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ARTICLE

The shore is the limit: marine spatial protection in Antarctica under Annex V of the Environmental Protocol to the Antarctic Treaty

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ABSTRACT

This paper examines the role of the Protocol on Environmental Protection to the Antarctic Treaty in relation to marine spatial protection, with a focus on the designation of marine or partially marine areas as Antarctic Specially Protected or Managed Areas (ASPAs and ASMAs). For an improved understanding of this ASPA and ASMA practice, the competence arrangements between the Antarctic Treaty Consultative Meeting (ATCM) and the Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR) are also examined. Five categories of ASPAs and ASMAs are identified according to their location and values relative to marine environments and ecosystems. A series of maps illustrate the outcomes of this inventory. The analysis and maps show that the use of ASPAs and ASMAs in marine or partially marine areas has been limited, although such protection is clearly within the mandate and competence of the Antarctic Treaty Consultative Parties. In part to explain these outcomes, the paper examines some recent ATCM discussions on marine protection issues. It is concluded that stronger spatial marine protection through ASPAs and ASMAs, as well as a strengthened integrated protection of the marine environment, requires stronger collaboration between the ATCM and CCAMLR, as well as mutual respect between these bodies.

KEYWORDS

Antarctic environmental protocol; Antarctic Specially Protected Area; Antarctic Specially Managed Area; marine protected areas; CCAMLR; marine spatial protection

Introduction

As stated in Article IX, paragraph 1(f), of the Antarctic Treaty (1959), the Antarctic Treaty Consultative Parties (ATCPs) bear responsibility for the preservation and conservation of living resources in the area to which the Treaty applies: the area south of 60° south (Art VI; hereinafter the Antarctic Treaty area). During the first two decades since the entry into force of the Treaty in 1961, this responsibility has been implemented through the Agreed Measures for the Conservation of Antarctic Fauna and Flora (1964; the Agreed Measures) and many additional Recommendations adopted by the Antarctic Treaty Consultative Meeting (ATCM). During these two decades, two

separate international agreements were also developed and signed: the Convention for the Conservation of Antarctic Seals (1972, CCAS) and the Convention on the Conservation of Antarctic Marine Living Resources (1980, CAMLR Convention). Through the adoption of the Protocol on Environmental Protection to the Antarctic Treaty (1991, the Protocol), environmental protection has been further strengthened for both the terrestrial and marine environments.

In recent years, important progress has been achieved within the framework of the CAMLR Convention with respect to marine spatial protection. While acknowledging these achievements, this special issue part of *The Polar Journal* on the 20th anniversary of the entry into force of the Protocol constitutes an excellent opportunity to focus on the role of the ATCM and the Protocol in the spatial protection of the Antarctic marine environment. To provide a clear and meaningful picture of this role, the authors have studied the application of the two most important instruments of the Protocol in relation to spatial protection: the designation of Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas (ASMAs) under Annex V to the Protocol (hereinafter ASPAs and ASMAs, or Annex V areas). Consequently, this paper aims to answer the following questions:

To what extent have the ASPA and ASMA instruments been applied for the protection of the Antarctic marine environment? and What needs and options exist to improve the application of Annex V spatial instruments for further strengthening the protection of the Antarctic marine environment?

For the purpose of answering these questions, the paper also examines the competence-related arrangements between the ATCM and the Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR). The interrelationship between the ATCM and CCAMLR is not the main topic of this paper, but nonetheless it must receive substantial attention: as we will illustrate this relationship is influencing the practice of designating ASPAs and ASMAs in relation to the marine environment.

The paper is structured as follows: As an introduction, a brief overview of marine protection in the Antarctic Treaty System (ATS) is provided, followed by an identification of the main instruments for marine protection (and particularly spatial protection) under the Protocol. We then discuss marine spatial protection under the Protocol and the connection with the CAMLR Convention. Next, we focus on the application of ASPAs and ASMAs for spatial marine protection. We then provide an update of recent discussions in the ATCM and Committee for Environmental Protection (CEP) on issues that are relevant for the topic of this paper. Based on these discussions we discuss the research questions outlined above and provide final conclusions.

Historic perspective: marine protection in the Antarctic Treaty System

The protection of the marine environment has received much attention in all international agreements that are considered part of the ATS.¹ Early measures – based on

¹Several international conventions outside of the Antarctic Treaty System also provide for marine spatial protection in the Antarctic Treaty area. These will not be discussed here. These include, for instance, the 1973 International Convention for the Prevention of Pollution From Ships, as modified by the Protocol of 1978 (MARPOL 73/78), the International Convention for the Regulation of Whaling (ICRW), the 2001 Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the Polar Code developed by the International Maritime Organization (IMO).

Article IX (f) of the Treaty – did not usually distinguish between terrestrial or marine living resources, and they applied to all living resources in the Antarctic Treaty area. For instance, the Agreed Measures for the Conservation of Antarctic Fauna and Flora, adopted in 1964 (Recommendation III-VIII), also applied to mammals, which in Antarctica are all marine species. The Preamble of the Agreed Measures stipulates: ‘Hereby consider the Treaty Area as a Special Conservation Area and have agreed on the following measures’. In line with this consideration, Article VII(1) of the Agreed Measures affirms that ‘[e]ach Participating Government shall take appropriate measures to minimize harmful interference within the Treaty Area with the normal living conditions of any native mammal or bird, or any attempt at such harmful interference, except as permitted under Article VI’. The Agreed Measures were also the first ATS instrument that established a basis for designating ‘Specially Protected Areas’ (see Article VIII(1)), and because the Agreed Measures applied to the area south of 60° south and did not distinguish between the terrestrial and marine environment, it also provided the option of designating ‘specially’ marine protected areas.² ‘Specially’ because, as explained, the entire Antarctic Treaty area, including all waters south of 60° south, was already considered a special conservation area.

In 1966, following the submission of Working Paper ATCM IV/WP57 by the UK and USA, the ATCM adopted Recommendation IV-21 (1966) on ‘Voluntary measures on pelagic sealing’ which aimed ‘...to promote and achieve the objectives of protection, scientific study and rational use of Antarctic seals’. Among other measures, the Recommendation divided the Antarctic Treaty area in a number of zones into which ‘Seals should be killed or taken only in alternating zones and alternating periods’. This proposal amounted, to a certain extent, to forms of marine spatial management and protection. Based on this and other Recommendations (e.g. Recommendation IV-16 (Santiago, 1966) that designated all species of the genus *Arctocephalus* (fur seals) as ‘Specially Protected Species’ under Article VI(5) of the Agreed Measures), the Convention on the Conservation of Antarctic Seals (CCAS) was adopted in 1972. Under Article 3(1)(d) of this convention, specific measures may include ‘open and closed areas, including the designation of reserves’. Three CCAS seal reserves have been designated in the South Orkney Islands, in Edisto Inlet and in the South West Ross Sea, which is comparatively much larger than the other two. In those reserves, which are seal breeding areas or sites of long-term scientific research, it is forbidden to kill or capture seals.³

In 1975, the ATCM discussed Working Paper ATCM VIII/WP03 (a paper of the Scientific Commission for Antarctic Research (SCAR), submitted by Norway), noting that a number of SCAR National Committees had expressed interest in the possibility of designating inshore marine areas either as Specially Protected Areas (SPAs) or as Sites of Special Scientific Interest (SSSIs) under the Agreed Measures.⁴ The Committees

²This issue has been the subject of a rich debate in the literature in light of Article VI of the Antarctic Treaty. See, among others, Orrego Vicuña, “The Law of the Sea and the Antarctic Treaty System,” 105. See also Vigni, “The interaction between the Antarctic Treaty System and the other relevant conventions applicable to the Antarctic Area,” including footnotes 18 and 62. This discussion is not revisited here in view of the clear assessment by the Legal Working Group in 1975 (see note 5).

