

CCAMLR Marine Protected Area in the Weddell Sea (Antarctica)

A Scientific Assessment

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1 Introduction

Non-use measures (ie measures that ban or suspend the use of a resource) and restricted- or limited-use measures (ie measures that restrict certain types of uses) form one important set of tools for conserving the marine environment. In larger management frameworks, such as in marine protected areas (MPAs), the two approaches are often intertwined.¹ Measures are tailored to the conservation objectives of the MPA and as a result can be extraordinarily diverse. Furthermore, they can apply to the whole range (or most) of an activity (eg fishing) or species (all fish taxa), or be much more specific.² Often, MPAs do not prohibit a use altogether, but use more specific restricted- or limited-use measures that take the form of rules specifying the appropriate method of use (eg minimum mesh sizes for nets, prohibition of certain fishing gear). In this case, the smooth transition between non-use measures and use measures becomes clear, highlighting the concepts are in fact on a continuous spectrum.³ The geographical scope of non-use measures may be applied to the entire MPA, so-called ‘no-take’ MPAs, or be limited to sub-areas, known as ‘zones’. Some MPAs may also contain a combination of geographical and temporal scopes, such as non-use measures that are only in place in certain zones during certain seasons (eg no-fishing zone during spawning season).

The case study in this chapter examines an MPA in the Southern Ocean, one of the world’s last great wilderness regions that contribute significantly to global marine biodiversity and ecosystem services.⁴ While the Southern

¹ This is also discussed by Guggisberg in chapter 2 of this volume.

² *ibid.*

³ *ibid.*

⁴ M. C. Kennicutt II et al, “Sustained Antarctic Research: A 21st Century Imperative” (2019) 1 *One Earth* 95–113; N. S. Steiner et al, “Climate change impacts on sea-ice ecosystems and associated ecosystem services” (2021) 9 *Elementa*.

Ocean is of crucial importance for the world's climate, biosphere, and well-being of [hu]mankind,⁵ at the same time, up to 20 nations fish in the Southern Ocean, mainly on Antarctic krill and Patagonian and Antarctic toothfish.⁶ In addition, there is growing evidence that the Southern Ocean is particularly sensitive to environmental change, such as change in sea ice concentration and extent,⁷ atmospheric and oceanic temperature rise,⁸ and increasing ocean acidification.⁹

To protect the life of the Southern Ocean, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) – the body responsible for conserving biodiversity in the Southern Ocean – is working on the establishment of a representative system of MPAs around Antarctica that largely utilises a non-use approach, albeit with zone-specific restricted-use measures for fishing activities and certain allowances for scientific research.

The following chapter discusses the MPA conservation planning of a large-scale international MPA proposal in the Weddell Sea as a case study. Beginning with a brief overview of spatial conservation planning in the Southern Ocean under the CCAMLR regime in general (section 2) and MPA planning in the Weddell Sea in particular (section 3), we provide insight into the rationale for protecting the Weddell Sea ecosystem (section 4) and present the non-use and (restricted-) use measures of the MPA (section 5). In doing so, we address the following questions: To what extent is the MPA with associated measures an embodiment of the precautionary approach? And to what extent is the Phase 1 of the Weddell Sea Marine Protected Area (hereafter: WSMPA P1) proposal related to the global problem of climate change? Finally,

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- 5 R. D. Cavanagh et al, "Future risk for Southern Ocean ecosystems: changing physical environments and anthropogenic pressures in an Earth system" (2021) 7 *Frontiers in Marine Science* 615214.
 - 6 C. M. Brooks, "Competing values on the Antarctic high seas: CCAMLR and the challenge of marine-protected areas" (2013) 3(2) *The Polar Journal* 277–300.
 - 7 S. Stammerjohn et al, "Regions of rapid sea ice change: An inter-hemispheric seasonal comparison" (2012) 39 *Geophysical Research Letters*; C. L. Parkinson and N. E. DiGirolamo, "Sea ice extents continue to set new records: Arctic, Antarctic, and global results" (2021) 267 *Remote Sensing of Environment* 112753.
 - 8 D. G. Vaughan et al, "Recent Rapid Regional Climate Warming on the Antarctic Peninsula" (2003) 60 *Climatic Change* 243–274; M. P. Meredith and J. C. King, "Rapid climate change in the ocean west of the Antarctic Peninsula during the second half of the 20th century" (2005) 32 *Geophysical Research Letters*.
 - 9 J. Turner et al, "Antarctic climate change and the environment: an update" (2014) 50 *Polar Record* 237–259; S. A. Morley et al, "Global Drivers on Southern Ocean Ecosystems: Changing Physical Environments and Anthropogenic Pressures in an Earth System" (2020) 7 *Frontiers in Marine Science* 547188.

we present some of the arguments and motivations of the opponents of the WSMPA P1 proposal and associated measures (section 6).

