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Wójcik I.
(*National Marine Fisheries Research Institute, Gdynia, Poland*)

Hintzen, N.T.
(Pelagic Freezer-trawler Association, Netherlands)

Bleijenberg J.
(*Wageningen Marine Research*, *The Netherlands)*

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Summary

This report presents the European Union (EU) fishing activity in 2023 in the South Pacific Regional Fisheries Management Organization (SPRFMO) Convention area and the observer program implementation in 2023. The data on catches of Jack mackerel (*Trachurus murphyi*) by four EU trawlers in 2023 covers the period from June to October. Total catch in 2023 was 69 072 (52 288 CJM) tonnes. Three scientific observers were deployed on four EU fishing vessels in the period from end of June till mid-October 2023.

A short section on the PFA self-sampling program has been included in the report, demonstrating the main results of the self-sampling activities that cover all trips by EU vessels in the area.

A PFA self-sampling report has been submitted to the SPRFMO SC, in which A description is presented of the fisheries carried out by vessels belonging to members of the Pelagic Freezer-trawler Association (PFA) within the SPRFMO area from 2017 to 2023. In 2023 three PFA vessels (and in total four EU vessels) have been active in the SPRFMO convention area. In the first half of 2024, two PFA vessels were present in the area but did not yield any catch despite extensive searching. In 2023, 15 PFA trips were self-sampled observers.

During the Jack mackerel Benchmark Working Group (SCW14) it was decided to develop a protocol for inclusion of self-sampling data for the EU fleet for those quarters where no observer trips were carried out. This document describes that protocol and the selection of quarters for which the self-sampling data will be used. For SC12 It is proposed to only use the self-sampling data from 2021 and onwards and only for quarter for which no observer data is present. For 2023 there are samples for all quarters when there was a fishery. It is therefore proposed not to use self-sampling data for 2023.

Exploratory fishing for toothfish was undertaken by the Spanish vessel Tronio in accordance with CMM 14e-2021. In both 2021 and 2022 the TAC of 75t was reached in 15 days and 17 days respectively. In 2023, logistic constraints on the vessel movements meant that only 8 days of fishing could be conducted, achieving just over half of the TAC. A detailed survey report is presented to the SC.

1 Introduction

The present report refers to the activity of four EU pelagic trawlers: “Alina” and “Annelies Ilena’’ (Poland), “Maartje Theadora” *(*Germany*),* and "Simonas Daukantas" (Lithuania) in period from June to October 2023 fishing for *Trachurus murphyi* in the SPRFMO Convention area.

The catch and effort data for 2023 refer to four months of fishing activity (June - October).
Biological data were collected during the period from June 26th to October 13th, when the observers were on board of all four EU pelagic trawlers active in the area in 2023. Five fishing trips of the EU vessels were observed out of total of 23 fishing trips in 2023.

Data presented in this report cover catch and effort data reported directly by the vessels and the data collected by scientific observers on board of the vessels.

2 Description of the EU Fisheries on Jack mackerel in the Pacific - overall summary

The first EU pelagic trawler arrived in the Pacific in 2005 and it conducted fishing operations for three months in the second half of the year. The following year, the same vessel returned and undertook fishing activities for the whole season from March to October. The number of EU vessels varied from 6 to 9 in the following four years (2007 – 2010). Since 2011, the number of EU vessels decreased as shown in Table 1.

Table 1. EU pelagic trawlers in the Pacific in 2005-2022.

Year	EU Member States and number of vessels
2005	Netherlands (1)
2006	Netherlands (1)
2007	Germany (3), Lithuania (1), Netherlands (2)
2008	Germany (3), Lithuania (1), Netherlands (2)
2009	Germany (3), Poland (3), Lithuania (1), Netherlands (2)
2010	Germany (3), Poland (3), Lithuania (1), Netherlands (1)
2011	Germany (1), Netherlands (1), Poland (1)
2012	no fishing
2013	Lithuania (1)
2014	Germany (1), Netherlands (1)
2015	Netherlands (1), Lithuania (1)
2016	Germany (1), Poland (1)
2017	Netherlands (1), Lithuania (1)
2018	Lithuania (1)
2019	Poland (1)
2020	No fishing
2021	Germany (1), Lithuania (1), Poland (1)
2022	Lithuania (1), Poland (1)
2023	Poland (2), Germany (1), Lithuania (1)

3 Catch, Effort and CPUE Summaries

3.1 Catch composition

The fishery by EU trawlers in the SPRFMO Convention area is targeting *Trachurus murphyi*. Other species make up only a small fraction of the total catch, as shown in Table 2.

Table 2.Total catch (tons) and species composition (%) of the EU fleet in 2009 – 2022. Based on landing data provided by the vessels owners.

Year	Total EU catch in tons	Species composition in percentages			
		Trachurus murphyi	*Scomber japonicus*	*Brama australis*	Other species
2009	91 336	95.3	4.3	0.4	0.0
2010	34 083	97.2	1.9	0.6	0.3
2011	1 810	98.3	0.2	1.3	0.2
2012	0	0	0	0	0
2013	10 390	97.2	2.2	0.6	0.0
2014	21 431	95.7	3.5	0.3	0.5
2015	27 955	98.1	1.1	0.6	0.2
2016	12 828	91.9	6.3	0.3	1.5
2017	29 652	93.3	6.2	0.3	0.3
2018	10 235	94.0	1.2	2.8	2.0
2019	12 114	97.3	1.0	1.1	0.6
2020	0	0	0	0	0
2021	51 182	77.2	14.4	0.02	8.4

2022	62 809	69,1	30,8	0	0,2
2023	69 072	75.7	24.1	0	0.2

The catch in 2023 was approximately 9.1% higher than in previous year due to higher fishing effort and high catch rates in July, August and October.

Similar to the previous years, the species composition of the catch in 2023 was dominated by Trachurus murphyi – the target species. This species made up 75.7% of the total catch. The by-catch of other species in 2023 was 24.3% of the total catch, with Scomber japonicus reaching 24.1%.