³CCAS Annex, point 5.

⁴Doc. ATCM VIII/WP 3, “Specially Protected Marine Areas and Maritime Sites of Special Scientific Interest,” SCAR paper submitted by Norway, 1975, available at http://www.ats.aq/documents/ATCM8/wp/ATCM8_wp003_e.pdf.

noted a distinct need for affording some degree of protection to selected inshore areas, including representative, unique, type locality and inviolate areas. However, the SCAR assessment was that 'at present this is not possible under the Agreed Measures for the Preservation of Flora and Fauna as they apply to terrestrial and ice shelf areas only'. This assessment by SCAR was discussed in the ATCM Legal Working Group, which concluded:

The representatives in the Working Group agreed that the interpretation by SCAR of Article VI of the Treaty and Article I of the Agreed Measures was too restrictive and that consideration of marine areas as Specially Protected Areas or Sites of Special Scientific Interest is possible under the provisions of the Treaty and the Agreed Measures for the Conservation of Antarctic Fauna and Flora.⁵

In 1977, Chile proposed a draft recommendation inviting SCAR 'to make suggestions for the designation of Marine Sites of Special Scientific Interest for consideration at the Tenth Consultative Meeting'.⁶ Chile also expressed its intention to propose to SCAR two marine SSSIs (para. 16, ATCM IX Final Report). At the same ATCM, Recommendation IX-2 on 'Antarctic Marine Living Resources' was adopted. With this Recommendation, the Consultative Parties recall their 'special responsibilities [...] in respect of the preservation and conservation of living resources in the Antarctic', note 'that concentrations of marine living resources are found in the Antarctic Treaty area and adjacent waters' and recognise 'the urgency of ensuring that these resources are protected by the establishment of sound conservation measures which will prevent overfishing and protect the integrity of the Antarctic ecosystem'. On the basis of this acknowledgment, the ATCM adopted 'Interim guidelines pending entry into force of the definitive regime for Antarctic Marine Living Resources' as part of Recommendation IX-2.

A few years later, this Recommendation was followed by the adoption of the 1980 Convention on the Conservation of Antarctic Marine Living Resources which entered into force in 1982. The objective of the CAMLR Convention is the conservation of Antarctic marine living resources (Art. II (1)). For the purposes of the Convention, conservation 'includes rational use' (Art. II (2)).⁷ In addition, 'any harvesting and associated activities' in the Convention area shall be conducted in accordance with the provisions of the Convention and with several principles of conservation (Art. II (3)). In brief, these principles aim to ensure '...the maintenance of stable recruitment in target species, the maintenance of the ecology of the system, particularly in relation to the predators of those target species, and that the ecosystem effects of fishing must be reversible over a fixed period'.⁸ Overall, Article II reflects concerns about overfishing

⁵Memorandum of the Chairman of the Legal Working Group for the Chairman [of the] Eight Consultative Meeting of Antarctic Treaty Representatives, 10 June 1975, attached to Doc. ATCM VIII/WP 3, "Specially Protected Marine Areas and Maritime Sites of Special Scientific Interest," submitted by the (United States of America 1975), http://www.ats.aq/documents/ATCM8/wp/ATCM8_wp041_e.pdf.

⁶Doc. ATCM IX/WP084, "Marine sites of special scientific interest," submitted by Chile.

⁷The "rational use" concept is not defined in the CAMLR Convention. It is generally used as a euphemism for "harvesting" (fishing), although it has been used for other purposes too. Constable has noted that "at present CCAMLR has not considered what constitutes rational use, either in an economic context or in the context of maintaining the amenity of the oceans." Constable, "Lessons from CCAMLR on the implementation of the ecosystem approach to managing fisheries."

⁸Constable, "Managing fisheries to conserve the Antarctic marine ecosystem."

and the expansion of fishing in the Southern Ocean, prevalent at the time the Convention was negotiated, and establishes basic ecosystem and precautionary approaches as the basis to the management of Southern Ocean fisheries.⁹

Following the negotiations and opening for signature of the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA), which was never ratified, the Protocol of Environmental Protection to the Antarctic Treaty was negotiated over a relatively short time and adopted in 1991, together with Annexes I–IV addressing, respectively, Environmental Impact Assessment; the protection of flora and fauna; waste disposal and management and prevention of marine pollution. Annex V on Area Protection and Management was negotiated separately and needed to be ratified on its own. The Protocol and Annexes I–IV became effective in 1998, while Annex V became effective on 24 May 2002.¹⁰ Annex VI on liability for environmental damage was signed in 2005 and is not yet in force.

The Protocol and the main instruments for marine spatial protection

The relevance of the Protocol and its Annexes I–IV and VI to marine protection

Under the Protocol the entire Antarctic Treaty area, including the marine environment south of 60° south, is designated as ‘a natural reserve, devoted to peace and science’ (Art 2). This is a similar approach as that used earlier in the 1964 Agreed Measures. In relation to the whole of this area, the Contracting Parties to the Protocol have committed themselves to establish a ‘comprehensive protection’ of the Antarctic environment and its ‘dependent and associated ecosystems’, a term that is particularly relevant to the marine ecosystems of the Southern Ocean.¹¹

The requirements on environmental impact assessment (EIA), laid down in Article 8 of the Protocol and Annex I, apply to all activities mentioned in Article VII (5) of the Antarctic Treaty.¹² These include all activities in the marine part of the Antarctic Treaty area with the exception of those activities regulated by the International Convention on the Regulation of Whaling (ICRW) and the CAMLR Convention. For instance, since the entry into force of the Protocol in 1998, approximately 55 Initial Environmental Evaluations (IEEs) have been submitted to the Antarctic Treaty Secretariat and included in its EIA database, addressing activities in the Southern Ocean such as research, tourism, environmental monitoring or maritime surveillance.¹³

⁹Hofman, *The intent of Article II of the CAMLR Convention*. For more information on the Article II discussions at the 35th anniversary of the signing of the CAMLR Convention Symposium, see Australia, Chile and the USA, “CCAMLR Symposium 2015”, 15–26.

¹⁰Recommendation ATCM XVI-10 (Bonn, 1991).

¹¹See e.g. Recommendation XIII-4 (Brussels, 1985) and Recommendation XV-1 (Paris, 1989). The extent of the Protocol’s area of coverage has been subject of discussion – see for instance Vidas “Entry into force of the Environmental Protocol and Implementation Issues”, 7–8.

¹²Article VII (5) of the Antarctic Treaty relates to “(a) all expeditions to and within Antarctica, on the part of its ships of nationals, and all expeditions to Antarctica organised in or proceeding from its territory; (b) all stations in Antarctica occupied by its nationals; and (c) any military personnel or equipment intended to be introduced by it into Antarctica subject to the conditions prescribed in paragraph 2 of Article I of the present Treaty.”

¹³Accessed 25 April 2018, keyword “marine” results in 38 IEEs; keyword “Southern Ocean” results in 17 IEEs. These are likely to represent only a subset of the activities carried out in the Southern Ocean – other activities may have occurred but not be listed in the EIA database.

Annex II on the conservation of Antarctic flora and fauna applies to native mammals and birds (Annex II, Art 1) and many of these are marine species that depend on the marine environment.

Annex III on waste disposal and waste management applies also to all categories of activities mentioned in Article VII(5) of the Antarctic Treaty, and it contains specific provisions regarding the disposal of sewage, domestic liquid wastes and other liquid wastes onto sea ice (Annex III, Art 4(2)), the disposal of waste at sea (Annex III, Art 5) and waste management on ships.

