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LETTER

Reaching consensus for conserving the global commons: The case of the Ross Sea, Antarctica

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Abstract

In October 2016, the international community made history by adopting the world's largest marine protected area in the Ross Sea, Antarctica—by consensus. Achieving this feat required trade-offs and compromise among the 24-Member States (plus the European Union) comprising the Commission for the Conservation of Antarctic Marine Living Resources. The process took 5 years of intense international negotiations and more than 10 years of scientific planning. Based on interviews with national delegations and other stakeholders, 5 years of participatory observation of Commission meetings (2012–2016), and analysis of hundreds of documents, we present unique insights that explain the conditions that stalled or facilitated the adoption of the Ross Sea MPA. These included economic interests, geopolitics, an erosion of trust, high-level diplomacy, and the compromises that were ultimately necessary. We reflect on lessons learned as the world considers how to achieve future large-scale conservation successes in the global commons.

KEYWORDS

Antarctica, CCAMLR, consensus, conservation, environmental governance, high seas, international commons, marine protected areas, Ross Sea, Southern Ocean

1 | INTRODUCTION

The Southern Ocean is one of the most remote, wild places on Earth. It supports commercial fisheries for Antarctic krill (*Euphausia superba*) and toothfish (*Dissostichus eleginoides* and *Dissostichus mawsoni*) (Figure 1), yet contains some of the last unexploited fish populations (FAO, 2016) and has not suffered most traditional resource uses. It is considered relatively healthy, compared with all other ocean systems (e.g., Halpern et al., 2008). The region has historically been protected by remoteness and harsh conditions, but also by political will. Many consider the Conventions under the Antarctic Treaty System (ATS) to be the most successful multilateral systems for governing global commons (e.g., Berkman, Lang, Walton, & Young, 2011).

Southern Ocean governance under the ATS falls to the Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention), widely lauded for its precautionary, ecosystem-, and science-based provisions (e.g., Miller & Slicer, 2014). The Southern Ocean is considered a well-defined social–ecological system (Berkes & Folke, 1998): the CAMLR Convention's jurisdictional boundaries (Figure 1) and the region's ecological boundary are congruent (Brooks et al., 2014). The Convention is implemented through