The monthly distribution of the catch in the year 2023 is presented in Figure 1, with the highest catch taken in August.

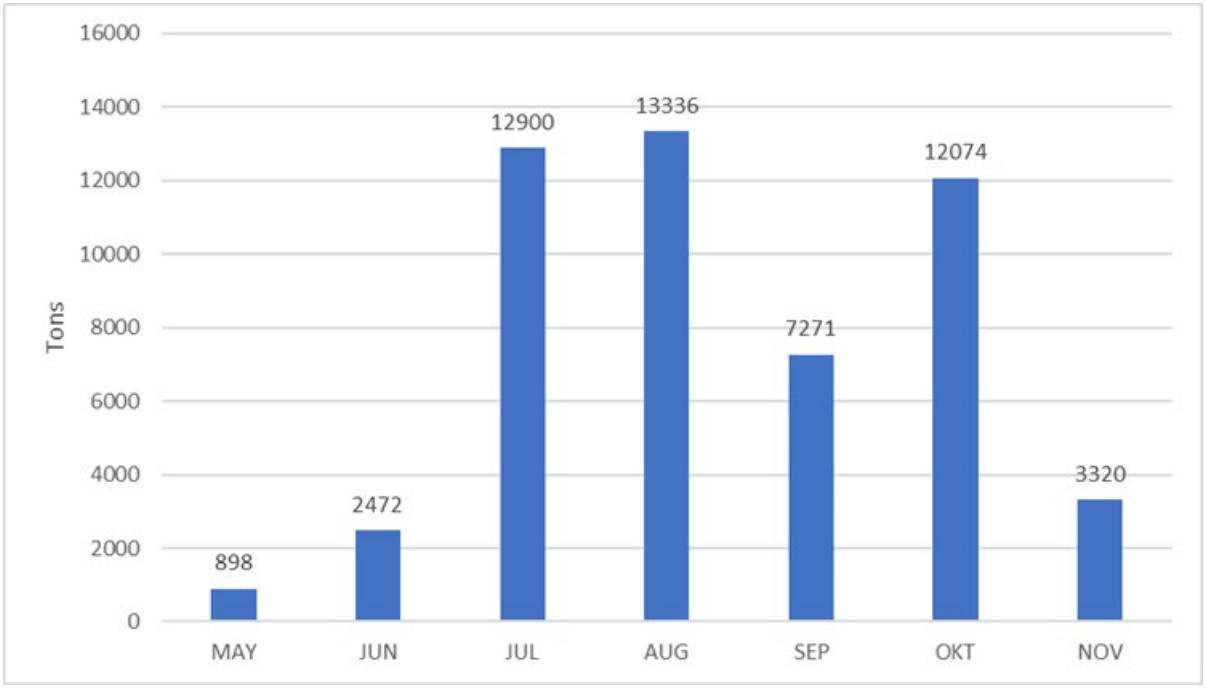


Figure 1. Monthly catch of Trachurus murphyi by EU vessels in 2023. Data based on catch reported by the vessels.

3.2 Effort and catch per unit of effort (CPUE)

The series of CPUE (in tons per day) for Trachurus murphyi presented in Table 3 is based on catch and effort of the EU fleet. The highest catch in 2023 was taken in August (nearly 10 th. tons) and was related to CPUE of 199 t/day. The highest CPUE in 2023 were recorded in July (154 t/day) and August (161 t/day).
Data for 2023 indicate that the CPUE in that year was low in May and September, then raised significantly from June reaching a peak in August and after a slight decrease in September reached a second peak in October. The average CPUE for EU fleet in 2022 was 228 t/day.

Table 3. Catch and effort of the EU fleet. Fishing days based on data provided by the vessels.

Year	Number of fishing days	Catch *Trachurus murphyi* (in tons)	CPUE (tons per day)
2005	44	6 187	141
2006	109	33 766	310
2007	401	123 523	308
2008	423	108 174	256
2009	436	87 043	200

2010	274	33 129	121
2011	32	1 779	56
2012	0	0	0
2013	140	10 010	72
2014	231	20 510	89
2015	149	25 504	157
2016	115	11 470	100
2017	273	27652	101
2018	132	9 620	73
2019	88	11 789	134
2020	0	0	0
2021	209	39 529	189
2022	233	43 370	186
2023	408	52271	128

4 Fisheries Data Collection and Research Activities

Tow-by-tow data on catch and effort were collected directly by the vessel. The observers collected detailed biological information on catch. Information on birds observed around the vessels were also collected.
Position, time and catch composition is provided for each haul. An Excel spreadsheet form was used to record the information at sea (*"SPRFMO-Observer-Trawl-template-2020"*). The information recorded in this spreadsheet corresponds to the data guidelines as set in the SPRFMO CMM on Data Standards.
Biological characteristics such as individual length, weight, sex, maturity stage, stomach fullness and otoliths for age reading were collected for *Trachurus murphyi*. In addition, discards and incidental by-catches of species of concern were monitored.
Otoliths of *Trachurus murphyi* collected in 2023 have been read by a specialist of the National Marine Fisheries Research Institute (Poland) and the information on age/length relationship could be used to convert length distributions into age compositions of the catch. This information could be used subsequently by the Scientific Committee in the stock assessments.

4.1 Observer data

Until 2016 the observer program was organized by the Dutch consultanting agency Corten Marine Research (CMR). This agency had been responsible for observer missions on board EU (Dutch, German, Lithuanian and Polish) trawlers in the SPRFMO Convention area since 2007. The coordination of the observer program to collect data from the EU fishing fleet in the SPRFMO Convention area from 2017 was taken over by the National Marine Fisheries Research Institute, Poland (NMFRI).
As from 2015, the program is financed through the EU Data Collection Framework (DCF) and is based on the Multi-lateral agreement for biological data collection of pelagic fisheries in SPRFMO Convention area amongst the responsible institutions of the EU Member States concerned.

In the period 2014-2023, the total number of fishing days with observers on board was 623, which means that 34% of fishing days was observed (Table 3 and Table 4).

