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EXTENDED ABSTRACT

Monitoring the anomalous presence of blue sharks in coastal waters of Galicia, Spain

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INTRODUCTION

Blue shark *Prionace glauca* (Carcharhinidae) is an oceanic–epipelagic and fringe littoral species distributed in temperate and tropical oceans around the globe. It is one of the most abundant, widespread, fecund and fastest growing sharks. It is also one of the most exploited shark species globally and in European waters, with 67,907 t total landings in 2017 for Atlantic (ICCAT 2018).

The unusual presence of numerous neonates and juvenile blue sharks in shallow inshore waters of Galicia, north-west Spain, was first observed in summer 2013 (Mejuto et al. 2014). This anomalous phenomenon has been posteriorly confirmed by numerous observations along the Galician coast in summer 2014 and 2015 (Bañón et al. 2016).

The blue shark spends most of its lifetime in the open ocean. However, juveniles stay in coastal and neritic waters at depths of 80 m during their first years of life (Litvinov 2006).

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Within the Atlantic Ocean, the north-east off the Iberian Peninsula and the Azores are considered nursery areas (Coelho et al. 2017). However, to our knowledge, there were no consistent records of coastal sharks in shallow waters off Galicia before 2013.

The aim of this study is to report and analyze this phenomenon to identify possible causes.

MATERIAL AND METHODS

This study was based on record data obtained from a citizen science approach between 2016 and 2017. Different sources of information were used to compile shark records (location-position, depth, number of individuals, sex, behavior, etc.) from direct communication, to news on the Internet and social networks. When available, photographs and/or videos were provided to confirm these reports. All shark observations are continuously loaded into a public online platform via shiny apps (https://fisheriesecology.shinyapps.io/coastal_sharks/).

RESULTS

A total of 65 observations corresponding to 106 specimens were recorded. The mean size of individuals was 72 cm total length (SD=28 cm). Observations were reported in Summer and Autumn from June to October, in shallow waters along the Galician coast (Figure 1). July was the month with the highest number of observations.

New observations and data are being collected in the year 2018. Preliminary results indicate a similar trend and an important increase of records with a total of 233 sharks recorded in 122 events. Most records occurred in August (Figure 1); there has also been a moderate increase of observations in September.

DISCUSSION AND CONCLUSIONS

Spatial predictions of monthly habitat preference for small juvenile in Eastern North Atlantic determined important areas in proximity to Galician waters from June to September (Vandeperre et al. 2016). Cantabric Sea has been suggested as a crucial habitat for small juveniles of this species in the North Atlantic (Coelho et al. 2017). Observations from research surveys on the Galician platform during September 2012 confirmed the temporary existence of aggregations of juveniles off the coast of Galicia (Bañón et al. 2016). Moreover, local fishers report the frequent presence of juveniles at the surface, sometimes in small groups in the fishing grounds a few kilometers offshore, especially in the summer (personal communication).

The common presence of newborn specimens in inshore waters is, however, a recent phenomenon, which has not been reported in other areas yet. Feeding and oceanographic anomalies were reported as possible causes of the unusual presence of *P. glauca* recruits in Galician coastal waters (Mejuto et al. 2014). The seawater temperature has increased in this region by 0.24º C per decade since 1974 (Gómez-Gesteira et al. 2011). So, changes in oceanographic conditions in traditional nursery areas, significant increases of recruitment, changes in the pupping area or a mixture of all these likely options are the most likely causes that push neonates to get closer to the coast during summer.

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The increase in observations may be due to several factors among which are the greatest diffusion of the project. However, to reach solid conclusions it is required a long time monitoring of the presence of this phenomenon.

