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1. Introduction

The Southern Ocean\(^1\) is a unique region of the world. It accounts for nearly 10% of the world’s total ocean space \([1]\), hosts as many as 10,000 known marine species \([2, 3]\), and largely comprises areas beyond national jurisdiction (ABNJ). It is a highly complex and challenging body of water to govern. ABNJ across the globe lack an overarching governance mechanism for managing activities and resource use, which has contributed to the degradation, overexploitation, and pollution of some of the ocean’s richest ecosystems \([4]\). The plight of the world’s oceans featured on the agenda at the 2002 World Summit on Sustainable Development \([5]\), when government leaders agreed the goal to use an ecosystem-based approach in marine management by 2010 and establish a representative network of marine protected areas (MPAs) by 2012. This goal was revised in 2010, when parties to the 1992 Convention on Biological Diversity (CBD) set the target for protecting 10% of ocean space by 2020 using a variety of area-based management tools (ABMTs) including MPAs \([6]\). This deadline has now arrived, and as of August 2020, 5.3% of total ocean space is covered by protected areas. For ABNJ, a meagre 1.2% is protected \([7]\).\(^2\)

The currently fragmented and sector-based legal framework for ABNJ under the 1982 United Nations Convention on the Law of the Sea...
(UNCLOS) is largely to blame for the lack of representative networks of MPAs in this vast ocean space [8,9]. In 2017, the United Nations General Assembly (UNGA) decided to convene an intergovernmental conference (IGC) to establish a new international legally binding instrument (ILBI) that will improve the conservation and sustainable use of marine biological diversity of ABNJ [10]. The new instrument comprises a package deal of four issues regarded as central to enhancing the protection of biodiversity. ABMTs, including the establishment of MPAs, are one of those central themes. The fourth and final intergovernmental conference (IGC-4) for the new ILBI was scheduled for March 2020 but owing to global disruption caused by COVID-19, IGC-4 has been indefinitely postponed. Substantial detail regarding the shape and nature of the Agreement is yet to be determined [11] and it is difficult to predict whether the delay in negotiations will benefit or hinder current inter-sessional work towards the instrument’s development.

In contrast to ABNJ governed by UNCLOS in other regions of the world, the Southern Ocean is uniquely managed by another suite of legal mechanisms known as the Antarctic Treaty System (ATS). Two instruments within the ATS - the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention), and the 1991 Protocol on Environmental Protection to the Antarctic Treaty (Protocol) - contain explicit mandates for the designation of protected areas in the Southern Ocean. To date, the CAMLR Commission (CCAMLR) has adopted two MPAs. Interaction between the ATS and the new ILBI is therefore inevitable as they both address the issue of marine protection in ABNJ.

This article critically examines the status quo for designating MPAs under the ATS and uses these findings to reflect on the future interaction with the new United Nations (UN) ILBI. I hypothesise that Antarctic Treaty Consultative Parties\(^3\) (ATCPs) and CCAMLR members must collectively engage with the ILBI process and across instruments within the ATS, to ensure the future interplay is one of opportunity, not conflict. Recommendations to foster a more effective future interaction are offered in the final concluding section. While a variety of ABMTs exist, this article predominantly focuses on MPAs.

2. Marine protection under the Antarctic Treaty System

The Southern Ocean has been lauded as one of the most comprehensively managed ABNJ in the world under the auspices of the ATS [12–14]. Since the inception of the Antarctic Treaty (AT) in 1959, several urgent environmental and resource issues emerged and were addressed through the adoption of a series of implementing agreements, resulting in today’s comprehensive ATS governance framework [15]. While Article IX of the AT sets out a mandate for parties to adopt measures\(^2\) in furtherance of the principles and objectives of the Treaty, including the “preservation and conservation of living resources in Antarctica”, the emergent issues proved too challenging to be managed by mere measures, hence the early expansion of the regime. In a ‘growth-by-accretion’ model, it was agreed that no successive instrument would undermine those before it, naturally increasing internal complexities throughout the system’s evolution [16]. The annual Antarctic Treaty Consultative Meetings (ATCM) now sit at the heart of the ATS and through consensus-based negotiations, the system has matured into the governance framework we see today.

2.1. The Convention on the Conservation of Antarctic Marine Living Resources (1980)

The CAMLR Convention was negotiated in the late 1970s, owing to mounting concerns regarding the overexploitation of the krill fishery, and entered into force in 1982 [17]. Contrary to typical high seas management approaches whereby the focus is on a single or target species [18], the CAMLR Convention was revolutionary for its time with an overarching objective to conserve all Antarctic living marine resources (Article II (1)). To achieve this conservation objective, Article II (3) requires that any harvesting or associated activities within the CCAMLR area must comply with the following principles of conservation:

(a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment. For this purpose its size should not be allowed to fall below a level close to that which ensures the greatest net annual increment;
(b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in sub-paragraph (a) above; and
(c) prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources.

Article IX (2) of the CAMLR Convention sets out the measures required to ensure these conservation principles can be met which includes:

(g) the designation of the opening and closing of areas, regions or sub-regions for purposes of scientific study or conservation, including special areas for protection and scientific study.

