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**Shortbill spearfish *Tetrapturus angustirostris*: a note on the  
distribution and occurrence in the Indian Ocean fisheries**

by

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**ABSTRACT**

This note reports the distribution and occurrence of shortbill spearfish in the IOTC-managed fisheries. It highlights the relatively common occurrence of the species in the catch, and the urgent need to evaluate the population status, and establish a management regime for this species.

## Introduction

Billfishes is a generic name for representatives of two fish families: Xiphiidae and Istiophoridae. Both families possess a characteristic extension of the upper jaw – rostrum often called a ‘bill’. All billfishes are highly migratory species listed in the Annex I of the United Nation Convention of the Law of the Sea (UNCLOS) (UNCLOS, 1982).

### What is shortbill spearfish?

Shortbill spearfish *Tetrapturus angustirostris* Tanaka, 1915 belongs to the family Istiophoridae that contains five genera: *Istiompax*, *Istiophorus*, *Kajikia*, *Makaira*, and *Tetrapturus* (Collette et al., 2006; Hanner et al., 2011). Shortbill spearfish is the smallest billfish reaching a maximum total length of 2 m and 52 kg in weight (Nakamura, 1985). It is characterized by a short bill, sometimes shorter than the lower jaw (Figure 2). Its area of distribution spreads over the tropical and subtropical Indo-Pacific with occasional records in the South-Eastern Atlantic (Nakamura, 1985).

### Management

Species from all billfish genera occur in the Indian Ocean (Nakamura, 1985). Indian Ocean billfish species are managed under the IOTC convention agreement (Indo-Pacific blue marlin: *Makaira mazara* valid name: *M. nigricans*; black marlin: *Makaira indica*, valid name *Istiompax indica*; striped marlin *Tetrapturus audax*, valid name *Kajikia audax*, Indo-Pacific sailfish: *Istiophorus platypterus*; swordfish *Xiphias gladius*), except shortbill spearfish (IOTC, 1993). Across other areas of its distribution, namely in the Pacific Ocean, the shortbill spearfish stocks are managed by the Western and Central Pacific Fisheries Commission (WCPFC) as: “highly migratory fish stocks” listed in the Annex I of the UNCLOS occurring in the Convention area” and in the Eastern Pacific by the Inter-American Tropical Tuna Commission (IATTC) as “tuna and tuna-like species, associated species”. The current non-inclusion of the shortbill spearfish in the list of the IOTC species represents an obvious conservation and management gap in the Indian Ocean.

The purpose of this working paper is to briefly summarise the occurrence, distribution and catch of the shortbill spearfish in the IOTC-managed fisheries in order to highlight the urgent need to establish a management regime for this species.

### **Data sources**

The IOTC nominal catch database was screened for total reported catches of the shortbill spearfish by CPCs (Contracting Party or Cooperating non-Contracting Party, Entity or Fishing Entity).

Additionally, detailed data for European Union Indian Ocean fisheries targeting tuna and swordfish collected under the EU-DCF (Data Collection Framework) by AZTI (Spain), IEO (Spain), IPMA (Portugal), and IRD Ob7 (France), as well as historical database for Soviet Indian Ocean Tuna Longline Research Program (SIOTLLRP) (Romanov et al., 2006) were used. Additional data sources, such as IOTC working papers presented by other CPCs, were also considered.

### **3. Results**

The shortbill spearfish officially reported annual catch to IOTC is generally low, not exceeding 400 metric tons (t) per year. It is highly variable, with two periods of relatively high catches (up to 376 t) during the initial years of the fisheries oceanic (1952-1968) and then since the early 2000's (up to 238 t). There was a period of lower catches (below 100 t) between 1973-2001 (Figure 3). The variability of the catch likely reflects the poor data reporting quality for this species, and the procedures used to estimate total catch. Most of the catches comes from longline fisheries with minor contributions from purse seine and handlines. A few catches are also reported from gillnets.