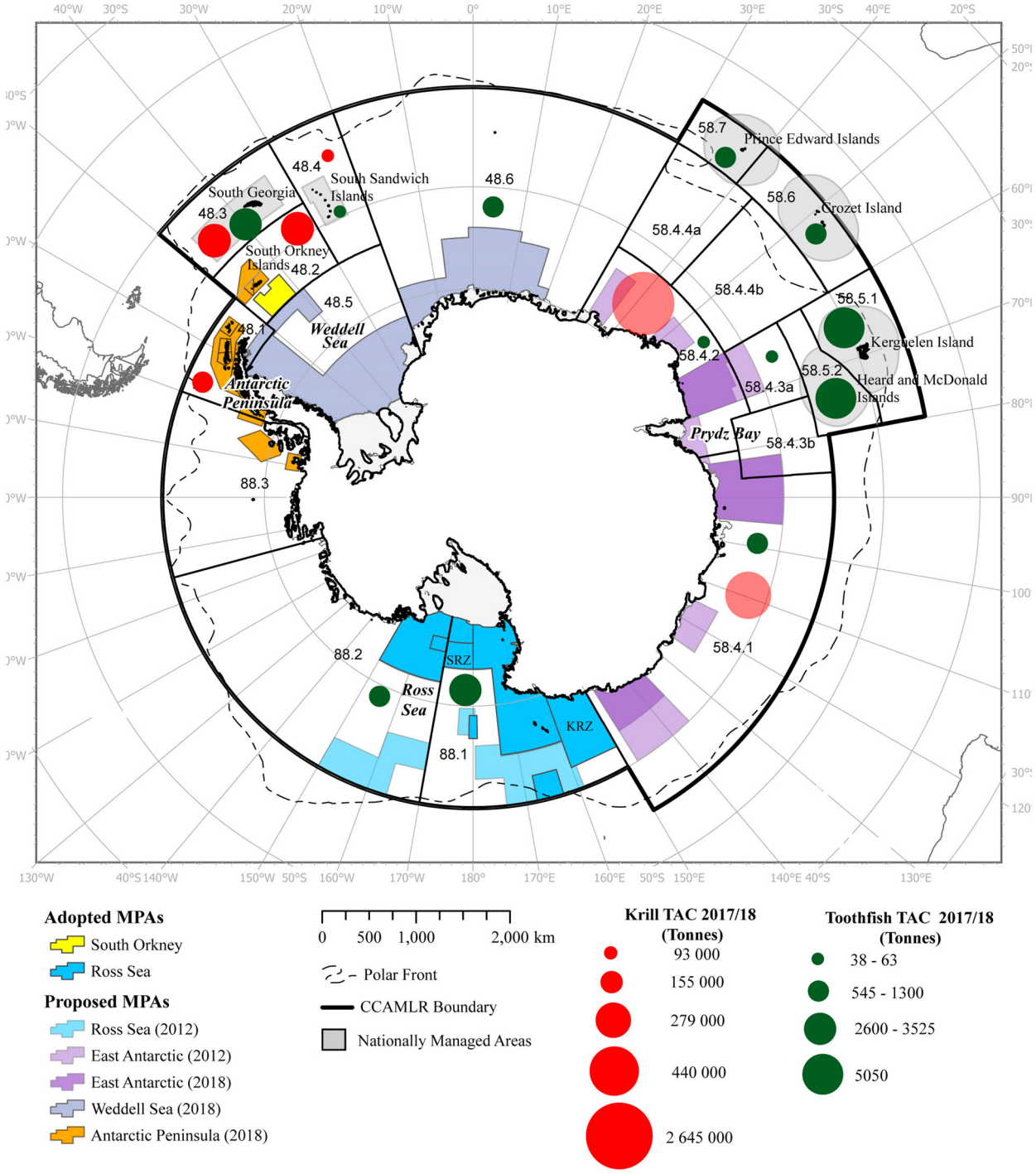

FIGURE 1 Proposed and adopted MPAs, management areas, and fisheries in the CCAMLR area. CCAMLR boundary indicated by thick black line; thin black line represents management area delineations labeled numerically. CCAMLR's adopted MPAs and MPA proposals from 2012 to 2018, including the South Orkney Islands Southern Shelf MPA (yellow), Ross Sea MPA (blue), East Antarctic (violet), Weddell Sea (purple) and the western Antarctic Peninsula (orange). Total Allowable Catch (TAC) for toothfish (blue) and krill (red) in the CCAMLR management area; circles proportional to respective TAC (tonnes in 2017/18), transparency indicates underutilization. Shaded circles around subantarctic islands reflect delineated exclusive economic zone boundaries generated prior to the signing of the CAMLR Convention. Shaded squares indicate toothfish management area around South Georgia and South Sandwich Islands, managed by the United Kingdom (CCAMLR boundaries, management areas, adopted MPAs, and TAC amounts and locations based on data provided via www.ccamlr.org; Ross Sea proposed MPA boundaries based on https://www.mfat.govt.nz/en/environment/antarctica/ross-sea-mpa-documents; East Antarctic proposed MPA boundaries based on http://www.antarctica.gov.au/law-and-treaty/ccamlr/marine-protected-areas; Weddell Sea and Antarctic Peninsula proposed MPA boundaries from proponent states (based on CCAMLRXXXVII/29 and CCAMLR-XXXVII/31, with permission). Figure does not include subantarctic MPAs which fall outside of CCAMLR's jurisdiction

its Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)—an international regime with 24 Member States plus the European Union. Annual meetings and regular working group science meetings encourage long-term face-to-face cooperation, enhancing conditions for trust and reciprocity (Österblom & Folke, 2013; Ostrom & Walker, 2003). CCAMLR's collaborative environment has enabled successful response to severe collective action problems such as dramatically reducing illegal, unregulated, and unreported fishing (Österblom & Folke, 2013; Österblom & Sumaila, 2011).

Despite CCAMLR's perceived successes, and the positive reputation of the ATS, recent assessments identify great risks to Antarctic biodiversity, warranting urgent conservation action. In line with other regimes, Antarctic governance is not on course to achieve global biodiversity conservation targets (e.g., Aichi Biodiversity Targets), failing to implement protections at the scale and pace needed to address threats of climate change and human use (Chown et al., 2017). However, CCAMLR has made progress toward the establishment of marine protected areas (MPAs) enshrined in Aichi Target 11 and United Nations Sustainable Development Goal 14.5.

In 2002, CCAMLR committed to establishing an MPA network to meet targets set by the 2002 United Nations World Summit on Sustainable Development (WSSD) (Brooks, 2013). An international community of Antarctic scientists, civil society, and celebrities specifically advocated for conserving the Ross Sea, branding it as *The Last Ocean* (e.g., Young, 2012). In 2016, CCAMLR adopted the Ross Sea MPA, celebrated as the world's only large-scale international MPA (CCAMLR, 2016a,b).

Here, we investigate the process of establishing large-scale Antarctic MPAs, focused particularly on the Ross Sea. Collaboration among diverse actors is critical for successful resource management (Bodin, 2017), but collaboration among multiple interests, with individual incentives, ambitions, and goals, can prove complicated. Understanding even small-scale successes in collaboration for common pool resource management is challenging (e.g., Ostrom, 1990; Ostrom, Burger, Field, Norgaard, & Policansky, 1999), and there is extremely limited insight from international cases (but see, e.g., Biermann et al., 2012; Young, 2011).

