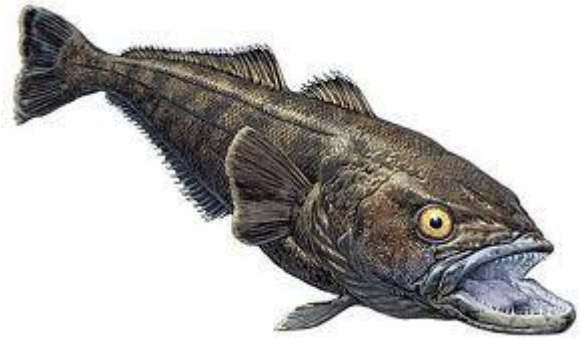
STATUS REPORT

Dissostichus eleginoides

Common Name: Patagonian toothfish

DRAFT FAO-ASFIS Code: TOP



2025

Updated November, 2025

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1. Description of the fishery

1.1 Description of fishing vessels and fishing gear

Fishing for Patagonian toothfish in the SEAFO Convention Area (CA) started around 2002. Based on the SEAFO database (as of August 31, 2025), Japan is the main fishing country that operated almost continuously for 21 years (2003-2020, 2022 and 2024-2025), while Republic of Korea, EU(Spain), South Africa and Namibia operated for 4, 11, 2 and 2 years, respectively. Since SEAFO established, nine vessels (from five countries) operated in the SEAFO CA. Table 1 shows the list of Patagonian toothfish bottom longline vessels and their specifications (2009-2025). The Spanish longline system has been used by EU-Spain, and Republic of Korea (Figure 1A), while the trotline by Japan, and South Africa (Figure 1B). The Autoline (Mustad Auto line Deep Sea System) is used by Namibia (Figure 1C).

Table 1: List of Patagonian toothfish bottom longline vessels and their specifications (2009-Aug 31, 2025)

target species	Year	ves_Name	ves_Flag	ves_Callsign	ves_IMO	ves_Gear_Type	ves_Length	ves_Tonnage
TOP	2009	JUNGWOO NO2	KOR	DTBQ4	8509961	LL	58	911
TOP	2009	JUNGWOO NO3	KOR	DTBV7	8421078	LL	48	494
TOP	2009	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2010	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2010	VIKING BAY	ESP	EAWJ	9221516	LL	43.5	692
TOP	2011	KORYO MARU 11	RSA	ZR7955	8603896	LL	10.4	336
TOP	2011	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2012	KORYO MARU 11	RSA	ZR7955	8603896	LL	10.4	336
TOP	2012	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2013	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2014	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2015	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2016	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2017	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2018	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2019	SHINSEI MARU NO3	JPN	JAAL	8520094	LL	47.2	495
TOP	2020	SHINSEI MARU NO8	JPN	7KFU	9891799	LL	57.85	1062
TOP	2020	TRONIO	ESP	ECJF	9361603	LL	55	569.26
TOP	2021	TRONIO	ESP	ECJF	9361603	LL	55	569.26
TOP	2022	SHINSEI MARU NO8	JPN	7KFU	9891799	LL	57.85	1062
TOP	2022	TRONIO	ESP	ECJF	9361603	LL	55	569.26
TOP	2023	TRONIO	ESP	ECJF	9361603	LL	55	569.26
TOP	2024	TRONIO	ESP	ECJF	9361603	LL	55	569.26
TOP	2024	Helena Ndume	NAM	V5RE	8510817	LL	47	1013
TOP	2024	SHINSEI MARU NO8	JPN	7KFU	9891799	LL	57.85	1062
TOP	2025	TRONIO	ESP	ECJF	9361603	LL	55	569.26
TOP	2025	Helena Ndume	NAM	V5RE	8510817	LL	47	1013
TOP	2025	SHINSEI MARU NO8	JPN	7KFU	9891799	LL	57.85	1062

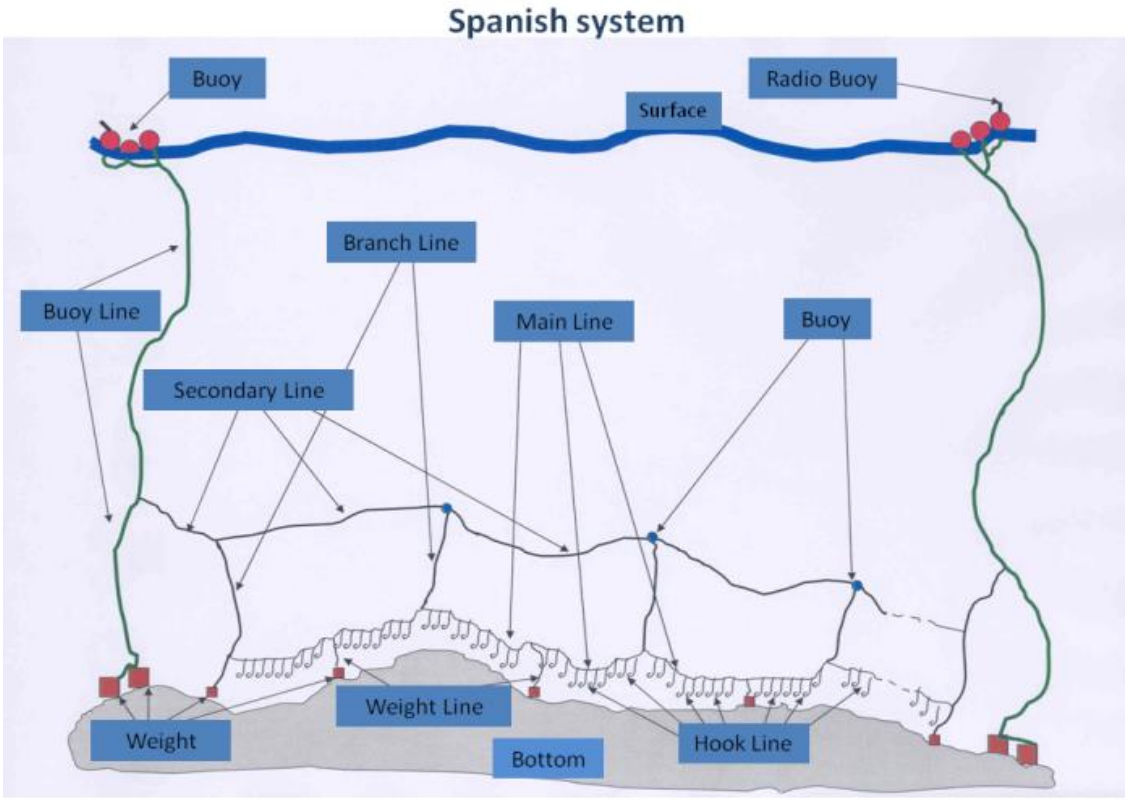


Figure 1A: Fishing gears used to fish *D. eleginoides*: Spanish longline system

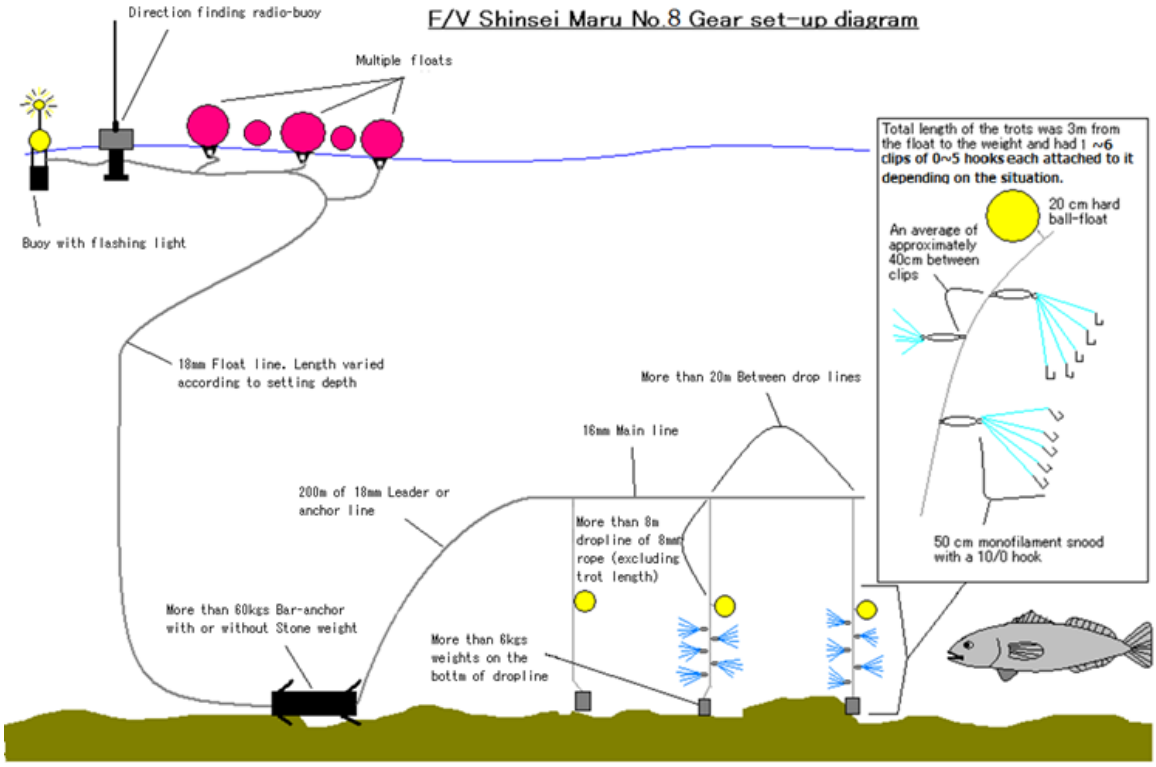


Figure 1B: Fishing gears used to fish *D. eleginoides*: the trotline (bottom).