CCAMLR’s endorsement of a holistic, ecosystem-based management (EBM) approach has seen the Commission referred to as an innovative leader that illustrates best practice for regional fisheries management organisations (RFMOs) across the globe [19,20]. In addition to EBM, the CAMLR Convention is also guided by the precautionary principle, which requires cautionary action in the presence of insufficient scientific information or certainty [18,21]. This principle is fundamental when developing conservation measures for species that are not fully understood by the science community, as is the case for the Antarctic toothfish (Dissostichus mawsoni) [22], the cardinal species of the Ross Sea fishery. ‘Conservation’ under the CAMLR Convention includes ‘rational use’ (Article II (2)). Neither the definition nor intent of this concept has been clearly expounded by CCAMLR, thus ‘rational use’ has become increasingly value-laden and interpreted in ways that benefit state interests [23]. This has resulted in a significant strain on CCAMLR’s consensus-based policy process [14]. Additional to this semantic ambiguity, the combination of CCAMLR’s overarching objective, EBM approach, and precautionary principle, have together restricted fishing in the Convention area which has vexed fishing states and further complicated policy processes, especially with regard to closing areas for conservation purposes [24].

CCAMLR meets annually with the central purpose to formulate, adopt and revise conservation measures based on the best available scientific evidence (CCAMLR, 1980, IX(1)(f)) provided by the technical advisory group, the Scientific Committee (SC-CAMLR). At a CCAMLR

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\(^3\) Development under consideration for this article cover discussions up to April 2020.

\(^4\) The Antarctic Treaty Consultative Parties are those parties allowed to take part in the decision-making process. To gain consultative status, parties must demonstrate their involvement in Antarctic matters by “conducting substantial research activity there”.

\(^5\) ‘Measures’ refer to the broad regulatory mechanisms as per Article IX(1) of the Antarctic Treaty. In 1995, ATCPs agreed Decision 1, which divided these regulatory mechanisms into Measures (legally binding), Decisions and Resolutions.
workshop in 2005, it was agreed that “MPAs had considerable potential for furthering CCAMLR’s objective in applications ranging from protection of ecosystem processes, habitats and biodiversity, to protection of species” [25] (p. 596). The workshop decided that a broad-scale bioregionalization of the Southern Ocean would be necessary to identify priority areas of protection [26,27] and that collaboration between the SC-CAMLR and the technical advisory body to the ATCM - the Committee for Environmental Protection (CEP) - would be fundamental in informing this work. In addition to stressing the importance of a harmonised approach across ATS, the workshop duly emphasised that CCAMLR, like other international organisations mandated to manage and conserve biodiversity in ABNJ, had a responsibility to contribute to international discussions regarding MPA designations to further such conservation objectives. Fast forward ~15 years, and this sentiment would see CCAMLR engaging in the new ILBI negotiations.

Shortly after CCAMLR’s completion of the bioregionalization of the Southern Ocean, which identified eleven priority areas for protection [26], the first high seas MPA was designated. The South Orkney Islands Southern Shelf (SOISS) MPA was adopted through Conservation Measure 91–03 in 2009 [60], receiving international acclaim [28]. The proposal prohibited all fishing activities in a 94,000-km$^2$ area; made provisions for permitted research activities; and banned dumping and discharges from shipping. It reportedly flew through the Commission’s processes, receiving little resistance from members [24]. On closer examination, such prompt success has been partially attributed to the MPA boundaries, which were strategically selected to avoid interference with nearby prospective fishing grounds [24,29,30]. This set a disquieting precedent for future MPA designations [31]. Another major shortcoming was the absence of a research and monitoring plan (RMP), which made the MPA’s effectiveness and implementation highly challenging [24].

Although closing areas for the purposes of scientific study or conservation was broadly permitted under Article IX (2) of the CAMLR Convention, in 2009, an explicit legal framework for MPA designation was lacking. In 2011, the Commission adopted Conservation Measure 91–04 [61] to fill this regulatory lacuna and codify its commitment towards the internationally agreed goals for global MPAs. The measure sets out the ‘General framework for the establishment of CCAMLR marine protected areas’ and stipulates the key guiding principles for MPA designations. These include the expectation that every MPA should be based on the available scientific evidence; have an RMP; and contribute to the achievement of the following conservation objectives that are consistent with the CAMLR Convention’s Article II (CM 91–04, (2)):

(i) the protection of representative examples of marine ecosystems, biodiversity and habitats at an appropriate scale to maintain their viability and integrity in the long term;
(ii) the protection of key ecosystem processes, habitats and species, including populations and life-history stages;
(iii) the establishment of scientific reference areas for monitoring natural variability and long-term change or for monitoring the effects of harvesting and other human activities on Antarctic marine living resources and on the ecosystems of which they form part;
(iv) the protection of areas vulnerable to impact by human activities, including unique, rare or highly diverse habitats and features;
(v) the protection of features critical to the function of local ecosystems;
(vi) the protection of areas to maintain resilience or the ability to adapt to the effects of climate change.

