting data of angelsharks through the creation of a citizen science sighting scheme called Poseidon (www.programaposeidon.eu) (J. Barker, pers. comm. 2014). **ElasmoCan: The portal of the Canarian Government REDPromar – Red de Observadores del Medio Marino en Canarias (<http://www.redpromar.com/>) was created in June 2013 and officially declared as a network of marine observers in the Canary Islands in a Resolution of 22 June 2015. ElasmoCan recommends users to report sightings through this portal.** Since the launch of the Poseidon portal in April 2014, there have been 624 validated records (sightings of angelsharks), covering areas with no previous records such as El Hierro and La Palma **ElasmoCan: The presence of *S. squatina* in El Hierro and La Palma have been reported by Bravo de Laguna & Escánez (1975). See also information in Narváez (2012) or <http://elasmocan.org/angel-shark-squatina/>.** (Meyers et al. 2014; Meyers pers. comm. 2015; also see reported sightings on the ASP website, available at <http://angelsharkproject.com/>).. Currently, 22 dive centers are actively reporting angelsharks (J. Barker, pers. comm. 2014); however, a few dive centers have been collecting observational data **ElasmoCan: Apart from the “Davy Jones Diving” dive center, we were not able to find a center with systematic, historic, records of angel shark sightings posted on their web.** even prior to the creation of the Poseidon portal. For example, the “Davy Jones Diving” dive center, in Gran Canaria, has collected data on angelshark sightings in the “El Cabron” or Arinaga Marine Reserve since 2006. Narváez et al. (2008) **ElasmoCan: A more detailed analysis is available in the PhD dissertation Narváez (2012)** analyzed these dive data for the period of May 2006 through August 2008 and found that 271 angelsharks were sighted **ElasmoCan: consider ‘sightings of angel sharks’ because individuals were not identified** over the course of 1,709 dives. The sex of the shark could only be determined in 41% of the sightings, with an overall sex distribution of 1: 1.6 (female: male). In addition, 9% of the sightings were determined to be juveniles. **ElasmoCan: 72% of the sightings occurred with water temperatures between 19 and 21°C and were highest during January 2007 and February 2008. The sightment depth oscillated between 3 and 29m of depth, with 82% between 5 and 15m (Narváez 2012).** The sightings of angelsharks peaked when water temperature dropped below 21°C and were highest in January and February, with the majority of sightings occurring in relatively shallow waters (of depths around 9 m) and less than 50 m from the coastline. **ElasmoCan: The Davy Jones Diving dive center publishes special and elasmobranch species sightings on its web (available at: <http://www.davyjonesdiving.com/diving/p50-diving-conditions-log.shtml>) since October 2007.** Narváez et al. (2014) analysed a 6-year data set for elasmobranch sightings in the area of El Cabrón (Gran Canaria), with support of the Shark Foundation (see also personal communication). A poster presented during the IV International Symposium of Marine Sciences is available at <http://elasmocan.org/long-term-sightings-shark-ray-davy-jones-diving-2014/>. ***Squatina squatina* was the only observed shark species and the most frequent observed elasmobranch out of 9 species, with 43.5% of the total sightments. Trends of the sighting probability, pooled by julian week, show a clear seasonal pattern with a low of 2% in water temperatures above 22°C and maximum average probability of 27.5% in a temperate range between 18° to 21°C.** The Davy Jones Diving dive center continues to log sightings of angelsharks and other species on its website (available at: <http://www.davyjonesdiving.com/diving/p50-diving-conditions-log.shtml>). Analysis of the log data from January 1, 2011 through December 29, 2014 shows that angelsharks are still



frequently observed in the Arinaga Marine Reserve, with sightings recorded on 35% of the dive trips off Gran Canaria over the past 3 years (n = 1,253 total trips).

Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

Research is presently being conducted to examine species distribution and habitat use throughout the Canary Islands, with preliminary findings expected in the spring/summer of 2015 (E. Meyers and J. Barker, pers. comm. 2014). [ElasmoCan: Kindly note the contributions of Narváez 2012 to the habitat use of the angel sharks in the Canary Islands and the research lines of ElasmoCan, available at <http://elasmocan.org/research/>](http://elasmocan.org/research/). *Squatina squatina* has been reported in all the islands of the Canarian Archipelago. As highlighted in the study of Narváez (2012), the species was found in fisheries captures in the islands of El Hierro, La Palma, Tenerife, Gran Canaria, Fuerteventura and Lanzarote (Bravo de Laguna & Escánez 1975). Additionally, during the last decade, the species was reported in all islands and islets by different local species – and dive guides, e.g. Espino et al (2006) and Hanquet (2014), and spotted with pictures and videos in specialized forums and social media.

