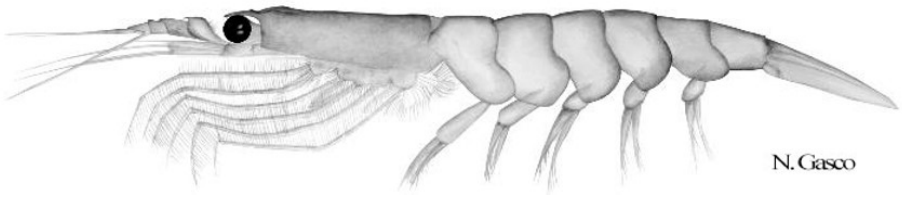
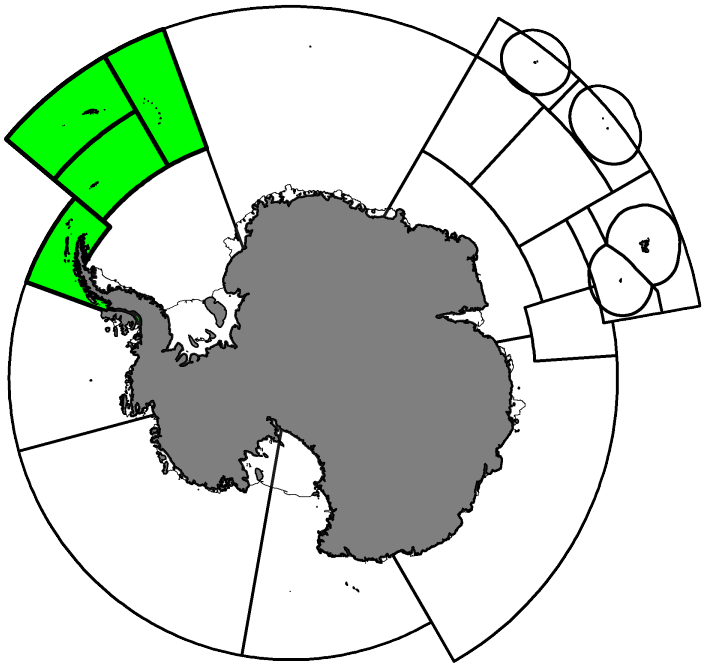
CCAMLR's revised Krill Fishery Management Approach (KFMA) in Subareas 48.1 to 48.4 as progressed up to 2024.

Working Group on Ecosystem Monitoring and Management and CCAMLR Secretariat.

02 March 2026



Antarctic krill, *Euphausia superba* Dana, 1850.



Map of the management areas within the CAMLR Convention Area. Subareas 48.1 to 48.4, the regions discussed in this report are shaded in green. Throughout this report, "2025" refers to the 2024/25 CCAMLR fishing season (from 1 December 2024 to 30 November 2025). Coastlines and ice shelves: UK Polar Data Centre/BAS and Natural Earth. Projection: EPSG 6932.

CCAMLR

Commission for the Conservation of Antarctic Marine Living Resources
Commission pour la conservation de la faune et la flore marines de l'Antarctique
Комиссия по сохранению морских живых ресурсов Антарктики
Comisión para la Conservación de los Recursos Vivos Marinos Antárticos

SCIENTIFIC COMMITTEE

SC-CAMLR-44/BG/02

02 September 2025

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EN

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Working Group on Ecosystem Monitoring and Management and CCAMLR Secretariat.

18 August 2025

This document summarizes the ongoing development of the revised approach to the management of the Antarctic krill fishery. The framework for the revised approach was adopted by CCAMLR in 2019 and integrates three components, namely regular updates of biomass estimates, a population projection model to estimate precautionary harvest rates, and a krill-predator spatial overlap analysis to determine the spatial and seasonal allocation of catch limits.

History of krill fishery management in CCAMLR

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) was established by international convention in 1982 in response to increasing commercial interest in Antarctic krill resources. A summary of the history of the Antarctic krill fishery is given in the krill fishery report. In Subareas 48.1, 48.2, 48.3 and 48.4, limits on krill harvesting are described in Conservation Measure 51-01.

Precautionary catch limits for krill have been determined using a set of decision rules to estimate what proportion of the stock biomass could be fished while still achieving the objective of the Convention. To do this, a simulated population of krill was projected forward in time using a model – the Generalised Yield Model (GYM, Constable and de la Mare, 1996; Constable et al., 2000) – to simulate the effects of different catch levels. For each projection, a starting point is randomly picked from an initial biomass distribution (Fig. 1(A)) and the population is projected forward with key parameters, such as recruitment, drawn at random from plausible ranges to account for natural variability and uncertainty.

The precautionary catch limit for krill is set on the basis of a precautionary constant harvest rate (*gamma*). Using the GYM outputs, the following decision rules (Butterworth et al., 1992; Constable et al., 2000) are applied to determine a precautionary harvest rate (Fig. 1):

1. Choose a harvest rate, *gamma*1, so that the probability of the spawning biomass dropping below 20% of its median pre-exploitation level over a 20-year harvesting period is 10%.

2. Choose a harvest rate, *gamma*2, so that the median escapement at the end of a 20-year period is 75% of the median pre-exploitation level.

3. Select the lower of *gamma*1 and *gamma*2 as the precautionary harvest rate.

The precautionary catch limit is the precautionary harvest rate selected in step 3 multiplied by the estimate of biomass from surveys of that stock, intended to represent B_0, the unexploited biomass.

In 2010, the Scientific Committee agreed that the best estimate of krill biomass within Subareas 48.1, 48.2, 48.3 and 48.4 from the CCAMLR-2000 Survey in Area 48 (Trathan et al., 2001) was 60.3 million tonnes. Using the GYM, CCAMLR agreed to the current precautionary catch limit for krill of 5.61 million tonnes per fishing season (1 December to 30 November of the following year) in Subareas 48.1, 48.2, 48.3 and 48.4 combined (SC-CAMLR-XXIX, paragraph 3.30; Conservation Measure 51-01).