2 CCAMLR and MPAS – the Protection of Marine Living Resources of the Southern Ocean

Several initiatives are currently underway to establish MPAs in the high seas of the Southern Ocean under the Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention).¹⁰ The objective of the Convention is the conservation of Antarctic marine living resources which includes their rational use.¹¹ It utilises precautionary, ecosystem-based, and science-led approaches for which it has been applauded internationally.¹² The Convention is implemented through CCAMLR. Under its auspices, 27 Contracting Parties determine the use of Antarctic marine living resources through consensus-based decision-making based on the best available scientific information. CCAMLR's conservation measures span the spectrum from restricted- or limited-use measures to non-use measures.

In 2009, CCAMLR and its Member States committed themselves to the establishment of a representative system of MPAs in the Convention Area¹³ as a key tool to achieve the Convention's objective of conserving Antarctic marine living resources while enabling, and in some cases, benefiting their rational use. Since then, two MPAs have been established in the Convention Area: (1) The Southern Shelf Area of the South Orkney Islands MPA in 2009, the first MPA beyond national jurisdiction,¹⁴ and (2) The Ross Sea Region MPA, the

10 For more information on MPAs in the Southern Ocean, see the discussion by Guggisberg in chapter 13 of this volume.

11 Convention for the Conservation of Antarctic Marine Living Resources (CAMLR Convention) (adopted 20 May 1980, entered into force 7 April 1982) 1329 UNTS 47, art II.

12 D. G. M. Miller and N. M. Slicer, "CCAMLR and Antarctic conservation: the leader to follow?" in S. M. Garcia, J. Rice, A. Charles (eds), *Governance of Marine Fisheries and Biodiversity Conservation: Interaction and Coevolution* (John Wiley & Sons Ltd 2014) 253–270.

13 CCAMLR, "Map of the CAMLR Convention Area" (last updated October 2017), available at <www.ccamlr.org/node/86816> accessed 18 July 2024.

14 CCAMLR, "Conservation Measure 91–03 (2009) Protection of the South Orkney Islands Southern Shelf" (2009) CM 91–03, available at <<https://www.ccamlr.org/en/measure-91-03-2009>> accessed 18 July 2024; P. N. Trathan and S. M. Grant, "The South Orkney Islands Southern Shelf Marine Protected Area: towards the establishment of marine spatial protection within international waters in the Southern Ocean" in: J. Humphreys and R. W. E. Clark (eds) *Marine Protected Areas. Science, Policy and Management* (Elsevier 2020) 67–98.

largest MPA in the world.¹⁵ In addition, four other MPAs (one in East Antarctica, two in the Weddell Sea and one near the Antarctic Peninsula) have since been proposed but are pending approval despite several years of discussion.¹⁶ Member States disagree strongly about the need for MPAs. Disagreement exists around the development process, the management and the research and monitoring plan of MPAs. Recently, CCAMLR hosted a Special Meeting on MPAs (Santiago, Chile, 19 to 23 June 2023). Unfortunately, a roadmap for the adoption of a representative system of MPAs could not be agreed upon at this meeting, and no other constructive outcome could be achieved.

3 MPA Planning in the Weddell Sea

The whole WSMPA remains, to the day of writing this chapter (July 2024), unadopted. For reasons explained below, the focus here is on a proposal related to part of the WSMPA, known as Phase 1. It has so far failed to achieve political consensus within CCAMLR.

The wider Weddell Sea region lies east of the Antarctic Peninsula and includes the Weddell Sea as well as the smaller Lazarev and Riiser-Larsen Seas (Figure 12.1(a)). The Weddell Sea region is important with regards to the global climate, biosphere, and human well-being, as it contributes significantly to global marine biodiversity¹⁷ and ecosystem functions, such as primary and secondary production¹⁸ and services, such as carbon sequestration.¹⁹

At the 35th Meeting of CCAMLR in 2016, the European Union and its Member States submitted the first proposal for a conservation measure to establish an MPA in the Weddell Sea region.

The scientific work underpinning the proposal was carried out by a team at the Alfred Wegener Institute (AWI) (Bremerhaven, Germany).²⁰ The

15 CCAMLR, "Conservation Measure 91-05 (2016) Ross Sea Marine Protected Area" (2016) CM 91-05, available at <<https://www.ccamlr.org/en/measure-91-05-2016>> accessed 18 July 2024; C. M. Brooks et al, "Reaching consensus for conserving the global commons: the case of the Ross Sea, Antarctica" (2020) 13 *Conservation Letters* e12676.

16 K. Teschke et al, "Planning marine protected areas under the CCAMLR regime – The case of the Weddell Sea (Antarctica)" (2021) 124 *Marine Policy* 104370.