In 2023 number of fishing days observed on board was 109, which means that 27% of fishing days was observed (Table 4). Total number of hauls with observer on board "Alina'', during two observed trips, was 62 including 55 observed (89% coverage). 33 hauls were observed out of total 47 hauls made by f/v "Maartje Theadora" which gives 70% observer coverage in terms of hauls.). 44 hauls were observed out of total 53 hauls made by f/v "Simonas Daukantas" which gives 83% observer coverage in terms of hauls. 62 hauls were observed out of total 76 hauls made by f/v "Annelies Ilena" which gives 82% observer coverage in terms of hauls.
In 2023 EU fishing vessels made 23 fishing trips including 5 observed, which gives 22% observer coverage in terms of fishing trips.

Table 4. Observer missions in 2014 - 2023

Year	Period	Vessel	Observer	Days with observations
2014	20 April – 30 May	Maartje Theadora	Tomasz Raczynski	23
	31 May – 19 August	Maartje Theadora	Co de Klerk	80
2015	29 April - 13 July	Annelies Ilena	Co de Klerk	60
	13 June - 24 July	Margiris	Tomasz Raczynski	28
2016	15 May - 17 June	Janus	Tomasz Raczynski	14
	18 June – 17 August	Maartje Theadora	Tomasz Raczynski	23
2017	15 March – 17 May	Margiris	Tomasz Raczynski	34
	05 April – 17 May	Margiris	Łukasz Dziemian	
	09 August – 20 September	Margiris	Tomasz Raczynski	32
2018	22 March – 02 May	Margiris	Tomasz Raczynski	26
	02 May – 13 June	Margiris	Kamil Kisielewski	27

	02 May – 13 June	Margiris	Piotr Pankowski	
2019	25 March – 13 May 13 May – 24 June	Annelies Ilena Annelies Ilena	Łukasz Giedrojc Kamil Kisielewski	25 22
2020	-	-	-	-
2021	26 March – 24 April 02 July – 18 August	Maartje Theadora Annelies Ilena	Piotr Pankowski Michał Szymański	8 28
2022	15 April – 16 May 16 May – 29 June 29 July – 16 September	Annelies Ilena Annelies Ilena Margiris	P. Pankowski, K. Bełej P. Pankowski M. Szymański	23 31 30
2023	27 June – 19 July 19 July – 5 August 2 August – 26 August 26 August – 15 September 1 September – 13 October	Alina Alina Maartje Theadora Simonas Daukantas Annelies Ilena	T. Bangma T. Bangma K. Bełej K. Bełe M. Szymański	14 14 30 16 35

The observers collected data on species and length composition of the main species observed in the catch (*Trachurus murphyi*, *Scomber japonicus* and other*)*. Biological characteristics such as individual length, weight, sex, maturity stage, stomach fullness as well as otholiths for age reading were collected for *Trachurus murphyi*. In addition, discards and incidental by-catch of species of concern were monitored.
As in the previous years, the observers also monitored interactions of sea-birds with the vessel and fishing gear as well as the presence of birds around the vessels.

4.1.1 Observer training

The observers employed by NMFRI in the program in 2023 had a wide experience in observer missions at sea: observers are ichthyologists with a University degree who have worked as observers on board Polish vessels (pelagic and demersal trawlers, long-liners, gill-netters) in the Baltic Sea. Two out of three observers served as observers on the EU vessels active in the SPRFMO area in previous years. The third observer had his first observer mission in the SPRFMO area in 2023 but is an experienced Dutch observer with many observer mission on trawlers active in the Atlantic and Nort Sea.
No special training activities were organized for the NMFRI observers in 2023 as no training needs were identified. The NMFRI observers are very experienced - biological and fisheries data collection is their daily routine under the EU DCF and other fisheries monitoring projects executed by the Institute and they are regularly briefed. Before each deployment of the observer on the vessel operating in the SPRFMO Convention area, observers are briefed on the updated Conservation and Management Measures applicable to the *Trachurus murphyi* fisheries in the SPRFMO area and as regards observer's obligations with respect to the methods and scope of the data to be collected.

At NMFRI an internal policy is in force regarding qualifications and safety requirements of the scientific observers. According to this policy, a two-stage observer training is applied:

- First - general maritime training confirming the ability to work at sea on board fishing vessels, resulting in obtaining relevant certificates in accordance with national rules and the requirements of the STCW Convention - Seaman's Book, Deck Hand Certificate, Basic Safety Training Certificate (incl. Personal Survival Techniques, Fire Prevention and Fire Fighting, Elementary First Aid, Personal Safety). This training lasts one week. Each observer working at sea must at all-time be in possession of all valid basic maritime certificates, including specific Marine Health Certificate.

- Second - practical training on observer's work, both in the lab and in the field and at sea (including species identification, otoliths/scales collection and reading, maturity determination, data recording etc.). Each newly employed observer is working under the supervision of Institute's Data Collection Coordinator and, when working in lab or at sea, is trained under direct supervision of an experienced observer. This training last minimum 3 weeks.

No additional special training is planned, unless new requirements regarding EU observer program are identified.

4.1.2 Program design and coverage

The observer program was designed to meet the requirements of the paragraph 22 of the SPRFMO CMM 01[1], *i.e.* to ensure a minimum of 10% scientific observer coverage of trips for trawlers flying the EU flag and to ensure that such observers collect and report data as described in the SPRFMO CMM 02[2] (Data Standards) respectively.

Table 5. Fishing activity coverage.

Year	Fishing		Observed		Coverage	
	Trips	Days	Trips	Days	Trips	Days
2017	10	273	3	66	30%	24%
2018	6	132	2	53	33%	40%
2019	3	88	2	47	66%	53%
2020	0	0	0	0	0	0
2021	10	209	4	36	40%	17%
2022	19	233	5	84	26%	36%
2023	23	408	5	109	22%	27%

In 2023 three observers was placed on board of all four EU pelagic trawlers active in the SPRFMO area in 2023. More details on the observed fishing trips is provided in section 9.