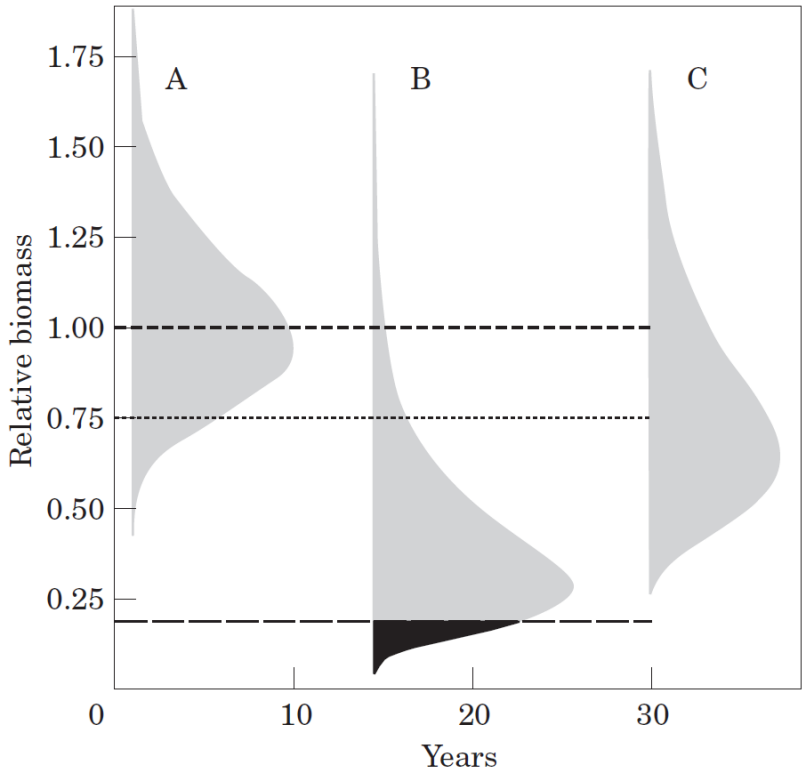

Figure 1: Statistical distributions of krill spawning biomass obtained by 'Monte Carlo' projections of a population model that takes into account the effects of uncertainties in krill demography and unexploited biomass: Distribution A represents the potential unexploited biomasses (dashed line: median); B is the statistical distribution of lowest population biomasses under a constant catch limit selected so that the probability of the biomass dropping below 20% of the pre-exploited median level over a 20-year harvesting period is 10% (large-dashed line); C is the statistical distribution of biomass at the end of 20 years of exploitation under a constant catch limit selected so that median escapement at the end is 75% (dotted line) of the pre-exploited median level. Figure taken from Constable et al., 2000.

In allocating a precautionary catch limit over an area comprised of several Subareas, CCAMLR recognised in the early 1990s that the fishery could become spatially concentrated, which could have localised ecosystem impacts. In recognition of this risk, when CCAMLR first considered possible limits on krill catches in 1991 (CCAMLR-X, paragraphs 6.13-6.17) and adopted a catch limit of 1.5 million tonnes per season in Area 48, it agreed that if the total catch in Subareas 48.1, 48.2 and 48.3 exceeded 620,000 tonnes in any fishing season, catch limits would need to be adopted at a finer spatial scale (Conservation Measure 32/X). In 2000, the Commission agreed that krill catches should not exceed a set (*i.e.*, 'trigger') level in Area 48 (to be determined) until a procedure for dividing the overall catch limit into smaller management units has been established (CCAMLR-XIX, paragraph 10.11). In 2007, the trigger level of 620,000 tonnes for Subareas 48.1, 48.2, 48.3 and 48.4 was adopted (CCAMLR-XXVI, paragraphs 4.47-4.48; Conservation Measure 51-01 (2007)), which the fishery cannot exceed until there is an agreed mechanism to distribute catches geographically such that localised impacts are avoided or minimised. The trigger level value was selected as it represented the sum of the maximum historic catches reported at that time from each Subarea (*N.B.*: the historical catch figures have been updated to 676,303 tonnes since the value was introduced;

see Table 1 in Hill et al., 2016). In 2009, the trigger level was explicitly subdivided into Subareas such that no more than 25% (155,000 t) could be taken from Subarea 48.1, no more than 45% (279,000 t) could be taken each from Subarea 48.2 and Subarea 48.3, and no more than 15% (93,000 t) could be taken from Subarea 48.4 (Conservation Measure 51-07 (2023); Fig. 2). These percentages deliberately summed to more than 100% to provide some flexibility to the fishery in each Subarea while the total catch was capped at the trigger level of 620,000 tonnes to achieve the objective of distributing fishing effort.

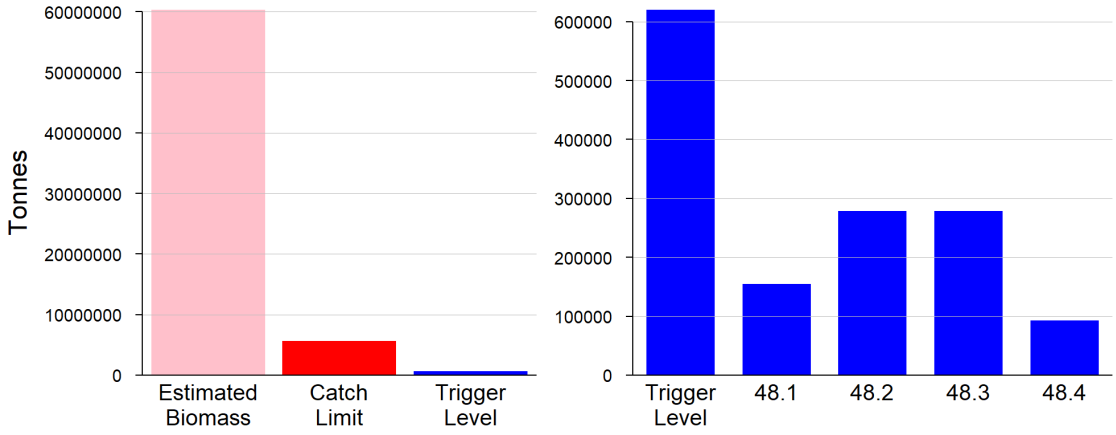

Figure 2: Estimated biomass from the CCAMLR-2000 survey in Area 48, catch limit and trigger levels in Subareas 48.1–48.4 (Conservation Measures 51-01 and 51-07 (2023)).