Overall, the observer data on the occurrence and distribution of shortbill spearfish in the Indian Ocean fisheries are sparse (Figure 4). The most consistent data series comes from the French observer program for Reunion Island based longline fleet (non-interrupted series of 16 years of observations from 2007 to 2022). The Portuguese longline fleet started operating in the Indian Ocean in 1998, however the observer program for that fleet only started in 2013 and as

such data on this species is only available since then and until 2018. The Spanish data indicate few interactions of shortbill spearfish with their longline fisheries (40 specimens reported between 2017 and 2022). Apparently, these data are highly incomplete since observations made in 2005 (Ariz et al., 2006) allowed to collect measurements for 168 specimens in a calendar year.

Observers' data collected onboard purse seiners shows rather sporadic occurrences of shortbill spearfish in purse seine catches, without any discernible preference to either free or FAD-associated schools.

The occurrence of this species in the gillnet fisheries is poorly documented. However, mining of information from IOTC working papers indicates a rather minor interaction of this species with major gillnet fisheries in the northern Indian Ocean due to rare occurrence in this area.

The spatial distribution in the Indian Ocean fisheries based on data available for this summary suggests an ocean-wide distribution of shortbill spearfish with major interaction with longline fisheries in the southern tropical and subtropical waters (Figure 5).

#### **4. Discussion**

As a species currently not managed by IOTC, the catch data provided by CPCs to IOTC is likely to be heavily underreported. As such, the overall catch of this species that is currently available in the IOTC nominal catch databases is certainly underestimated, even despite the low probability of misidentification of this billfish due to the unique morphological characteristics that make their identification relatively simple. The degree of non-reporting and/or catch underestimation is currently impossible to evaluate. However as most of istiophorid billfishes in the IOTC area of competence are highly exploited or overfished, there is an urgent need to evaluate this species for its status, and to establish a management regime.

As this species has no management or a clear reporting system in place, any fleet catching this species as bycatch could be considered to be engaging in IUU (Illegal, Unreported and Unregulated) fishing.

The IOTC Working Party on Billfishes (WPB) has been providing Recommendations to the IOTC Commission on the Unreported and Unregulated status of the shortbill spearfish in the IOTC tuna and tuna-like fisheries since 2014 (IOTC–WPB12, 2014), reiterating this Recommendation every year since then.

However, the procedure of adding a new species to the official list of those to be covered by the IOTC mandate seems to require a modification of the IOTC Agreement, and possibly due to the complex nature of such procedure, this has not been done by the Commission to date. Therefore, there are currently no management actions adopted by the IOTC Commission on this species.

Given the current situation, the Commission should urgently consider to either change the IOTC convention agreement to include this species, or explore other ways to set a management umbrella on species that are not necessarily listed in the agreement. This is currently done, for example, in pelagic sharks in the IOTC area, that even though are not explicitly listed in the IOTC list of species, are still included under the IOTC management scheme, with requirements for CPCs in terms of data collection and reporting, as well as request to the WPEB (Working Party on Ecosystems and Bycatch) to establish the stock status and provide management Recommendations to the Commission, that can advise the Commission on actions to be taken.

In parallel, we also Recommend the SC and the WPB, to add this species to its future workplan of species to be evaluated, and establish clear request for CPCs to collect and submit to the Secretariat data on this species catches, effort and size distribution, as is mandated for other pelagic species captured in IOTC fisheries.