[1] Conservation and Management Measure for *Trachurus murphyi*

[2] Conservation and Management Measure on Standards for the Collection, Reporting, Verification and Exchange of Data

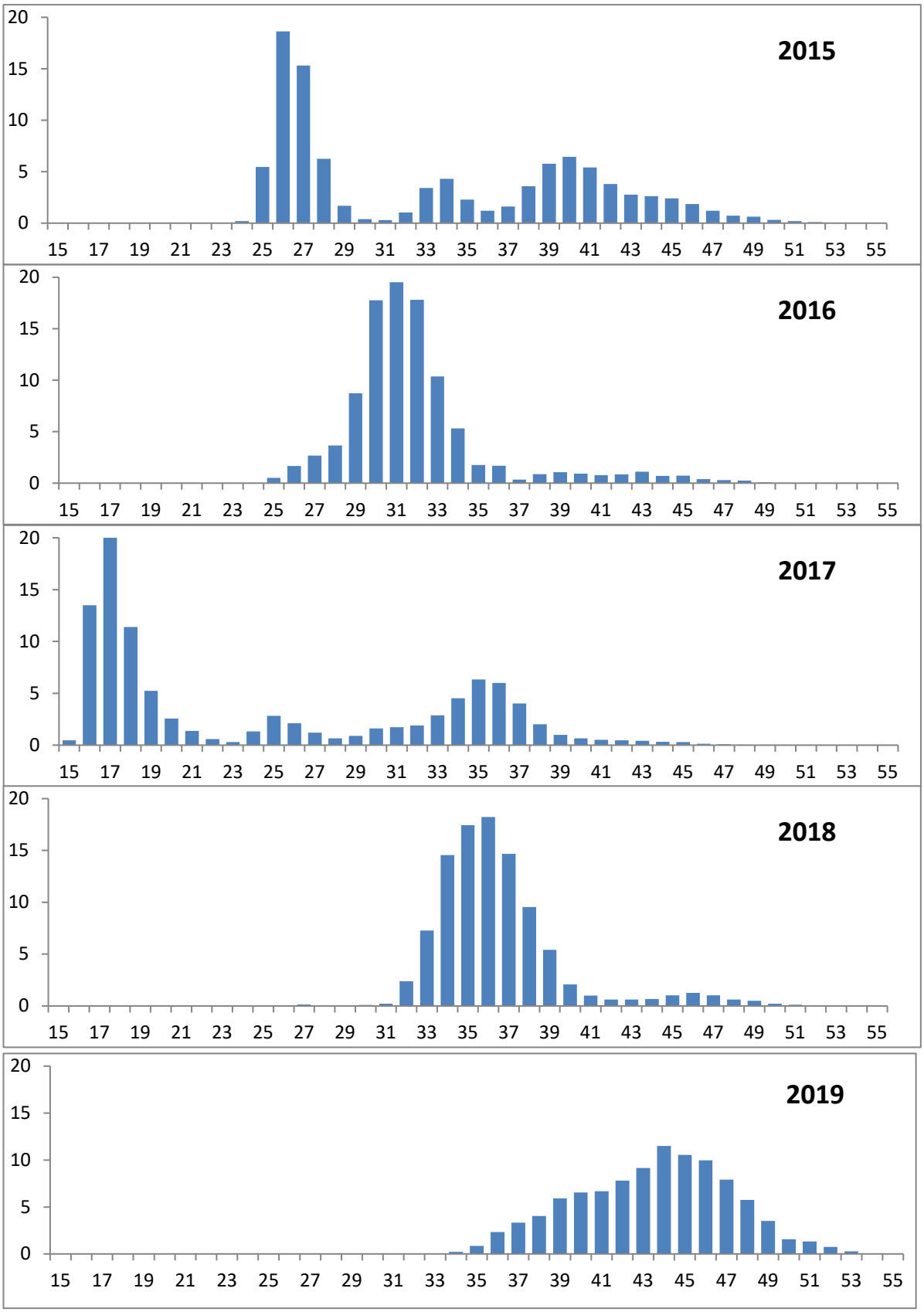
5 Biological Sampling and Length/Age Composition

In total 26 608 individuals of *Trachurus murphyi* were measured in 2023 (Table 6). Otoliths from 793 fish were collected for age reading.
Samples for length measurements were collected from 194 hauls out of total of 238 hauls in observed trips. For biological data collection (including sampling for age) for *Trachurus murphyi*, a revised sampling protocol provides that 4-5 individual fish for each length class represented in the catch should be collected per trip per fishing area with the aim to have even representation for all length classes recorded.

Table 6. Number of *Trachurus murphyi* measured by scientific observers during 2008-2023.

Year	Number of *Trachurus murphyi* measured
2008	28 250
2009	15 744
2010	10 540
2011	2 194
2013	2 727
2014	15 148
2015	17 563
2016	25341
2017	13843
2018	7465
2019	5152
2020	0
2021	5241
2022	20 061
2023	26 608

The length composition of *Trachurus murphyi* sampled in 2015-2023 is presented in Figure 3.
Age structure for *Trachurus murphyi* sampled in 2023 is presented in Figure 4.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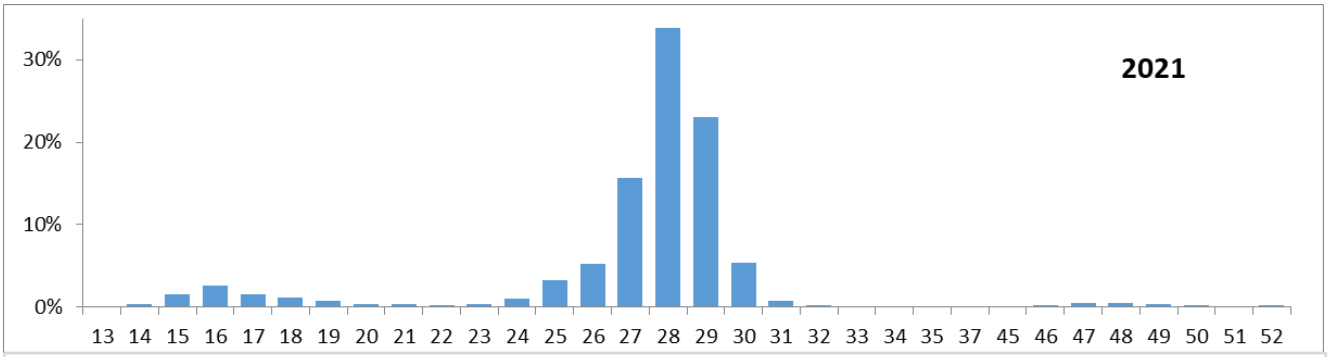