The relevance of Annex IV for the marine environment is even more obvious as its provisions relate to the prevention of marine pollution and apply to ships in the Antarctic Treaty area.¹⁴ For the purpose of marine spatial protection, Articles 5(3) and 6(1) are of particular interest. Under these articles, disposal of food waste and the discharge of sewage are not allowed within 12 nautical miles from land or ice shelves, albeit they are allowed beyond this boundary. In view of the definitions in the Annex (e.g. 'ship') and the aims of the Annex, it is clear that the provisions of this Annex also apply to fishing operations.¹⁵

Annex VI contains rules on liability arising from environmental emergencies in the Antarctic Treaty area. Once in force it will cover, for instance, emergencies relating to tourist vessels that enter the Antarctic Treaty area.

Annex V instruments for marine spatial protection

ASPAs and ASMAs

Annex V on area protection and management establishes that '[f]or the purposes set out in this Annex, any area, including any marine area, may be designated as an Antarctic Specially Protected Area or an Antarctic Specially Managed Area' (Art. 2 (1), Annex V) and that activities in those areas 'shall be prohibited, restricted or managed in accordance with Management Plans adopted under the provisions of this Annex'.¹⁶ Thus, such specially protected or managed areas may explicitly include any marine area south of 60° south and are therefore the primary instruments of the Protocol for marine spatial protection.¹⁷

The main difference between an ASPA and an ASMA is that the former is designed to protect 'outstanding environmental, scientific, historic, aesthetic or wilderness values, any combination of those values, or ongoing or planned scientific research' (Art 3(1) Annex V), whilst the latter is designed 'to assist in the planning and co-ordination of activities, avoid possible conflicts, improve co-operation between Parties or minimize environmental impacts' (Art 4(1) Annex V). Furthermore, while the designation of ASMAs is optional (Annex V, Article 4(2)), designating ASPAs is rather an *obligation* for the Contracting Parties under Annex V, Article 3(2):

¹⁴Even in cases of vessels with sovereign immunity, to which the Annex does not apply, each Party shall take into account the importance of protecting the Antarctic environment (Art 11(2)).

¹⁵These requirements from Annex IV of the Protocol are replicated in CCAMLR CM 26-01, 2012.

¹⁶Protocol Annex V, Article 2.

¹⁷Annex V integrated and superseded previous specially protected area systems based on the Antarctic Treaty, such as the Specially Protected Areas of the Agreed Measures.

Parties shall seek to identify, within a systematic environmental-geographical framework, and to include in the series of Antarctic Specially Protected Areas:

- (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;
- (e) areas of particular interest to ongoing or planned scientific research;
- (f) examples of outstanding geological, glaciological or geomorphological features;
- (g) areas of outstanding aesthetic and wilderness value;
- (h) sites or monuments of recognised historic value; and
- (i) such other areas as may be appropriate to protect the values set out in paragraph 1 above.

Aside ‘representative examples of major...ecosystems’ of various kinds, which explicitly refers to marine ecosystems, Article 3(2) of Annex V lists eight other categories of values that should be included in a series of ASPAs. Most of these categories could apply to marine or partially marine areas.

Entry into an ASPA ‘shall be prohibited except in accordance with a permit issued under Article 7’ (Art 3(4) Annex V). Activities in ASMAs do not require a permit (Art 4(3) Annex V) and are regulated on the basis of a code of conduct that is included in the management plan (Art 5(3)(j) Annex V). Management plans are considered by the CEP following submission by one or more proponents, in consultation with the Scientific Committee for Antarctic Research (SCAR), and as appropriate, by CCAMLR. Management plans may be adopted by the ATCM through a Measure. Reviews of management plans, for both ASPAs and ASMAs, shall be initiated at least every five years, and the plans shall be updated if necessary (Art 6(3) Annex V). Currently, the Annex V regime consists of 72 ASPAs (numbered 101–175) and six ASMAs (numbered 1–7) that have been designated by the ATCM (Please see supplemental information).¹⁸

Zoning

Article 5.3(f) of Annex V allows for the identification of zones within ASPAs and ASMAs ‘in which activities are to be prohibited, restricted, or managed for the purpose of achieving the aims and objectives’ of the management plan.¹⁹ Zones are part of ASPAs or ASMAs rather than separate instruments. Zoning guidelines for ASPAs and ASMAs list facilities zones, access zones, historic zones, scientific zones and restricted zones. ASPAs can also include prohibited zones.²⁰ ASMAs can also include visitor

¹⁸Antarctic Protected Area database (http://ats.aq/devPH/apa/ep_protected.aspx?lang=e), April 2018. Three ASPAs and one ASMA have been de-designated in recent years.

¹⁹For an early discussion of zoning issues, see Harris, “Standardisation of zones within specially protected and managed areas under the Antarctic Environmental Protocol.”

²⁰Revised Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas. ATCM Resolution 2 (2011) – Annex.

zones.²¹ Most ASMAs contain different zones where various activities are concentrated, regulated or discouraged. Some zones within ASPAs or ASMAs contain guidance for marine protection. This may include preferred approaches by boat, landing sites and anchoring considerations. Some zones regulate access or set aside scientific or restricted zones, which may include a marine component.²²

Historic sites and monuments

ASPAs or ASMAs may contain sites or monuments of recognised historic value that have been listed as a Historic Site and Monument (HSM) by the ATCM.²³ Designated HSMs can also be located outside those areas. Listed HSMs ‘shall not be damaged, removed or destroyed’.²⁴ In themselves, HSMs are not regarded as protected area instruments. However, depending on the type of site, protecting the HSM means a degree of protection of the discrete area where it is located.

Although Annex V, Article 8 on historic sites and monuments does not explicitly refer to marine areas, it would conceptually be possible to have historical sites and monuments that are underwater or that otherwise have a marine component. Most of the HSMs in Antarctica have a connection with activities at sea such as whaling, exploration or research expeditions, and many HSMs are set in coastal locations. A subset of these HSMs originate in specific activities such as landings, shipwrecks and rescue operations or include cairns or commemorative plaques remembering some of these earlier maritime activities.²⁵ However, only a few management plans for ASPAs containing HSMs refer explicitly to the presence of historic remains in the marine environment, such as underwater or in the intertidal zone.²⁶

One ocean, two regimes

Before analysing the practice of designating ASPAs and ASMAs to protect marine values, it is important to discuss briefly the relationship between the ATCM and CCAMLR. The CAMLR Convention area broadly coincides with the Antarctic Polar Front (also known as Antarctic Convergence), the approximate boundary for the Southern Ocean that surrounds the Antarctic continent.²⁷ Consequently, the CAMLR Convention area includes the Antarctic Treaty area south of 60° south (coincident with the marine area to which the Protocol applies) and also extends further north in the Atlantic and Indian Oceans to latitudes of 55°–45° south. There is also an overlap in the life forms covered by both the Protocol and the CAMLR Convention, with native

²¹Guide for the preparation of management plans for Antarctic Specially Managed Areas. ATCM Resolution 1 (2017) – Annex B.

²²See, for instance, ASMA 4 *Dry Valleys*.

²³See the article by Susan Barr in this issue of *The Polar Journal*.

²⁴Annex V, Article 8(4). There is a more extensive set of ATCM instruments providing additional protection or guidance to the management of HSMs.

²⁵Roura, “Antarctic cultural heritage: geopolitics and management.”

²⁶For instance, HSM 45 “Remains of Port-Martin base” is situated in ASPA 166 *Port-Martin, Terre-Adélie*.