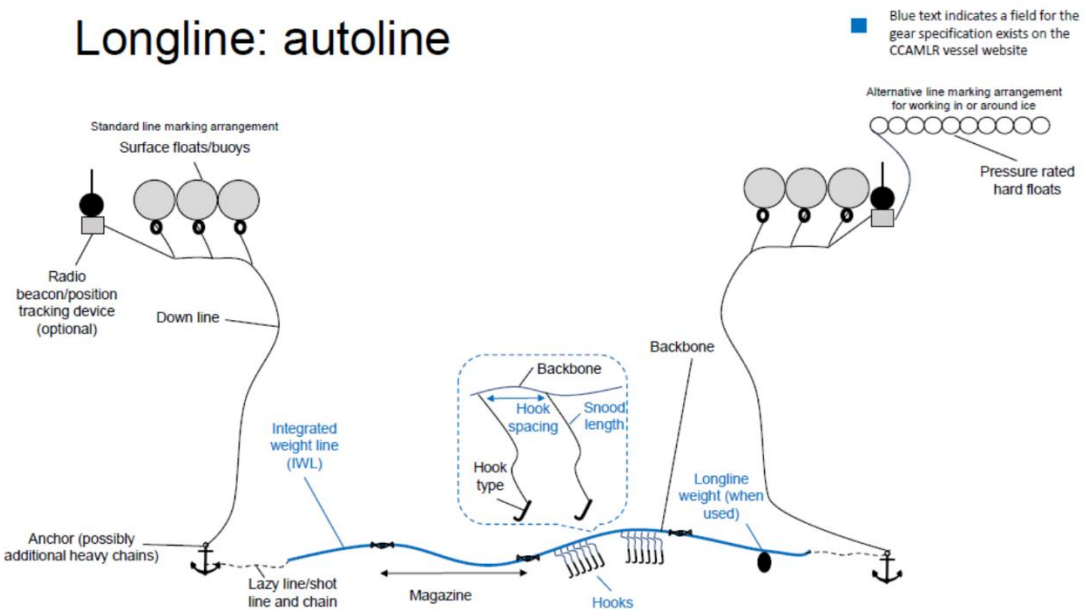
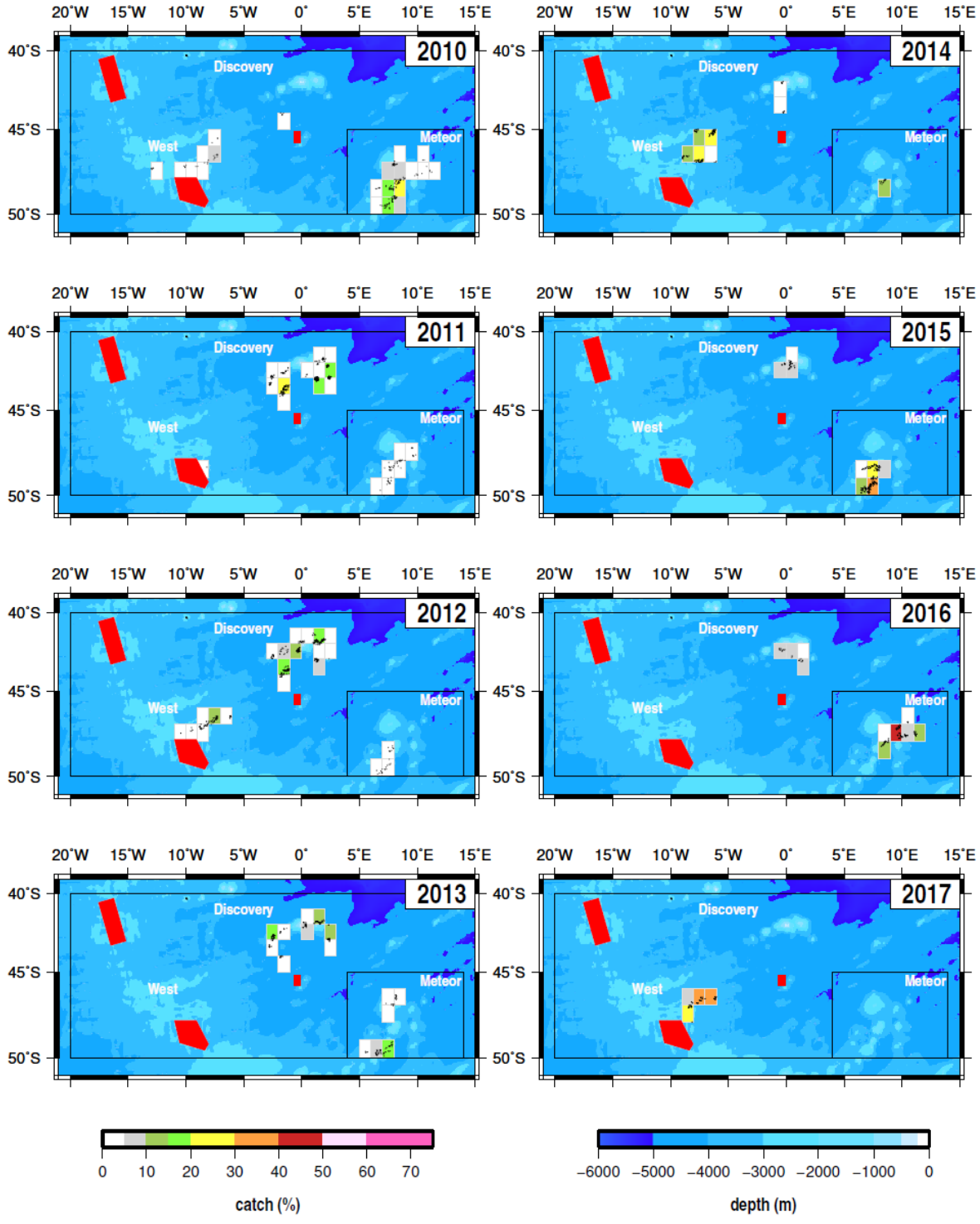


Figure 1C: Fishing gears used to fish *D. eleginoides*: the autoline.
(Source: Illustrated generic gear diagrams on the CCAMLR website)

1.2 Spatial and temporal distribution of fishing

In the SEAFO CA, the fishery has been conducted in Sub-Area D, concentrated at the Meteor seamounts (D1), the Discovery seamount (central Sub-Area D; D0), and the West seamounts (western Sub-Area D; D0), as shown in Figure 2.



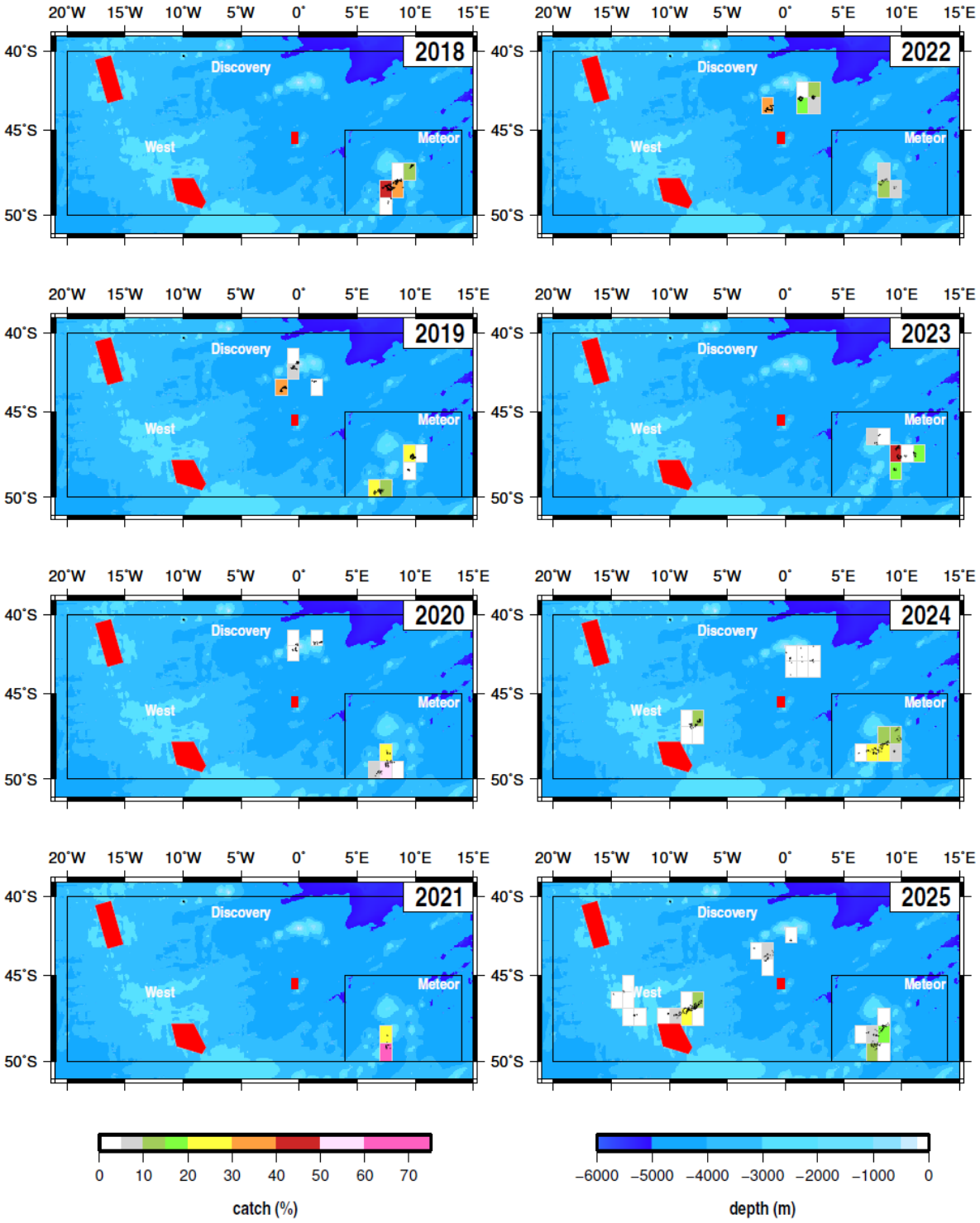


Figure 2: Annual distribution of catches (%) (2009-2025) (SEAFO database). Red-polygons: closed areas

Fishing occurred almost annually at Meteor (D1) and intermittently at Discovery (D0), while no fishing took place at West (D0) between 2018 and 2023. In 2024 and 2025, fishing has also taken place at West, alongside Meteor and Discovery.