Our process tracing analysis spans 20 years, and is focused intensively on 2012–2016, when the Ross Sea MPA was negotiated and adopted. We identify periods of momentum and stalling and the factors creating a political window of opportunity in 2016. Finally, we reflect on lessons applicable to other international regimes and issues.

2 | METHODS

This case study used a mixed-methods approach to collect and analyze qualitative and quantitative data (Yin, 2014). Our methods included (a) participant observation of CCAMLR's annual, intersessional, and Scientific Committee meetings (2012–2016); (b) semistructured, key informant interviews with top diplomats and scientists from all Member States (2014); (c) content and discourse analysis of CCAMLR reports (1982–2016); and (d) analyses of secondary sources (e.g., reports, media, maps, and fisheries data). Using these data, we employed process tracing (sensu George & Bennett, 2005) to analyze how CCAMLR was able to achieve consensus (see Supporting Information Methods for additional detail).

3 | RESULTS AND DISCUSSION

CCAMLR's MPA discussion began in the 1990s, initiated by the International Union for the Conservation of Nature (Figure 2). In the wake of the 2002 WSSD, CCAMLR formally added MPAs to its agenda and committed to pursuing a Southern Ocean MPA network. Over the next decade, CCAMLR held scientific workshops, identifying priority areas (Figure 2 and Figure S1), and individual Member States developed MPA proposals. However, even during this early progress, the influences of geopolitics and economic incentives were apparent (Supporting Information Results, pp. 2–4).

In 2009, CCAMLR adopted the South Orkney Islands Southern Shelf MPA (94,000 km^2) (Figure 1), proposed by the United Kingdom. Consensus was achieved swiftly with no evaluation criteria or rules to guide process. The MPA was adopted without management, research, or monitoring plans, leaving no mechanisms for implementation. Several experienced negotiators reported a sense of confusion over the policy process. The MPA avoided interference with existing fisheries and was modified to accommodate potential future fishing, setting precedent for future MPA negotiations (Supporting Information Results, pp. 11–12).

In 2011, CCAMLR adopted a legal framework to guide future MPAs—Conservation Measure 91-04 (CCAMLR, 2011)—largely consistent with MPA best practices established elsewhere (Day et al., 2012). However, negotiations had resulted in compromises, including a duration clause. Adopting this measure *after* the South Orkney Islands MPA and during the development of other MPA proposals (see below) confused the overall MPA process (Figure 3) (Supporting Information Results; pp. 12–13, 16–18).

In 2012, MPA proposals were submitted for the Ross Sea (by the United States and New Zealand) and the East Antarctic (by Australia, France, and the EU). Half of CCAMLR's Member States raised concerns in extensive negotiations (Table 1; Figures S1 and S2; Figure 4). Russia and China were most vocal, together making ~50% of the

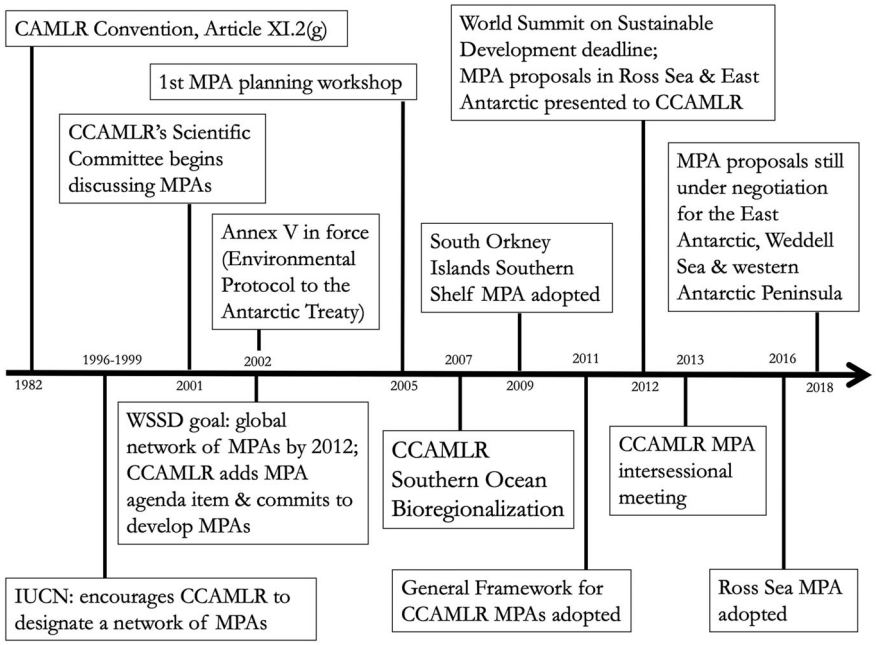

FIGURE 2 Key milestones in CCAMLR's marine protected area (MPA) process. Closed areas were always part of the original CAMLR Convention, but were not formally discussed as MPAs until the later 1990s. IUCN refers to the International Union for Conservation of Nature. WSSD refers to the World Summit on Sustainable Development