²⁷The Antarctic Polar Front is an irregular, variable zone in the Southern Ocean some 40–50 km wide, occurring between about 48°–61° south, where cold Antarctic surface water and warmer sub Antarctic surface water meet and intermix. The zone is a significant oceanic and biological boundary and has been used as the basis for the boundary of the CAMLR Convention area.

mammals and native seals covered by both instruments in their respective areas of application.²⁸

The functioning of the ATCM and of CCAMLR

The ATCM is the main decision-making body for matters relating to the Antarctic Treaty and the Protocol. The ATCM may adopt a series of instruments (Measures, Decisions and Resolutions) on key issues. The CAMLR Convention establishes the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), which has a central role in implementing and further developing the Convention's legal instruments. CCAMLR may adopt binding Conservation Measures and non-binding resolutions to support the conservation of marine living resources and the management of fisheries in the Southern Ocean.²⁹

The parties to both conventions overlap substantially, as does the membership of their respective decision-making bodies: the ATCM and CCAMLR.³⁰ There are currently 29 ATCPs, including the 12 original signatories and 17 countries that acceded the Treaty after having demonstrated their interest in Antarctica in accordance to Article IX.2 of the Treaty by 'conducting substantial research activity there'. ATCPs participate in ATCMs and have voting rights. There are further 24 Non-Consultative Parties to the Antarctic Treaty. CCAMLR is composed of 25 members (24 States and the European Union) and 11 parties. A member is a Party that is active in fishing or research, contributes financially to CCAMLR and has voting rights.

ATCPs and CCAMLR conduct their business through annual meetings and make decisions by consensus. For a number of contracting parties the composition of national ATCM and CCAMLR delegations overlap significantly, i.e. some of the same institutions and individuals represent their countries in both bodies.

The ATCM functions through plenary meetings complemented by meetings of Working Groups (currently on legal and institutional issues and on science, tourism and logistic issues). The Committee for Environmental Protection (CEP), established by Article 11 of the Protocol, provides advice and formulates recommendations to the ATCM regarding the implementation of the Protocol, including the operation of its Annexes.³¹ The CEP's work is complemented by CEP subsidiary groups on protected areas and on climate change.³² Other ad hoc, time-limited discussion groups may be

²⁸For the CAMLR Convention, "Antarctic marine living resources means the populations of fin fish, molluscs, crustaceans and all other species of living organisms, including birds, found south of the Antarctic Convergence" (Article I (1)). For the Protocol, Annex II, Article 1, "native mammals" and "native birds" refer to any member of any species (and for birds, at any stage of its life cycle) of the Classes Mammalia or Aves, respectively, indigenous to the Antarctic Treaty area or occurring there naturally through migrations. Instead, native invertebrates or native plants refer to terrestrial or freshwater species only.

²⁹Webpage on the CAMLR Commission's work, <https://www.ccamlr.org/en/organisation/commission>.

³⁰At the time of writing, 23 consultative parties to the Antarctic Treaty, including all 12 original signatories, were full Members of CCAMLR. Four consultative parties (Bulgaria, Finland, The Netherlands and Peru) were contracting parties of the CAMLR Convention but not Members of CCAMLR. Two ATCPs (the Czech Republic and Ecuador) have not adhered to the CAMLR Convention. The European Union and Namibia are Members of CCAMLR but have not adhered to the Antarctic Treaty. In addition, 22 other states are signatories of one or the other instrument, or of both, but do not have the status to participate in decision making for either body. Six EU Member States have not acceded to either instrument but are entitled to participate in EU consultations on CCAMLR issues.

³¹Protocol Article 12.

³²Subsidiary Group on Management Plans (SGMP) and Subsidiary Group on Climate Change Response (SGCCR).

tasked by the CEP to address specific topics. CCAMLR's subsidiary bodies are the Standing Committees on implementation and compliance and on administrative matters; its advisory bodies are the Scientific Committee (SC-CAMLR) and its scientific and technical working groups.

Discussions at SC-CAMLR are somewhat more technical than at the CEP (for instance, they inform annual fishing quotas) which requires its Working Groups members to meet in person in between CCAMLR annual meetings. The CEP, on the other hand, provides advice to the ATCM on a broader set of environmental issues than SC-CAMLR. Both the ATCM/CEP and CCAMLR/SC-CAMLR send observers to the other body's meetings.

There are important differences in philosophy between CCAMLR and the ATCM/CEP. As noted earlier, under Article II of the CAMLR Convention, CCAMLR has the mandate of 'conservation' of Antarctic marine living resources, '...including rational use' although 'any harvesting and associated activities...' must meet important conservation principles (CAMLR Convention Art. II). Due to its focus on conservation, CCAMLR is not generally regarded as a Regional Fishing Management Organization. Instead, the Protocol designates Antarctica as 'a natural reserve, devoted to peace and science' (Protocol, Article 2) and mandates State Parties to the 'protection' of the environment and of a range of Antarctic values as a 'fundamental consideration for the planning and conduct of all activities' (Protocol, Article 3).

Further, there are fairly substantial differences in meeting dynamics between the ATCM and CCAMLR meetings. Whereas both are international fora where national interests play a significant role, the commercial component at CCAMLR meetings is more obvious than at the ATCM. In both fora the industries are represented by bodies acting in an observer/expert capacity: krill and toothfish operators for CCAMLR and tourism for both CCAMLR and ATCM.³³ Industry influence is also evidenced in the composition of national delegations to CCAMLR, with one or more representatives of the fishing industry participating in many national delegations. At the ATCM, in contrast, only a few ATCM delegations include representatives of the tourism industry.

Environmental Non-Governmental Organizations (ENGOS) are represented as experts/observers by a coalition of the main national and international ENGOS with an interest in Antarctica.³⁴ ENGOS have a limited representation in national delegations for either body.

Due to commercial sensitivities, much of the information discussed at CCAMLR meetings and related bodies – for instance working papers – is not publically available or at least not easily accessible to the public. In contrast, all documents submitted to the ATCM and CEP are accessible online on the conclusion of the annual meetings.

CCAMLR protected area instruments

Many of CCAMLR's Conservation Measures have a spatial dimension through regulating certain activities in specified areas (spatial units) in the CAMLR Convention area, either for

³³These include the Association of Responsible Krill Fishing Operators (ARK), the Coalition of Legal Toothfish Fishing Operators (COLTO) and the International Association of Antarctica Tour Operators (IAATO).

³⁴The Antarctic and Southern Ocean Coalition, ASOC.

a fixed period or permanently.³⁵ These Conservation Measures generally concern fisheries research or management and are not categorised by CCAMLR as protected areas.

CCAMLR has also established several instruments of marine spatial protection, notably CCAMLR Ecosystem Monitoring Program (CEMP) sites and Marine Protected Areas (MPAs). These may coincide with, contain or be adjacent to ASPAs or ASMAs designated by the ATCM.

CEMP sites are locations where the key life-history parameters of selected dependent species such as penguins, albatrosses, petrels and fur seals are monitored to detect changes in the abundance of fished species and their predators and to identify fishing related effects from environmental variability.³⁶ CCAMLR adopted CM 91-01 (2004) to provide protection to CEMP sites to address concerns that activities at some sites may interfere with the collection of data. There are currently no protected sites under CM 91-01, but seven of the 13 currently active CEMP sites south of 60° south are protected by effect of being within ASPAs or ASMAs.³⁷

In 2009 CCAMLR committed to adopting a representative system of MPAs in the Southern Ocean. It also adopted the South Orkney Islands Southern Shelf MPA (CM 91-03, 2009): the first MPA in the high seas. Subsequently it approved a general framework for the establishment of MPAs under the CAMLR Convention (CM 91-04, 2011) which outlines major ecosystem protection, climate change and research objectives underpinning MPA development. Following several years of negotiations, CCAMLR adopted the Ross Sea Region Marine Protected Area (CM 91-05, 2016), which includes an area of over 1.55 million square kilometres excluding ice shelves, of which 1.12 square kilometres are fully protected.³⁸ CCAMLR is currently discussing proposals for MPAs in the Antarctic Peninsula and Scotia Sea, East Antarctica and the Weddell Sea region. All current and proposed MPAs are located south of 60° south and contain fully or in part, or are adjacent to, existing ASPAs and ASMAs.