Table 2 summarizes fishing effort (number of sets and hooks) by year and area (2006–2025). Effort was concentrated almost continuously in the Meteor and Discovery areas, while the West area experienced multi-year periods with no effort. In 2024 and 2025, effort was high in both the Meteor and West areas.

Table 2: Summary of fishing efforts (number of sets and hooks) by year and area (2006-2025)
(2025 is preliminary as of Aug 31, 2025)
(Data source: SEAFO Secretariat)

Area	D1 (Meteor)		Discovery		West		Total	
year	# of set	# of hooks (million)	# of set	# of hooks (million)	# of set	# of hooks (million)	# of set	# of hooks (million)
2006	147	(na)					147	(na)
2007	31	(na)	101	(na)	94	(na)	226	(na)
2008	52	(na)			68	(na)	120	(na)
2009	233	1.37	3	0.02	49	0.25	285	1.64
2010	118	0.55	5	0.04	27	0.17	150	0.76
2011	54	0.19	207	0.82	1	0.00	262	1.02
2012	25	0.12	207	0.92	68	0.26	300	1.29
2013	57	0.26	108	0.43		0.00	165	0.70
2014	13	0.05	64	0.26	100	0.40	177	0.71
2015	127	0.56	24	0.10			151	0.66
2016	67	0.27	22	0.09			89	0.36
2017					34	0.14	34	0.14
2018	100	0.46					100	0.46
2019	75	0.21	48	0.23			123	0.44
2020	56	0.49	24	0.11			80	0.60
2021	15	0.18	2	0.01			17	0.19
2022	21	0.17	75	0.36			96	0.53
2023	74	0.57					74	0.57
2024	90	1.05	25	0.20	37	0.18	152	1.43
2025	74	0.64	27	0.25	137	1.00	238	1.89
Average (operation year)	75	0.45	63	0.27	62	0.27	149	0.79

Blank: no fishing operations and (na): Data are not available

1.3 Reported retained catches and discards

Table 3AB presents data on Patagonian toothfish catches and discards (2002-Aug 31, 2025) listed by country and the management area from which catches were taken. Annual catches varied between 12 tonnes (2017) and 393 tonnes (2003). A small amount (< 1 ton) of Antarctic toothfish (*Dissostichus mawsoni*) were caught in 2014 by Japan.

In the last three years with complete data (2022-2024) retained catches were 137, 113 and 188 tonnes respectively and the annual weight of discarded specimens was 4 tonnes in 2022 and less than 2 tonnes in 2024. Discards were mainly due to parasite infection of fish. Retained and discarded bycatch from the Patagonian toothfish fishery by species are available in the Secretariat. It is noted that the two most dominant bycatch species (in terms of weight) are rattail (GRV) and deep-sea cod (ANT).

Table 3A: Catches (tonnes) (Retained & Discocarded) of Patagonian toothfish (*Dissostichus eleginoide*), (**TOP**) made by Spain (EU), Japan, Rep of Korea and Rep of South Africa. (2002- Aug 31,2025)

Flag State	Spain					Japan				Rep of Korea				Rep of South Africa			
Fishing method	Longlines					Longlines				Longlines				Longlines			
Management Area	D	D0		D1		D0		D1		D0		D1		D0		D1	
Year	Retain	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard	Retain	Discard
2002	18					-	-	-	-	-	-	-	-	-	-	-	-
2003	101					47	0	-	-	245	0	-	-	-	-	-	-
2004	6					124	0	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	158	0	-	-	10	0	-	-	-	-	-	-
2006	11					155	0	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	166	0	-	-	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	122	0	-	-	76	0	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	74	0	16	0	46	0	-	-	-	-
2010	-	12	0	14	0	-	-	54	2	-	-	-	-	-	-	-	-
2011	-	-	-	-	-	159	6	-	-	-	-	-	-	15	0	28	0
2012	-	-	-	-	-	86	3	-	-	-	-	-	-	24	0	12	0
2013	-	-	-	-	-	41	2	19	1	-	-	-	-	-	-	-	-
2014	-	-	-	-	-	47	<1	6	<1	-	-	-	-	-	-	-	-
2015	-	-	-	-	-	52	<1	7	<1	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	7	<1	32	<1	-	-	-	-	-	-	-	-
2017	-	-	-	-	-	12	<1	-	-	-	-	-	-	-	-	-	-
2018	-	-	-	-	-	-	-	57	<1	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	26	1	37	<1	-	-	-	-	-	-	-	-
2020	-	-	-	58	0	5	<1	-	-	-	-	-	-	-	-	-	-
2021	-	-	-	16	0	-	-	-	-	-	-	-	-	-	-	-	-
2022	-	-	-	32	0	101	4	-	-	-	-	-	-	-	-	-	-
2023	-	-	-	113	0	-	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	145	0	35	1	-	-	-	-	-	-	-	-	-	-
2025*	-	52	0	87	0	34	<1	-	-	-	-	-	-	-	-	-	-
TOTAL	**136**	**64**	**0**	**465**	**0**	**1377**	**17**	**286**	**3**	**347**	**0**	**46**	**0**	**39**	**0**	**40**	**0**

* Provisional (Data received up to 31 August). - = No Fishing. Blank fields = No data available

Table 3B: Catches (tonnes) (Retained and Discarded) of Patagonian toothfish (*Dissostichus eleginoide*), (**TOP**) made by IUU fishing and Namibia. (2002- Aug 31,2025)

Flag State	BOLIVIA (IUU)	Rep of Namibia				
Fishing method	Longlines	Longlines				
Management Area	Unknown	D0		D1		
Year	Retain	Retain	Discard	Retain	Discard	TOTAL
2002	-	-	-	-	-	**18**
2003	-	-	-	-	-	**393**
2004	-	-	-	-	-	**130**
2005	-	-	-	-	-	**168**
2006	-	-	-	-	-	**166**
2007	-	-	-	-	-	**166**
2008	-	-	-	-	-	**198**
2009	-	-	-	-	-	**136**
2010	-	-	-	-	-	**82**
2011	-	-	-	-	-	**208**
2012	-	-	-	-	-	**125**
2013	-	-	-	-	-	**63**
2014	-	-	-	-	-	**53**
2015	-	-	-	-	-	**59**
2016	101	-	-	-	-	**140**
2017	-	-	-	-	-	**12**
2018	-	-	-	-	-	**57**
2019	-	-	-	-	-	**64**
2020	-	-	-	-	-	**63**
2021	-	-	-	-	-	**16**
2022	-	-	-	-	-	**137**
2023	-	-	-	-	-	**113**
2024	-	7	<1	-	-	**188**
2025*	-	57	1	-	-	**231**
TOTAL	**101**	**64**	**1**	**-**	**-**	**2986**

* Provisional (Data received up to 31 August). - = No Fishing. Blank fields = No data available

Annual catches relative to the TAC for Patagonian toothfish in SEAFO Sub-area D are shown graphically in Figure 3. Catches were about half the TAC in 2022–2024 and rose to 84% (231 tonnes) in 2025.

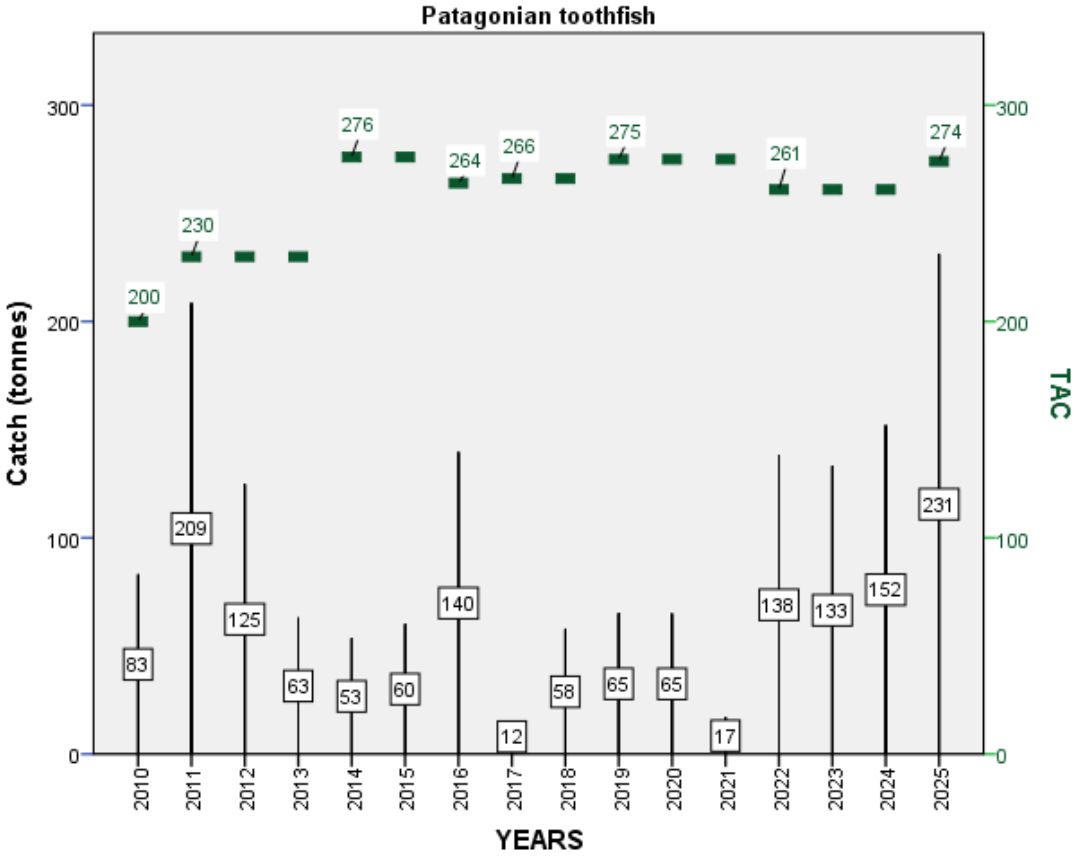


Figure 3: Annual catches in relation to TAC for Patagonian toothfish in SEAFO Sub-Area D (2010- Aug 31, 2025).