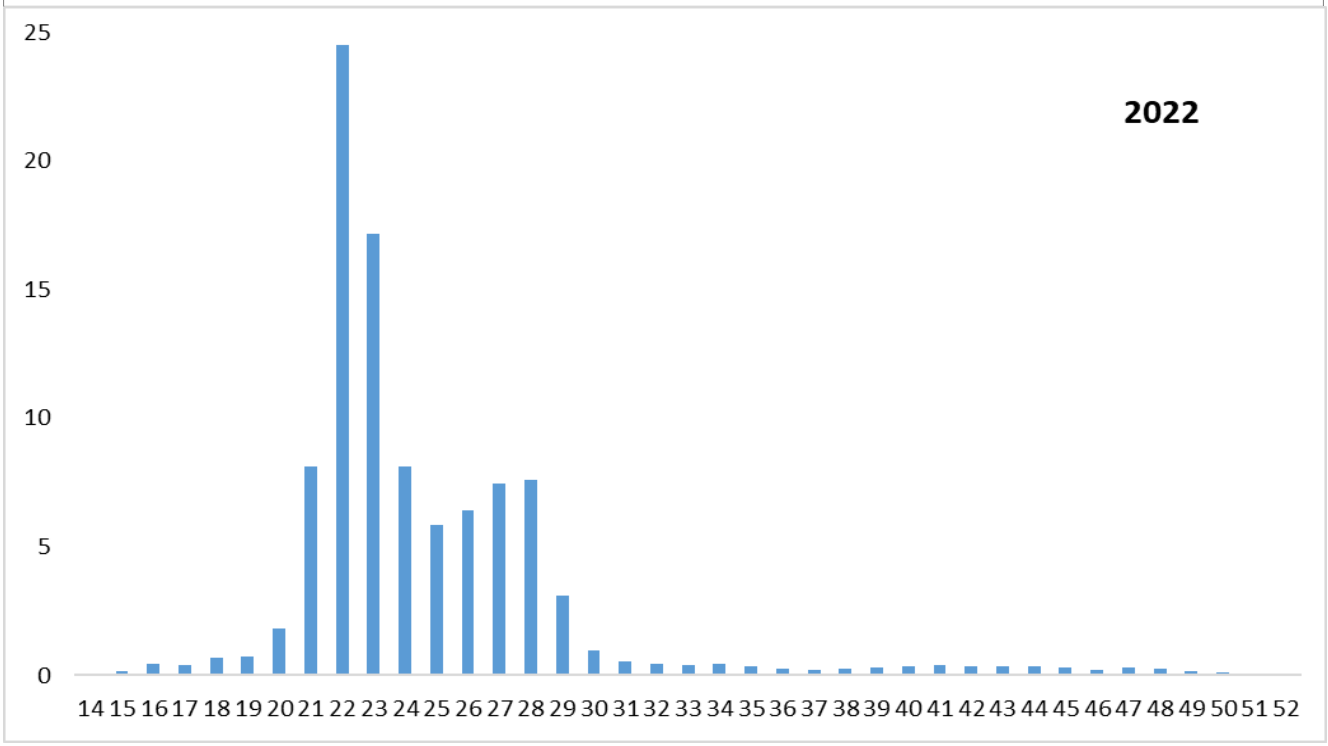

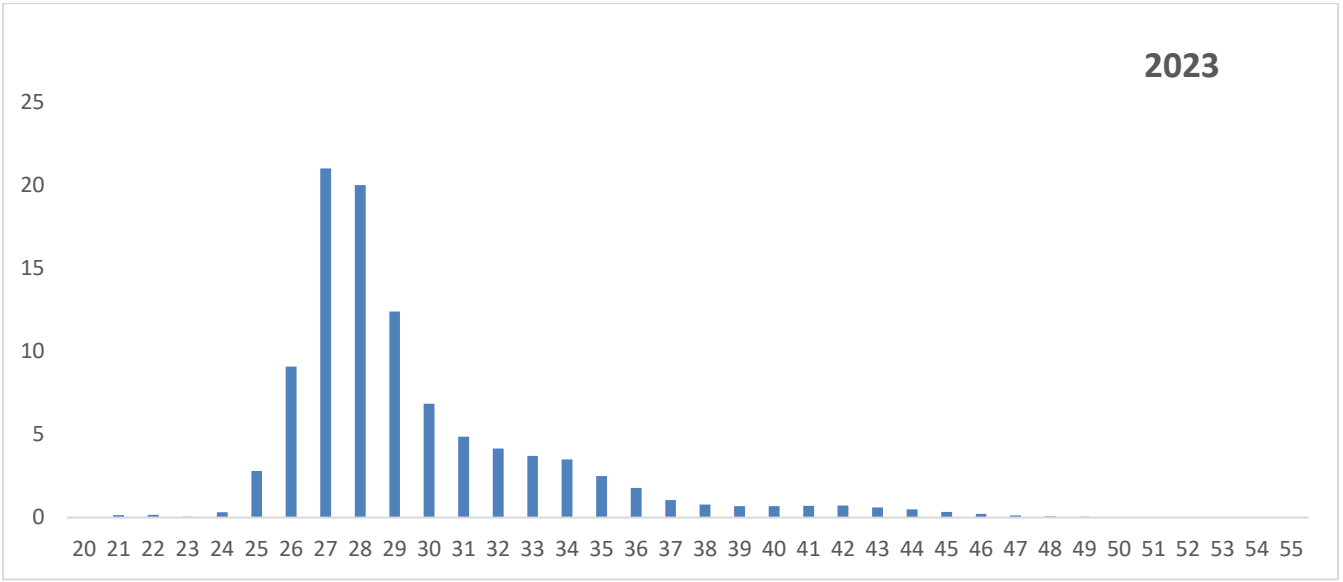

Figure 3. Percentage length composition of Trachurus murphyi in EU catch sampled in 2015 – 2023.