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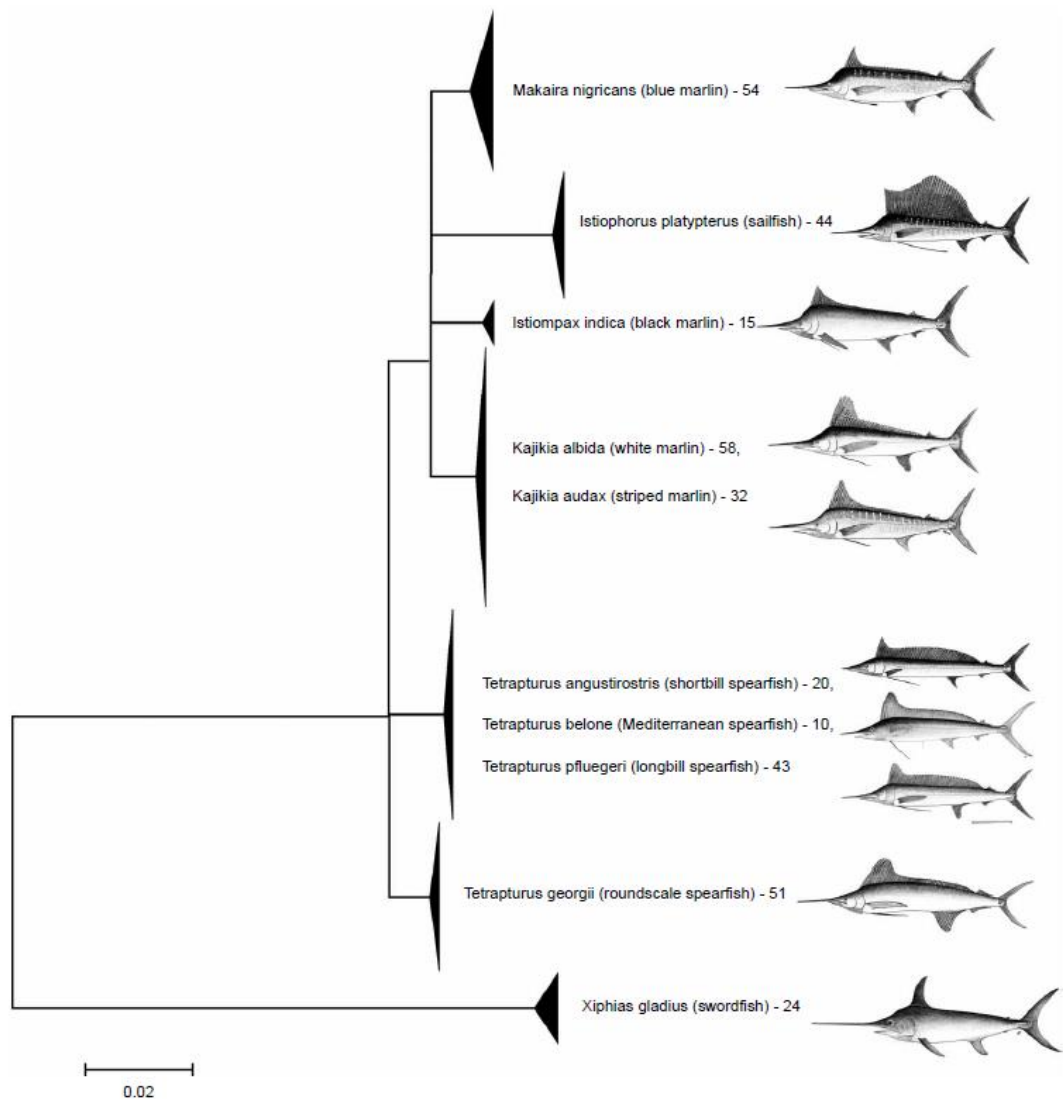


Figure 1. Neighbouring joining tree of COI sequences of billfishes (Source: Hanner et al., 2011).