1.4 IUU

IUU fishing activity in the SEAFO CA has been reported to the Secretariat in 2012 and 2015-2016. In 2015-2016 it was reported that one IUU vessel (Bolivia) caught 101 tonnes of Patagonian toothfish.
A piece of gillnet was recovered by an authorised fishing vessel in 2024. Its origin is unknown. It could be indicative of IUU fishing activity.

2. Stock distribution and identity

Patagonian toothfish is a southern circumpolar, eurybathic species (70-1,600m), associated with shelves of the sub-Antarctic islands, usually north of 55ºS. Young stages are pelagic (Horn, 2002). The species occurs in the Kerguelen-Heard Ridge, around islands of the Scotia Arc, and in the northern part of the Antarctic Peninsula (Hureau, 1985; DeWitt et al., 1990). It is also reported from the southern coast of Chile northward to Peru and along the coast of Argentina, especially in the Patagonian region (DeWitt, 1990), and from Discovery and Meteor seamounts in the SE Atlantic (Figure 4) and El Cano Ridge in the South Indian Ocean (López-Abellán and Gonzalez, 1999, López-Abellán, 2005).

In SEAFO CA the stock structure of the species is unknown. The CCAMLR Scientific Committee in 2009 noted that in most years since 2003, the main species caught in CCAMLR sub-area 48.6 (adjacent to and directly south of SEAFO Division D) is *D. eleginoides*. The distribution of the species appears to be driven by the sub-Antarctic front which extends into the SEAFO CA.

There were four tags recaptures between SEAFO CA and CCAMLR CA, which suggests connectivity between the two waters. For details, see Section 3.8 Tagging and migration, page 17.

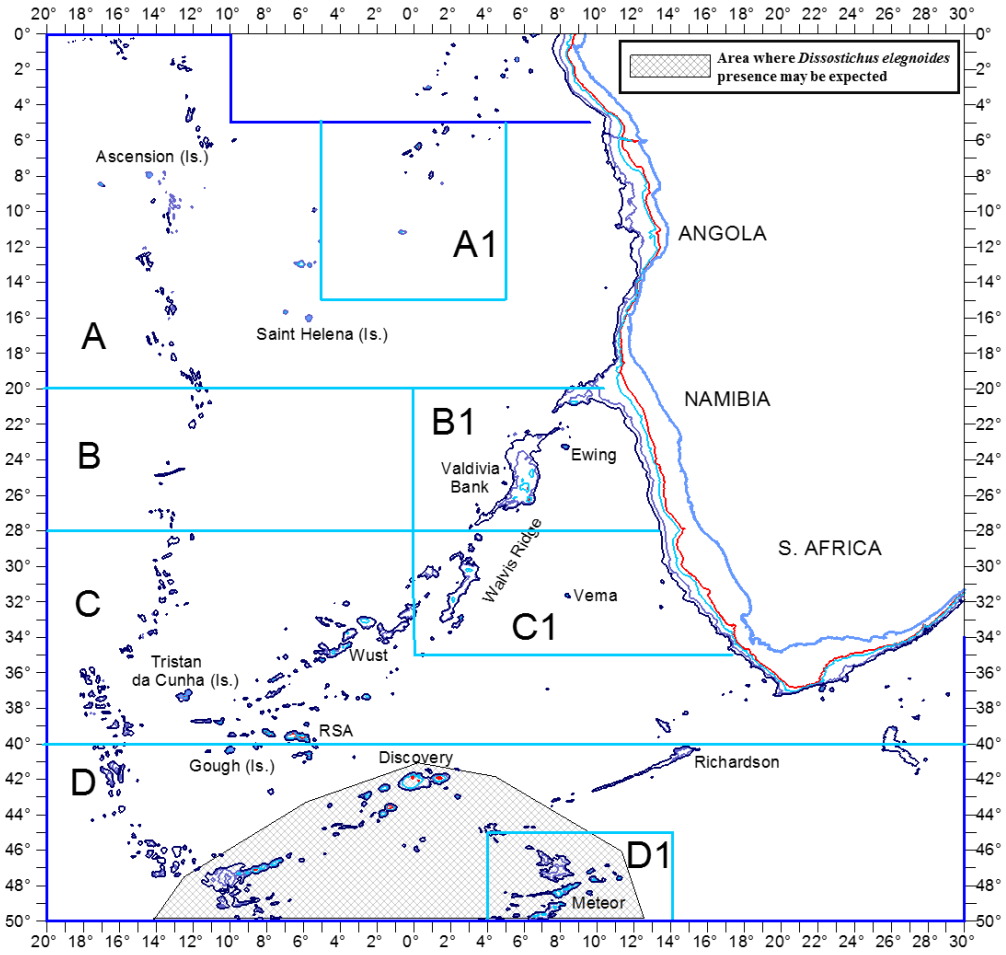


Figure 4: Species geographical distribution in the SEAFO CA
(just north of CCAMLR sub-area 48.6)
(Source: Species profile on the SEAFO website).

3. Data available for assessments, life history parameters and other population information

3.1 Samplings

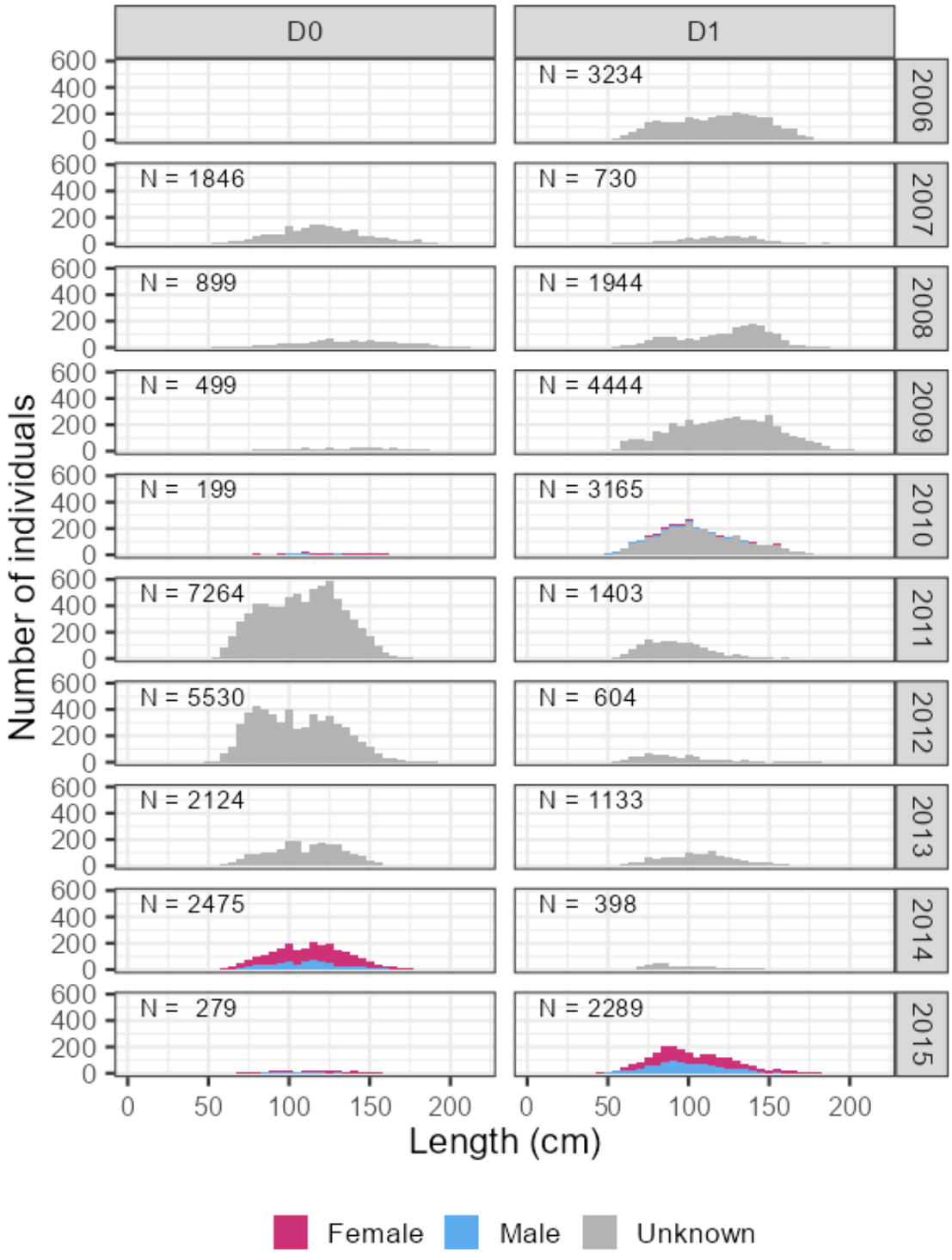
The number of fishing sets sampled for Patagonian toothfish from 2006 onwards indicates an adequate sampling level in line with the SEAFO guidelines for data collection (Table 4). On average, samples were taken from 93% of the total sets, and 23 specimens were measured per sampled set, which is considered acceptable given the length range of the exploited population and meets with the SEAFO sampling protocol (n=20). Annex A shows the number of biological samples collected for Patagonian toothfish: fork length, weight, sex, otoliths, gonad weight, and maturity stage. Information of all biological samples of Patagonian toothfish and bycatch species caught in Patagonian toothfish bottom longline fisheries is available in the Secretariat's database.