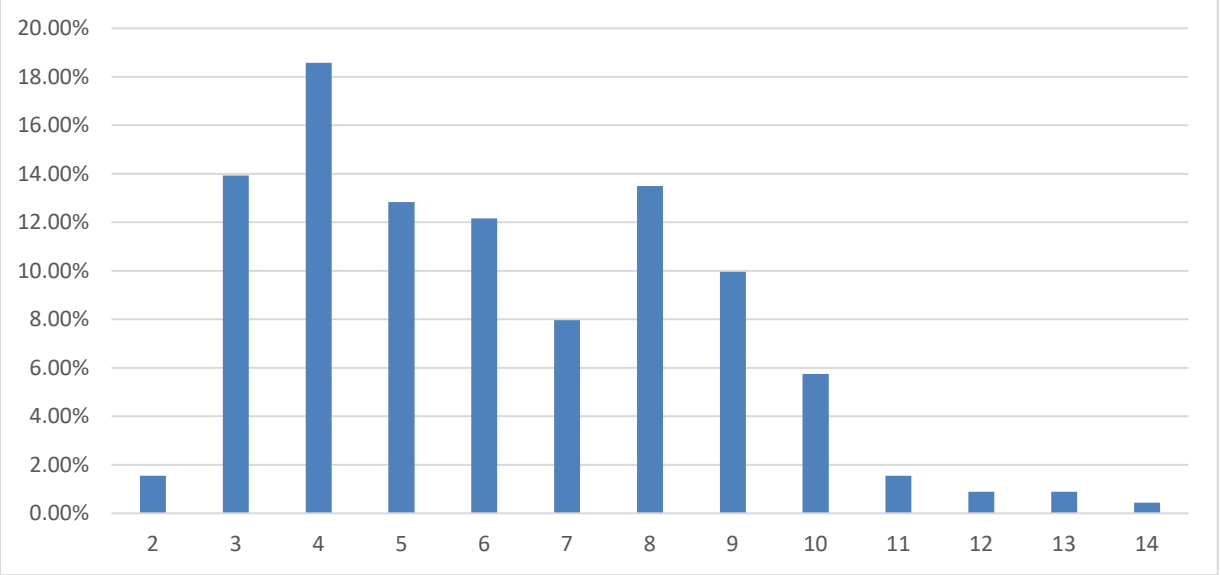

Figure 4. Age-frequency distribution of Trachurus murphyi in EU catch sampled in 2023.

6 Ecosystem approach considerations

During the observed trips, interactions of birds with fishing gear were observed in 200 hauls out of total 238 hauls made by the vessels (84% observer coverage). No mortality of birds in the fishing gear was recorded during the fishing operations observed. Only one bird's interaction was observed. On 22 July 2023, observed from the bridge by the observer present: an albatross was stuck with his head in the net during the hauling process. The Albatross was pulled out of the net by one of the deckhands and flew away immediately. The Albatross was seemingly unharmed, the observer did not have time to take a closer look and because of this the exact albatross species is not determined. Based on the albatrosses the observer has seen around the vessel, this was probably the black-browed albatross.

7 PFA self-sampling data

Since 2015 a full self-sampling program has been initiated on all EU fishing vessels belonging to members of the Pelagic Freezer-trawler association (PFA) and fishing in the SPRFMO Convention area. The self-sampling program covers all trips and all hauls of the vessels that are active in the area and thereby delivers information on spatial and temporal evolution of the fishery, species and length compositions and ambient fishing conditions (temperature and depth).

The relative length compositions by year were estimated from raised catch numbers at length (raised by haul, (Figure 5). The relative length compositions show some deviations from the length compositions derived from the observer trips (figure 3) as incorrect length measurements had been taken on-board two of the three PFA vessels (standard length rather than fork length). These measurements have been excluded from further use.

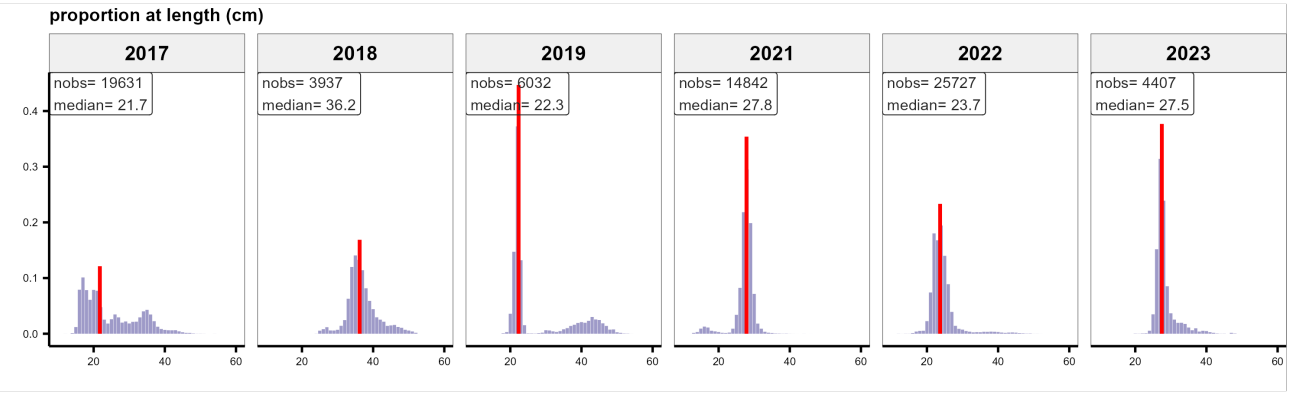

Figure 5. Relative length distributions of Trachurus murphyi in the PFA self-sampling program 2017-2023. Nobs indicates the number of length measurements while median indicates the median length (cm).