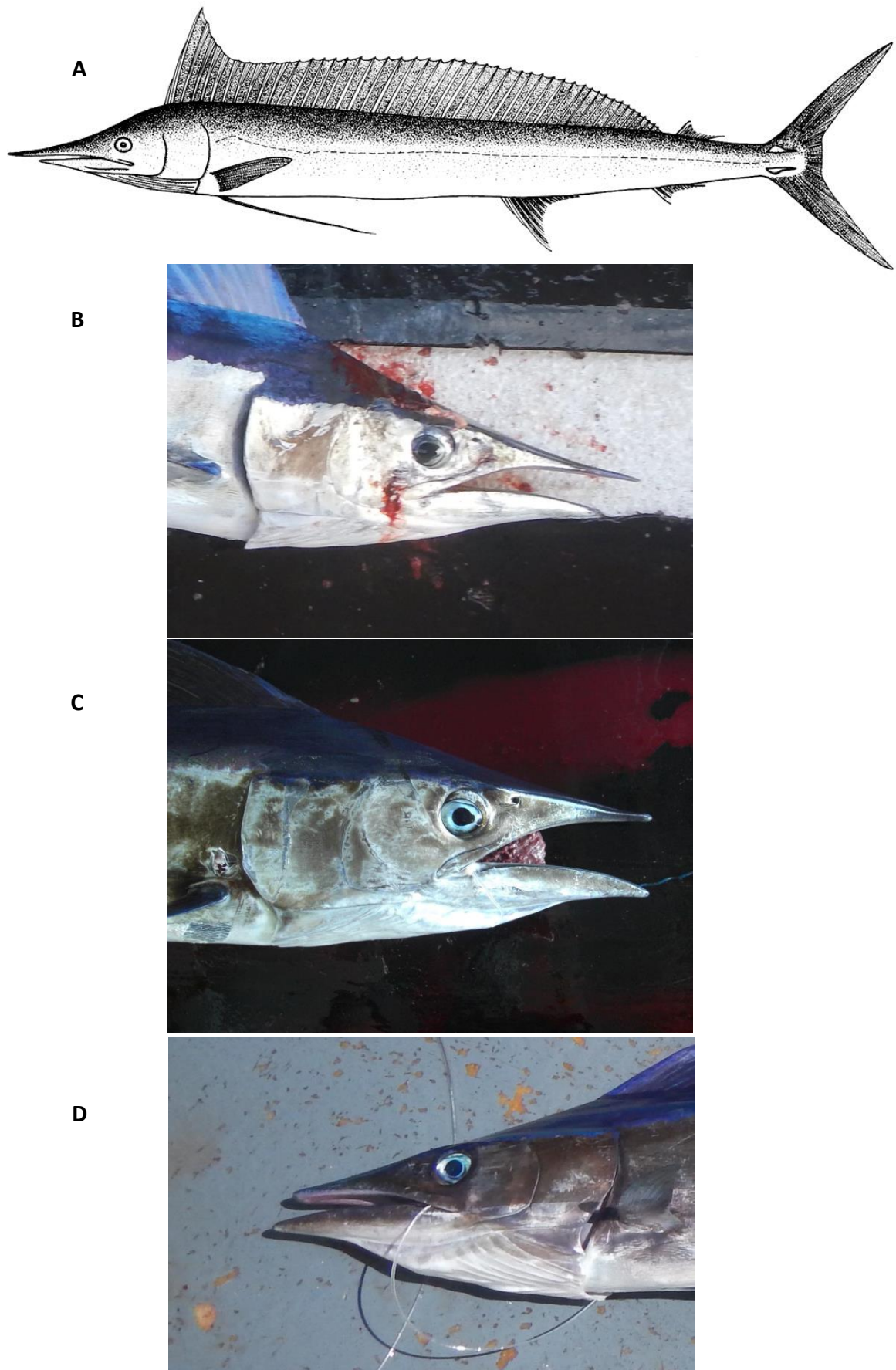


Figure 2. Shortbill spearfish *Tetrapurus angustirostris*: entire fish (A, from Nakamura 1983), variations in rostrum length (B, C, D, source: IRD Ob7, Romanov, 2010).