Table 4: Annual biological sampling efforts for Patagonian toothfish (2006- Aug 31, 2025) (SEAFO database)

year	Total no. of sets	No.of set with samples	% of sets including samplings	Ave. no. of fish sample/set	Total no. of fish sampled
2006	147	146	99	22	3,235
2007	226	222	98	12	2,577
2008	120	120	100	24	2,843
2009	285	275	96	18	4,943
2010	150	125	83	27	3,364
2011	262	263	100	33	8,667
2012	300	298	99	21	6,134
2013	165	164	99	20	3,258
2014	177	176	99	16	2,874
2015	151	149	99	17	2,568
2016	89	88	99	18	1,551
2017	34	11	32	44	481
2018	100	92	92	21	1,955
2019	123	112	91	19	2,142
2020	80	77	96	30	2,297
2021	17	15	88	35	525
2022	96	94	98	23	2,196
2023	74	74	100	20	1,490
2024	152	144	95	19	2,748
2025	238	232	97	18	4,254
Average	149	144	93	23	3,005

3.2 Length data and frequency distribution

Figure 5 shows the annual total length (%) frequency distributions of Patagonian toothfish catch (samples) in the SEAFO CA (2006-Aug 31, 2025). Distribution patterns and modes vary widely from year to year. Around 135cm is the most common mode in the early years (2006-2009), followed by smaller modes down to around 100cm. A small mode near 70 cm occurred most frequently in D1 in 2024–2025, suggesting possible strong recruitment.



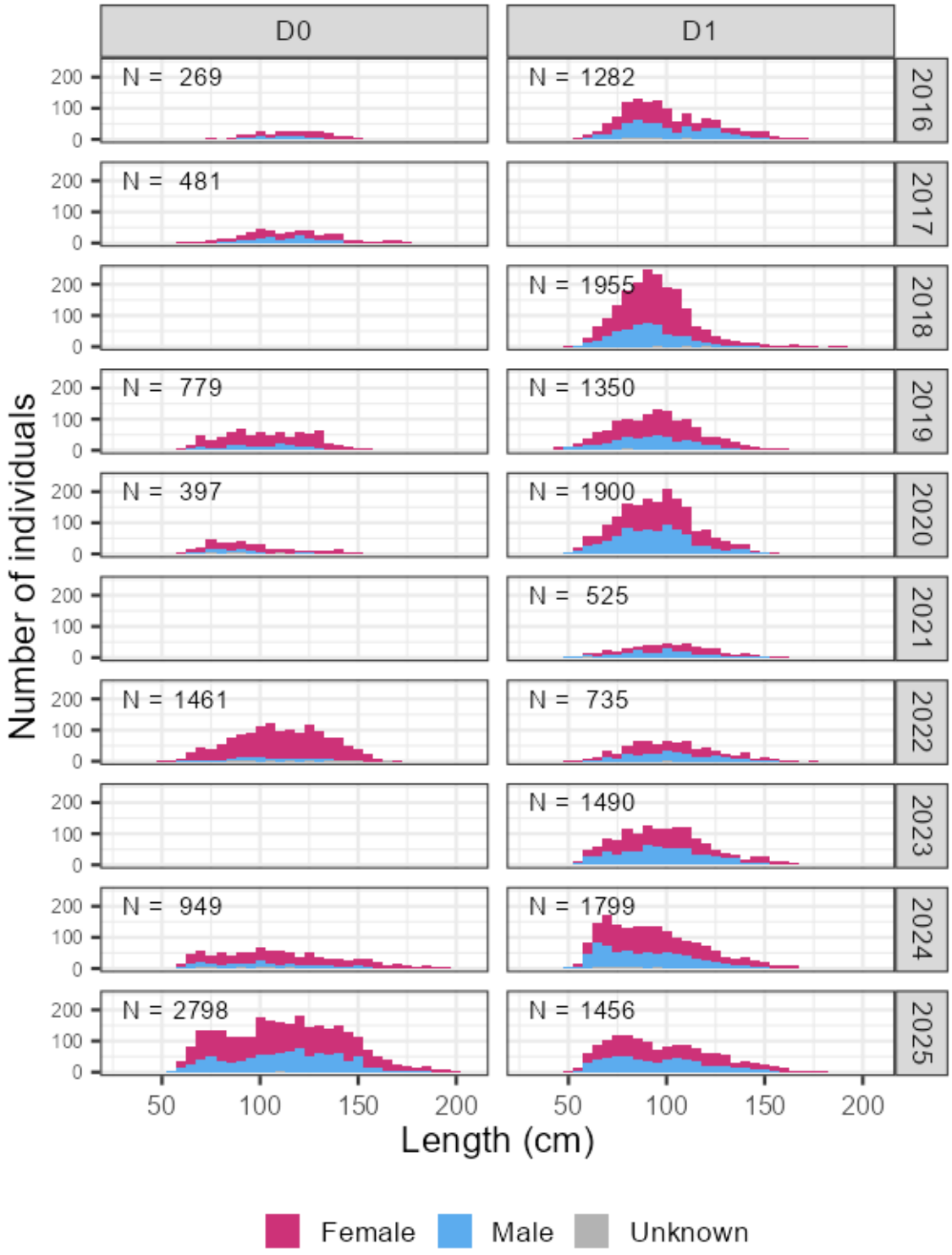


Figure 5: Annual size (total length) frequency distributions of *D. eleginoides* in D1(Meteor) and D0 (Discovery and West) (2006-Aug 31, 2025) by 5cm size classes. The graphs are shown as stacked bars and color-coded by sex.

3.3 Length-weight relationships

Figure 6 shows the length-weight relationships by sex in D1 based on observer data from the Spanish fleet in 2024. Both are similar with less variance.

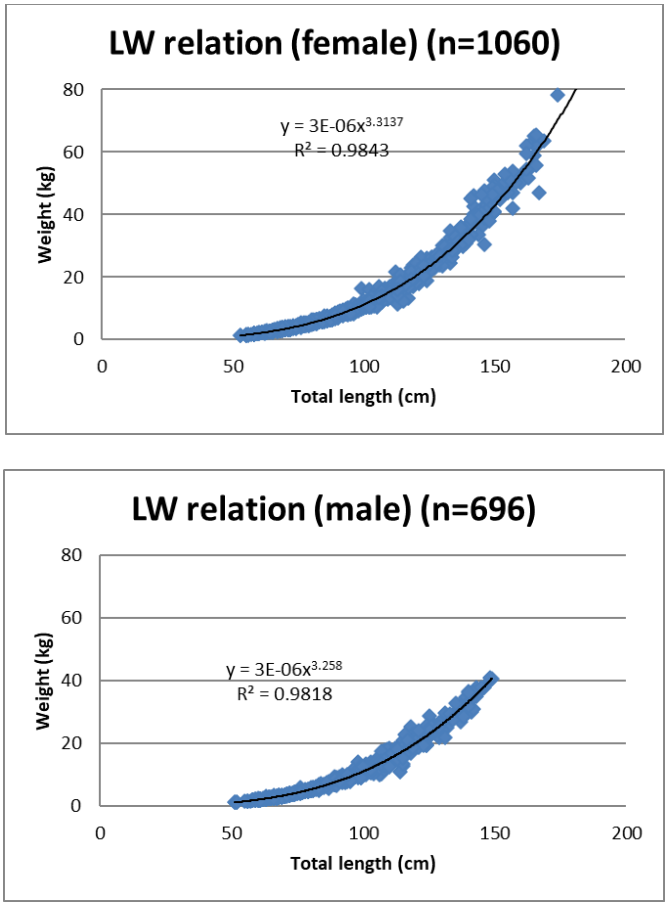


Figure 6: Total length-weight relationships by sex based on the Spanish fleet fishing in 2024

3.4 Age data and growth parameters

There is no available information for this species in SEAFO CA.

3.5 Reproductive parameters

There is no available information for this species in SEAFO CA.

3.6 Natural mortality

There is no available information for this species in SEAFO CA.

3.7 Feeding and trophic relationships (including species interaction)

There is no available information for this species in SEAFO CA.

3.8 Tagging and migration

Table 5 shows the information on tag releases and recaptures in SEAFO and CCAMLR CA, indicating movements between two areas. This implies that the stock is likely to be the same between SEAFO and CCAMLR (sub-area 48.6 adjacent to SEAFO CA and up to Kerguelen adjacent to SIOFA CA).

Table 5 Summary of tag releases and recaptures for Patagonian toothfish in SEAFO and CCAMLR CA.

CA	Release				Recapture			
	#	year	Area	Vessel	#	Year	Area	Vessel
SEAFO	11	2006	Sub area D	Viking Bay (Spain)				
	14	2010	Sub area D					
	117	2023	Div D1	Tronio (Spain)	5	2024	SEAFO Div D1	Tronio (Spain)
	150	2024	Div D1	Tronio (Spain)	1 1	2024 2025	SEAFO Div D1 SEAFO Div D1	Tronio (Spain)
	8	2024	Div D0	Helena Ndume (Namibia)				
	39	2024	Div D0	Shinsei Maru No 8 (Japan)				
	54	2025	Div D0	Tronio (Spain)	1	2025	SEAFO Div D0	Helena Ndume (NAM)
	89	2025	Div D1					
	59	2025	Div D0	Helena Ndume (Namibia)				
	40	2025	Div D0	Shinsei Maru No 8 (Japan)				
CCAMLR		2013	Sub area 48.6		1	2020	SEAFO Div D1	Tronio (Spain)
		2017	Kerguelen 58.5.1		1	2022	SEAFO Div D0	Shinsei Maru No 8 (Japan)
		2013	48.6		1	2025	SEAFO Div D0	Tronio (Spain)
		2013	48.6		1	2025	SEAFO Div D1	Tronio (Spain)

(Note 1) Blank: no information available.