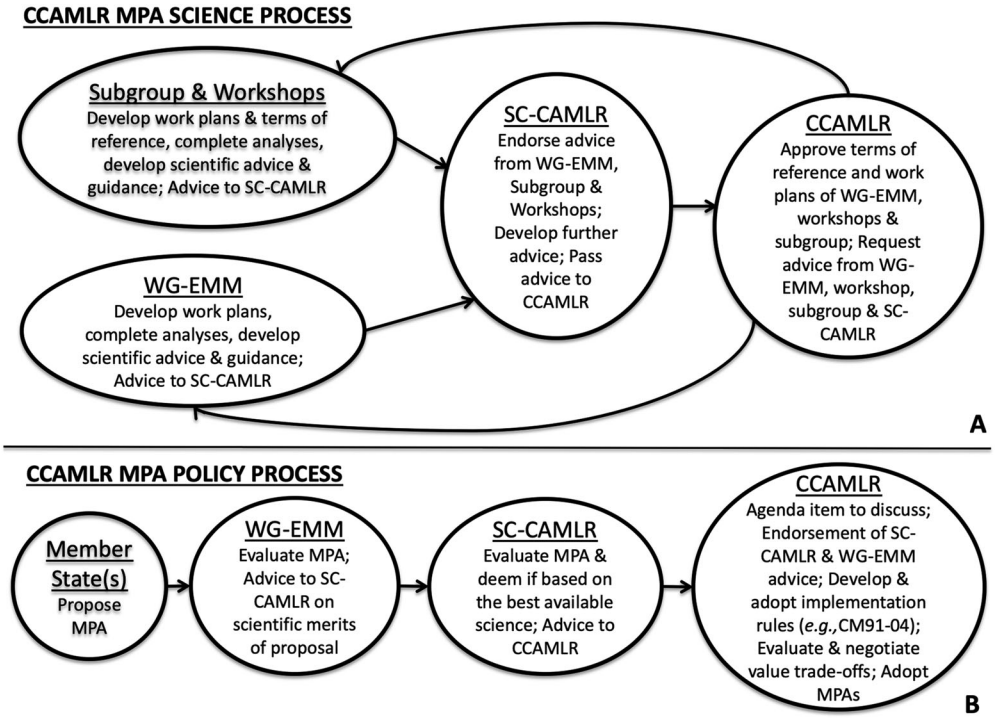

FIGURE 3 CCAMLR's marine protected area (MPA) science (A) and policy (B) process. The science process is both bottom up and top-down, whereby CCAMLR receives advice and requests advice regarding workplans, scientific analyses, and other details (A). The policy process is streamlined through to proposing the MPAs to CCAMLR, at which point the process of negotiation and adoption is less clear (B). SC-CAMLR refers to CCAMLR's scientific advisory body the Scientific Committee for the Conservation of Antarctic Marine Living Resources; WG-EMM refers to SC-CAMLR's Working Group on Ecosystem Monitoring and Management

opposing interventions (Tables S1 and S2). The majority of concerns regarded size and boundaries—the MPAs were proposed to be the world's largest (Table 1; Figure 1). Others concerns are related to procedural rules, lack of clarity, and the need for further scientific advice (Table 1; Figure S2), likely linked to Conservation Measure 91–04, and how to evaluate proposals against this measure. Evaluating multiple MPAs simultaneously also created confusion. The Ross Sea and East Antarctic proposals were markedly different in design, philosophy, scientific approach, objectives, and

TABLE 1 Concerns with marine protected areas (2012–2016). Breadth of concerns raised during formal Commission negotiations over marine protected areas (MPAs) at annual CCAMLR meetings between 2012–2016 (six meetings total, includes special intersessional meeting in July 2013; based on participant observation)