This framework was not available when the SOISS MPA was designated, leaving it short of some of today’s key principles such as an RMP. Tension therefore persists between Conservation Measures 91–03 and 91–04 [32]. Recent attempts to rectify this inconsistency through the development of an RMP have proven futile [30]. According to Brooks et al. [24], the adoption of this conservation measure after the establishment of the SOISS MPA, and during the development of other MPA proposals, led to confusion around the whole MPA process. Several other MPA proposals were optimistically tabled following the framework’s endorsement, including in the Ross Sea, East Antarctic, Weddell Sea and Western Antarctic Peninsula, but consequently, all bar one have failed to reach consensus to date.

The Ross Sea region MPA (RSRMPA) entered into force in December 2017 under Conservation Measure 91–05 [34] after five years of laborious negotiation. New Zealand (NZ) and the United States (US) first submitted two separate proposals in 2012, each offering different MPA conceptualisations. A major divergence related to the possible exclusion of a commercially remunerative toothfish fishery [33]. After failing to reach consensus in the first year, a revised joint US/NZ proposal was presented in 2013, including a significantly reduced area for protection. In subsequent annual meetings, the joint proposal received continual push-back and a host of adjustments were made including substantial changes to the MPA zones, such as: further reduction of the proposed general protection zone (GPZ) where commercial fishing is prohibited; enhancement of the special research zone (SRZ) where the krill and commercial toothfish research fishery are regulated (largely to satisfy Russian fishing interests); and the addition of a krill research zone (KRZ) where research for krill is regulated (largely to win China’s approval) [24]. The RSRMPA finally reached consensus in 2016 and now covers an area of at least 1.55 million km$^2$, boasting the largest MPA in the global commons.

The RSRMPA is in place for 35 years. This is 15 years short of the timeframe provided in the original joint proposal [67], and shorter than the life cycle of a toothfish, a key species it aims to protect [22,24]. As per Conservation Measure 91–04, an RMP is required to measure and monitor the MPAs conservation value (Annex C, CM-91-05), however, this continues to be the nucleus of significant geopolitical debate. The RSRMPA RMP was endorsed by the SC-CAMLR following a workshop in 2017 and is considered a ‘working document’, requiring frequent review and amendment [35]. Several states remain either unwilling to acknowledge the existence of the RMP, or disagree with specific aspects of it, thus (reminiscently) bringing the legitimacy of the RSRMPA into question [36]. Not only was the designation of the RSRMPA highly contentious, but many unresolved issues, including the RMP, persist in complicating its continued implementation.

2.2. The Protocol on Environmental Protection (1991) to the Antarctic Treaty

The Protocol to the 1959 Antarctic Treaty is a second instrument within the ATS mandated to protect the marine environment, and which arguably possesses a more comprehensive framework to establish protected areas [15]. The Protocol entered into force in 1998 and designates Antarctica as a “natural reserve, devoted to peace and science” (Article II). Annex V$^6$ (Article 2) outlines procedures and standards for the protection and preservation of the Antarctic environment, including the marine space:

Any area, including any marine area, may be designated as an Antarctic Specially Protected Area (ASPA) or an Antarctic Specially Managed Area (ASMA). Activities in those Areas shall be prohibited, restricted or managed in accordance with Management Plans adopted under the provisions of this Annex.

The ATCM tasks its technical advisory body, the CEP, to investigate key issues such as area protection, and make recommendations to ensure compliance with the Protocol. The ATCM, on recommendation of the

$^6$ Annex V to the Protocol was adopted separately in 1991 by the 16th ATCM and entered into force in 2002.
Areas (ASPs) with a marine component (Source: ATCM [38]. Summary of the amount and percentage of marine area covered by Antarctic Specially Protected Areas (ASMA) and Antarctic Specially Managed Areas (ASMA) containing marine values for protection (including terrestrial and biophysical and ecological processes not confined by such rigid boundaries. Although this limits the CEP’s ability to contribute to a representative network of MPAs, several other obstructing factors are at play. For example, Annex V, Article 6(2) of the Protocol states:

...no marine area shall be designated as an Antarctic Specially Protected Area or an Antarctic Specially Managed Area without the prior approval of the Commission for the Conservation of Antarctic Marine Living Resources.

This provision has resulted in a power shift to CCAMLR members, removing agency from the ATCM in leading its own innovative marine protection initiatives [15]. ATCM Decision 9 (2005) does however offer a level of independence to the ATCM regarding marine protection. The specific scenarios requiring CCAMLR’s prior approval are outlined here, such as when the proposed ASPA/ASMA interferes with harvesting potential; restricts activities permitted by CCAMLR; or, has implications for the CCAMLR Ecosystem Monitoring Programme (CEMP). This leaves space to freely designate areas that do not jeopardise those rights. Regardless, the CEP/ATCM has largely proceeded to delegate marine protection initiatives to CCAMLR [39], which is counterintuitive given that addressing marine protection and management is a priority 2 issue on the CEP’s Five-year Work Plan.