(Note 2) A total of 581 TOP has been tagged and released in the SEAFO CA (2006~2025).

4. Stock assessment and status

At the 9th meeting of the Scientific Committee in 2014 (SC9 (2014)), preliminary stock assessment attempts were made using Y/R analysis, length cohort analysis and ASPIC (production model). However, there was no consensus on the results because the time series were too short and the r^2 (correlation coefficient) of the standardized CPUE was too low (r^2 < 30%). However, SC9 (2014) suggested that all results provided the perception that the current harvest rate (F) was below Fmsy in 2014 (SC9, 2014 report).

As no agreed stock-assessment results are available, two basic indicators — trends in total catch and nominal CPUE — are provided for reference in Figures 7 and 8. The total catch for 2002–2025 generally declined from 2003 onward, with some exceptions, and has shown signs of recovery since 2021 (Figure 7). The annual mean nominal CPUE for 2009–2025 (Figure 8) was high in 2022–2023 (235 kg per 1,000 hooks), while the current level for 2024–2025 (146 kg per 1,000 hooks) has decreased to near the 2012–2021 average (116 kg per 1,000 hooks).

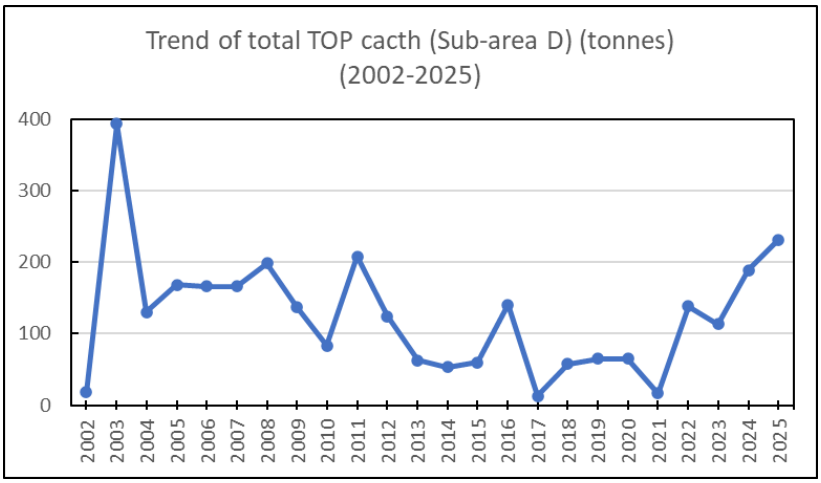


Figure 7: Trend of total catch of Patagonian toothfish in sub-area D (2002-Aug 31, 2025)

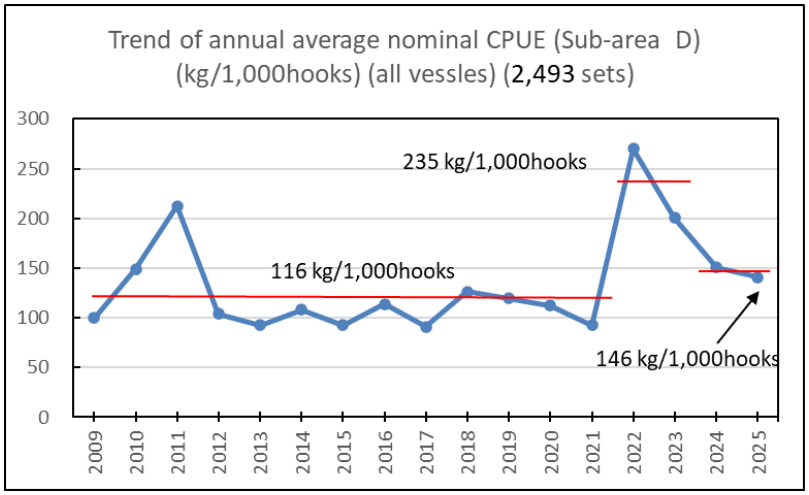


Figure 8: Trend of annual average nominal CPUE in sub-area D (2009-Aug 31, 2025)

Figure 9 shows historical catches of Patagonian toothfish from the Prince Edward Islands EEZ (DFFE, 2025). An experimental fishery began in October 1996. In the two years before that, the stock was heavily exploited by illegal vessels. The toothfish reference-case assessment (the model considered to best reflect stock status and dynamics) is updated annually to check that the resource has not deviated from expectations under the operational management procedure. In October 2024 the reference-case was updated using revised catch data (Figure 9), CPUE, catch-at-length and tagging data through the end of the 2022/23 season. The stock is estimated to remain above B_{MSY} (DFFE, 2025).

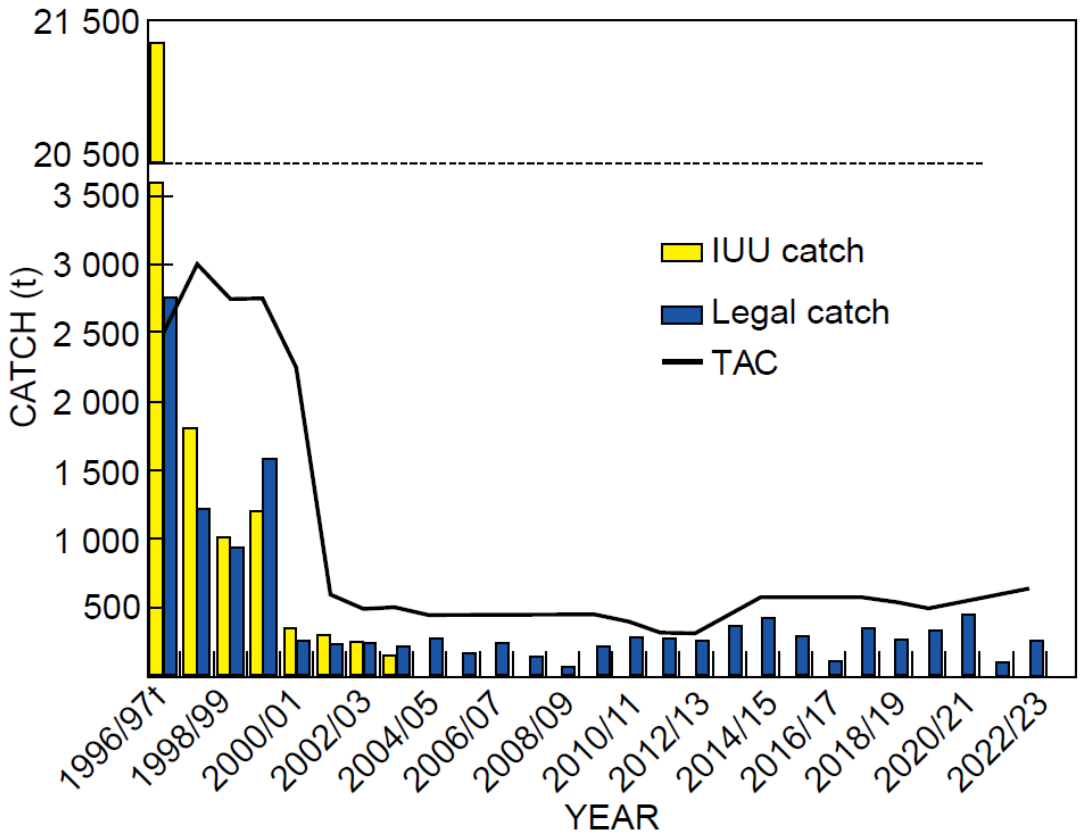


Figure 9: Estimated catches (tonnes) of Patagonian toothfish from the Prince Edward Islands EEZ, shown as legal fishery catches and estimates of illegal, unreported and unregulated (IUU) catches. † Data for the 1996/97 season include legal catches from October–November 1996. Excerpt from Figure 47 of "Status of the South African Marine Fishery Resources 2025".

5. Incidental catch

In this section, incidental catch (VME species, seabird, mammals and turtles) is reported.

5.1 Invertebrate bycatch (VME taxa)

Table 6 shows VME indicator species annual bycatch (16 coral and 3 sponge species) exploited by Patagonia toothfish bottom longline fishery (kg) (2010-Aug 31, 2025) (3 areas). Figure 10 shows their geographic locations.