The current trigger level is not linked to the assessment of krill biomass. In 2010, although the precautionary catch limit was amended from 3.47 million tonnes to 5.61 million tonnes using updated data and projection models, the trigger level value (set when the precautionary catch limit was 1.5 million tonnes) was not changed. However, modelling studies completed after the precautionary catch limit was increased suggest that the risks of not achieving the three principles of conservation articulated in Article II of the Convention may increase substantially as catches increase from the trigger level to the precautionary catch limit (Plagányi and Butterworth, 2012; Watters et al., 2013). Additionally, in discussions related to the use of the GYM, the Working Group on Ecosystem Monitoring and Management (WG-EMM) considered the application of the decision rules used by CCAMLR to determine the precautionary catch limit for krill and noted that for stocks such as krill that experience high interannual variability in abundance, the probability with which the biomass may fall below 20% of the initial biomass may be greater than 0.1 even in the absence of fishing (WG-EMM-10, paragraph 2.78). Given the potential impact of climate change on recruitment variability, the Working Group agreed that both the recruitment variability and the specification of the current decision rule relating to the maintenance of stable recruitment should be investigated.

Fishing effort has become more spatially concentrated since the mid-2000s (Fig. 3). In discussing the revision of the management of the krill fishery, the Scientific Committee expressed concern over the potential implications of the rapid expansion of the krill fishery into data-limited areas such as the Gerlache Strait and noted that the impact of increased krill catches and their spatial and temporal concentration had yet to be evaluated (SC-CAMLR-41, paragraph 3.50). The Scientific Committee noted that this spatial concentration of the fishery

was a major factor driving the need for spatial and temporal management of the krill fishery, and that it had consequences on the scale of future management units (SC-CAMLR-40, paragraphs 3.6 and 3.12).

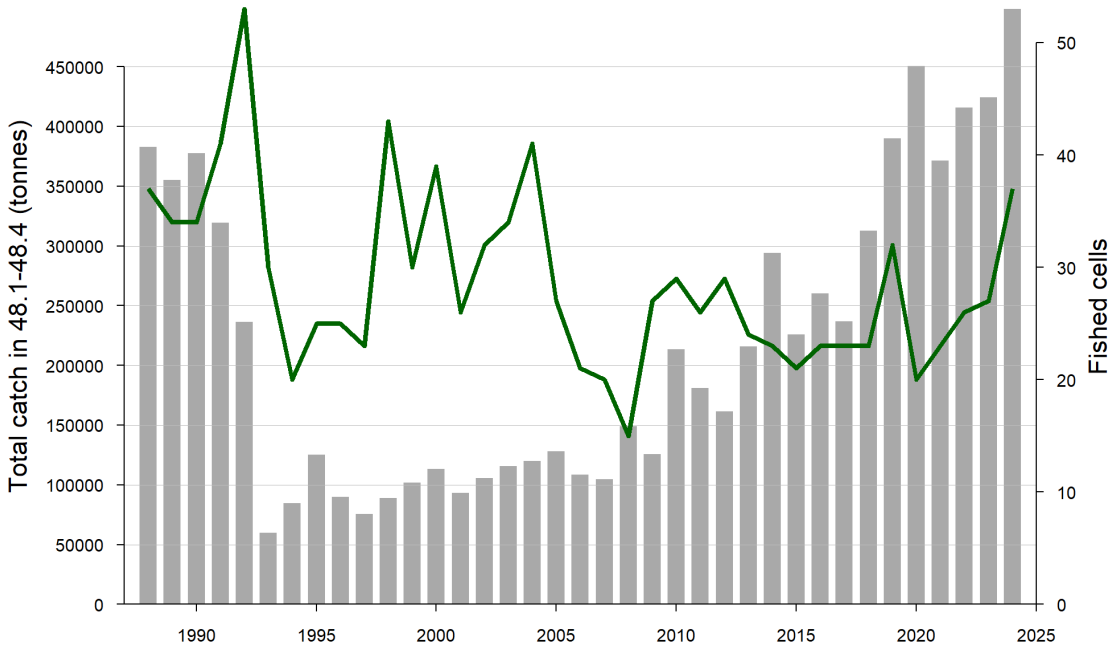

Figure 3: Total krill catch reported in Subareas 48.1–48.4 since 1988 (grey, left axis) and count of spatial cells in which catch has been reported (green, right axis) after aggregation of the data using equal area (100 km x 100 km) cells (see Krill fishery report, Fig. 3).

The development of a program for systematic observer coverage in the krill fishery was first implemented in 2010 (Conservation Measure 51-06 (2009)) starting with a 30% target coverage rate. Over time, this target increased up to 100% starting in the 2021 fishing season (as detailed here).

In 2021, Conservation Measure 51-07 (2021) (as agreed by CCAMLR-XXXV, paragraph 5.19) expired. In 2021 (CCAMLR-40, paragraph 6.12), 2022 (CCAMLR-41, paragraph 4.21), and 2023 (CCAMLR-42, paragraph 4.31) the Commission agreed to 1-year extensions to enable further progress on the revision of the Krill Fishery Management Approach (KFMA).

In 2024, following extensive discussions by the Scientific Committee (SC-CAMLR-43, paragraphs 2.2, 2.18–2.113) and the Commission (CCAMLR-43, paragraphs 4.13–4.44), the Commission did not reach consensus to extend Conservation Measure 51-07 (2023) further, and it therefore expired at the end of the 2024 fishing season (CCAMLR-43, paragraph 4.45). As such, starting in the 2025 fishing season, the total combined catch in Subareas 48.1–48.4 will be limited to 620,000 tonnes (Conservation Measure 51-01) without further spatial distribution of the trigger level between Subareas or within any of the Subareas.

The revised Krill Fishery Management Approach (KFMA)

In 2019, the Commission endorsed (CCAMLR-38, Paragraph 5.17) a three-component (Fig. 4) revision of the KFMA, comprising:

(i) a stock assessment to estimate precautionary harvest rates,

(ii) regular updates of biomass estimates, initially at the subarea scale, but potentially at multiple scales,

(iii) a risk assessment framework to inform the spatial allocation of catch.