8 Combination of observer-data and self-sampling data

During the Jack mackerel Benchmark Working Group (SCW14) it was decided to develop a protocol for inclusion of self-sampling data for the EU fleet for those quarters where no observer trips were carried out.

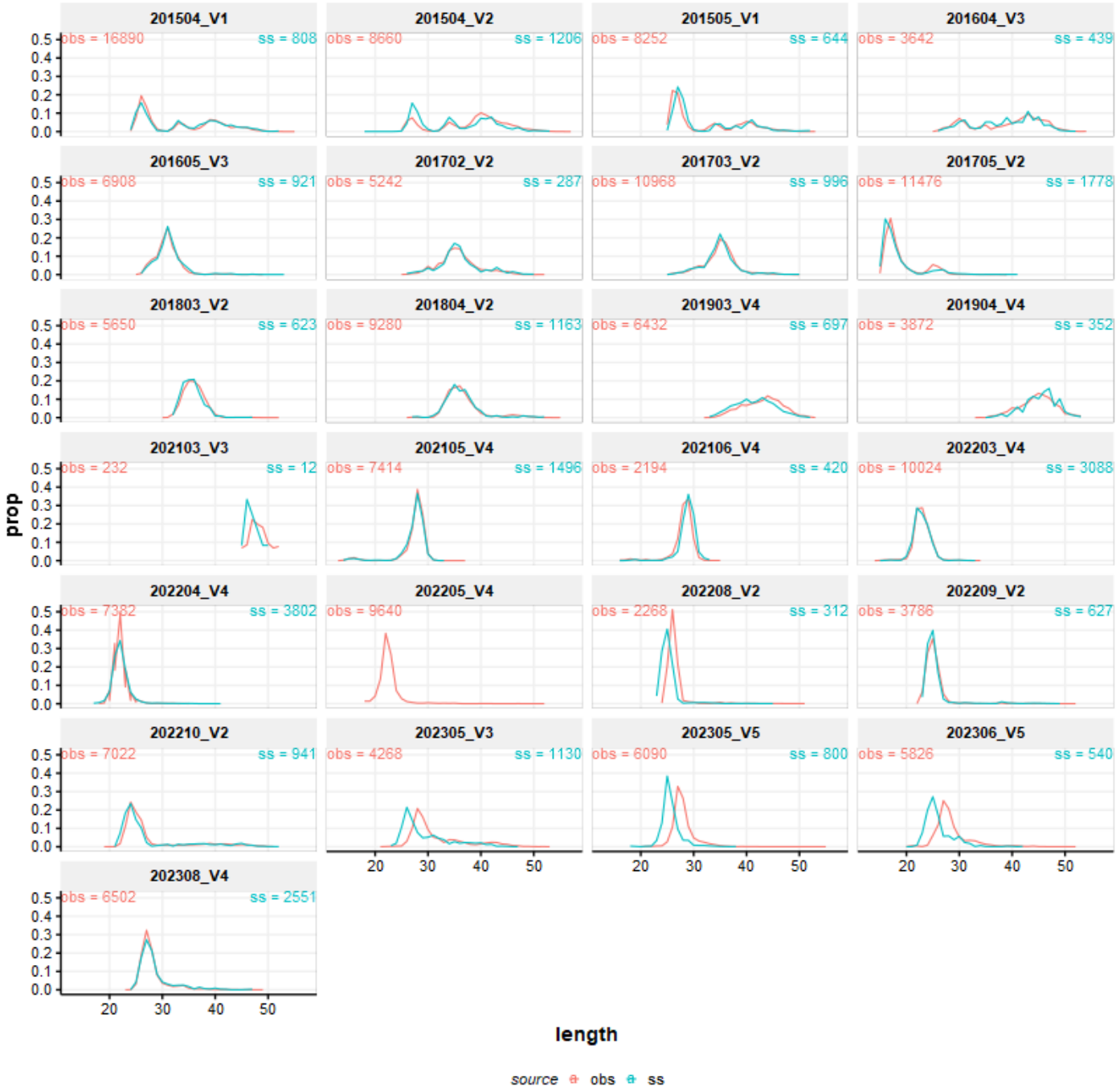

Figure 6. Comparison of relative length distributions of Trachurus murphyi in the EU observer program ("obs") and the PFA self-sampling program ("ss") by year and quarter. The facets with blue-ish backgrounds refer to the quarters in the past where no observer trips were carried out. The facets with reddish backgrounds refer to the quarters where the length distributions are proposed to be taken from the self-sampling program. These will be added to the EU data submission for 2023 (final data) and 2024 (preliminary data).

In general it is proposed to only use the self-sampling data from 2021 and onwards and only for quarter for which no observer data is present. For 2023 there are samples for all quarters when there was a fishery. It is therefore proposed not to use self-sampling data for 2023.

9 General information on European Union (EU) observer activity in 2023

The fishing in 2023 was conducted by f/v "Alina" (EU, Poland), f/v "Annelies Ilena'' (EU,Poland), f/v "Maartje Theadora" (EU, Germany), and "Simonas Daukantas" (EU, Lithuania) , (type of vessel: TTF) close to the 200 Nm Chilean EEZ.
Basic information on observers' activity in two missions in 2023 (June – October) are provided in tables below.