### 3. Towards a new global instrument for biodiversity beyond areas of national jurisdiction

The Southern Ocean largely comprises ABNJ, thus the ATS intersects with the international law of the sea. UNCLOS (1982) provides the overarching governance framework for all ocean space, and at the turn of the twenty-first century, the issue of managing biodiversity in ABNJ emerged on the UN agenda. In 2004, the UNGA adopted Resolution 59/24 [63] calling for the establishment of an Ad Hoc Open-Ended Working Group tasked with studying the legal options for a new multilateral instrument that would better manage the conservation and sustainable use of marine biodiversity in ABNJ [40]. The Group identified four issues central to the development of ABNJ governance, comprising a ‘package deal’ including: capacity building and the transfer of marine technology; ABMTs, including MPAs; environmental impact assessment (EIA); and marine genetic resources including questions on benefit sharing [10]. After nearly a decade of Ad Hoc Open-ended Working Group discussions, the UNGA adopted Resolution 69/292 (2015) [64], formally establishing a preparatory committee mandated to develop an ILBI under UNCLOS. In 2017, UNGA convened the first IGC (IGC-1) to consider the recommendations of the preparatory committee and begin the draft of the new instrument. The first three negotiations have already convened, with the final substantive session postponed indefinitely owing to the COVID-19 global pandemic.

The first draft text of the Agreement was released in May 2019 and underwent significant revision following discussions at IGC-3 [65]. Comprising 70 Articles within 12 Parts, much of the revised text remains square-bracketed, thus a substantial number of provisions are still to be negotiated, clarified and agreed. Draft Article 2 of the revised Agreement outlines the overarching conservation objective which is to:

... to ensure the [long-term] conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction through effective implementation of the relevant provisions of the Convention and further international cooperation and coordination.

Using MPAs as a conservation tool to support this objective is an action delegates agreed as fundamental in the early stages of the ILBI’s formation, but despite wide unanimity, consensus is yet to be reached on a single definition of an MPA (draft Article 1(10)). States have now submitted proposals containing revised text for consideration at IGC-4, and a variety of disparate MPA definitions have been posed. This is unsurprising given the lack of a globally agreed definition for MPAs [41], however the establishment of a single definition will be critical for enriching discussions at IGC-4 and reducing latent misinterpretation [24] once (and if) the Agreement is implemented.

The intersection between the ILBI and existing bodies remains in question. Article 4 of the draft text outlines key provisions relating to the “relationship between this Agreement and the Convention [UNCLOS] and relevant legal instruments and frameworks and relevant global, regional, subregional and sectoral bodies”. This Article stipulates that the ILBI shall not ‘undermine’ existing instruments and frameworks; a feature that has received strong support throughout negotiations. The

### Table 1:

| ASPA # | Name                                             | Area (km²) | % ASPA marine |
|--------|--------------------------------------------------|------------|---------------|
| 106    | Cape Hallett                                     | 0.05       | 10.26         |
| 107    | Emperor Island                                   | 4.59       | 96.18         |
| 117    | Avian Island                                     | 0.61       | 48.50         |
| 120    | Pointe-Geologie Archipelago                      | 0.10       | 25.03         |
| 121    | Cape Royds                                       | 0.48       | 74.01         |
| 124    | Cape Crozier                                     | 8.25       | 12.20         |
| 127    | Harwell Island                                   | 5.22       | 86.00         |
| 133    | Harmony Point                                    | 19.57      | 42.21         |
| 144    | Chile Bay (Discovery Bay)                        | 0.72       | 100.00        |
| 145    | Port Foster                                      | 2.33       | 100.00        |
| 146    | South Bay                                        | 0.97       | 97.18         |
| 149    | Cape Shirreff and San Telmo Island                | 5.66       | 50.40         |
| 151    | Lion’s Rump                                      | 0.67       | 43.29         |
| 152    | Western Bransfield Strait                        | 960.63     | 100.00        |
| 153    | Eastern Dallman Bay                              | 636.57     | 100.00        |
| 161    | Terra Nova Bay                                   | 29.41      | 100.00        |
| 165    | Edmonson Point                                   | 2.54       | 46.01         |
| 166    | Port-Martin                                      | 0.09       | 53.00         |
| 169    | Amanda Bay                                       | 16.11      | 93.98         |
| 173    | Cape Washington and Silverfish Bay               | 273.47     | 97.67         |

TOTAL: 1968.04

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7. (1) ASMA 1, Admiralty Bay, King George Island; (2) ASMA 4, Deception Island; (3) ASMA 7, Southwest Anvers Island and Palmer Basin; ASMA 6, Larsenmann Hills, East Antarctica, includes a marine component but the values for protection only pertain to terrestrial and freshwater features.

8. This figure is a conservative approximation as it adds the total approximate area of ASMAS containing marine values for protection (including terrestrial and marine areas) to the total area of marine space covered by ASPAs as per Table 1 (1968.04 km²). ASMA 1, Admiralty Bay, King George Island covers approximately 360 km²; ASMA 4, Deception Island covers approximately 141 km²; ASMA 7, Southwest Anvers Island and Palmer Basin covers approximately 3238 km². The total approximate marine area covered by the three ASMAS is less than the total approximate area, i.e. <3739 km². The total approximate marine area covered by ASMAS and ASPAS is therefore <5707.04 km².