Competence-related arrangements between ATCM and CCAMLR

The CAMLR Convention and the Antarctic Treaty and its Protocol have separate aims and different but overlapping contracting Parties and geographical scopes. However, the instruments are interrelated, and the aims of the separate systems also require effective collaboration and mutual respect.³⁹ Therefore, various ‘arrangements’ for collaboration and preventing inconsistencies have been codified. For example, Article IX(5) of the CAMLR Convention states CCAMLR ‘shall take full account of any relevant measures or regulations

³⁵Examples of CCAMLR Conservation Measures with a spatial dimension include additional protection for Vulnerable Marine Ecosystems (VMEs) from bottom fishing activities (whether their presence is known (CCAMLR CM 22-09, 2012) or potential (CM 22-07, 2017)); prohibition on fishing for toothfish (*Dissostichus spp.*) in depths shallower than 550m in exploratory fisheries (CM 22-08, 2009); the establishment of time limited Special Areas of Scientific Study in newly exposed marine areas following ice shelf retreat or collapse around the Antarctic Peninsula (CM 24-04, 2017); environmental protection restrictions including with respect to discharges and dumping (CM 26-01, 2015) south of 60° south and prohibition of directed fishing in some closed areas (CM 32-02, 2017).

³⁶For an overview of the CEMP see Constable, “Lessons from CCAMLR on the implementation of the ecosystem approach to managing fisheries.”

³⁷<http://www.ccamlr.org/en/science/ccamlr-ecosystem-monitoring-program-chemp>.

³⁸Surface data from <https://www.mfat.govt.nz/en/environment/antarctica/ross-sea-region-marine-protected-area/>.

³⁹Article Arts. V(1) and V(2) CAMLR Convention. This extends to Contracting Parties of the CAMLR Convention which are not Parties to the Antarctic Treaty.

established or recommended by the Consultative Meetings pursuant to Article IX of the Antarctic Treaty'.⁴⁰ It may also be desirable that CCAMLR draws attention to ATCM measures more directly through its Conservation Measures. A particularly important example is CM 91-02, which provides the following:

Each Contracting Party shall ensure that their fishing vessels licensed in accordance with CM 10-02 are aware of the location and relevant management plan of all designated ASMAs and ASPAs which include marine areas listed in Annex 91-02/A.

Prior to the adoption of CM 91-02 there were instances of krill fishing activities taking place in waters that are part of ASMA 1, *Admiralty Bay, King George Island*. This ASMA contains ASPA 128, *Western shores of Admiralty Bay*, which supports an exceptional assemblage of Antarctic birds and mammals and is the focus of long term research.⁴¹

Conversely, the ATCM must also take account of the work, expertise and competences of CCAMLR. For instance, in accordance with Article 5(1) of Annex V, CCAMLR may take the initiative to propose an area for designation as an ASPA or ASMA by submitting a proposed management plan to the ATCM. In addition, Article 6 (1) of Annex V to the Protocol requires the ATCM to forward proposed management plans for ASPAs and ASMAs to the CEP, the Scientific Committee on Antarctic Research (SCAR) and, 'as appropriate', CCAMLR. In addition, the CEP shall take into account any comments provided by the SCAR and, 'as appropriate', by CCAMLR. Furthermore, Article 6(2) of Annex V to the Protocol states that no marine area shall be designated as an ASPA or ASMA without the 'prior approval' of CCAMLR.

Decision 9 (2005) provides more clarity on the interpretation of Article 6(2) of Annex V:

- (1) That for the purpose of the implementation of Article 6.2 of the Environmental Protocol, draft management plans that contain marine areas which require a prior approval of CCAMLR are those:
 - (a) in which there is actual harvesting or potential capability of harvesting of marine living resources which might be affected by site designation; or
 - (b) for which there are provisions specified in a draft management plan which might prevent or restrict CCAMLR related activities.
- (2) That proposals for designations of Antarctic Specially Protected Areas or Antarctic Specially Managed Areas which meet the criteria of Paragraph 1 above shall be submitted to CCAMLR for its consideration before any decision is taken on the proposal relating to marine areas.
- (3) Furthermore that any other proposed designations which might have implications for CCAMLR Ecosystem Monitoring Programme (CEMP) sites shall also be submitted to CCAMLR for its consideration.⁴²

⁴⁰Article IX(5) CAMLR Convention.

⁴¹ATCM XXXV report, paragraphs 162–168.

⁴²Decision 9 (2005), "Marine Protected Areas and Other Areas of Interest to CCAMLR."

This approach has been applauded by CCAMLR: ‘The Commission agreed that the provision of advice from CCAMLR to the ATCM, in order that such advice could be included in decision-making, was consistent with the spirit of cooperation and harmonisation between CCAMLR and the ATCM’.⁴³ This is also the main message of Resolution 1 (2006), in which the ATCM underscored the importance of the CAMLR Convention as an integral part of the ATS and ‘encourage[d] increased cooperation at the practical level’ between the ATCM and CCAMLR. Cooperation between various bodies is a recurrent theme in ATCM/CEP discussions and the subject of several ATCM Resolutions while, at the same time, the ATCM and the CEP retain autonomy to expand the protection of the marine environment with respect to matters under their competency.⁴⁴ In addition, the CEP and SC-CAMLR have conducted two workshops which discussed practical cooperation on issues of common interest (2009) and on climate change and monitoring (2016).⁴⁵

The 2009 workshop discussed spatial marine management and protected areas in some detail (paragraphs 7.1–7.9). The workshop ‘...agreed on the importance of a systematic approach to marine spatial protection and management and noted that CEP and SC-CAMLR had agreed to taking a harmonised approach to the development of a representative system of marine protected areas (CEP IX Final Report, paras 98 to 99; SC-CAMLR-XXIV, paragraph 3.51–3.52)’ (paragraph 7.1).⁴⁶ The workshop also noted:

Issues relating to spatial protection and management of Antarctic marine biodiversity would generally be best led by SC-CAMLR. However, this does not preclude in any way the development by the CEP of ASPAs and ASMAs which have in whole or in part a marine component. (paragraph 7.7)⁴⁷

These various arrangements and discussions make clear that the foundations for expanding the system of Annex V areas on the marine environment are in place.

The application of ASPAs and ASMAs for marine spatial protection

Five area categories

For the purposes of this article the set of existing ASPAs and ASMAs can be categorised on the basis of their *location* relative to the marine environment and the *values* they aim to protect or manage. Location factors include whether the Annex V areas are far or close from the shore, whether they contain a marine component within its boundaries or not and, if so, whether this component is major or minor. Value factors include whether or not the Annex V area primarily aims to protect values or manage activities associated with the marine environments and ecosystems. For instance, many ASPAs use the shoreline (the shifting line of contact between the sea and land) as one of their boundaries. Although these

⁴³See Paragraph 5.83 of the CCAMLR-XXXII report.

⁴⁴See, for instance, the Final Report ATCM XXXII (2009), paragraph 97 and Appendix 4 to the CEP Report, Part I, section 2, page 157. The CEP agreed at its 2009 meeting to ‘develop a strategy and work towards the establishment of an effective, representative and coherent spatial protection of marine biodiversity within the Antarctic Treaty area within the next three years through the designation of Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas (ASMAs).’

⁴⁵See ATCM XXXII/WP055 submitted by France, New Zealand, Russian Federation and USA and ATCM XXXIX/WP 053 submitted by UK and USA.

⁴⁶ATCM XXXII/WP055, paragraph 7.1.