In 2021, noting the greater availability of data in Subarea 48.1 than in 48.2, 48.3 and 48.4, the Scientific Committee endorsed (SC-CAMLR-40, paragraph 3.13) the recommendation of WG-EMM-2021 (paragraph 2.66) that the development of management advice for these other Subareas will take longer. Consequently, scientific efforts have focused on Subarea 48.1. However, not all CCAMLR Members agree with such a staged approach due to the connectivity between Subareas, and consider that a coordinated management framework across Area 48 would be preferable.

The revision of the KFMA has involved efforts from all Working Groups of the Scientific Committee, which has developed an ambitious list of tasks (SC-CAMLR-40, paragraph 3.24).

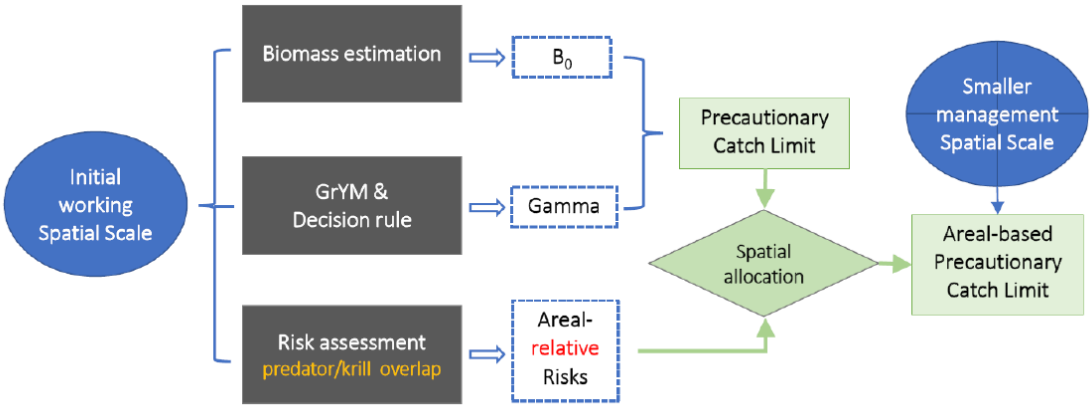

Figure 4: The three components and workflow of the revised KFMA. Figure taken from SC-CAMLR-40 (Annex 8, Figure 1).

A central element to the revision of the management of the krill fishery in Subarea 48.1 is its subdivision into smaller areas (*i.e.*, management units). While considering data availability (in particular acoustic data), distribution of fishing effort and scenarios tested within the risk assessment framework, the Scientific Committee endorsed candidate management units in 2024, whilst recognising that these could be adjusted in future if required (paragraph 2.63 and Fig. 1 in SC-CAMLR-43; Fig. 5 below). The krill catch history, split according to these management units is given in Figure 6 and Table 1.

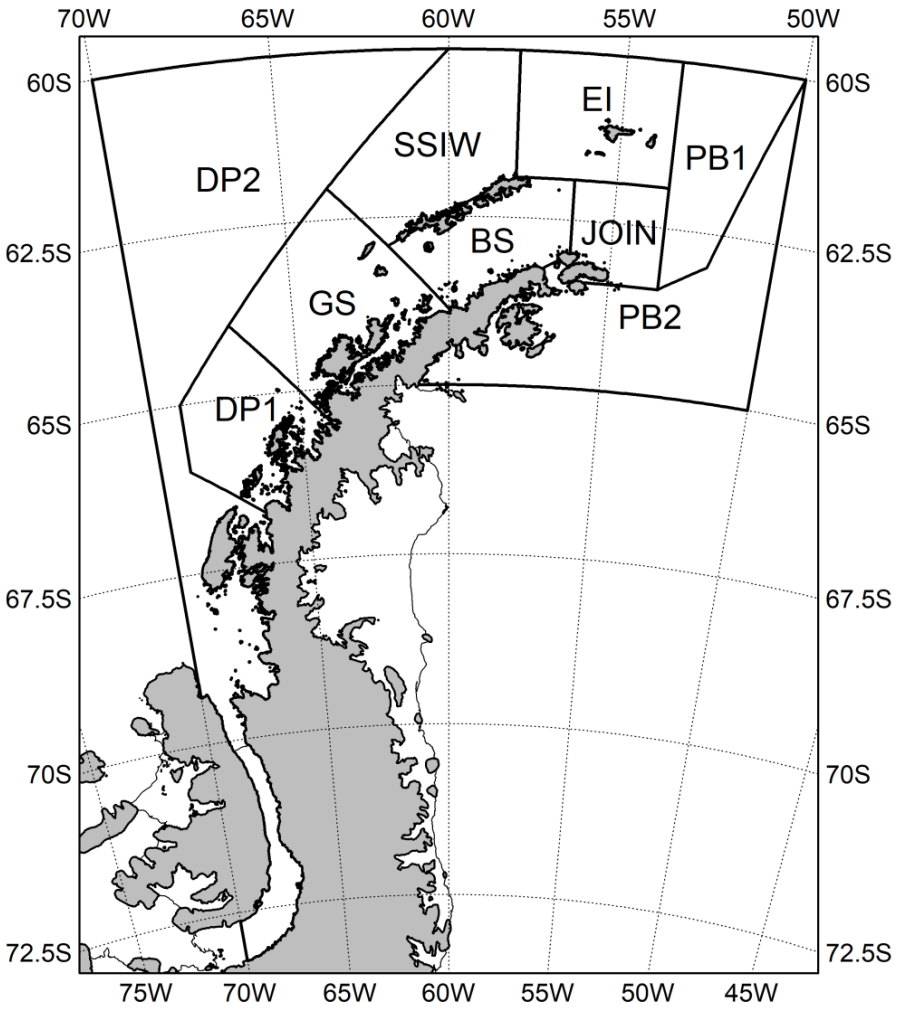

Figure 5: Candidate krill fishery management units in Subarea 48.1, as of 2024. EI – Elephant Island, JOIN – Joinville, BS – Bransfield Strait, SSIW – South Shetland Islands West, GS – Gerlache Strait, DP – Drake Passage, PB – Powell Basin. Sources: CCAMLR/UK Polar Data Centre/BAS and Natural Earth. Projection: EPSG 6932 (rotated). https://github.com/ccamlr/geospatial_operations.