9. This is a contentious issue. As pointed out by Hemming [59]; a central theme to the Protocol is the “protection of the Antarctic environment and dependent and associated ecosystems”. Hemmings argues that to offer genuine and comprehensive protection, the boundary of the Southern Ocean cannot merely lie along a latitudinal line, rather it should take into consideration the biophysical and ecological processes not confined by such rigid boundaries. This critical perspective requires a broader discussion beyond the scope of this article.
real implications and scope of this notion, however, remain unclear. Two distinct interpretations are evident [42,43]: the first would view ‘undermine’ as a duplication of existing mandates or authority, whereas the second would see the ILBI’s architecture developed in such a way that would avoid undermining the effectiveness, or objectives, of the existing bodies and instruments. The latter would enable the strengthening and support of existing conservation objectives [42]. In the case of MPAs in Southern Ocean management, the latter interpretation is arguably more fitting, given the likely exemption of fisheries as an activity to be managed under the new ILBI [44]. As CCAMLR seemingly uses MPAs to solely manage fisheries [24], a duplication of mandates seems unlikely. Rather, the new ILBI could support work towards MPAs by strengthening the CCAMLR MPA objectives. The draft text also offers a unique indicative set of criteria for MPAs (draft Annex I) beyond the scope of CCAMLR’s MPA criteria:

(a) [Uniqueness; 
(b) [Rarity; ]
(c) Special importance for the life history stages of species;
(d) Special importance of the species found therein;
(e) The importance for threatened, endangered or declining species or habitats;
(f) Vulnerability, including to climate change and ocean acidification;
(g) Fragility;
(h) Sensitivity;
(i) Biological diversity [and productivity];
(j) [Representativeness; ]
(k) Dependency;
(l) [Exceptional naturalness; ]
(m) Ecological connectivity [and/or coherence];
(n) Important ecological processes occurring therein;
(o) [Economic and social factors; ]
(p) [Cultural factors; ]
(q) [Cumulative and transboundary impacts; ]
(r) Slow recovery and resilience;
(s) Adequacy and viability;
(t) Replication;
(u) Feasibility.]

Areas in the Southern Ocean that warrant protection under the ILBI criteria, may serve to both support and complement the conservation objectives of CCAMLR MPAs. A representative network could therefore be achieved using a combination of ABMTs under the diverse criteria of CCAMLR, the Protocol and the new ILBI.

The chosen governance mechanism for the ILBI will be pivotal for how the regime will interact and risk ‘undermining’ competent bodies like CCAMLR. It will also dictate how the ILBI may contribute to marine protection in the Southern Ocean. A trio of options identified in the 2017 Chair’s Non-paper are under consideration: 1) global model; 2) regional and/or sectoral model; or, 3) hybrid model. The ‘global model’ is most ambitious, as it requires adopting an overarching global framework for the designation, management and enforcement of MPAs using a top-down approach. While advantageous for filling current gaps in ABNJ governance, it may leave existing bodies feeling at risk of being undermined, or having rules ‘imposed’ [44] by a new instrument viewed as incompetent. This approach would only succeed if the global body was highly influential [30]. Contrarily, the ‘regional and/or sectoral model’ would offer general MPA policy guidance to existing bodies without global oversight; a bottom-up approach. Only serving to reinforce the status quo for MPA designation in ABNJ is the risk here, with responsibility still relegated to regional and sectoral bodies failing to perform for reasons such as a lack of incentive or capacity, unsuccessful cross-sectoral collaboration, or designations of MPAs that counter technical, scientific advice [30,41,44]. Lastly, the ‘hybrid model’ would see guidelines and objectives determined at a global level, with ‘oversight’ offered to foster sectoral cooperation towards MPA development. Scott [41] suggests that the delivery of ‘oversight’ is ambiguous, and questions whether regional bodies would agree to this process separate to their member states, and how enforcement would be administered regarding states not party to the regional/sectoral body establishing the MPA.

Additional to the unresolved governance mechanism, significant ambiguity underlies the issue of implementation and compliance (Part VIII). Delegates have agreed on the adoption of a Scientific and Technical Body to provide advice (draft Article 21), and that establishing committees for MPA implementation and compliance may be useful, however, the practical function of such bodies remains elusive. The Agreement’s lack of overall comprehensiveness makes it difficult to evaluate how it may intersect with existing instruments. The following section employs the method of critically analysing the status quo for MPA designations under the ATS, to reflect on the necessary steps towards fostering an effective future interaction with the ILBI.