⁴⁷*Ibid.*, paragraph 7.7.

areas may be entirely ‘above water’, some of these ASPAs protect marine ecosystem values such as breeding sites for native seabirds or marine mammals. Other ASPAs in a similar setting protect instead terrestrial, historic and other ‘above water’ values.

These factors influence whether or not the areas contain ‘actual harvesting or potential capability of harvesting of marine living resources’, which is the criterion set by Decision 9 (2005) *Marine Protected Areas and other areas of interest to CCAMLR* to determine if the designation of an ASPA or an ASMA requires prior approval by CCAMLR. On the basis of these criteria – location and values – the authors have identified the following five area categories ([Figures 1–3](#)):

- (1) Marine or partially marine ASPAs and ASMAs that meet the criterion of Decision 9 (2005) and which required approval by CCAMLR prior to their adoption by the ATCM⁴⁸;
- (2) Marine or partially marine ASPAs and ASMAs that do not meet the criterion of Decision 9 (2005) and which did not require approval by CCAMLR prior to their

⁴⁸Listed in CM 91-02 (2012).

Figures 1–3. Maps and map key. Categorisation of ASPAs and ASMA.

adoption by the ATCM.⁴⁹ The marine component, in these instances, is usually limited to the nearshore environment;

- (3) Coastal ASPAs and ASMAs protecting values pertinent to the marine ecosystems (e.g. native seabirds and mammals that spend part of their life cycles on land). These areas are adjacent to the shoreline, which serves as one of the area boundaries, but have no marine component;
- (4) Coastal ASPAs and ASMAs protecting values pertinent to the terrestrial ecosystems (e.g. terrestrial flora and fauna, lakes) or other above-water values and features (e.g. geological features or sites or monuments of recognised historic value). These areas are also adjacent to the shoreline, which serves as one of the area boundaries, and have no marine component and
- (5) Inland ASPAs and ASMAs that protect a range of terrestrial, above-water values and features. Some of these areas are located in the Antarctic interior; other areas are relatively close to the coast, although not adjacent to the shoreline, e.g. at high altitude.

It should be noted that some ASPAs are set in unique locations and do not fit neatly into one of the above categories. Many ASPAs de facto protect a combination of terrestrial and marine values, although usually the primary reason to protect an area is specific.

Categorisation of ASPAs and ASMAs according to their marine component

As noted above the series of Annex V areas contains 72 ASPAs and 6 ASMAs. After a brief overview of the entire series of Annex V areas, the section below discusses the main characteristics of each of the categories and some examples of protection of marine values.

Most ASPAs of all categories (nearly 80% of all ASPAs) were established prior to 2002 – before Annex V entered into force – and in fact prior to the entry into force of the Protocol in 1998. These areas were then re-designated with Annex V categories. Relatively fewer areas have been designated as ASPAs since then. In contrast all ASMAs in place were designed after 2002, as (unlike ASPAs) an equivalent instrument did not exist before Annex V. Three ASPAs and one ASMA were de-designated in 2014 for management or scientific reasons and others may follow in the future.⁵⁰

All ASPAs and ASMAs in the series have been established for an indefinite period except three small marine sites that were initially established as Special Sites of Scientific Interest and later re-designated as ASPAs. Their duration has been extended periodically pending review.

Most ASPAs are relatively small in surface area (range <1–900 km² approximately) when compared to ASMAs (range 400–18,000 km² approximately). Annex V areas are also considerably smaller than CCAMLR MPAs (range 94,000–1.5 M km² range). In addition, at present there are 26 ASPAs under 1 km² in surface area and 22 ASPAs under 10 km².

⁴⁹CM 91-02 (2012), footnote 1.

⁵⁰CEP XXI Report, paragraphs 63–68; ATCM XXXI Final Report, paragraph 105.

The examples below illustrate the diversity of ASPAs and ASMAs within categories 1–5, the various values that are protected in accordance with the criteria of Annex V, Article 3 (2) and the key marine protection requirements within the areas according to their management plans.

Category 1: marine or partially marine ASPAs and ASMAs reviewed by CCAMLR

At the time of writing, 11 ASPAs and three ASMAs contained a marine component meeting the criteria of Decision 9 (2005) and required approval by CCAMLR prior to their adoption by the ATCM.

The ASPAs adopted with the approval of CCAMLR have a marine component that covers approximately 30–100% of the area of the ASPA. The largest ASPA in this category is over 900 km², but several of them are considerably smaller with a size between 1 and 10 km².

The primary reason for designation of most of these areas as ASPAs is scientific research interest or the presence of important or unusual assemblages of species, including major colonies of breeding native birds or mammals. In several of these ASPAs, marine protection regulations are generic rather than specific and are included in the ASPA's permit conditions. In these instances, there are no specific restrictions on routes of access to or movement within the ASPA, although movements should be minimised. Requirements include preferred locations for boat access, landings and anchoring. Free passage of ships is allowed in most ASPAs, although ASPA 173 *Cape Washington and Silverfish Bay* includes a restricted marine zone. In areas where the benthic habitat is protected, the marine protection component includes a request to avoid waste dumping from ships, bottom hauling and sitting of bottom devices, as well as anchoring except in compelling circumstances.

Harvesting (fishing) is not specifically mentioned in the ASPA management plans, with two exceptions. The management plan for ASPA 161 *Terra Nova Bay* states that '[n]o marine resource harvesting has been, is currently, or is planned to be, conducted within the Area, nor in the immediate surrounding vicinity'. The management plan for ASPA 165 *Edmonson Point* notes that research in the ASPA 'is important to broader studies of how natural and human-induced variations in the Antarctic ecosystem may affect the breeding success of Adélie penguins, and to understand the potential impact of harvesting of Antarctic krill (*Euphausia superba*)'.

Each of the three ASMAs adopted with the approval of CCAMLR has a marine component that covers approximately 30–90% of the ASMA area. The management plans for these ASMAs aim to conserve and protect the environment and more specific values, such as breeding seabird populations, by managing the variety of activities and interests. These ASMAs also contain several ASPAs.

The marine spatial protection component within ASMAs 1 *Admiralty Bay* and 4 *Deception Island* consists primarily of either shallow marine areas or small research blocks protected as ASPAs. Access to these areas by ships or other vessels is not restricted, but some guidelines for research, anchoring, etc., are provided in order to avoid or minimise disturbance of wildlife, benthic habitats or interference with ongoing research.

ASMA 7 *Southwest Anvers Island and Palmer Basin* has a much larger surface area than the other two ASMAs, much of which is a marine area. ASMA 7 explicitly aims to ensure that any marine harvesting activities are coordinated with scientific research and other activities taking place within the ASMA. ASMA 7 is also a CEMP site, where the

connection between offshore fishing and the health of land-based predator species is monitored. Its marine spatial protection component consists of restricted zones (a number of islands), including a buffer extending 50 m from the shore into any adjacent marine area. In order to protect sensitive bird colonies throughout the breeding season, access to the restricted zones between 1 October to 15 April is restricted to those conducting essential scientific research, monitoring or maintenance.

Category 2: marine or partially marine ASPAs and ASMAs not reviewed by CCAMLR

Category 2 Annex V areas include 10 ASPAs and one ASMA. Although these areas include a marine component, they have not been reviewed by CCAMLR as they do not meet the criteria of ATCM Decision 9 (2005). This lack of interest is related to the small size of the areas, the fact that they are not navigable or that they are outside of fishing grounds. In some of these ASPAs, protected waters are a narrow buffer zone 10–100 m wide in zones surrounding islands. In other instances, marine areas are larger but unsuitable for fishing.