17 T. Brey et al, "Antarctic benthic diversity" (1994) 368 *Nature* 297–297; A. Brandt et al, "First insights into the biodiversity and biogeography of the Southern Ocean deep sea" (2007) 447 *Nature* 307–311.

18 J. Gutt et al, "Reviews and syntheses: A framework to observe, understand and project ecosystem response to environmental change in the East Antarctic Southern Ocean" (2022) 19 *Biogeosciences* 5313–5342.

19 M. Deininger et al, "Towards mapping and assessing Antarctic marine ecosystem services – The Weddell Sea case study" (2016) 22 *Ecosystem Services* 174–192.

20 Teschke et al (n 16).

translation of MPA aims into concrete and geographically specific conservation measures involved several rounds of thorough statistical analyses based on the best available science. The team ran spatial prioritisation algorithms based on 75 conservation features, having previously compiled the necessary data on environmental characteristics (eg sea ice concentration, water temperature) and ecological components (small invertebrates to fish, birds, and mammals) from scientists and institutions from more than 20 countries. The scientists also generated a variety of data products to obtain a better understanding of the habitats or feeding grounds of individual species and species assemblages.²¹ Developing the scientific basis for a WSMMA was an iterative process. From the beginning of the WSMMA planning initiative in 2013, the status of scientific work was discussed each year in the relevant CCAMLR working groups and then presented to the CCAMLR Scientific Committee. The scientific papers were revised according to the suggestions from the working groups and resubmitted to the Scientific Committee for discussion the following year. In addition, two international WSMMA workshops were held to discuss and agree on the WSMMA conservation objectives, features and their target values in more depth.

The original WSMMA proposal was split into two sub-proposals in 2019: WSMMA P1 (west of the prime meridian) and WSMMA P2 (east of the prime meridian) (Figure 12.1(b)).²² This division into two phases occurred because Norwegian scientists had raised concerns about differences in the data availability between the western and the eastern parts of the Weddell Sea region, and the implications of such differences on the statistical modelling efforts. A Norwegian team of scientists has been redeveloping the scientific basis for a WSMMA P2 conservation measure proposal and submitted this to CCAMLR in 2023. In the meantime, the German team (who had drafted the original proposal) amended the original proposal for a WSMMA conservation measure to cover only P1. The WSMMA P1 proposal is updated regularly to reflect major scientific discoveries, such as the world's largest fish nest colony.²³ It has been resubmitted to the CAMLR Commission every year, most recently in 2023. Nevertheless, to date, no consensus on either the WSMMA P1 or P2 proposals has been achieved among Member States within the CAMLR Commission.

21 K. Teschke et al, "An integrated compilation of data sources for the development of a marine protected area in the Weddell Sea" (2020) 12 *Earth System Science Data* 1003–1023.

22 Teschke et al (n 16).

23 A. Purser et al, "A vast icefish breeding colony discovered in the Antarctic" (2022) 32 *Current Biology* 842–850.

4 Rationale for Protection – Weddell Sea Ecosystem under Climate Change

One of the main aims behind the WSMMPA P1 proposal is to ensure that the Weddell Sea can function as a climate refugia for ice-dependent species (like Antarctic krill, Weddell seals) or species with low heat tolerance (like many Antarctic fish species). The reasoning is that the Weddell Sea is expected to be one of the last regions of the Southern Ocean where the consequences of climate change will manifest due to its ice cover and favourable currents.²⁴ It is therefore conceivable that these cold-adapted species will use the Weddell Sea as a refuge in the future. Researchers have already found that some ice-dependent penguin species are abandoning their traditional colony locations due to a lack of ice cover.²⁵ Furthermore, some projections suggest that favourable habitats for Antarctic krill might be shifting southward, resulting in possible declines in abundance and/or biomass.²⁶ The extent to which habitat shifts have already occurred and the potential future effects on individual species or the ecosystem as a whole continue to be the subject of debate and active research. Detailed scientific evidence may not be available until species shifts (which are likely irreversible) have occurred, therefore a precautionary approach is required.

The WSMMPA P1 proposal also recognises that the Weddell Sea ecosystem deserves protecting in its own right, as it is a pristine ecosystem (compared to other regions in the Southern Ocean), home to many important species and has no major current threats.²⁷ The area offers an important breeding and foraging ground for birds and mammals,²⁸ and a habitat for many rare species or

24 SEAIICE Portal, “Das Meereisportal – Log-Buch Einer Schwindenden Welt”, available at <<https://www.meereisportal.de>> accessed 12 July 2024.

25 H. J. Lynch et al, “Spatially integrated assessment reveals widespread changes in penguin populations on the Antarctic Peninsula” (2012) 93 *Ecology* 1367–1377.