4. Marine protected areas in the Southern Ocean: challenges

Though boasting the largest high seas MPA in the world, CCAMLR has been widely criticised for the length of time it took to reach consensus [24,45–47]. Consensus decision-making allows a single party to halt the progression of any initiative [48], and with 26 members now involved in the decision-making process, MPA negotiations have proven lengthy. A small number of nations persistently opposed the RSRMPA and in a recent comprehensive analysis by Brooks et al. [24], the breadth of concerns that slowed the RSRMPA progress are explored including, inter alia: disagreement with the MPA boundaries, duration and size; concerns that the MPA process was not aligned with CCAMLR rules; interference with fisheries; legal issues such as inconsistencies with UNCLOS; the argument that the RMP was insufficient; and concerns regarding the number of MPA proposals being tabled. MPA support from claimant states has also forged distrust among non-claimants who perceive support as attempts to secure sovereignty over areas of the Southern Ocean [24,30,47]. Thus, underlying every MPA objection, complex geopolitical factors entangled with economic interests, power dynamics, and other external international diplomacy issues were at play [49].

CCAMLR’s growing membership has resulted in the body becoming increasingly identifiable as a RFMO with fishing states now outnumbering non-fishing states [31,47]. The Commission has received criticism for this dynamic, as vested economic interests overshadow core conservation objectives [27,37,45]. The presence of exclusive economic zones (EEZ) in the Southern Ocean has further challenged MPA progress [31]. CCAMLR states with jurisdiction over EEZs are perceived to have unfair access to lucrative fishing grounds, decreasing equity in the process of establishing MPAs in ABNJ, and leaving states who lack territory ‘competing’ for resources, thus reluctant to agree on more area closures. Decision-making power at CCAMLR meetings is only available to states that are actively harvesting, which further diminishes equity within the policy process by excluding states who lack resource.

The presence of institutional issues within CCAMLR are also a major challenge [15,24]. ‘Conservation’ includes ‘rational use’, whereby the parameters of ‘rational’ are decided by voting parties to the Convention and can be founded on political, rather than scientific reasoning [48]. Fishing states have interpreted ‘rational use’ as a right to fish, evoking the term to oppose MPA designations [23,50]. The UNCLOS high seas freedoms reserved in the Article VI of the AT have also been used to support this assertion. As CCAMLR has inextricably linked ‘conservation’ with the misnomer that is ‘rational use’, the overall conservation

10 It is interesting to note that the European Union (EU) is a decision-making CCAMLR member, itself consisting 27 member countries of which several are not Contracting Parties to the CCAMLR Convention.
ethos of the instrument is murky.

In contrast to the CCAMLR Convention, ‘conservation’ in the context of the Protocol is conceptualised as follows:

Conservation embraces both protection and judicious use, management of biodiversity, intrinsic value and importance in maintaining the life sustaining systems of the biosphere: distinguished from “sustainable use” and “sustainable management”.

This definition is from the Guidelines for implementation of the Framework for Protected Areas set forth in Article 3, Annex V of the Environmental Protocol, and highlights a key difference in how the Protocol views conservation for the establishment of protected areas. The ATCM distinguishes between biodiversity conservation and sustainable use, whereas CCAMLR’s notion of conservation includes ‘use’. The rationale for designating protected areas at the CCAMLR and ATCM nexus therefore differs, which does not bode well for the harmonisation of a marine protection approach across the two instruments [15].

The relationship between the CEP/ATCM and CCAMLR is further diminished by the exemption of fishing activities from the Protocol’s EIA process [13]. With fisheries out of scope for the ATCM, CCAMLR must be relied upon to make conservation-based decisions; a task that has proven challenging to date. At the 2009 joint SC-CCAMLR/CEP workshop, it was recognised that while the CEP has no competency or authority over fisheries, it does possess aptitude over other, non-fishing related activities, including the protection of species that rely on overall healthy ecosystems. In fact, the Protocol comprises an entirely different and broad set of criteria for the designation of ABMTs with a marine component. For example, Annex V, Article 3 of the Protocol lists the following criteria which affords protection using ASPAs:

(a) areas kept inviolate from human interference so that future comparisons may be possible with localities that have been affected by human activities;
(b) representative examples of major terrestrial, including glacial and aquatic, ecosystems and marine ecosystems;
(c) areas with important or unusual assemblages of species, including major colonies of breeding native birds or mammals;
(d) the type locality or only known habitat of any species; areas of particular interest to ongoing or planned scientific research;
(e) examples of outstanding geological, glaciological or geomorphological features;
(f) areas of outstanding aesthetic and wilderness value;
(g) sites or monuments of recognised historic value;
(h) and such other areas as may be appropriate to protect the values set out in paragraph 1 above.

Novel ways to enhance marine protection beyond the scope of CCAMLR may be recognised by examining both the commonalities and differences within the broader criteria of the Protocol and new ILBI for the designation of ABMTs including MPAs.