ASPAs 107 *Emperor Island* comprises the island itself as well as the marine environment (including sea ice when present) within 1,000m of the coastline. The site contains an isolated colony of emperor penguins of outstanding scientific interest, and one of only two colonies of this species in which breeding occurs on land. The 1,000m boundary is set as a precautionary limit to avoid disturbance to breeding emperor penguins. Within this zone, landing and over flight restrictions apply to aircraft during the period from 1 April to 15 December.

ASPAs 137 *North West White Island, McMurdo Sound* is an unusual site that protects an isolated Weddell seal population located around Black Island, which is surrounded by the Ross and McMurdo ice shelves under which the seals feed. The area includes the coast and the ice shelf and is entirely marine. However, it is covered by these floating ice shelves.

ASMA 4 *Dry Valleys* is a large area managing and protecting primarily terrestrial values. Most of the ASMA, which is the second largest in Antarctica, is above water but adjacent to McMurdo Sound and contains a marine area, Explorers Cove, which has been designated as a 'scientific zone' extending to the grounding depth of sea ice pressure ridges at 75–100 m offshore. The purpose of this zone is to avoid disturbance to the local marine environment and ecology which are the subject of long-term scientific studies. This relatively small marine area is therefore currently protected.

Category 3: coastal areas protecting marine ecosystem values on land

There are 19 ASPAs and one ASMA protecting marine ecosystem values on land. These are above-water areas in which the shoreline serves as one of its boundaries. These Annex V areas primarily protect features such as breeding areas for seabirds and seal, or concentrations of these animals, but not the marine environment itself. Some Category 3 ASPAs (e.g. 105 *Beaufort Island*, 120 *Point-Géologie Archipelago* and 124 *Cape Crozier*) protect groups of islands or rocks that are important for some penguin populations and protect the fast ice around these, when present, but not the marine environment itself.

ASMA 6 *Larsemann Hills, East Antarctica* covers an ice-free area of 40 km.² The ASMA comprises the ice-free area and near-shore islands collectively known as the Larsemann Hills and the adjacent plateau. The ice-free area includes a range of coastal features including two major peninsulas (Stornes and Broknes), four minor peninsulas and approximately 130 near-

shore islands. The ASMA includes the coastal area within a polygon that includes the nearby islands but not the marine environment. The ASMA contains two ASPAs, one of which, ASPA 169 *Amanda Bay*, includes a small marine component and protects a breeding colony of Emperor penguins.

Category 4: coastal areas protecting terrestrial values on land

There are 18 ASPAs primarily designated to protect terrestrial flora and ecosystems, although some of these areas also contain significant marine values. There are no Category 4 ASMA according to the classification used here.

Some sites are protected due to their geological values, and there is also a site designated as a tomb. Several of these ASPAs are also primarily sites set aside for research purposes. Several ASPAs have a maritime connection with respect to the expeditions that were later established at those sites and whose remains are now protected, including ASPA 155 *Cape Evans*, ASPA 157 *Backdoor Bay* and ASPA 159 *Cape Adare*. ASPA 154 *Botany Bay* protects both flora and historic values.

Category 5: inland areas

There are 14 ASPAs and one ASMA in this category, which aim to protect values or manage activities which are mostly not associated with the marine environment, including glaciological features, high altitude geothermal sites and a polar desert ecosystem. However, ASPA 142 *Svarthamaren* protects the largest known inland seabird colony in Antarctica, with snow petrels, south polar skuas and Antarctic petrels. ASPA 147 *Ablation Valley* includes two perennially frozen freshwater lakes, which although are located about 100 km from the open sea are in contact with the saline waters of George VI Sound, which at that location is under a floating ice shelf. Marine biota and several seals have been observed in one of these lakes. ASPA 158 *Hut Point, Ross Island* protects a historic site (Scott's *Discovery* hut) and is located close in a small peninsula a short distance from the sea. However, ASPA 158 includes solely the footprint of the hut, which is located within the operational area of USA's McMurdo Station. As far as the ASMA are concerned, ASMA 3 *Amundsen-Scott South Pole Station*, South Pole, is the only ASMA in this category.

Discussion

Anthropogenic impacts on marine ecosystems in Antarctica clearly require the attention of governing bodies.⁵¹ In this context, the application of Annex V areas constitutes an important mechanism to complement other area-based instruments applicable to the Southern Ocean. However, the rate of ASPA designation in general has almost halved in the past decade.⁵² As noted above, with a few exceptions most Annex V areas are not particularly large in surface area, for instance compared with CCAMLR MPAs or other CCAMLR management units. Nonetheless some marine or partially marine ASPAs are of interest to CCAMLR under Decision 9 (2005) due to harvesting potential. Direct overlap of krill-dependent predators with the krill fishery on small spatial and temporal scales and depths is relatively common throughout the Antarctic Peninsula region.⁵³ Indeed, prior to the adoption of CM 91-02 by

⁵¹ Aronson, "Anthropogenic impacts on marine ecosystems in Antarctic."

⁵² Shaw, "Antarctica's Protected Areas are Inadequate." See also Hughes, "The spatial distribution of Antarctica's protected areas."

CCAMLR, there were instances of fishing within ASMA 1 *Admiralty Bay* and associated ASPA 128 *Western shore of Admiralty Bay*.

Recent discussions on the harmonisation of Annex V areas and CCAMLR MPAs

The adoption of the Ross Sea MPA in 2016 and its entry into force on 1 December 2017 generated interest in the harmonisation of protected areas under Annex V to the Protocol with CCAMLR MPAs in the benefit of establishing an integrated protection of the marine environment. Several ASPAs and one ASMA are located in this region, and some of those Annex V areas have a marine component or otherwise protect marine values. In 2018, New Zealand (supported by some other Parties) proposed to ATCM XLI to discuss this through the establishment of an Intersessional Contact Group (ICG). However, while the proposal received broad support from many CEP Members, a few CEP Members opposed this idea on the ground that the Research and Monitoring plan for the Ross Sea MPA had first to be formally adopted by CCAMLR before the ICG could be established. Further, the ATCM reported that

Some [CEP] Members raised generic issues, including the independent procedure and role of the ATCM from CCAMLR, the nature of MPAs as a tool to achieve CCAMLR objectives and principles, and the differences between conservation and protection.⁵⁴

Some of the proposed terms of reference for the putative ICG related directly to a request of the ATCM to the CEP to consider this issue and to tasks included in the CEP work plan. ATCM Resolution 5 (2017) calls on the CEP to consider any appropriate action to achieve specific objectives of the Ross Sea MPA and notes that there was also agreement on the CEP at its previous meeting in 2017, which was reflected in the five year work plan ‘to consider connectivity between land and ocean, and complementary measures that could be undertaken by Parties with respect to MPAs’.⁵⁵ However, this proposal did not convince all Members of the need to establish a formal ICG. At the ATCM it was further noted that

With respect to Resolution 5 (2017), some [CEP] Members suggested that the proposed ICG should only be established after a Research and Monitoring Plan for the Ross Sea Region MPA is adopted by CCAMLR according to its Conservation Measures⁵⁶

Eventually it was agreed that New Zealand would lead informal discussions on this matter between interested Parties, rather than a formal contact group agreed by the CEP and ATCM.

Relativity: different ‘gravitational fields’ within the ATS?

The ATCM and CCAMLR and their related bodies have overlapping but not identical areas of application, objectives and membership. From a more practical perspective, this situation makes it difficult to have a clear overview of the current spatial protection of the marine environment in the Antarctic Treaty area – what

⁵³Hinke et al, “Identifying Risk: Concurrent Overlap of the Antarctic Krill Fishery with Krill-Dependent Predators in the Scotia Sea.”

⁵⁴ATCM XLI final report, paragraph 156.

⁵⁵Ibid., paragraph 159.