26 A. Atkinson et al, “Krill (*Euphausia superba*) distribution contracts southward during rapid regional warming” (2019) 9 *Nature Climate Change* 142–147; D. Veytia et al, “Circumpolar projections of Antarctic krill growth potential” (2020) 12 *Nature Climate Change* 568–575.

27 K. Teschke et al, “Scientific background document in support of the development of a CCAMLR MPA in the Weddell Sea (Antarctica) – Version 2016 – Part A: General context of the establishment of MPAs and background information on the Weddell Sea MPA planning area”, Meeting of CCAMLR Working Group on Ecosystem Monitoring and Management, Bologna, Italy, 04 Jul 2016 to 15 Jul 2016, WG-EMM-16/01, 2016.

28 M. A Hindell et al, “Tracking of marine predators to protect Southern Ocean ecosystems” (2020) 580 *Nature* 87–92; J. Handley et al, “Marine Important Bird and Biodiversity Areas for Penguins in Antarctica, Targets for Conservation Action” (2021) 7 *Frontiers in Marine Science* 602972.

vulnerable features such as fish nest colonies²⁹ or sponge communities.³⁰ Any alterations to their environment, such as warming ocean temperatures³¹ and changes in sea ice concentration and extent,³² could have serious consequences for biodiversity and community stability, and thus ecosystem functioning and services.³³ In general, the relatively short food chains³⁴ and lower adaptive capacity of species³⁵ makes polar ecosystems particularly vulnerable to change.

While the proposed WSMPA P1 cannot prevent the effects of climate change, it can serve to minimise other important stressors to increase the region's resilience to climate change. It can also support research and monitoring that will improve our understanding of the Antarctic ecosystems and the effects of climate change disentangled from other human activities. Given the uncertainty about the future extent and potential consequences of climate change on biotic ecosystem components of the Weddell Sea, the MPA proposal argues for protection under the precautionary principle. The rationale is that by minimising anthropogenic impacts on the Weddell Sea ecosystem, we maximise the likelihood of being able to pass on this natural heritage to future generations. This is especially pertinent given that exploitation of living marine resources in the area is likely to expand. With climate change affecting sea ice cover, previously inaccessible areas may become accessible in the future. The Weddell Sea has already seen a slight increase in fishing activity in recent years, catches for Antarctic toothfish have increased from below 100 tonnes in the early 2000s to >300 tonnes each year in 2017–2023.³⁶ Given continuous advances in fishing technology and increasing need for food globally, it stands to reason that economic interests may look to expand into the Weddell Sea in the near future. The WSMPA P1 proposal seeks to restrict fishing activity as a

29 Purser et al (n 23).

30 D. Barthel and J. Gutt, "Sponge associations in the eastern Weddell Sea" (1992) 4 *Antarctic Science* 137–150.

31 Vaughan et al (n 8); Meredith and King (n 8).

32 Stammerjohn et al (n 7); Parkinson and DiGirolamo (n 7).

33 A. J. Constable et al, "Climate change and Southern Ocean ecosystems 1: how changes in physical habitats directly affect marine biota" (2014) 20 *Global Change Biology* 3004–3025; J. Gutt et al, "The Southern Ocean ecosystem under multiple climate change stresses-an integrated circumpolar assessment" (2015) 21 *Global Change Biology* 1434–1453; A. D. Rogers et al, "Antarctic Futures: An Assessment of Climate-Driven Changes in Ecosystem Structure, Function, and Service Provisioning in the Southern Ocean" (2020) 12 *Annual Review of Marine Science* 87–120.

34 E. J. Murphy et al, "Spatial and temporal operation of the Scotia Sea ecosystem: a review of large-scale links in a krill centred food web" (2007) 362 *Philosophical Transactions of the Royal Society B* 113–148.

35 L. S. Peck et al, "Acclimation and thermal tolerance in Antarctic marine ectotherms" (2014) 217 *Journal of Experimental Biology* 16–22.

36 CCAMLR Secretariat, "Fishery Report 2023: *Dissostichus mawsoni* in Subarea 48.6." (2024).

precautionary measure before it spreads into the Weddell Sea and potentially impacts ecosystem resilience.