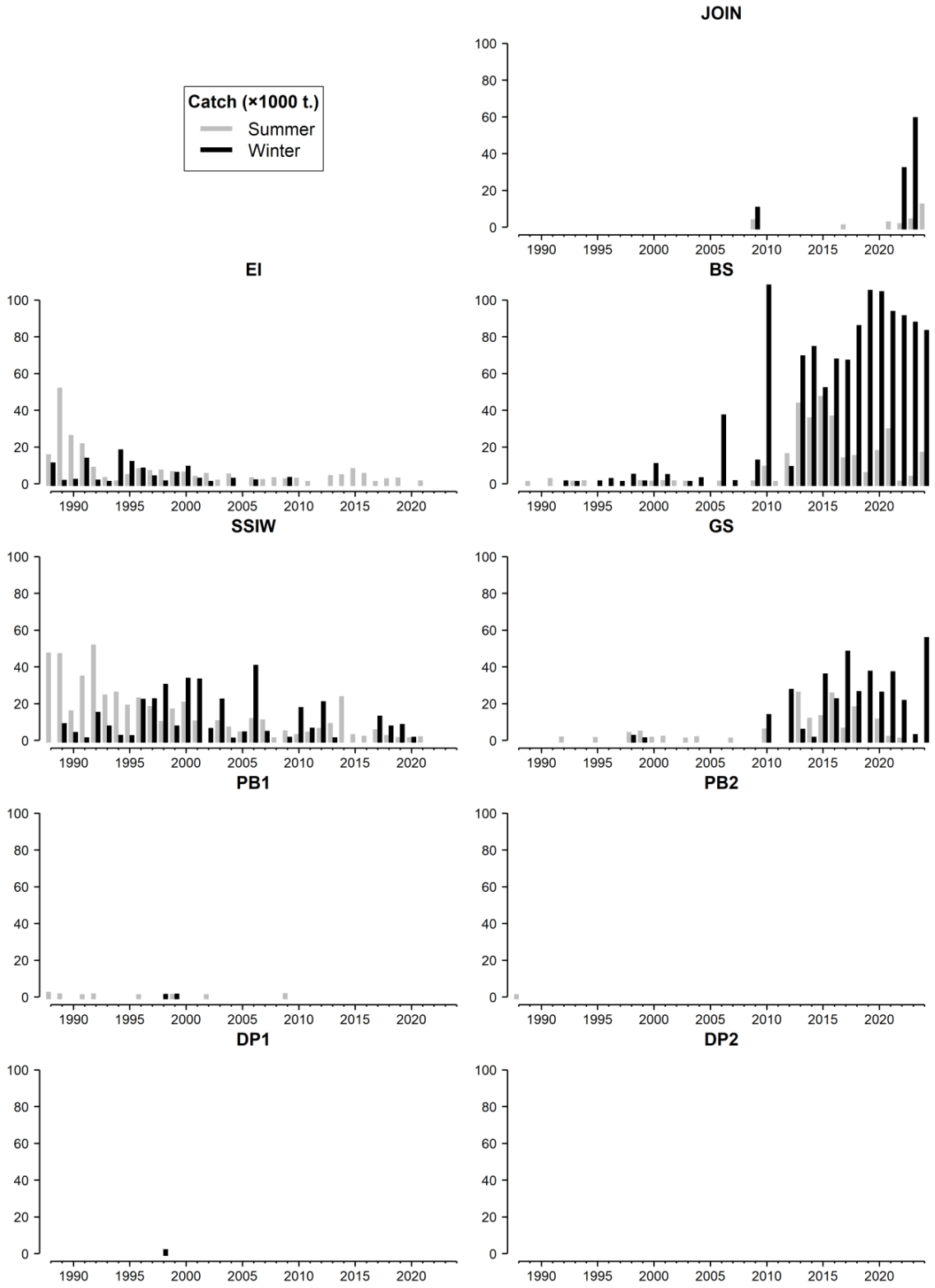

Figure 6: Catch history (×1000 tonnes) in each candidate krill fishery management unit in Subarea 48.1. Summer: 1 Oct – 31 Mar; Winter: 1 Apr – 30 Sept. JOIN – Joinville, EI – Elephant Island, BS – Bransfield Strait, SSIW – South Shetland Islands West, GS – Gerlache Strait, PB – Powell Basin, DP – Drake Passage.

Table 1: Catch history (×1000 tonnes) in each candidate krill fishery management unit in Subarea 48.1. Summer: 1 Oct – 31 Mar; Winter: 1 Apr – 30 Sept. JOIN – Joinville, EI – Elephant Island, BS – Bransfield Strait, SSIW – South Shetland Islands West, GS – Gerlache Strait, PB – Powell Basin, DP – Drake Passage.