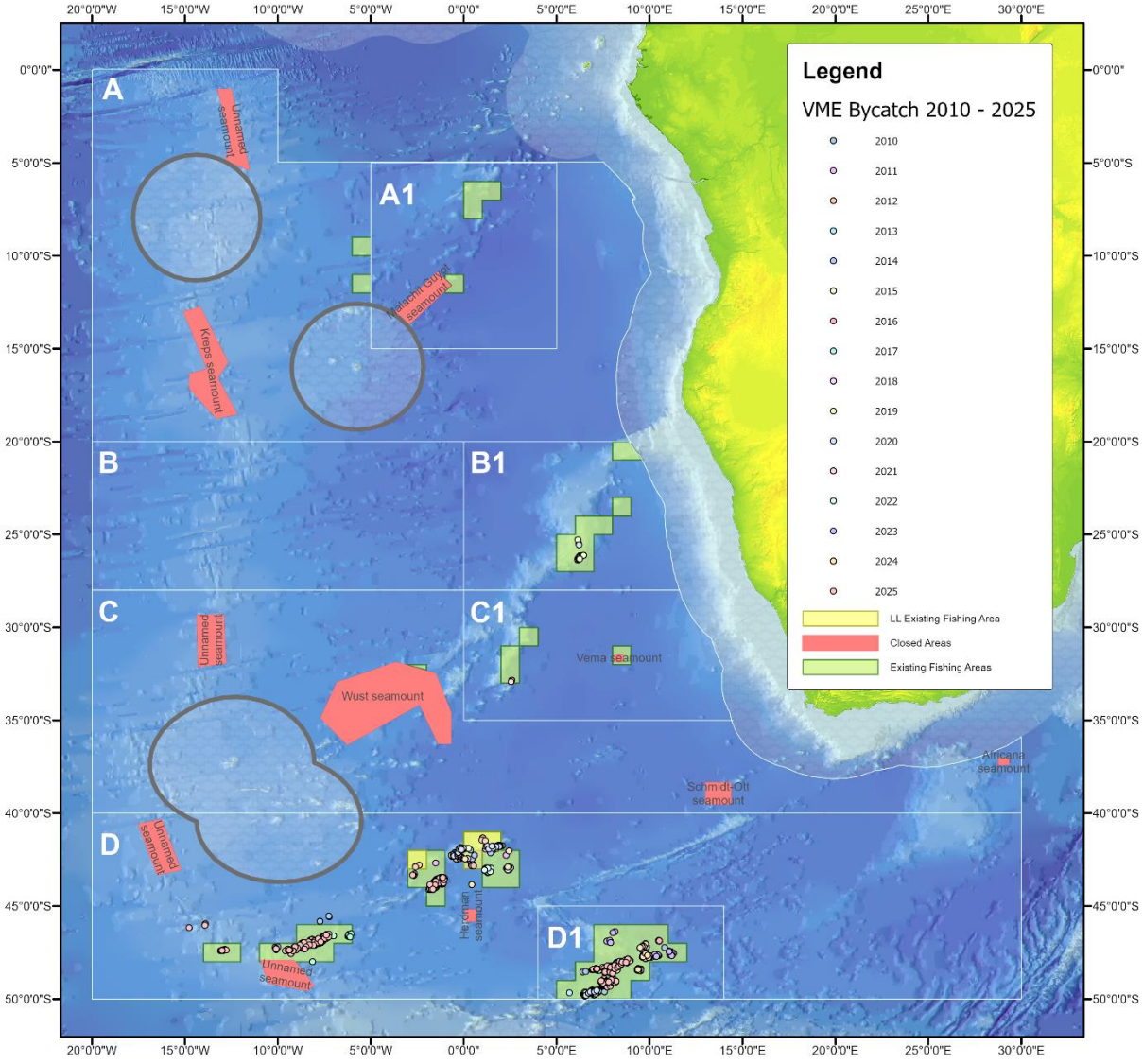


Figure 10: Locations for incidental bycatch of VME indicator species caught in the Patagonia toothfish bottom longline fishery (kg) (2010- Aug 31, 2025). (Note) To date, there are no records on VME indicators species weights exceeding the encounter threshold values.

Table 6: Annual total bycatch wights (kg) of VME indicator species in the Patagonia toothfish bottom longline fisheries by area (2010-Aug 31, 2025) (NF: No fishing operations; Yellow marker: bycatch weight (kg); blank yellow: no bycatch during operation)

type		Corlas (16)																Sponges (3)		
FAO code		GGW	CSS	ATX	OEQ	OWP	AXT	AZN	HXY	AQZ	CWD	AJZ	ZOT	NTW	KQL	HQZ	BZN	PFR	SPO	DMO
English name		Gorgonians	Hard corals madrepores nei	Sea anemones	Basket Star	Basket and brittle stars	Hydrocorals	Hydrocorals	Glass Sponges	Black corals and thorny corals	Feather stars and sea lilies	Soft corals	Zoanthids	Sea pens	Branched bamboo coral	Hydrozoans	Erect bryozoans	Sponges	Sponges	Spomges
Scieitific name		Gorgoniidae	Scleractinia	Actiniaria	Euryalida	Ophiuroidea	Stylasteridae	Anthoathecatae	Hexactinellida	Antipatharia	Crinoidea	Alcyonacea	Zoanthidea	Pennatulacea	Acanella spp	Hydrozoa	Bryozoans	Porifera	Spongidae	Demospongiae
D0 (West)	2010	33.24	1.76	0.10		1.09	0.10			3.86	0.91	0.16	0.14	0.02		0.06		4.89		
	2011																			
	2012	10.42								0.20										
	2013(NF)																			
	2014																			
	2015(NF)																			
	2016(NF)																			
	2017	1.41	6.91		1.14			0.59		0.10		0.06	1.12	0.02				0.52		
	2018(NF)																			
	2019(NF)																			
	2020(NF)																			
	2021(NF)																			
	2022(NF)																			
	2023(NF)																			
	2024	5.75	12.24		0.90				1.94	0.71						6.45				0.12
	2025	70.74	60.77	1.45	7.92		1.45	0.44	16.08	6.04	0.24	2.82					0.10			8.43
	Average	24.31	20.42	0.77	3.32	1.09	0.77	0.52	9.01	2.18	0.57	1.01	0.63	0.02		3.25	0.10	2.71		4.27
D0 (Discovery)	2010	0.65	0.29	0.01		0.16							0.05	0.93				13.13		
	2011	3.81	15.40	0.40																
	2012	19.86	17.60	1.66										0.02					1.20	
	2013	1.12																		
	2014	2.34	2.80	0.20		0.10														
	2015					0.00												0.40		
	2016	0.01	0.68											1.88						
	2017(NF)																			
	2018(NF)																			
	2019	0.02	3.20				0.10		0.64	0.01		0.02	0.08	0.01						
	2020	0.00													0.18		0.12			
	2021(NF)																			
	2022	1.03	1.82	0.00			0.02							0.20						
	2023(NF)																			
	2024	2.80	0.26																	
	2025	14.75	22.71	4.88			4.88		3.50			0.30		2.95				20.01		2.45
	Average	4.22	7.20	1.19		0.09	1.67		2.07	0.01		0.16	0.07	1.00	0.18		0.12	11.18	1.20	2.45
D1 (Meteor)	2010	13.60	0.10	0.90		2.00				0.50	0.10	1.00	0.10	0.30		0.30		11.70		
	2011																			
	2012																			
	2013	0.70		1.20																
	2014	2.60	0.30																	
	2015	0.35				4.90	1.00													
	2016	9.54	3.88			0.60	0.12											0.84		
	2017(NF)																			
	2018	0.60	2.76		1.04		0.94	1.46		0.04							0.08			0.02
	2019	6.93	0.08		0.02							0.06	0.02	0.22						
	2020	17.79		14.82			4.49			0.57		0.54								0.67
	2021	4.21	0.37	0.54								0.07								0.32
	2022	4.64	1.12															1.85		
	2023	16.41	1.03		3.39		1.80		0.98	0.04				0.01						
	2024	41.87	0.18	11.55	17.07		4.77	0.10	23.64	0.12		0.77	1.71	1.24		6.45	0.21			9.85
	2025	36.02	33.01	2.42	20.20		2.42		8.76	0.71		1.02	0.34	0.63			0.31			15.485
	Average	11.94	4.28	5.24	8.34	2.50	2.22	0.78	11.12	0.33	0.10	0.57	0.54	0.48		3.38	0.20	4.80		5.27
	over all average	13.49	10.63	2.40	5.83	1.23	1.55	0.65	7.40	0.84	0.34	0.58	0.41	0.50	0.18	3.31	0.14	6.23	1.20	4.00

5.2 Incidental mortality (seabirds, mammals and turtles)

In the SEAFO CA, five sea birds were caught incidentally in Sub-area D (2014 and 2016) as shown in Table 7.

Table 7: Summary of sea bird bycatch in SEAFO CA.

FAO ASFIS code	DIM	DIX	MAI	PUG
English name	Black-browed Albatross	Wandering Albatross	Southern giant Petrel	Great Shearwater
Scientific name	*Thalassarche melanophris*	*Diomedea exulan*	*Macronectes giganteus*	*Puffinus gravis*
2014	1			2
2016		1	1	

5.3 Bycatch mitigation methods (Sea birds)

No offal dumping during hauling, deployment of bird scaring devices (Tori lines) and bottle test are mandated to mitigate seabird bycatch.

6. Lost and abandoned gear

Figure 11 shows locations the lost gears (2019-2025) based on the observer data.