5 Zone-Specific Regulations

In line with the precautionary approach, the WSMFA P1 proposal addresses the potential increase of economic use by pre-emptively assigning three management zones (Figure 12.2) that have different main aims and allow or prohibit different activities of fishing as well as scientific research (see Table 12.1). This approach is already applied in other MPAs established within CCAMLR (see

TABLE 12.1 Summary of specific provisions in each of the WSMFA P1 management zones. AMLR: Antarctic marine living resources; CM: Conservation measure

Zone	Specific management provisions
Fisheries Research Zone – (Restricted-) use	
Prohibited	<i>Fishing:</i> Directed fishing for all finfish and non-fish taxa (incl. krill), except of <i>Dissostichus</i> spp.
Permitted (with limitations)	<i>Fishing:</i> Directed fishing for <i>Dissostichus</i> spp. between 550 m and 2100 m water depth in accordance with established CCAMLR procedures and CMS ^a <i>Scientific research:</i> – Directed fishing on all other finfish and non-fish taxa (incl. krill) for scientific research in accordance with CM 24-01: a. Catch limit for all other finfish taxa: 1 t/vessel/year b. Catch limit for krill: 1 t/vessel/year – Scientific research on AMLR that uses towed gear that interacts physically with the seafloor; limit: 1 km ² /vessel/season
Permitted	– All other scientific research on AMLR
Scientific Reference Area and General Protection Zone – Primarily non-use	
Prohibited	<i>Fishing:</i> Directed fishing for all finfish and non-fish taxa (incl. krill)

TABLE 12.1 Summary of specific provisions in each of the WSMPA P1 management zones (cont.)

Zone	Specific management provisions
Permitted (with limitations)	<p><i>Scientific research:</i></p> <ul style="list-style-type: none"> – Directed fishing on all finfish and non-fish taxa (incl. krill) for scientific research in accordance with CM 24-01: <ol style="list-style-type: none"> a. Catch limit for <i>Dissostichus</i> spp.: 5 t/vessel/year b. Catch limit for all other finfish taxa: 1 t/vessel/year c. Catch limit for krill: 1 t/vessel/year – Scientific research on AMLR that uses towed gear that interacts physically with the seafloor; limit: 1 km²/vessel/season
Permitted	– All other scientific research on AMLR
Special Protection Zone – Non-use only	
Prohibited	<p><i>Fishing:</i></p> <p>Directed fishing for all finfish and non-fish taxa (incl. krill)</p> <p><i>Scientific research:</i></p> <ul style="list-style-type: none"> – Directed fishing on all finfish and non-fish taxa (incl. krill) for scientific research – Scientific research on AMLR that uses towed gear that interacts physically with the seafloor (eg beam/ otter trawls, dredges, sledges)
Permitted	– All other scientific research on AMLR

a For example, CM 22-08 (2009) (n 41); CM 41-04 (2022) (n 39)

for instance the Ross Sea MPA³⁷). Zonation works in tandem with CCAMLR’s existing Conservation Measures that regulate the harvesting of marine living resources and associated activities (incl. setting of catch limits, gear restrictions, area closures). This approach was chosen primarily to reconcile different interests (*conservation and rational use*) of CCAMLR Member States.

Antarctic krill and Antarctic toothfish constitute the main species of commercial interest in the Southern Ocean.³⁸ At the moment, there is only one

37 CM 91-05 (n 15); Brooks et al (n 15).

38 C. M. Brooks et al, “Antarctic fisheries: factor climate change into their management” (2018) 558 *Nature* 177–180.

active fishery in the WSMFA P1, ie exploratory fishing on Antarctic toothfish, which is conducted in the eastern part of the proposed MPA (Figure 12.2) by Japan, Spain and South Korea and is regulated by CCAMLR Conservation Measure 41-04.³⁹ The catch for Antarctic toothfish in this area (ie in CCAMLR Research Block 48.6_5) in 2023 was 141 tonnes (which made up 83.9% of the area's allocated catch limit).⁴⁰ Licensed commercial fishing is currently not allowed. The fact that exploratory fishing has not transitioned to commercial fishing to date and that no further proposals for exploratory fishing in other parts of the proposed WSMFA P1 have been submitted to CCAMLR is primarily the consequence of the limited access for fishing vessels due to sea ice conditions in the region. As a result, only limited data are available for scientists to estimate the stock size of Antarctic toothfish. This means current estimates carry a high uncertainty and that potential impacts of fishing on this target species remain unknown. Possible wider ecosystem effects and trophic impacts of longline fishing for Antarctic toothfish have also not been investigated to date.

The Proposal's Fisheries Research Zone (FRZ), which includes a Scientific Reference Area (SRA) (Figure 12.2) was designed specifically to contribute to science-based management of the Antarctic toothfish stock through ongoing research by fishing vessels. The FRZ encompasses an existing CCAMLR research area (Research Block 48.6_5) for exploratory fishing for Antarctic toothfish. It is intended to be managed in accordance with established CCAMLR procedures and conservation measures,⁴¹ and therefore does not require an addendum to existing CCAMLR regulations. However, an addendum would be required for the proposed SRA, as fishing for Antarctic toothfish would not be permitted there. The proposed SRA is located spatially adjacent to the FRZ and would allow researchers to directly compare the fished FRZ to a 'controlled' unfished area.⁴² This enables the study of potential wider ecosystem effects and trophic impacts of longline fishing for Antarctic toothfish, thereby reducing uncertainty around this issue in the future. Both the FRZ and the SRA have a limit of one tonne per vessel per year for all other fisheries exploiting finfish and

39 CCAMLR, "Conservation Measure 41-04 (2022) Limits on the exploratory fishery for *Dissostichus mawsoni* in Statistical Subarea 48.6 in the 2022/23 season" (2022) CM 41-04.