	JOIN		EI		BS		SSIW		GS		PB1		PB2		DP1		DP2
Season	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
1988			14.7	10.1	0.0		46.3		0.0		1.4		0.1		0.0		0.0
1989			50.9	0.7	0.1		46.2	8.1	0.0	0.0	0.6				0.0		
1990	0.0		25.2	1.4	0.0		15.0	3.2	0.0		0.0						
1991			20.6	12.9	1.8		33.9	0.3	0.1		0.1						
1992	0.1		7.9	0.9	0.1	0.5	50.7	14.0	0.7		0.6	0.0	0.0	0.0	0.0		0.0
1993			2.3	0.1	0.3	0.1	23.6	6.7	0.0				0.0				
1994			0.4	17.3	0.5		25.2	1.7	0.0								
1995		0.0	4.0	11.1		0.4	18.1	1.5	0.5								
1996			7.1	7.4		1.8	22.0	21.2			0.2		0.1				
1997			6.2	3.2	0.1	0.2	17.3	21.5			0.0						
1998			6.4	0.4		4.1	9.2	29.4	3.2	1.6	0.0	0.3			0.0	1.0	0.0
1999	0.0		5.5	5.1	0.5	0.5	16.0	6.7	3.9	0.2	0.2	0.4		0.0			0.0
2000			5.2	8.4	0.3	10.0	19.7	32.7	0.6			0.1		0.0			
2001			2.8	1.9	0.6	4.0	9.5	32.3	1.1	0.0	0.0						
2002			4.5	0.1	0.4	0.0	0.0	5.4	0.0	0.0	0.2						
2003			0.9	0.0	0.3	0.2	9.6	21.4	0.1	0.1	0.0	0.0					
2004			4.3	1.9	0.0	2.3	6.1	0.1	0.9		0.0	0.0					
2005			0.0	0.0	0.0	0.0	3.5	3.5									
2006			2.2	1.1	0.3	36.4	10.8	39.7	0.0								
2007			1.2		0.1	0.6	10.1	3.7	0.2	0.0		0.0					
2008			2.3				0.3										
2009	2.9	9.7	1.6	2.3	0.4	11.8	4.1	0.6	0.0		0.7		0.0				
2010			1.9		8.5	107.1	2.0	16.8	5.1	13.0	0.0				0.0		0.0
2011			0.1	0.0	0.1	0.0	3.3	5.6	0.1	0.0							
2012	0.0		0.1	0.0	15.3	8.4	5.4	19.9	0.1	26.7							
2013			3.4		42.7	68.5	8.2	0.3	25.2	4.9							
2014			3.8		34.7	73.6	22.7		11.0	0.6							
2015			7.1		46.4	51.2	2.0		12.3	35.1							
2016		0.0	4.6	0.0	35.7	66.8	1.1		24.8	21.5							
2017	0.2		0.2		13.0	66.1	4.6	12.1	5.6	47.4				0.1			
2018	0.0		1.6	0.1	14.3	84.9	1.5	6.6	17.2	25.5	0.0						
2019	0.0		2.0	0.0	5.0	104.2	0.5	7.6	0.0	36.5							0.0
2020					17.0	103.5	0.3	0.6	10.4	25.2	0.0						
2021	1.7		0.4		28.8	92.6	0.9		1.0	36.2							
2022	0.7	31.3			0.3	90.3		0.0	0.2	20.6							
2023	3.3	58.5			2.9	86.8		0.0		2.1							
2024	11.5		0.0		16.0	82.4	0.0		0.0	54.8							

The sections below provide details on the three components of the revised KFMA as progressed from 2020 to 2024, as well as additional elements under consideration. Although these were considered by all Working Groups and the Scientific Committee, each was a focus topic for a particular Working Group:

- Working Group on Acoustic Survey and Analysis Methods (WG-ASAM): biomass estimates based on acoustic surveys,
- Working Group on Statistics, Assessments and Modelling (WG-SAM): krill population projection model configuration,

- Working Group on Ecosystem Monitoring and Management (WG-EMM): recruitment modelling, projection model parameter values and spatial overlap analysis,

- Working Group on Fish Stock Assessment (WG-FSA): Synthesis and provision of resulting advice to the Scientific Committee.

Biomass estimates

Within Subarea 48.1 both recent (Kasatkina et al., 2021; Krafft et al., 2021; Wang et al., 2021) and historic (*e.g.*, Reiss et al., 2008) data from acoustic surveys are available. In 2022, discussions in WG-ASAM and WG-EMM resulted in an agreement on the use of the available acoustic data (WG-EMM-2022, paragraphs 2.34 and 2.35); the best contemporary estimate would, for the purpose of an initial revision of catch limits in Subarea 48.1, be obtained by computing the long-term average of historic data for strata with several surveys, and, using the lower bound of the one-sided 95% confidence interval (assuming a lognormal distribution) for strata with a single survey. Should strata surveys occur annually in the future, the Working Group considered that a five-year window to average acoustic biomass estimates may become appropriate.

The biomass estimates for each management unit (Table 3 in SC-CAMLR-41) were developed based on the density estimates and CVs collated in WG-EMM-2021/05 Rev. 1 with the methods described above, and scaled to the updated management units following WG-ASAM-2022 methodology (paragraphs 3.19–3.22, Table 9 in WG-ASAM-2022).

While noting these discussions (SC-CAMLR-41, paragraphs 3.16–3.22), the Scientific Committee recommended that given the periodic and dynamic nature of krill population dynamics, future catch limits should be revised frequently to ensure a precautionary management of the krill fishery (SC-CAMLR-41, paragraph 3.24), and it noted that the use of fishing vessels to undertake regular acoustic surveys within management strata will be essential to obtain regular biomass estimates (SC-CAMLR-41, paragraph 3.25).

In 2023, WG-ASAM documented the workflow of krill biomass estimation in Subarea 48.1 (Appendix E in WG-ASAM-2023), and the R code and data files were subsequently made available to CCAMLR scientists via a GitHub repository. WG-ASAM further progressed the development of acoustic survey protocols for fishing vessels (Appendix D in WG-ASAM-2023) and the standardisation of the spatial definition of management areas.

In 2024, WG-ASAM progressed the development of protocols, including for echosounder calibration (Appendix D in WG-ASAM-2024), trawl sampling (Appendix E in WG-ASAM-2024) and CTD sampling (Appendix F in WG-ASAM-2024). WG-ASAM noted that biomass estimates extrapolated into areas that had not been surveyed should be treated with caution (WG-ASAM-2024, paragraph 3.28) and developed an additional survey strategy (WG-ASAM-2024, paragraphs 3.29–3.34), including proposed transects and sampling stations, with three options for the spacing of stations (Fig. 7). The Scientific Committee noted that these transects would be appropriate to derive krill biomass estimates from the agreed management units (SC-CAMLR-43, paragraph 2.64) and agreed that a pragmatic approach was needed in terms of fishing vessel capability when conducting such surveys (SC-CAMLR-43, paragraph 2.51).