In the same year IGC-1 convened, the ATCM adopted Resolution 5 (2017), which invited the CEP to: “consider any appropriate actions within the ATCM’s competence to contribute to the achievement of the specific objectives set forth in CCAMLR Conservation Measure 91–05, particularly in the designation and implementation of ASPAs and ASMAS in the Ross Sea region and the management of relevant human activities”. Several ATPs responded by submitting a working paper to the 2018 ATCM that re-iterated the need to address Resolution 5 (2017), and the CEP Five-year Work Plan, which asks parties to: “consider connectivity between land and ocean, and complementary actions that could be taken by Parties with respect to MPAs”. To deliver on these agreements, the paper recommended establishing an Interessional Contact Group (ICG) to formally support this work; an initiative that failed to reach consensus. NZ continued to lead informal discussions between 2018 and 2019 and presented a follow-up working paper to ATCM XLII. This included a list of draft complementary measures within the framework of the Protocol that could support land-ocean connectivity and strengthen the marine protection initiatives across the ATS. In response, some delegates argued that the harmonisation initiative must only proceed with CCAMLR’s approval; an opposition that others viewed as undermining the very essence of the work itself [38]. Consensus decision-making created a roadblock yet again, bringing to light a commonly shared criticism that the ATS is increasingly unable to develop environmental policy apace with the rapidly changing Antarctic environment and subsequent conservation issues [51–53][37] [27,54].

5. The future interaction between the ILBI and the ATS

Marine protection in the Southern Ocean is yet to offer representative refuge for increasingly threatened ecosystems, but consequently, the ATS can provide valuable insight into the environmental and political complexities of designating MPAs in ABNJ [14]. ATCPs and CCAMLR members have exercised the legal and political hegemony for Southern Ocean management for several decades now and could offer astute learnings that would enrich discussions about the necessary processes, governance mechanisms and functions of ABMTs under the new ILBI. For example, the implementation of CCAMLR MPAs has been significantly compromised by the omission of RMPs. While avoiding the replication of known flaws [30], this experience could inform the new ILBI regarding the appropriate stage in the MPA process for the development and adoption of RMPs.

ATS engagement is also critical for the future conservation outcomes of ABMTs because “in the realm of marine conservation, stakeholder engagement has been found to be the most important factor in MPAs being ecologically successful” [27](p. 10). Engagement would require the ILBI to first feature on the agendas of both the ATCM and CCAMLR meetings, so that members could collectively view the ILBI through the lens of Antarctic governance, rather than national interests. The mechanism for engagement would need to be both addressed and decided, albeit through consensus, within both fora. Appointed representatives could serve as a possible linkage between the ATS and ILBI processes. Of course, this would require a shared set of values, among other challenges that are beyond the scope of this paper. Social science will be key in further exploring this possibility.

Despite the pressing need for stakeholder engagement the ATS has remained largely disengaged from the ILBI negotiations. For example, at ATCM XI in 2017, the ATCPs agreed on a letter in response to any invitations from the UN Secretariat regarding the ILBI negotiations that stated “Thank you for such a kind invitation. I take this opportunity to recall that the Antarctic Treaty System is the competent framework within which to address the conservation and sustainable use of biodiversity in the Antarctic region” [55] (p. 53). Historically, ATCPs and CCAMLR members have shown this same nature of reluctance towards engaging with the UN treaty system [56,57], which disregards the legal obligations set forth in founding ATS documents (Table 2). Reasons for this include avoiding the further politicisation of issues; maintaining authoritative independence; and retaining the ability to resolve disputes internally [14].

As already discussed in this article, the burden of disengagement not only extends to external international legal processes but also riddles the ATS internally. The critical analysis has given light to a group of states functioning in a progressively fragmented system, which slows progress, and enhances conflict. On numerous counts, CCAMLR has agreed on the importance of proactive engagement with other instruments to effectively address the issue of marine conservation, yet complex and heterogeneous geopolitics have thwarted the policy process. These challenges are further compounded by the consensus-based framework upon which decisions must be made. Likewise, the CEP has recognised marine spatial protection and management as a priority 2 issue in their Five-year Work Plan, yet genuine dedication to this mission is yet to materialise.
Table 2

| Antarctic Treaty System legal documents | Provisions requiring cooperation between the ATS and external legal mechanisms |
|----------------------------------------|--------------------------------------------------------------------------------|
| Antarctic Treaty Article III           | 2 In implementing this Article, every encouragement shall be given to the establishment of cooperative working relations with those Specialized Agencies of the United Nations and other international organisations having a scientific or technical interest in Antarctica. |
| CAMLR Convention Article XXIII         | 2 The Commission and the Scientific Committee shall co-operate, as appropriate, with the Food and Agriculture Organisation of the United Nations and other Specialized Agencies. |
|                                        | 3 The Commission and the Scientific Committee shall seek to develop co-operative working relationships, as appropriate, with inter-governmental and nongovernmental organisations which could contribute to their work, including the Scientific Committee on Antarctic Research, the Scientific Committee on Oceanic Research and the International Whaling Commission. |
|                                        | 4 The Commission may enter into agreements with the organisations referred to in this Article and with other organisations as may be appropriate. The Commission and the Scientific Committee may invite such organisations to send observers to their meetings and to meetings of their subsidiary bodies. |