40 CCAMLR Secretariat (n 36).

41 CCAMLR, "Conservation Measure 21-02 (2019) Exploratory fisheries" (2019) CM 21-02; CCAMLR, "Conservation Measure 22-08 (2009) Prohibition on fishing for *Dissostichus* spp. in depths shallower than 550 m in exploratory fisheries" (2009) CM 22-08; CM 41-04 (n 39).

42 Fisheries Research Zone (FRZ) and Scientific Reference Area (SRA) are similar to Impact Reference Zone (IRZ) and Preservation Reference Zone (PRZ) used in deep-seabed mining, see ISA, "Workshop: Design of Impact Reference Zones and Preservation Reference Zones in the Area" (2017), available at <<https://www.isa.org.jm/events/workshop-design-of-impact-reference-zones-and-preservation-reference-zones-in-the-area/>> accessed 16 September 2024.

non-fish taxa (such as krill). This is in line with CCAMLR Conservation Measure 24-01.⁴³ For other scientific research in the FRZ incl. SRA, the use of any towed gear that physically interacts with the seafloor, such as trawls and dredges, would be limited to one square kilometre per vessel per season.

The other two zones, the General Protection Zone (GPZ) and the Special Protection Zone (SPZ), were designed with the goal of ensuring that the Weddell Sea can function as a climate refugia for ice-dependent species or species with low heat tolerance. The zones are intended to provide a general level of protection (eg for representative examples of pelagic and benthic ecosystems, biodiversity and habitats) or enhanced protection for known vulnerable marine ecosystems and unique, rare or biodiverse and/or endemic habitats and features. To ensure this protection and prevent possible impacts from fishing under the precautionary principle, no fishing activities are allowed. In the GPZ, only scientific research on marine living resources shall be allowed at five tonnes per vessel per year for Antarctic toothfish and one tonne per vessel per year for all other finfish and non-fish taxa (such as krill). In the SPZ, all fishing activities (including scientific research fishing) are to be prohibited. For other scientific research activities, the same restriction shall apply for the GPZ and SPZ as that of within the FRZ.

The WSMMA P1 should therefore be viewed not as a single non-use/ (restricted-) use measures, but rather a combination of several measures bundled into a larger management framework (see definitions at the beginning of this chapter).

6 Arguments of the Opposition to the WSMMA

Throughout its lifetime, the WSMMA P1 proposal has faced major opposition. The Republic of China and the Russian Federation have continued to be the most vocal members of the opposition throughout the years, blocking the proposal in both the Scientific Committee and the Commission. Their main arguments condense down to concerns about the CCAMLR principle of 'best available science' (ie the adequacy of scientific evidence underpinning the proposal),⁴⁴ citing the need to provide more scientific data to demonstrate threats to the ecosystem and thus justify the rationale behind the WSMMA P1 conservation objectives. The opposition's reasoning may be a reflection of

43 CCAMLR, "Conservation Measure 24-01 (2019) The application of conservation measures to scientific research" (2019) CM 24-01.

44 K. N. Scott, "MPAs in the Southern Ocean under CCAMLR" (2021) 9 *The Korean Journal of International and Comparative Law* 84-107.

political motives (eg a matter of national importance or even sovereignty) rather than genuine scientific concerns.⁴⁵ Through this narrative, China and Russia directly oppose a 'precautionary approach' that would necessitate the establishment of MPAS precisely because the complexity of the ecosystem and its possible threats are not yet fully understood.

The Republic of China and the Russian Federation most often apply this line of argumentation to question the non-use and (restricted-) use measures associated with the proposed GPZ and SPZ, which would restrict their long-distance fisheries in the future. In contrast, the majority of other CCAMLR fishing Member States (eg the United Kingdom, New Zealand) recognise that MPAS are an effective tool for marine conservation and may even have positive effects on commercially exploited fish stocks (see for instance the UK's leading role in the Global Ocean Alliance⁴⁶).

The opposition's narrative using 'best available science' argumentation is not always focused on individual measures but also applied broadly within larger CCAMLR discussions. For instance, the Republic of China and the Russian Federation apply it to question the development process of MPA proposals generally and to any topics related to the link between fishing pressure and climate change. They articulate the need to provide more scientific data to demonstrate threats to the ecosystem that would be caused by fishing or climate change. As highlighted previously, such data are not currently available, nor is it likely that a substantial amount of it becomes available before some of the intended aims of the WSMPA P1 proposal have already become impossible.