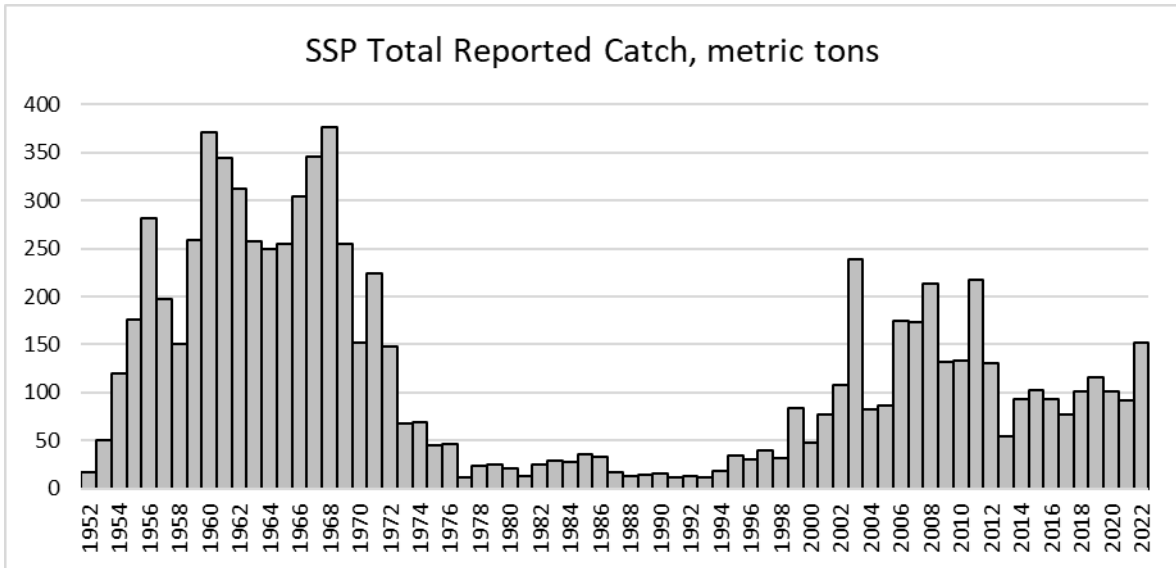


Figure 3. Nominal catch of shortbill spearfish *Tetrapturus angustirostris* in the Indian Ocean, as reported to the IOTC nominal catches database (Source: IOTC Secretariat).

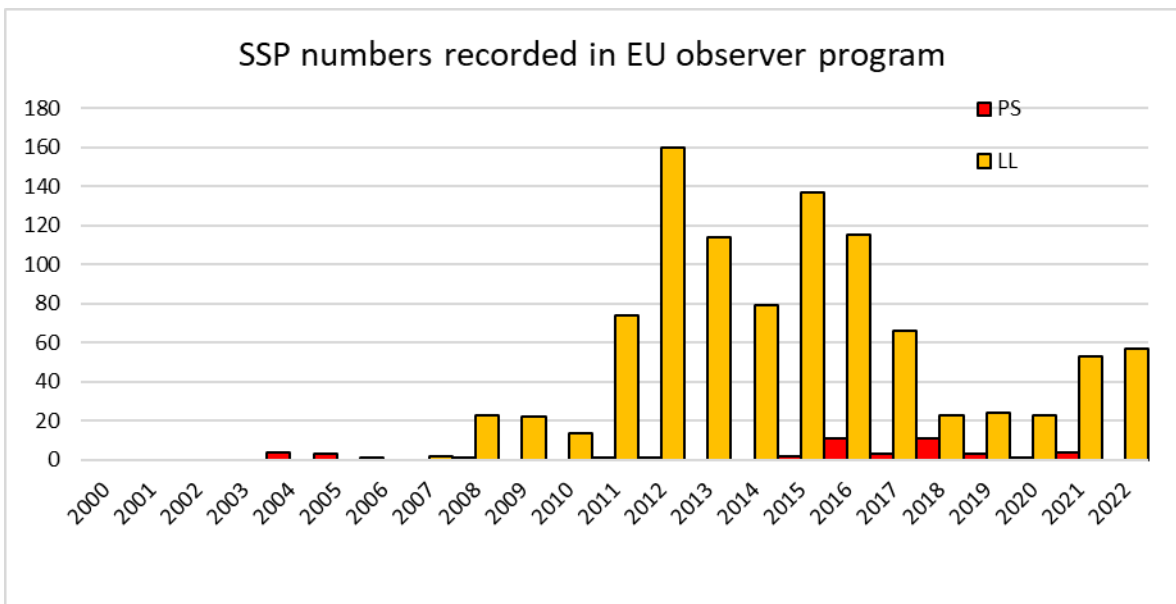


Figure 4. Number of shortbill spearfish *Tetrapturus angustirostris* recorded by scientific observers in the Indian Ocean in the framework of the EU-DCF (Data Collection Framework).