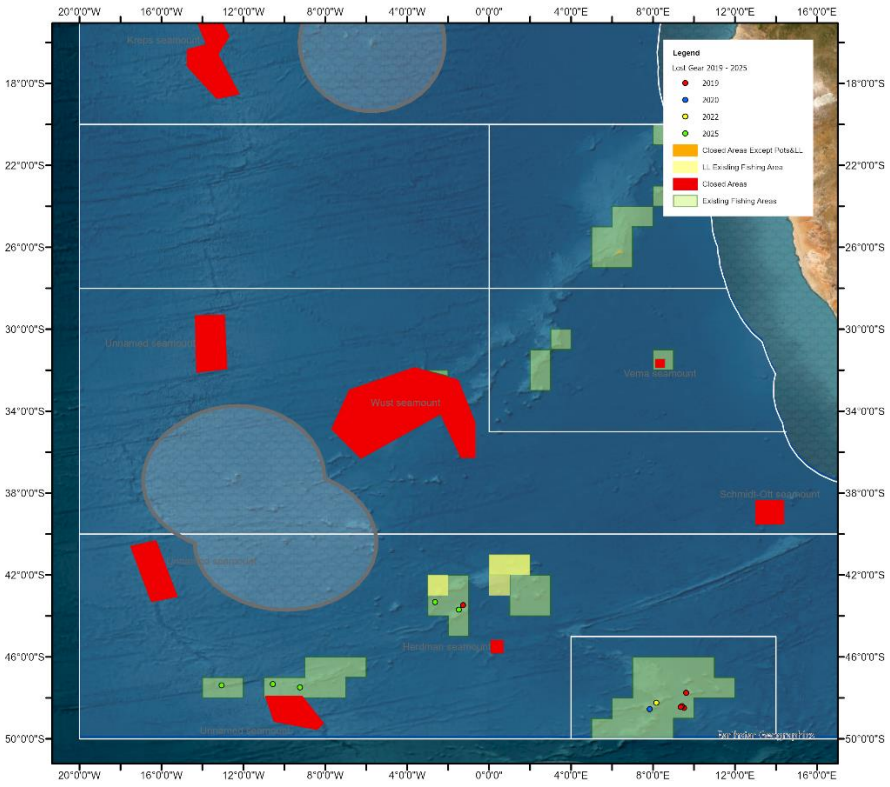


Figure 11: Locations of the lost gears in the Patagonia toothfish bottom longline fishery based on observer data (2019-2025)

7. Current conservation measures and management advice

In 2015, the Commission adopted Harvest Control Rule (HCR) to decide TAC if agreed stock assessment is not available. This HCR had been applied in NAFO (Greenland halibut during 2011-2017), which uses average of slopes of CPUE in recent 5 years (Box 1).

$$TAC_{y+1} = \begin{cases} TAC_y \times (1 + \lambda_u \times slope) & if \quad slope \geq 0 \\ TAC_y \times (1 + \lambda_d \times slope) & if \quad slope < 0 \end{cases}$$

Slope: average slope of the Biomass Indicator (CPUE, Survey) in recent 5 years

- λ_u :TAC control coefficient if slope > 0 (Stock seems to be growing) : λ_u=1
- λ_d :TAC control coefficient if slope < 0 (Stock seems to be decreasing) : λ_d=2
- TAC generated by the HCR is constrained to ± 5% of the TAC in the preceding year.

Box 1: HCR for Patagonian toothfish adopted by the Commission in 2015

In the HCR, standardized CPUE is preferable to apply. Although SC estimated standardized CPUE using generalised linear models (GLM) five times in the past (2014, 2015, 2016-twice and 2018), all results indicated that correlation coefficients (goodness of fitness) were too low (r^2 < 30%) to provide the plausible standardized CPUE for the HCR and SC did not agree to use standardized CPUE for HCR.

Then SC12 (2016) agreed to apply nominal CPUE for the HCR. As nominal Japanese CPUE in the Meteor and Discovery seamounts areas were available almost every year, SC12 (2016) agreed to use the slope of average of two nominal CPUE and applied in 2016 and afterwards.

Using this method, TAC for 2022 and 2023 was computed as 261 tonnes for Sub-Area D in SC (2021). Then SC (2021) recommended TAC for Sub-Area D of 261tonnes and a zero TAC for the remainder of the SEAFO CA for the years 2022 and 2023, which was agreed by the Commission meeting in 2021.

The Commission meeting (2022) requested SC19 (2023) to assess whether the current TAC (261 tonnes) could be carried over to 2024. In this regard, the virtual TAC (2024) was calculated using HCR and resulted in 274 tonnes.

At SC19 (2023) the stock was considered safe and the current TAC (261 tonnes) was considered sustainable to extend through 2024, based on three points: (a) recent catches were at a low level (Figure 7); (b) CPUE in 2022–2023 showed an increasing trend (Figure 8); and (c) the virtual TAC for 2024 (274 tonnes) was higher than the current TAC (261 tonnes).

The Commission meeting (2023) adopted the recommendation that a TAC rollover for 2024

for Sub-Area D of 261 tonnes and a zero TAC for the remainder of the SEAFO CA.

With regard to the TAC for 2025 and 2026, SC (2024) acknowledged that the HCR requirements were not met because the Japanese catch data did not provide a continuous time series for the most recent five years. Applying the exceptional-circumstance protocol for data gaps, three approaches were used to estimate TACs for catches recorded on Meteor and Discovery seamounts:

- TAC estimate of 274 tonnes, calculated from the CPUE slope for the last five calendar years for which Japanese CPUE data are available (2019, 2020 and 2022) (Figure 12A).
- TAC estimate of 271 tonnes, calculated from the CPUE slope for the most recent five fishing years with Japanese CPUE data (2016, 2018, 2019, 2020 and 2022) (Figure 12B).
- TAC estimate of 274 tonnes, calculated from the CPUE slope for the most recent four fishing years (2020–2023) using Spanish CPUE (Figure 12C).

The SC recommended a TAC of 274 tonnes for 2025 and 2026 in the Sub-Area D, calculated from the Japanese CPUE slope over the last 5 calendar years and applying the 5% constraint rule as in previous practice (Figure 12A). The SC further recommended a zero TAC for the remainder of the SEAFO CA for 2025 and 2026. The SC also recommended reviewing the HCR, including the exceptional-circumstance protocol, to clarify the definition of "recent five years" and to ensure that all available data are used when setting future TACs.

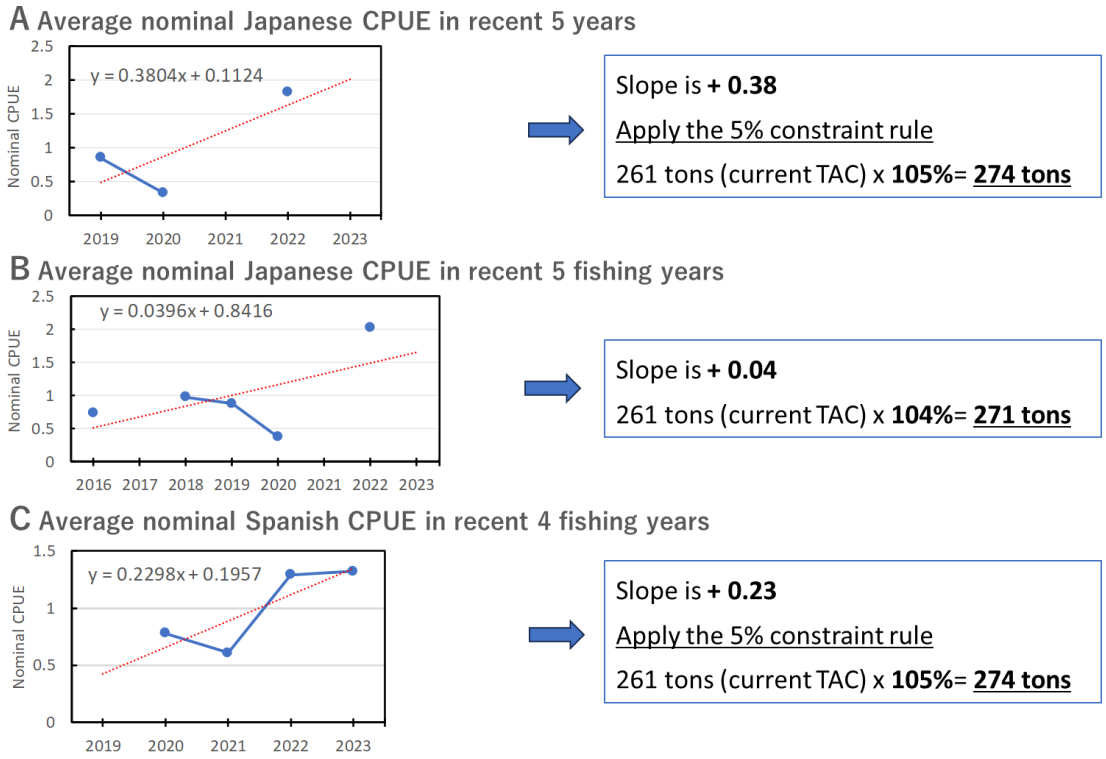


Figure 12: Virtual TAC (2025 and 2026) for Patagonian toothfish based on HCR

Table 8 shows relevant Conservation Measures.

Table 8: Conservation Measures.

Conservation Measure 04/06	On the Conservation of Sharks Caught in Association with Fisheries Managed by SEAFO
Conservation Measure 14/09	To Reduce Sea Turtle Mortality in SEAFO Fishing Operations.
Conservation Measure 25/12	On Reducing Incidental Bycatch of Seabirds in the SEAFO Convention Area
Conservation Measure 30/15	On the Management of Vulnerable Deep Water Habitats and Ecosystems in the SEAFO Convention Area
Conservation Measure TAC-01 (2024)	On Total Allowable Catches and related conditions for Patagonian Toothfish, Deep-Sea Red Crab, Alfonsino, Orange Roughy and Pelagic Armourhead for 2025 and 2026 in the SEAFO Convention Area.

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Annex A: Sample sizes of Patagonian toothfish biological data by year
(2006-Aug 31, 2025)

year	Total length(cm)	Weight (kg)	Sex	Maturity Stage	Gonad Weight (g)	Scale and/or Otolith
2006	3,235					
2007	2,577					
2008	2,843					
2009	4,943	2,175				
2010	3,364	490	482	432		
2011	8,667	1,592				
2012	6,134	1,870				
2013	3,258					
2014	2,874	2,874	2,468	2,467	2,467	800
2015	2,568	2,568	2,567	2,568	2,567	736
2016	1,551	1,551	1,531	1,530	1,529	749
2017	481	472	472	472	472	141
2018	1,955	1,955	1,952	1,935	1,955	479
2019	2,142	2,120	2,096	2,112	2,112	551
2020	2,297	2,268	2,268	2,268	2,233	659
2021	525	525	525	522	292	150
2022	2,196	2,196	2,175	2,175	2,175	576
2023	1,490	1,491	1,491	1,490	1,291	248
2024	2,748	2,713	2,664	2,662	2,389	741
2025	4,254	4,123	4,245	4,245	4,120	1,122
Total	60,102	30,983	24,936	24,878	23,602	6,952