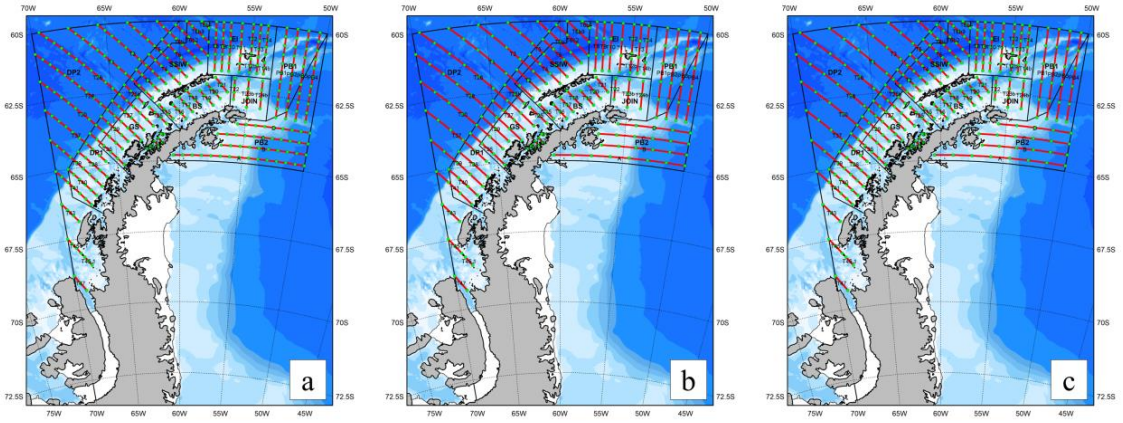

Figure 7: Proposed transects (red) and sampling stations (green) with a maximum station spacing of a) 20 nautical miles, b) 40 nautical miles, or c) 20 nautical miles within the spatial overlap analysis footprint (SOA) and of 40 nautical miles outside of the SOA footprint. The transects are identical across all 3 maps. Sources: GEBCO/CCAMLR/UK Polar Data Centre/BAS and Natural Earth. Projection: EPSG 6932 (rotated). https://github.com/ccamlr/geospatial_operations.

Precautionary harvest rate (*gamma*)

In 2019, the GYM was recoded in R (Maschette et al., 2023) and named Grym (Generalised R Yield Model). The Grym reproduces the GYM software core functionalities and presents advantages compared to GYM. It provides more flexibility in parameters and functionality, uses an improved method for solving differential equations, includes more possibilities for recruitment formulations, works on any platform that can run R (Windows, Mac, Linux), and its code is easier to read and is publicly available.

The value for *gamma* depends, among other things, on the recruitment variability used in the projections. In 2022, the Scientific Committee endorsed (SC-CAMLR-41, paragraph 3.31) the recommendations by WG-FSA-2022 (paragraphs 7.18 and 7.19) to use the US AMLR survey recruitment series from all trawls (day and night) from years which cover all four strata, including data from the Joinville stratum, as well as the Russian Subarea 48.1 survey to derive recruitment parameters for the Grym. The mean and standard deviation of the proportional recruitment from the 12 surveys were 0.5047 and 0.2406 respectively. All other model parameters were chosen from scenario 18 of WG-FSA-2021/39 to be consistent with the models presented in WG-FSA-2022/39. The inputs to the model and the results were presented in Appendix G of WG-FSA-2022.

The Scientific Committee endorsed the value of *gamma* for Subarea 48.1 generated using the Grym of 0.0338 (SC-CAMLR-41, paragraph 3.33). It noted that it was the first revision to this parameter for several decades and that it was based on the best available science.

The Scientific Committee noted that it would be useful to record the sources of uncertainty in the estimation of *gamma* and that the parameter should be revised based on updated Grym models as new sources of data become available (SC-CAMLR-41, paragraph 3.32).

In 2023, WG-SAM discussed the preliminary results of a pilot integrated stock assessment model for krill and noted its usefulness in providing an additional approach to assessing krill stock status (WG-SAM-2023, paragraphs 4.1–4.3). Further work was identified to examine the sensitivity of the Grym to fishery selectivity parameters and seasonal patterns in natural mortality (SC-CAMLR-42, paragraphs 2.44–2.49).

In 2024, noting efforts towards the development of integrated stock assessments for krill by American, Chilean and Chinese scientists (*e.g.*, WG-SAM-2024, paragraphs 2.1–2.9), WG-SAM encouraged coordination between model development teams as well as communication with finfish integrated stock assessment modelers (WG-SAM-2024, paragraphs 3.1 and 3.2).

Spatial allocation of catch limits

The Spatial Overlap Analysis (previously termed the Risk Assessment Framework; SC-CAMLR-41, paragraph 3.36; Warwick-Evans et al., 2022) was introduced in 2016 (WG-FSA-16, paragraph 8.3) and aims to minimise the risk of predator populations, in particular land-based predators, being inadvertently or disproportionally affected by the krill fishery. It was endorsed by the Scientific Committee and Commission in 2019 as part of the three-component (Fig. 4) revision of the KFMA, and has been extensively developed since then for Subarea 48.1 (WG-EMM-2022/17).

The spatial overlap analysis computes the relative spatial and seasonal overlap between krill and its predators within a region and can evaluate overlap associated with different scenarios to subdivide the catch (WG-FSA-2022, paragraph 7.23). It produces "*alpha*" values (proportions of catch allowed) for each management unit and each season which quantify that overlap, with lower *alphas* where the overlap is greater. *Alpha* values sum to 1 across all of the spatio-temporal units included in an analysis. Catch limits are then allocated by multiplying the overall Subarea 48.1 catch limit (product of biomass multiplied by precautionary harvest rate *gamma*) by the *alpha* of each management unit, in each season. For example, a low alpha value allocated to the Bransfield Strait in summer due to the higher relative overlap with predators, would result in a low catch limit in that area (paragraph 7.30 and Table 10 in WG-FSA-2022).

While noting existing data deficiencies, especially in winter, the Scientific Committee applied the spatial overlap analysis (based on the *alphas* from the 'AMLR strata new5' baseline scenario given in WG-FSA-2021/16, as reported in Table 10 in WG-FSA-2022) to the new management units used by WG-ASAM-2022, and determined precautionary catch limits (SC-CAMLR-41, paragraph 3.45) in each management unit, for winter and summer (Table 2 in SC-CAMLR-41). Members had, however, diverging views on the required changes to Conservation Measures (SC-CAMLR-41, paragraphs 3.59–3.61) and were not able to provide consensus advice to the Commission for the implementation of these catch limits (SC-CAMLR-41, paragraphs 3.67–3.69).