Disease or Predation

(*Stibarobdella moorei*) on *S. squatina* captured from Antalya Bay, Turkey; however, I could find no further information on rates of parasitism in the *Squatina* species or data to suggest they are affecting the abundance of angelsharks. [ElasmoCan: Osaer & Narváez \(2015\) identified *Aegapheles deshaysiana* as a common micropredator for *S. squatina* in the Canary Islands.](#)

Other Natural or Manmade Factors

Meyers (pers. comm. 2015) notes that divers have recently observed female angelsharks straying from their usual birthing areas (in areas frequented by divers) to more remote coastal areas (where divers tend to be absent) to give birth. Although these observations indicate that the increased diver disturbance may be affecting angelshark behavior, at this time, there is not enough information to determine if diver disturbance is a threat negatively affecting the abundance of the *S. squatina* population in the Canary Islands. [ElasmoCan: ElasmoCan has an awareness message available at <http://elasmocan.org/angel-shark-squatina/attack-sleepy/>](http://elasmocan.org/angel-shark-squatina/attack-sleepy/).

Threats Assessment

The species is also being landed, both legally and illegally, at levels that historically led to population declines. In the Canary Islands, which are thought to be the last stronghold for the species, *S. squatina* is presently at risk of mortality at the hands of artisanal fishermen as well as a growing number of sport fishermen, despite the prohibition on capturing the species. Although trawling is banned within the Canary Islands, and a number of marine reserves and SACs have been established here, it is unclear to what extent these regulations will be effective in protecting important *S. squatina* habitat or decreasing fishing mortality rates. [ElasmoCan: *Squatina squatina* was listed as a species of fisheries interest, e.g. \[Aplica2 2007\]\(#\); \[Gobierno de Canarias 2007\]\(#\) until the Council](#)



Regulation EC43/2009 and consecutive became into force (Narváez 2012). The Royal Decree 2200/1986 prohibits trawling fisheries in the Canary Islands since 1986. More details about the protective fisheries regulations can be found on the web of ElasmoCan: [Conservation status](#).

CONSERVATION EFFORTS

In response to the alarming decline of *S. squatina* over the years, a number of conservation efforts have developed with the goal of learning more about these sharks in order to understand how better to protect them. [ElasmoCan: To the best of our knowledge, and as mentioned in Risk of Extinction, there is no reliable data available to assess population declines of *S. squatina* in the Canary Islands. Therefore we have highlighted the need for research during the time that the species was listed as a resource of fisheries interest. The first effort in this sense, not based on an alarming population decline, dates back from 2006. Krupskaya Narváez and Filip Osaer were able to address biological and ecological key information such as habitat use, reproduction and diet as part of a PhD dissertation at the ULPGC, with support from the Shark Foundation. Additional to the in situ and ichthyologic research, citizen science data collection with recreational divers was validated to reveal patterns of habitat use. The PhD dissertations analyse some data collected of habitat use for the period 2006-2008. Systematic data collection by Krupskaya Narváez & Filip Osaer continued over the years and the non-profit \[ElasmoCan\]\(#\) was raised in order to give continuity to these investigations. The data will be useful to establish long-term population trends and 'abundance' if a suitable model can be fit to it.](#)

Actions other than the ones already mentioned in the document include petition to make the Canary Islands a Sanctuary for sharks in Rays following the proposal of [OCEANA \(2010\)](#):

- ATIRACAN Asociación de Amigos de los Tiburones y Rayas de Canarias in Change.org <https://www.change.org/p/presidente-del-gobierno-de-canarias-canarias-santuario-de-tiburones>.
- Judith B <http://www.thepetitionsite.com/581/776/011/canary-islands-dont-let-the-angel-shark-disappear/>
- Alianza por los tiburones de Canarias <http://alianzatiburonescanarias.blogspot.com.es/2014/02/la-alianza-por-los-tiburones-de-canarias.html>.

Recently, petitions have started to include *S. squatina* in the Canarian catalogue of protected species https://www.change.org/p/presidente-del-gobierno-de-canarias-incluya-el-angelote-en-el-cat%C3%A1logo-canario-de-especies-protegidas?just_created=true and to prohibit recreational fisheries in the Canary Islands https://www.change.org/p/la-prohibición-de-la-pesca-deportiva-de-tiburones-y-rayas-en-aguas-de-canarias?tk=yfPB_svcEBz6HWEZFn0Rg69MJzn1EAQMk577zRwo094&utm_source=petition_update&utm_medium=email.



We hope to have informed you correctly and remain at your disposal for any further information you may need.

Sincerely,
Filip Osaer, Ph.D.
Krupskaya Narváez, Ph.D.

www.ElasmoCan.org

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