This narrative continues despite the fact that the Scientific Committee certified the process of scientific work (described above) to develop the MPA proposal to reflect the 'best available science' in 2016. In CCAMLR, the role of science is clearly defined. Scientific representatives from each Member State are represented in the Scientific Committee. The task of the Scientific Committee as a whole is to evaluate the best science currently available and to outline the risk and benefits of any proposed management measures. It is only in the CAMLR Commission that Member States must decide what credence to give to the scientific recommendations in favour of a WSMPA P1 proposal.

As has become evident in the discussions in the Commission, some CCAMLR Member States are far more content to err on the side of caution (accepting potential economic consequences of non-use or restricted-use measures), while others seem to prioritise economic interests. This is underscored by the

45 C. M. Brooks et al, "Science-based management in decline in the Southern Ocean" (2016) 354(6309) *Science* 185–187; Teschke et al (n 16).

46 United Kingdom, "Global Ocean Alliance", available at <<https://www.gov.uk/government/topical-events/global-ocean-alliance-30by30-initiative/about>> accessed 12 July 2024.

way in which the opposition to the WSMMPA P1 proposal challenges the precautionary principle behind the central pillars of the proposal. Unsurprisingly, this is an efficient manner to oppose potential limitations to one's fishing activities. Having economically-motivated opposition is not a problem unique to the WSMMPA process. Brooks et al. have found economic interests to be a central roadblock to MPAs in the Southern Ocean, and this is generally true for MPAs worldwide.⁴⁷ Economic interests have also prevented successful CCAMLR conservation action on other matters outside the MPA debates, owed to the fact that CCAMLR operates on a consensus-based approach.⁴⁸

7 Conclusion

As the recent 3rd CCAMLR Special Meeting on MPAs (Santiago, Chile, 19 to 23 June 2023) showed, CCAMLR has not been able to resolve the deadlock in the MPA negotiations. Rather, the deadlock crystallised more clearly than ever. The scientific and political debates in CCAMLR appear to be moving further apart, ie scientific findings and recommendations from the CCAMLR Scientific Committee seems to be increasingly ignored by the CAMLR Commission, where economic concerns over the non-use or (restricted-) use measures dominate. It is likely that a breakthrough must be sought at much higher political levels. In forums such as the European Parliament,⁴⁹ there are increasing calls for high-level political commitment to support the WSMMPA P1 proposal and those for other MPAs around Antarctica. Hopefully, given the increase in political pressure and will, the issue of marine conservation around Antarctica can be placed on the agenda of future high-level political discussions to break the current deadlock in MPA negotiations in CCAMLR. Such negotiations should exercise great caution, however, to ensure any compromises do not result in concessions below the level of current protection afforded by the overall non-use and (restricted-) use measures enacted by CCAMLR.

47 Brooks et al (n 38).

48 L. Goldsworthy, "Consensus decision-making in CCAMLR: Achilles' heel or fundamental to its success?" (2022) 22 *International Environmental Agreements: Politics, Law and Economics* 411–437.

49 European Parliament, "Resolution of 8 July 2021 on the establishment of Antarctic Marine Protected Areas (MPAs) and the conservation of Southern Ocean biodiversity" (2022) 2021/2757(RSP)OJ C99,214, available at <https://www.europarl.europa.eu/doceo/document/TA-9-2021-0361_EN.html> accessed 12 July 2024.