Concern	Definition/meaning
Boundaries	Concern specifically with proposed MPA boundaries, including that the boundaries are not supported by the existing science.
CCAMLR rules	Concern that the proposed MPA and/or the MPA negotiation process is not in agreement with CCAMLR rules or procedures. These include that the MPA proposals need to be in accordance with Conservation Measure 91–04, concerns over needing consensus before moving MPAs to legal drafting, or concerns with the lack of translation during negotiations.
Duration	Concern with the duration, or timeframe, proposed for the MPAs, including requests for a sunset clause.
Exclusivity	Concerns that MPAs are being used (by proponent States) to exclude other CCAMLR Members, including accusations of MPAs being used as a tool for sovereignty; also includes assertions that the MPAs have to be "CCAMLR MPAs" belonging to all Members equally.
Interference with fishing	Concern that the MPAs as proposed will interfere with or negatively impact fishing activities. This includes reference to the MPA not including, or interfering with, "rational use." This also includes general concerns or opposition to no-take areas.
Interference with research	Concern that the proposed MPA interferes with research. This includes that the MPA does not adequately allow for research fishing in the proposed MPA boundaries, or interferes with vessel access to research stations.
Legal issues	Legal concerns with the proposed MPA, including that CCAMLR does not have the legal capacity to adopt MPAs or that the MPA may be inconsistent with other international legal agreements (e.g., UNCLOS).
No need	Assertion that there is no need for MPAs in CCAMLR waters, including that there is already sufficient protection under current CCAMLR conservation measures or that there is no conservation need, risk, or threat that warrants an MPA.
Number of MPAs	Concern over the number of MPAs being negotiated. This includes concerns with MPAs being proposed as a network rather than a single MPA (e.g., East Antarctic) or concerns with negotiating multiple MPAs at once (e.g., Ross Sea and East Antarctic).
Review	Concern with the period of review, review process, or other components of the proposed MPA review.
Scientific Committee advice	Insistence that MPA proposals need further consideration, review, or advice from CCAMLR's Scientific Committee or that the proposed MPA is not supported by Scientific Committee advice.
Size	Concern with the size of the proposed MPA, including that the size is too big or is not supported by the existing science.
Sufficiency of research and monitoring plans	Concern with the proposed MPA's research and monitoring plans, including that the plan is inadequate or unfeasible. Also includes concerns about which States will offer resources (including financial) to carry out the research and monitoring plan.
Sufficiency of science	Concern that the science underpinning the MPA proposals is not sufficient. This includes concerns that not enough data or information exists to support the MPA or that all available data were not used in designing the MPAs.
Unclear	General concerns about the MPA proposals, including that the proposals are unclear, vague, or need more information. Also concerns over what activities are allowed or banned, or concerns over the objectives of the MPA as well as the risks or threats to the area.

even terminology. Thus, in closing the 2012 meeting, States agreed to a special intersessional meeting in July 2013, dedicated to the MPAs (Supporting Information Results, pp. 18–21).

During the intersessional meeting, CCAMLR agreed that both proposals met the guidelines of Conservation Measure 91–04, providing greater transparency. However, CCAMLR was still far from consensus. Continuing concerns involved interference with fishing, boundaries, and size (Table 1). States also questioned the science for the Ross Sea MPA's proposed northern areas. Norway, the only Antarctic claimant[1] State not engaged in developing or proposing an MPA (Figure S3), mediated between nonproponent fishing States (especially Chile, China, Japan, Korea, and Russia) and MPA proponents (United States and New Zealand).[2] Eventually, the northern area of the Ross Sea proposal was removed due to scientific uncertainty (Figure 1; Table S3). Meanwhile, Russia emerged as the greatest opponent (Tables S1 and S2), advocating for opening additional toothfish fishing areas both within and outside the proposed MPA to offset potential closures, with Ukraine's support (Figure 1). Further, Russia questioned CCAMLR's legal status to adopt MPAs, effectively

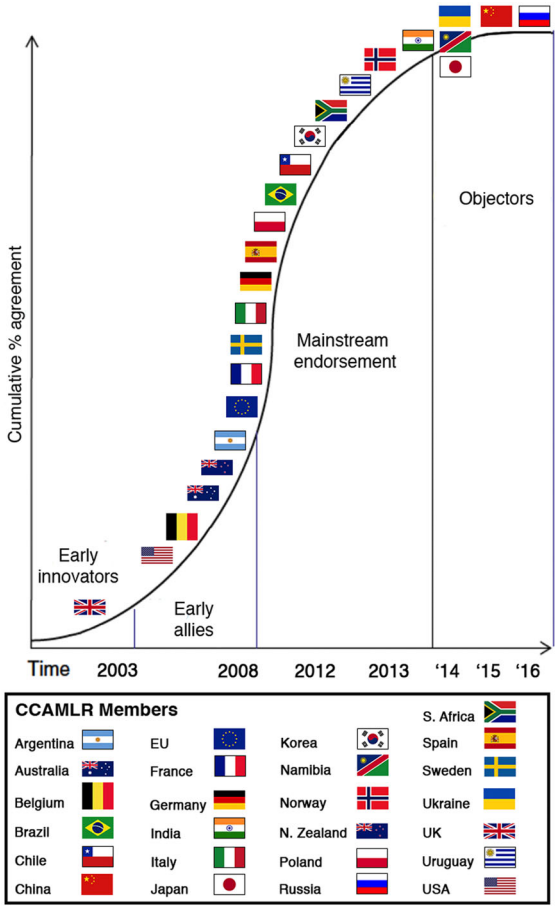

FIGURE 4 Building to consensus toward CCAMLR marine protected areas (MPAs). The process of building to consensus for adopting CCAMLR MPAs, with particular focus on the Ross Sea MPA during the 2013–2016 time period. Consensus curve and categories based on Ridgeway (2014) and diffusion of innovation theory (Rogers, 1962). Cumulative agreement towards consensus based on CCAMLR annual meeting reports (1982–2011) and participant observation notes (2012–2016)

halting negotiations. Many closing statements voiced disappointment, stressing the intersessional meeting was intended to make progress on the MPA proposals (Supporting Information Results, pp. 21–23).