⁵⁶Ibid., paragraph 156.

is protected, where, from what activities, by means of which spatial instruments and by whom. It is possible that in some instances there may be tensions between diverging objectives of ‘conservation’ which coexists with some degree of fishing and ‘comprehensive protection’ which regulates strictly a different set of activities.

While different instruments of the ATS are complementary, Herr (2000) suggested that there has been a more complete compartmentalisation of the CAMLR Convention from the Protocol and its implementation than what was intended by the drafters of the Convention, and this has led to some costs and missed opportunities concerning a close and mutually supportive relationship.⁵⁷ In our view, this is particularly apparent in respect of the implementation of Annex V of the Protocol in what concerns marine spatial protection. Here, it would seem that, in practice, protection using ASPA and ASMA instruments largely stops at the shore.

To a certain degree, the ATS arrangement of overlapping instruments in a common space – Antarctica and the Southern Ocean, and in particular the marine area south of 60° south – resembles a lithograph by the Dutch artist M.C. Escher.

M.C. Escher's "Relativity" © 2018 The M.C. Escher Company, the Netherlands. All rights reserved www.mcescher.com.

⁵⁷Herr, "CCAMLR and the Environmental Protocol." See for instance Belgium, "The Concept of 'Outstanding Values' in the Antarctic Marine Environment".

Relativity (1953) depicts people moving through an impossible townscape. Various architectural features in the image – stairs, landings, arches, doors, windows – share the same space, but they are attracted to different gravitational fields and so are the people moving through them. For instance, what is a floor for one person is a wall for another. In 1959, Escher himself described the image as follows:

It is impossible for the inhabitants of different worlds to walk or sit or stand on the same floor, because they have differing conceptions of what is horizontal and what is vertical. Yet they may well share the use of the same staircase. On the top staircase illustrated here, two people are moving side by side and in the same direction, and yet one of them is going downstairs and the other upstairs. Contact between them is out of the question because they live in different worlds and therefore can have no knowledge of each other's existence.⁵⁸ © The M.C. Escher Company, The Netherlands, All rights reserved. www.mcescher.com

It could be argued that, similarly, experts and representatives involved in CCAMLR and the implementation of the Protocol are both involved in Antarctic governance, but – in a figurative sense – they do not seem aware of each other's existence, resulting in a lack of interaction. The area of application of both the CAMLR Convention and the Protocol overlap significantly, but by and large they are implemented separately from each other.

Conclusions

To what extent have the ASPA and ASMA instruments been applied for the benefit of protecting the Antarctic marine environment?

Overall, there has been some progress towards achieving marine spatial protection in the Antarctic Treaty area using Annex V. However, our analysis shows that this progress has been rather limited in terms of spatial coverage. Marine components and values appear to be underrepresented in the ASPA and ASMA systems when compared to the possibilities of Annex V. A number of ASPAs and ASMAs have a marine component and protect some elements of the marine ecosystem, but the boundaries of most ASPAs and ASMAs stop at the shore – or not far from it. Many of the Annex V areas under categories 2 and 3 contain marine values (e.g. near-shore environment, native fauna) whose protection *could* have included a marine component within their boundaries, for instance with respect to native mammals or birds, but in practice this component was excluded.

Some valuable steps have been taken towards greater synergy between the work of CCAMLR and the CEP/ATCM on marine spatial protection, including the option of designating CEMP sites as ASPAs or ASMAs: CCAMLR CM 91-02 requiring respect for ASPAs and ASMAs from fishing operators and the co-occurrence of Annex V areas and CCAMLR Marine Protected Areas, as is the case with the Ross Sea MPA. Nonetheless, formal discussions on the harmonisation of Annex V areas with the Ross Sea MPA have been stopped for the time being, due to matters related to CCAMLR's own processes; according to some CEP Members, CCAMLR had to take some decisions before the

⁵⁸Escher, *The Graphic Work*.

ATCM/CEP should carry out its discussions. These CEP Members have also raised ‘... generic issues... including... the differences between conservation and protection’.⁵⁹

This suggests that the thinking prevalent among some CCAMLR Members – and perhaps ongoing discussions on marine protection within CCAMLR – may be limiting progress in the ATCM and CEP with respect to applying Annex V instruments to marine areas, as part of broader obligations to expand the series of ASPAs. This, in combination with the fact that the rate of ASPA designation in general has diminished in recent years, should be considered a matter of concern.

The discussion on harmonising Annex V areas with CCAMLR’s Ross Sea MPA reflects the difficulties of reaching consensus at the ATCM with respect to enhancing spatial protection of the marine environment. In turn, this may be a reflection of the increasingly resource use-oriented focus of CCAMLR negotiations.

What needs and options exist to improve their application for further strengthening the protection of the Antarctic marine environment?

ASPAs and ASMAs, as well as CCAMLR, MPAs fill particular roles within the ‘legal tool box’ of the ATS. An integrated approach between these instruments would make sense in the context of the mandate of both the ATCM and CCAMLR. However, the above discussions make clear that this integrated approach is currently missing. Acting together as part of a broader system, ASPAs, ASMAs and CCAMLR MPAs (individually or in combination) could provide a strong protection of marine mammals and seabirds that spend part of their life cycle on land (and/or sea ice), while allowing conservation and fisheries management activities approved by CCAMLR within the criteria of Article II (3) of the CAMLR Convention. Therefore, there is a primary need for a more consistent application of Annex V to marine and partially marine areas as part of a more integrated approach in protecting the Antarctic marine environment. Harmonisation would also apply to other Antarctic activities relevant for both land and sea, including shipping, tourism and scientific research, and to land based sources of marine pollution.

A related need is that, in striving towards such a more integrated and coherent spatial marine protection, it is important to ensure mutual respect for the different central aims of the CAMLR Convention and the Protocol. Currently, this appears not to be the case. The interpretation of Article II (2) by CCAMLR and individual CCAMLR Members – concerning the relation between conservation and ‘rational use’ – is central to how the CAMLR Convention is implemented, and this indirectly affects the implementation of ‘comprehensive protection’ obligations under the Protocol. It also has an effect on the implementation of Annex V by the CEP and ATCM, by putting limits on the scope of its application, so that currently only a few ASPAs and ASMAs play a role in spatial protection of the marine environment. Currently, the limit of marine spatial protection under Annex V appears to be the shore, not the proverbial sky. This limiting effect appears to be the result of both a form of self-censorship by the

⁵⁹ ATCM XLI final report, paragraph 156.

ATCM as well as more direct influence of CCAMLR thinking into CEP and ATCM discussions. In this regard, the options available seem rather limited and would require from ATPs and CEP Members – many of whom are also CCAMLR Members wearing a different hat – to be systematic in the application of the Protocol's mandate and, at a minimum, to buffer the implementation of the Protocol from discussions taking place in the context of CCAMLR.

In terms of the analogy with Escher's lithography *Relativity*, we may conclude that while the ATCM and CCAMLR operate in overlapping and intersecting spaces, the regimes operate in somewhat different dimensions or are at a minimum not seamlessly joined. Furthermore, it appears that, currently, thinking along the lines of 'conservation...including rational use' has for the time being a stronger 'gravitational pull' than the Protocol's 'comprehensive protection' objectives. The aims of both the Protocol and the CAMLR Convention would benefit from a change to this situation.

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Disclosure statement

Ricardo Roura regularly serves as a consultant for environmental NGOs and has participated in ATCMs as and CCAMLR meetings representative of the Antarctic Southern Ocean Coalition (ASOC). Kees Bastmeijer is advisor on Antarctic affairs to the Dutch government and has participated in the ATCM in that capacity. The views expressed in this paper are those of the authors and do not necessarily reflect the official policy or position of ASOC, the Dutch government, or any organisation the authors have cooperated with.

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