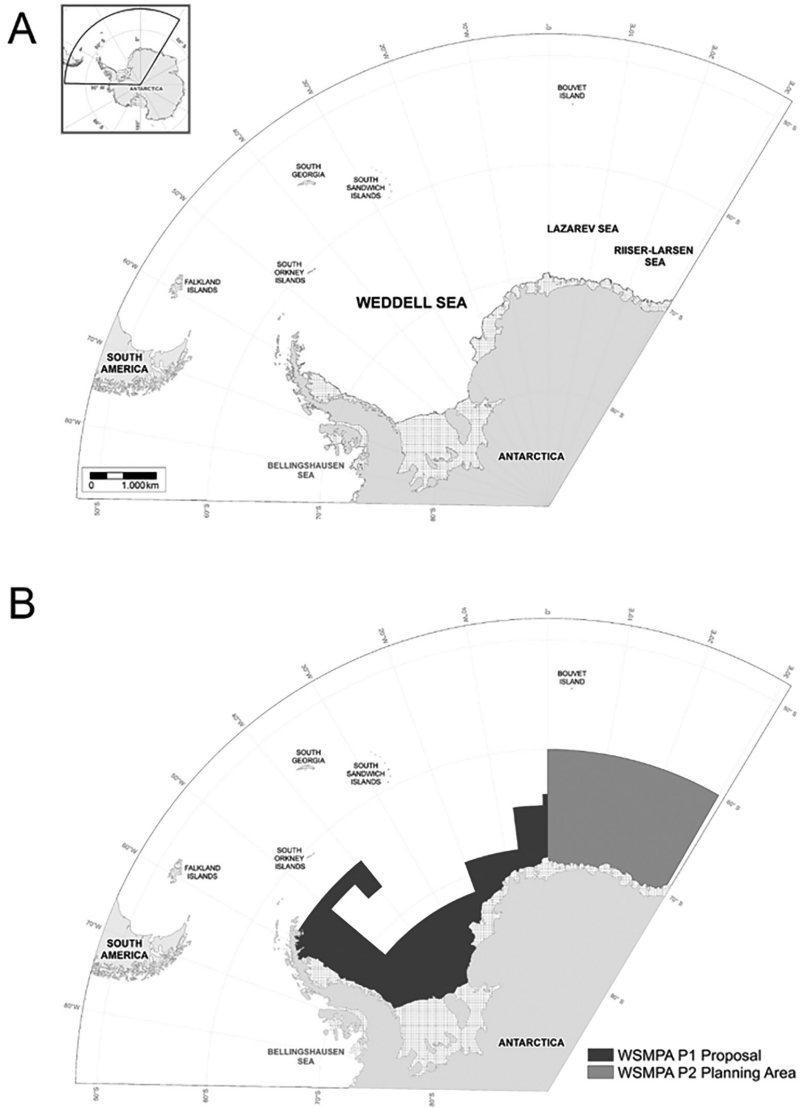


FIGURE 12.1 Wider Weddell Sea region (Antarctica) including the Weddell Sea as well as the smaller Lazarev and Riiser-Larsen Seas (A); 2023 Weddell Sea Marine Protected Area Phase 1 (WSMPA P1) Proposal alongside the Planning Area for which a Phase 2 Proposal was first proposed in 2023 (B). Base layers for Antarctica and the ice shelf taken from Quantarctica K. MATSUOKA ET AL, “QUANTARCTICA, AN INTEGRATED MAPPING ENVIRONMENT FOR ANTARCTICA, THE SOUTHERN OCEAN, AND SUB-ANTARCTIC ISLANDS” (2021) 140 ENVIRONMENTAL MODELLING & SOFTWARE 105015

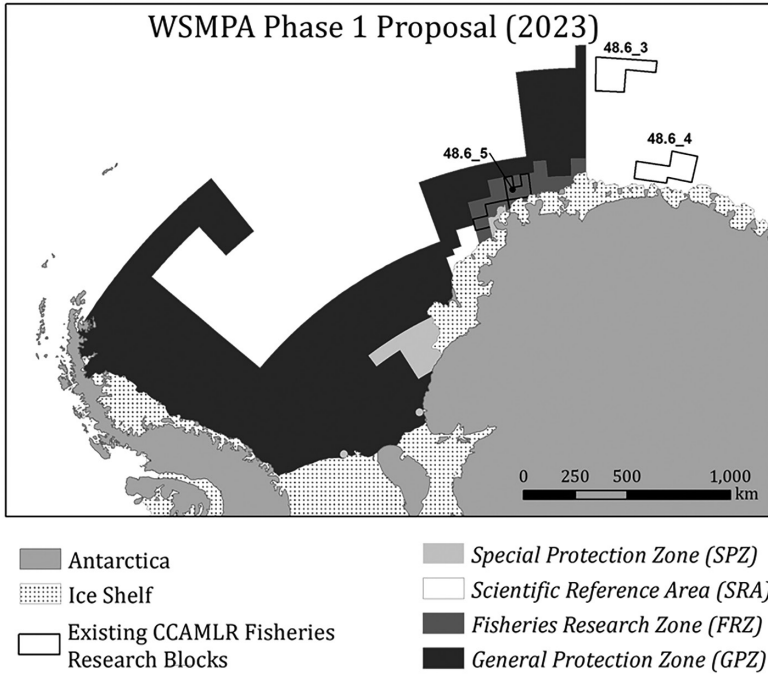


FIGURE 12.2 Weddell Sea MPA Phase 1 Proposal with planned management zones: The General Protection Zone (GPZ), the Special Protection Zone (SPZ), the Fisheries Research Zone (FRZ), and the Scientific Reference Area (SRA). It also shows the CCAMLR fisheries research blocks (48.6_3, 48.6_4, 48.6_5) that are already in effect. Base layers for Antarctica and the ice shelf taken from Quantarctica

K. MATSUOKA ET AL, "QUANTARCTICA, AN INTEGRATED MAPPING ENVIRONMENT FOR ANTARCTICA, THE SOUTHERN OCEAN, AND SUB-ANTARCTIC ISLANDS" (2021) 140 ENVIRONMENTAL MODELLING & SOFTWARE 105015