Even in failure, high profile meetings can help open political windows of opportunity to achieve solid commitments (Keohane & Nye, 2011; Young, 1999). By the 2013 annual meeting in October, MPA proposals had been changed to address concerns raised in July. The proposed Ross Sea MPA's size had been reduced by ~40%; the East Antarctic MPA's by almost half (Figure 1; Table S3). With these changes, 20 States supported the Ross Sea proposal, including key fishing States Norway and South Korea (Figure 4; Tables S1 and S2). Despite lack of consensus, the Commission Chair recommended both MPA proposals for legal drafting. This halted negotiations as all States voiced disapproval for violating consensus, a foundational rule of the CAMLR Convention (Supporting Information Results, pp. 23–25).

In 2014, the Ross Sea proposal was negotiated for the fourth time. Shared past interactions and anticipation of a shared future should lead to higher levels of trust and cooperation (Axelrod, 1984; Cox, Arnold, & Tomas, 2010), but positions can also become entrenched (Ostrom & Walker, 2003), and the MPA process had divided CCAMLR. Many interviewees described the 2014 CCAMLR meeting as "antagonistic," "hostile," "stagnant," "stalled," and "divided." Others said the process was "ruined," "deadlocked," "at a dead end," and there was "no road open" and "no hope" for adopting MPAs right now. Others said that "positions have become entrenched," "finding commonality was difficult," "the process has gone on too long," and has "become divisive and polarized." Many commented that MPA negotiations had broken trust in CCAMLR—a powerful sentiment in a commission with a small number of total representatives (Supporting Information Results, pp. 25–26).

Distrust can lead to "social traps" where actors refuse cooperation, despite potential mutual benefits (Rothstein, 2005). States have diverse motivations for joining the CAMLR Convention and also for supporting or opposing Antarctic MPAs. For some fishing States, MPAs presented a threat to current and future access that could also set precedent for other regions (e.g., high seas and Arctic). Negotiations and interviews exposed widely divergent views on the CAMLR Convention's purpose, and the purpose of and need for MPAs (Table 2). Lack of a clear policy process also compromised trust. Further, the boundaries of the original Ross Sea and East Antarctic proposals aligned with historic Antarctic sovereignty claims rather than ecological features, raising questions about motivations (Figure S3) (Supporting Information Results, pp. 9–12, 16, 22, 25).

Perhaps even more importantly, while the Antarctic is physically isolated, negotiations did not occur in political isolation. In 2014, more than half of interviewees identified Russia/United States tensions—stemming from Russia's annexation of the Crimean Peninsula from Ukraine—as a major factor influencing negotiations. From the outset, Russian delegates reported they were unable to negotiate MPA proposals. In contrast, Ukraine was far less vocal in its opposition to MPAs (Figure 4; Tables S1 and S2). Multiple independent interviewees reported "Cold War"-type tensions re-emerging in negotiations. Throughout the 2014 meeting, the United States and Russia refused compromise. But, by the meeting's end, Russia and China remained the only countries opposing a Ross Sea MPA (Figure 4) (Supporting Information Results, pp. 25–26).

The Ross Sea proposal was negotiated for the fifth time in 2015. The proposed MPA had been further reduced in size, and the Special Research Zone (SRZ) had been expanded (Figure 1; Table S3), intended to appease Russian research fishing interests (Supporting Information Results, pp. 27–28). Further, the proposal included a clause—requested

TABLE 2 **Institutional issues.** Institutional issues reportedly affecting CCAMLR's marine protected area (MPA) process indicate widely divergent perspectives on four critical issues: 1) CCAMLR's purpose; 2) Operational interpretations of 'rational use'; 3) the need for MPAs in CCAMLR; and, 4) the general purpose of MPAs. Text boxes provide the main ideas or phrases that interviewees raised. These issues are presented as the broad spectrum in responses received