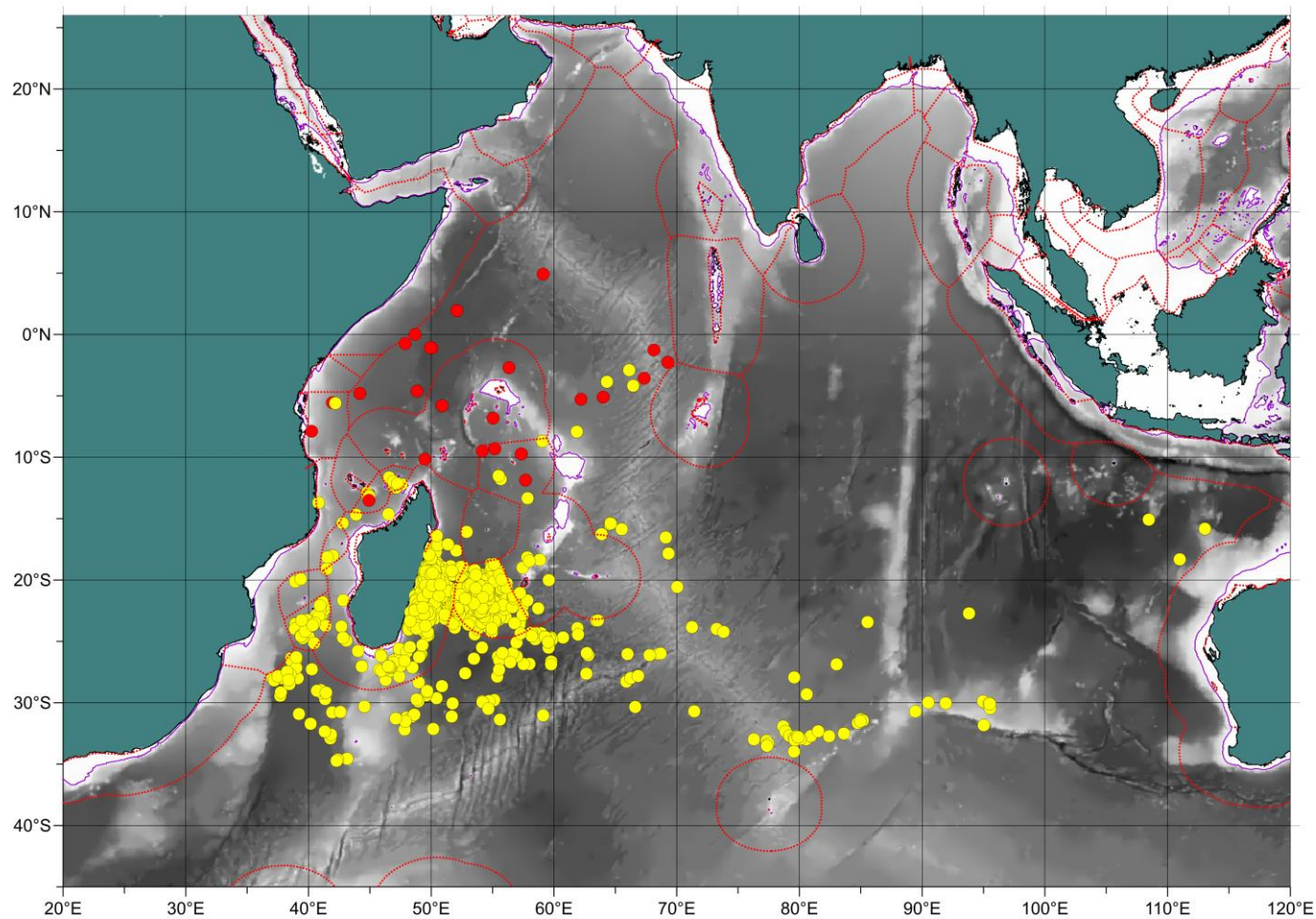


Figure 5. Occurrences of shortbill spearfish *Tetrapturus angustirostris* recorded by scientific observers in the Indian Ocean in the framework of the EU-DCF (Data Collection Framework) between 2004-2022 (red points – purse seine, yellow points – longline). A few historical points from SIOTLLRP are also present.