Observer	1	
Vessel	f/v Alina, GDY-346	
Start mission on board of vessel	Date: 2023-JUNE-27	Time: UTC – 13:00
End mission on board of vessel	Date: 2023-JULY-19	Time: UTC – 12:00
No. of days on vessel	23	
No. of fishing days	14	
No. of days with observations	14	
Total no. of hauls	35	
No. of hauls observed – fish / (coverage)	29 (83%)	
No. of hauls observed for Birds monitoring	35	
Total catch (tons)	2538	
Total catch of Jack mackerel (tons)	1899	
No. of Jack mackerel measuerd	6090	
No. of Jack mackerel biological samples	174	
No. of otoliths	174	
No. of other species measured	1720	

Observer	1	
Vessel	f/v Alina, GDY-346	
Start mission on board of vessel	Date: 2023-JULY-19	Time: UTC - 12:00
End mission on board of vessel	Date: 2023-AUG-05	Time: UTC – 12:00
No. of days on vessel	18	
No. of fishing days	15	
No. of days with observations	14	
Total no. of hauls	27	
No. of hauls observed – fish / (coverage)	26 (96%)	
No. of hauls observed for Birds monitoring	26	
Total catch (tons)	1770	
Total catch of Jack mackerel (tons)	1370	
No. of Jack mackerel measuerd	5826	
No. of Jack mackerel biological samples	140	
No. of otoliths	140	
No. of other species measured	1573	

Observer	2	
Vessel	f/v Maartje Theadora, ROS-171	
Start mission on board of vessel	Date: 2023.08.02	Time: UTC -19:30
End mission on board of vessel	Date: 2023.08.26	Time: UTC – 15:30
No. of days on vessel	25	
No. of fishing days	24	
No. of days with observations	24	
Total no. of hauls	47	
No. of hauls observed – fish / (coverage)	33 (70%)	
No. of hauls observed for Birds monitoring	33	
Total catch (tons)	5279	
Total catch of Jack mackerel (tons)	4120	
No. of Jack mackerel measuerd	4120	
No. of Jack mackerel biological samples	137	
No. of otoliths	137	
No. of other species measured	1221	

Observer	2	
Vessel	f/v Simonas Daukantas KL-872	
Start mission on board of vessel	Date: 2023.08.26	Time: UTC -15:40
End mission on board of vessel	Date: 2023.09.15	Time: UTC – 23:00
No. of days on vessel	19	
No. of fishing days	16	
No. of days with observations	16	
Total no. of hauls	53	
No. of hauls observed – fish / (coverage)	44 (83%)	
No. of hauls observed for Birds monitoring	44	
Total catch (tons)	2193	
Total catch of Jack mackerel (tons)	1115	
No. of Jack mackerel measuerd	4070	
No. of Jack mackerel biological samples	205	
No. of otoliths	204	
No. of other species measured	3175	

Observer	3	
Vessel	f/v Annelies Ilena GDY- 151	
Start mission on board of vessel	Date: 2023-SEP-01	Time: UTC -21:00
End mission on board of vessel	Date: 2023-OCT-13	Time: UTC – 17:30
No. of days on vessel	43	
No. of fishing days	36	
No. of days with observations	35	
Total no. of hauls	76	
No. of hauls observed – fish / (coverage)	62 (82%)	
No. of hauls observed for Birds monitoring	62	
Total catch (tons)	6275	
Total catch of Jack mackerel (tons)	4549	
No. of Jack mackerel measuerd	6502	
No. of Jack mackerel biological samples	138	
No. of otoliths	138	
No. of other species measured	2586	

10 Exploratory fishing for toothfish

11 Exploratory fishing for toothfish

An exploratory Patagonian tootffish (*Dissostichus* spp.) fishery took place in 2021 - '23 by the Spanish vessel Tronio. Only Patagonian toothfish (TOP) was caught; no Antarctic toothfish (TOA) were caught in any of the three campaigns.

In both 2021 and 2022 the TAC of 75t was reached in 15 days and 14 days respectively. In 2021 27 longline were set and in 2022 32 longlines were set. In 2023, logistic constraints on the vessel movements meant that only 8 days of fishing could be conducted, achieving just over half of the TAC. And only 17 longlines were set.

Fishing took place in the George V Fracture zone in the SPRFMO convention area, following along the seamount chain/ridge of the area In 2021, due to human error, 3 sets were set at less than 3nm distance from previous sets. No lines were lost in 2021- '23 , but some hook losses occurred, estimated to be 1% of the total, as well as occasional steel weights that are lost

In terms of fish bycatch 2 species consistently occurred. Macrourus spp. occurred most frequently amounting to approximately 1% of total toothfish catch. The Secondary bycatch was Antimora rostrata. Four other species occurred infrequently throughout the years: Lepidion spp, Spectrunculus grandis(pudgy/giant cusk-eel), and Muraenolepis spp. (eel cod).

Biological samples were taken as well as seabird observations executed via EM, oceanographic parameters collected and bycatch of seabirds, marine mammals and reptiles was zero in 2021-'23. There were no marine mammals observed. 14 species of marine birds were observed in 2023, including 3 species listed as Endangered (EN) under IUCN Red Listing. Only minor amounts of VME indicator taxa were recovered during the campaigns; 1.995 kg in 2021, 0.045 kg in 2022 and 0.35 kg in 2023. The move-on rules were never triggered.
Oceanographic data was collected in 2021 and in 2023, showing similar results in terms of ocean structure.

Toothfish tag release and recoveries suggest that abundance (CPUE) along the deep ridge system may be partitioned to ridge/seamount peaks. But despite this, there is evident connectivity to the wider region from as far as Macquarie Ridge 700nm to the east of the GVFZ as evidenced from tag recoveries.

Patterns of sex ratio and reproductive state of toothfish fish caught changed throughout the study period; further exploration in the area may provide some explanation possibly relating to early exploitation of a virgin stock or alternatively, variability in reproductive pattern and migration between deep and shallower depths. Supplementary genetic and otolith samples collected will be analysed and should provide critical information on the age distribution and connectivity of Patagonian toothfish in the region's adjacent toothfish fisheries

More details on the campaign can be found in a separate paper for SC12 - Exploratory Patagonian toothfish demersal longline fishery: George V Fracture Zone, SPRFMO Convention Area 2021-23 Fishing Campaign: Data Summary.