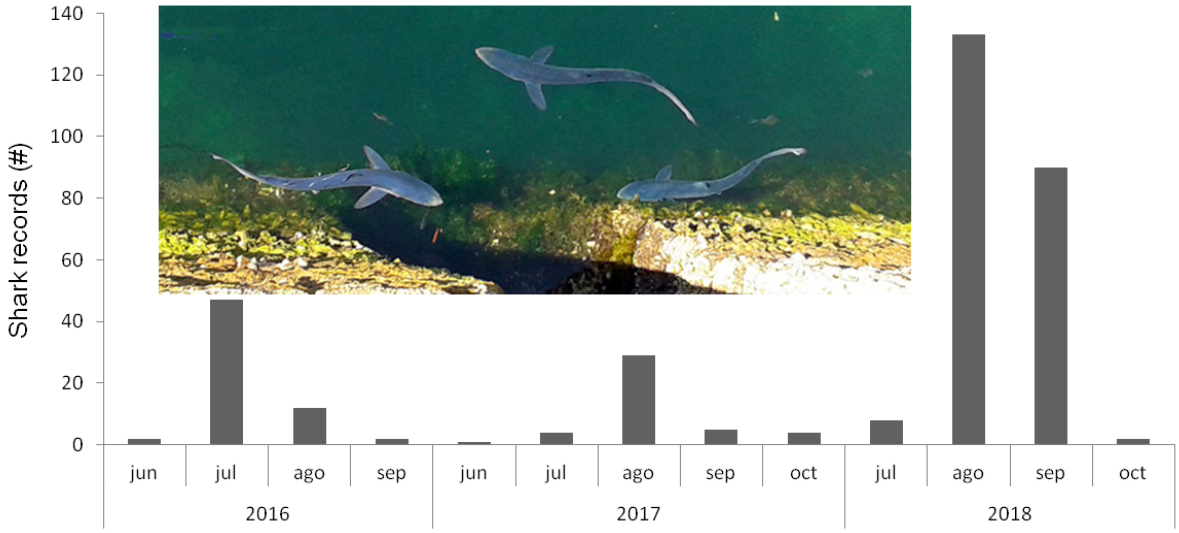

FIGURE 1. Number of blue shark records off the Galician coast (per month and year, 2016–2018).

AUDIO-VISUAL SUPPLEMENTARY MATERIAL

Footage of juvenile blue sharks obtained with a Go-Pro Hero camera in Galician platform 2012/09/17, operator GM: https://youtu.be/DbVcwBEVMfQ

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AUTHORS' CONTRIBUTIONS

This work was planned and executed by GM and AA, with significant contributions from TM, RB and DV.

CITED REFERENCES

Bañón R, Maño T & Mucientes G (2016) Observations of newborn blue sharks Prionace glauca in shallow inshore waters of the north−east Atlantic Ocean. Journal of Fish Biology, 89: 2167-2177. https://doi.org/10.1111/jfb.13082

DOI: 10.29094/FiSHMED.2018.005

Coelho R, et al. (2017) Distribution patterns and population structure of the blue shark (Prionace glauca) in the Atlantic and Indian Oceans. Fish and Fisheries 2018;19:90–106. https://doi.org/10.1111/faf.12238.

Gómez-Gesteira M, et al. (2011) The state of climate in NW Iberia. Climate Research 48, 109–144. doi: 10.3354/cr00967

ICCAT (2017) Nominal catches of Atlantic tunas and tuna-like fish (including sharks), by gear, region and flag [MS Excel; version 10/2018, 7 Mb(7z)].

Litvinov, FF (2006) On the role of dense aggregations of males and juveniles in the functional structure of the range of the blue shark Prionace glauca. Journal of Ichthyology 46: 613. https://doi.org/10.1134/S0032945206080091.

Mejuto J, García-Cortés B, Ramos-Cartelle A & Abuin E (2014) Note on the observation of recruits of blue shark, Prionace glauca, in near coastal areas of Galicia (NW Spain) during the summer of 2013. Collective Volumes of Scientific Papers ICCAT, 70: 2452-2461.

Vandeperre F, Aires−da−Silva A, Lennert−Cody C, Serrão Santos R & Afonso P (2016) Essential pelagic habitat of juvenile blue shark (Prionace glauca) inferred from telemetry data. Limnology and Oceanography 61: 1605-1625. doi:10.1002/lno.10321.