6. Summary and conclusions

This article has demonstrated the many challenges and opportunities faced by ATCPs and CCAMLR in a world of evolving ocean law. The development of the new UN ILBI offers a window of possibility for the ATS to express its mandate and engage with external developments for the shared purpose of improving the conservation and sustainable (rational) use of biodiversity in ABNJ. Reflections on the status quo for marine protection in the Southern Ocean, however, tell us that ATS decision-makers must better utilise and develop internal mechanisms for cooperation to enable effective engagement with international progress. To increase the chances of a future interplay between the ILBI and the ATS becoming one of opportunity, not conflict, I offer the following brief recommendations for the consideration of both ATCPs and CCAMLR members regarding the issue of MPAs:

- At upcoming ATCM and CCAMLR meetings, address the UN ILBI and consider its implications for spatial management and area protection in the Southern Ocean. Identify complementary synergies where the conservation objectives of each instrument could be mutually supported and discuss (and decide) a mechanism for enhanced engagement with the ILBI process;
- Continue the work on harmonising marine protection initiatives across the ATS as per agreements made at the 2009 joint SC-CAMLR/CEP workshop. Consider further developing the existing mechanisms for cooperation between the ATCM and CCAMLR e.g. mechanisms such as those available within Decision 9 (2005); Conservation Measure 91–02 (2012); Conservation Measure 91–04 (2011); Resolution 5 (2017); and, the CEP Five-year work plan (to name a few);
- Facilitate a second CEP/SC-CAMLR workshop on marine protection and re-emphasise CCAMLR’s commitment towards international goals for the establishment of representative MPA networks. The workshop terms of reference could include: practical steps towards the achievement of conservation objectives for existent MPAs using tools across all ATS instruments; a review of pending MPA proposals to investigate their contribution towards a representative network; an analysis of the possible risks and opportunities available post-implementation of the ILBI; and, establishing a formal Working Group to develop a strategic plan to continue with this work;
- As per Article XXIII (CAMLR Convention), further develop the relationship between the Scientific Committee on Antarctic Research (SCAR) and SC-CAMLR to investigate ways to increase funding opportunities and international collaborations for Southern Ocean marine research and monitoring, including in the social sciences. This could enhance the co-production of science across both policy and scientific communities; enrich decision-making in anticipation for new marine conservation initiatives; and, support research and monitoring for existent MPAs. Once implemented, SCAR’s Ant-ICON (Integrated Science to Inform Antarctic and Southern Ocean Conservation) Scientific Research Programme could be tasked to facilitate this work;
- Consider improvements to the consensus decision-making model for the future effective governance of Antarctica. For example, a burden-of-proof could be mandatory to increase the transparency and quality of decision-making, especially in cases where a single member wishes to veto [58].

Issues of power, geopolitics, and sovereignty have seen the ATS referred to as “hollowing” over time [16]. MPAs provide an excellent case study for examining these fundamental issues, while simultaneously providing a mechanism to address them. CCAMLR has undoubtedly shown leadership on an international stage for adopting MPAs in ABNJ, but a representative network is beyond the line of the horizon. The new ILBI provides a rare opportunity for further supporting this work, not just in the Southern Ocean, but across the globe. The ATS must urgently address the themes within the ILBI package including MPAs and take proactive steps towards harmonising its own framework so that a future intersection can be one of opportunity. Addressing the plight of the world’s oceans can no longer wait. Through international collaboration and leadership, the ATS should put words into action, and engage with developments in the international law of the sea.

Author statement

The author is not depositing data for this article. All information accessed for the research towards this perspective piece is available in the public domain.

Declaration of competing interest

The author is an Environmental Advisor at Antarctica New Zealand however this article is written in a personal capacity and the views therein do not represent New Zealand or any organisation.

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List of acronyms:

ABMT: Area based management tool
ABNJ: Areas beyond national jurisdiction
ASMA: Antarctic Specially Managed Area
ASPA: Antarctic Specially Protected Area
AT: Antarctic Treaty
ATCM: Antarctic Treaty Consultative Meeting
ATCP: Antarctic Treaty Consultative Party
ATS: Antarctic Treaty System
BBNJ: Biodiversity beyond national jurisdiction
CBD: Convention on Biological Diversity
CCAMLR: The Commission for the Conservation of Antarctic Marine Living Resources
CEMP: CCAMLR Ecosystems Monitoring Programme
CEP: Committee on Environmental Protection
EBM: Ecosystem-based management
EIZ: Exclusive economic zone
EIA: Environmental impact assessment
GPZ: General protection zone
IGC: Intersessional contact group
IGC: Intergovernmental conference
ILBI: International legally binding instrument
IUCN: International Union for Conservation of Nature
KRZ: Krill research zone
MPA: Marine Protected Area
RFMO: Regional fisheries management organisation
RMP: Research and monitoring plan
RSRMPA: Ross Sea Region Marine Protected Area
SCAR: Scientific Committee on Antarctic Research
SC-CCAMLR: Scientific Committee to CCAMLR
SOISS: South Orkney Islands Southern Shelf
SRZ: Special research zone
UN: United Nations
UNCLOS: United Nations Law of the Sea
UNGA: United Nations General Assembly
WSSD: World Summit on Sustainable Development
WWF: World Wildlife Fund