Institutional issues	
CCAMLR's purpose/role	A regional fisheries management organization (RFMO); Not a normal RFMO; different from other RFMOs; More successful than other RFMOs; a leader among RFMOs; More than an RFMO; has a greater conservation mandate; has greater Antarctic Treaty System (ATS) values; Not a RFMO; and A conservation organization.
Rational use meaning/ interpretation	A right to fish; MPAs should not interfere with rational use; MPAs need to accommodate rational use; No-take zones (closed areas) may not be rational use; Part of conservation; Having an ecosystem mandate; As protecting; and MPAs are part of CCAMLR fulfilling their mandate under Article II (rational use).
MPAs' use/need in CCAMLR	CCAMLR Area is already a IUCN category IV MPA; Current CCAMLR fisheries closures function as MPAs; CCAMLR does not need MPAs; is strict enough; has conservation measures that work; has been effective through existing rules; MPAs, as closed areas, are in contrast to CCAMLR; CCAMLR could benefit from MPAs, but not the current ones being proposed, needs different and better proposals; CCAMLR needs MPAs, needs protection of whole ecosystem; needs MPAs for conserving marine living resources; Need MPAs because of climate change threats to the Southern Ocean; needs climate change reference areas and fishery reference areas; MPAs important for CCAMLR's reputation and leadership and for ensuring CCAMLR is more than an RFMO; MPAs are a main, important objective of CCAMLR, part of their larger conservation mandate, in the spirit of Article II and the larger ATS values; and CCAMLR is not a category IV MPA.
MPAs' purpose	A fisheries management tool; Do not need no-take areas; A means for conserving marine living resources; A tool for sustainable fisheries management; Can enhance fisheries, can benefit fisheries with spillover effects; A biodiversity conservation and a fisheries management tool; Tool for ecosystem management, conservation, and protection; A conservation and ecosystem approach; more than a fishery closure; Important tool to ensure leaving something for future generations; Important for managing for uncertainty in the face of climate change; and MPAs need to have no-take areas.

by multiple Member States—that the MPA expire after 50 years without consensus to continue at that time (Table S3). Despite the expanded SRZ, Russia remained opposed. China also continued to voice concerns, wanting higher levels of fishing and an even shorter duration (Supporting Information Results, pp. 27–29).

Negotiations stalled until the final morning of the meeting, when a revised version of the Ross Sea MPA with a ~322,000 km^2 krill fishing zone (KRZ) west of the Ross Sea (Figure 1; Table S3), was produced from tri-lateral negotiations with China. The United States and New Zealand noted the revision was "to meet the concerns of a particular Member…We want to thank China for its constructive approach…and spirit of cooperation" (CCAMLR, 2015, para 8.107). China formally thanked the United States and New Zealand for their "endeavors to accommodate" (CCAMLR, 2015, para 8.108). The Commission also agreed to permit krill fishing in the toothfish fishing zone, despite it being a critical breeding area for penguins (Ballard, Jongsomjit, Veloz, & Ainley, 2012; Brooks et al., 2016). With the meeting soon ending, parties agreed to engage intersessionally on the updated proposal (CCAMLR, 2015). Some CCAMLR delegates and scholars attribute China's support to both the KRZ and high-level political meetings between the United States and China during 2015 leading up to the Paris Agreement (Bloom, 2017; Tang, 2017, Liu & Brooks, 2018) (Supporting Information Results, pp. 29–31).

The lead up to the 2016 CCAMLR meeting created a political window of opportunity that ultimately enabled Russia to join in consensus for Ross Sea MPA adoption. First, Russia was isolated as the last State opposing the MPA. Russian President Vladimir Putin had declared 2017 as a Year of Ecology, appointing a new Special Representative for Ecology (e.g., Nilsen, 2016). Russia was also chairing the 2016 CCAMLR meeting, and preparing to celebrate the 200th anniversary of Russia's contested discovery of Antarctica (CCAMLR, 2016a,b). Finally, United States Secretary of State John Kerry, wanting his legacy to include a Ross Sea MPA (e.g., Howard, 2013), had been liaising with his counterparts in Russia, applying high-level political pressure throughout 2016 (Bloom, 2017). The stage was set for Russian leadership.

In 2016, formal Ross Sea MPA negotiations were sparse, occurring primarily in private meetings between the top diplomats from each Member State, or in informal consultations. Russia negotiated for more toothfish fishing in the Ross Sea MPA's SRZ (Figure 1) and to open some previously closed areas outside the MPA (Table S3). The proposal called for a 50-year duration, but other States, like Japan and China, had requested a 20-year duration. Eventually, a 35-year duration was negotiated (Supporting Information Results, pp. 31–34).

On October 28, 2016, the Ross Sea MPA was adopted by consensus (CCAMLR, 2016a,b). The CCAMLR Secretariat printed a map of the MPA and invited all delegations to sign it, most did, including China and Russia (Figure S4). Almost every Member State made substantial closing remarks highlighting the success (Table S4) (Supporting Information Results, pp. 33–34).