In 2023, the Scientific Committee discussed the potential use of temporal analyses to distinguish between oceanic transports and natural mortality as drivers of krill availability (SC-CAMLR-42, paragraphs 2.57–2.59).

In 2024, an updated implementation of the spatial overlap analysis was presented including scenarios accounting for the potential closure of areas under the Domain 1 Marine Protected

Area (D1MPA) proposal (SC-CAMLR-43, paragraph 2.71). Noting the data limitations and other caveats affecting the application of the spatial overlap analysis, the Scientific Committee encouraged collaboration between Members to further progress this analysis (SC-CAMLR-43, paragraphs 2.72–2.75).

Additional elements under consideration

Apart from the three foundational elements of the revision of the KFMA, several other topics are considered by the Scientific Committee and the Commission, including (CCAMLR-41, paragraph 4.17):

(i) the monitoring of catch and fishery closure forecasting at smaller spatial scales,

(ii) the harmonisation and/or integration of different spatial management initiatives within Subarea 48.1, including the ARK voluntary restricted zones and the D1MPA proposal,

(iii) future monitoring of krill biomass and other components of the ecosystem, including fish by-catch, krill dependent predator species, especially in data-limited areas such as the Gerlache Strait, and the assessment of the potential impacts of the increased fishery on the ecosystem.

In 2022, based on the current understanding that a proportion of the krill stock is transported by currents from Subarea 48.1 to Subareas 48.2 and 48.3, the Scientific Committee indicated that a holistic approach to all Subarea catch limits is required when fully implementing the revised KFMA (SC-CAMLR-41, paragraph 3.26). The Commission noted (CCAMLR-41 paragraph 4.12) the Scientific Committee's consideration of the management implications of applying these new catch limits, in particular the need to acquire new monitoring data as catch limits increase, and the integration of krill fishery management in Subarea 48.1 with the D1MPA proposal (SC-CAMLR-41, paragraphs 3.43–3.66) to coordinate efforts and develop a coherent approach for the conservation and rational use of marine living resources. This would be supported by a revised data collection plan (Table 1 in SC-CAMLR-41), an enhanced CEMP (SC-CAMLR-41, paragraph 3.8, 3.41, 3.48), and the development of a krill stock hypothesis (SC-CAMLR-41, paragraph 3.28).

In 2023, WG-EMM devised four teams to analyse the existing CEMP data as well as to progress the enhanced CEMP (WG-EMM-2023, paragraph 5.65), and developed an ambitious Krill Stock Hypothesis Information Collection Plan (Table 1 in WG-EMM-2023). The Krill Fishery Observer Workshop (WS-KFO-2023) gathered CCAMLR krill scientists, scientific observers, and fishery operators to review and discuss workload, and refinement of sampling protocols (WG-FSA-2023, paragraphs 3.44 and 3.45). Noting the needs highlighted by its Working Groups, the Scientific Committee recommended (SC-CAMLR-42, paragraph 2.71):

(i) implementation of a revised KFMA in Subarea 48.1 should be accompanied by enhanced ecosystem monitoring at appropriate scales in those management strata that are fished,

(ii) such monitoring could include data collected on vessels and at breeding sites, using remote observations and automated monitoring systems for biological and physical variables,

(iii) partnership with other programmes that collect predator data in these areas might be an appropriate way of expanding CCAMLR's access to monitoring data,

(iv) sustainable funding mechanisms (potentially including incentives for submitting monitoring data) should be identified, as enhanced data collection and analysis require additional effort and resources,

(v) consideration should be given to the acquisition of environmental data at appropriate spatial and temporal scales to identify potential drivers of monitored parameters,

(vi) analysis should be conducted on existing CEMP data to advise the Scientific Committee on status and trends of the ecosystem and to progress implementation of the revised KFMA.

The Scientific Committee and the Commission endorsed the Terms of Reference for a Harmonisation Symposium to align spatial management initiatives in the Peninsula Area (Annex 14 in SC-CAMLR-42; CCAMLR-42, paragraph 4.36).

In 2024, in preparation for the Harmonisation Symposium, WG-EMM discussed relevant topics, including the principles of harmonisation (WG-EMM-2024, paragraphs 5.3–5.5), alternative harmonisation scenarios (WG-EMM-2024, paragraphs 5.6–5.23), adjustments to the D1MPA and KFMA (WG-EMM-2024, paragraphs 5.24–5.30), catch limits (WG-EMM-2024, paragraphs 5.31–5.54), staged implementation (WG-EMM-2024, paragraphs 5.55–5.58), and, data collection (WG-EMM-2024, paragraphs 5.59–5.71). WG-EMM further held discussions on enhancing CEMP including with elements that pertained to the revision of the KFMA (WG-EMM-2024, paragraphs 6.1–6.79). The Harmonisation Symposium (HS-2024) generated a set of recommendations – which did not represent the consensus of all participants – on a potential 'harmonised approach' that could simultaneously increase catch limits for krill in Subarea 48.1 while establishing zones in which directed fishing would either be prohibited or seasonally restricted (SC-CAMLR-43, paragraph 2.85). The Scientific Committee discussed the elements of the harmonised approach and recommended the Commission further consider the approach and its implementation (SC-CAMLR-43, paragraph 2.86–2.113). The Commission noted that a revised KFMA will require increased capacity at the Secretariat to enable fisheries monitoring if catch limits were spread across many management units and between summer and winter (CCAMLR-43, paragraph 4.15), and further discussed the approach (CCAMLR-43, paragraphs 4.21–4.44). The Commission could not reach an agreement on an harmonised approach or on extending Conservation Measure 51-07, which consequently expired at the end of the 2024 season (CCAMLR-43, paragraph 4.45).

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Additional Resources

- Fishery Summary: pdf, html
- Fishery Report: pdf, html
- Species Description: pdf, html
- Fisheries Documents Browser