4 | CONCLUSIONS AND LESSONS LEARNED

CCAMLR has a long history of conservation successes (e.g., Miller & Slicer, 2014; Österblom & Folke, 2013), but MPAs posed a new collective action challenge (Brooks et al., 2016). Consensus-based decision making allows any party to block a measure, and individual State interests can undermine international cooperation (Miller & Slicer, 2014). Thus, achieving consensus in the Ross Sea was slow, exacerbated by the lack of clear and transparent process and degradation of trust owing to geopolitics within and outside of CCAMLR. A fundamental driver was CCAMLR's mandate to declare closed areas, offering a legal mechanism and legitimacy for MPAs. Early on, the adoption of global targets influenced CCAMLR's discussions. Scientific information underpinned and helped drive the process. Ultimately, consensus for the Ross Sea MPA required levers of influence with diverse Member States. While accommodation of fishing interests was a key incentive, high-level diplomacy and opportunities for leadership potentially proved the most influential drivers.

Importantly, CCAMLR is the only management body to have adopted no-take MPAs within the global commons. As CCAMLR moves toward establishing a network of MPAs, with MPA proposals for the East Antarctic, Weddell Sea, and Antarctic Peninsula under negotiation (Figure 1), the Ross Sea MPA, which established the policy process for high seas MPAs, will continue to inform. CCAMLR States have learned from the experience. Proponents for recent MPA proposals have been more inclusive and transparent in the process, encouraging early participation. For example, Argentina and Chile held multiple workshops in developing an Antarctic Peninsula MPA proposal, inviting all CCAMLR member States, conservation NGOs, and the fishing industry (Supporting Information Results, pp. 18, 29).

The CCAMLR MPA process may, however, prove most influential in informing the ongoing United Nations negotiations to develop other high seas MPAs within a new International Legally Binding Instrument for the Management of Biodiversity in Areas Beyond National Jurisdiction (BBNJ). The new legal instrument is expected to be produced by 2020 through an Intergovernmental Conference process. Though CCAMLR's membership is relatively small and the diversity of industries and stakeholders limited compared with other international bodies, potentially making consensus easier to achieve, the Ross Sea MPA process reveals both potential pathways and impediments. Already BBNJ negotiations

have proposed CCAMLR's Conservation Measure 91–04 as a framework for high seas MPAs (United Nations, 2017), and CCAMLR demonstrated a pathway to work through regional fisheries management organizations (RFMOs), a flashpoint of negotiations within BBNJ. In these international spaces, science, leadership, and high-level political engagement will be critical, as well as engagement with all participants, including NGOs and industry.

Adoption of the Ross Sea MPA was a diplomatic success, but its conservation value remains to be seen. With areas of highest biodiversity and importance to predators left unprotected to accommodate fishing, the MPA may not protect the Ross Sea's ecological structure and function—one of its main objectives. Further, the 35-year duration is shorter than the life histories of many of the animals the MPA intends to protect. Enforcement, research, and monitoring within the MPA will depend on commitments by individual States, most of which do not have the capacity.

Further, like RFMOs, CCAMLR has jurisdiction only over fishing. Thus, the only activity banned in the Ross Sea MPA is industrial fishing and related activities (e.g., transshipment). CCAMLR does not have jurisdiction over mining, tourism, sealing, or whaling. However, many of these activities have de facto protection. Mining is currently banned under the Antarctic Treaty's Madrid Protocol. Commercial sealing has ceased. Commercial whaling is technically prohibited under the International Whaling Commission (IWC), although some whaling still occurs, including in the Ross Sea MPA (Bando, Nakai, Kanbayashi, Umeda, & Kin, 2018).

While the Ross Sea MPA adoption demonstrated leadership and inspired hope that conserving the global commons is possible, its limitations highlight a critical lesson for large-scale conservation initiatives: they must work across institutional boundaries. Global initiatives, such as the Aichi Targets or the United Nations Sustainable Development Goal 14 (Life Below Water), will fail in isolation. Nation States, conservation NGOs, industry and other stakeholders must work together across all relevant institutions. Within CCAMLR, this implies greater coordination with all the institutions that potentially govern or guide Southern Ocean conservation. Beyond the IWC and tourism industry this should include, among others, the Convention on Biological Diversity, and the United Nations Framework Convention on Climate Change. Nonetheless, the adoption of the Ross Sea MPA demonstrates that the Antarctic continues to be an exceptional global commons dedicated to peace, science, and conservation.

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AUTHOR CONTRIBUTIONS

C.M.B. was the lead author, conducted the case study, and performed participant observation and interviews and longitudinal analyses. L.B.C. assisted in case study development, methodology, and analysis. H.Ö. assisted in case study development and analysis, and performed participant observation in 2009. A.L.S. assisted in case study development, methodology, and analysis.

ENDNOTE

[1] Seven States (Argentina, Australia, Chile, France, New Zealand, Norway, United Kingdom) have sovereignty claims in Antarctica and two additional states (Russia, United States) reserve a right to claim; however, these claims were suspended with the signing of the 1959 Antarctic Treaty.

[2] CCAMLR is comprised of fishing and non-fishing States, with an increasing proportion of the latter over time (Brooks, 2013). Some MPA proponent states engage in commercial fishing, including New Zealand; thus all fishing states do not inherently oppose MPAs.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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