CCAMLR

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

CCAMLR-XXXV/18

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COMMISSION

Proposal on a conservation measure establishing the Weddell Sea Marine Protected Area (WSMPA)

Delegation of the European Union and its Member States

EN

CONSERVATION MEASURE 91-XX
Weddell Sea Marine Protected Area

The Commission,

Noting that this Conservation Measure is established in accordance with Conservation Measure (CM) 91-04, which provides the framework for the establishment of Marine Protected Areas (MPA) in the Convention Area (CCAMLR MPAs);

Supporting the designation of a system of CCAMLR MPAs, of which the area in this Conservation Measure forms a part, for special attention to sustaining, now and in the future, all Antarctic marine living resources, as defined in Article I of the Convention, including their relationships and dependencies within those areas, for the purposes of conservation and science in accordance with Articles II and IX of the Convention;

Desiring to implement Articles IX.1(f) and 2(g) of the Convention, which provide that conservation measures, formulated on the basis of the best scientific evidence available, may designate 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;

Recalling its endorsement in 2010 of the work program of the Scientific Committee to develop a representative system of Antarctic MPAs with the aim of conserving marine biodiversity in the Convention Area to further the achievement of the objective of the Convention, and the Strategic Plan for Biodiversity 2011-2020, acknowledged in the decision at the 2012 United Nations Conference on Sustainable Development, to conserve 10% of marine and coastal areas through effectively and equitably managed, ecologically representative and well-connected systems of protected areas by 2020;

Conscious of the important leadership role that CCAMLR plays internationally through its role in the conservation of Antarctic marine living resources and marine biodiversity, including through the on-going development of a representative system of CCAMLR MPAs;

Recalling that CCAMLR forms an integral part of the Antarctic Treaty System and that, in accordance with the principle enshrined in Article III (1)(c) of the Antarctic Treaty, scientific observation and results from Antarctica shall be exchanged and made freely available;

Noting that MPAs can be managed to meet multiple conservation and scientific objectives;

Desiring to ensure that areas vulnerable to the effects of climate change and impacts by human activities are protected in recognition of their global and regional environmental and scientific importance;

Noting that the Weddell Sea has largely pristine ecosystems and diverse marine living resources and that it is crucial for global ocean circulation and the world's climate, and is also an ideal area for studying ecosystem effects, resilience and adaptive capacity to climate change and ocean acidification separate from the impacts of other human activities, such as fishing;

Mindful of the benefits of ensuring that the resilience of Antarctic marine environments and their ability to adapt to possible adverse effects, including, inter alia, of climate change and ocean acidification, is maintained and/or enhanced;

Noting the comprehensive scientific information about the environmental and ecological parameters in the Weddell Sea[1], which represent the best scientific evidence available and serve as background and support for the Weddell Sea Marine Protected Area (WSMPA);

Noting that the analysis of the scientific data identified a set of six general and twelve specific objectives for the protection of marine ecosystems, species and habitats in the Weddell Sea;

Acknowledging that the management zones and provisions aim at implementing these objectives most efficiently;

Noting that research and monitoring related to the objectives of the WSMPA form an integral part of the management of the WSMPA;

Noting that, as additional information becomes available and further scientific analysis will be undertaken, amendments to the boundaries, objectives or management of the WSMPA may be required;

[1] BP xx/2016

Welcoming the WSMPA as a useful tool to implement the objective and principles of the Convention in the conservation and management of the marine living resources and associated ecosystems of the Weddell Sea;

hereby adopts the following Conservation Measure in accordance with Article II and IX of the Convention:

1. Consistency with relevant provisions

1. This Conservation Measure shall be implemented consistently with:

   a. international law, including the United Nations Convention on the Law of the Sea, and the Antarctic Treaty;

   b. the provisions of Conservation Measure 91-04.

2. The Weddell Sea Marine Protected Area (WSMPA)

1. The area defined in Annex 91-XX/A of this Conservation Measure is designated as the "Weddell Sea Marine Protected Area" (WSMPA).

3. Objectives of the WSMPA

1. In accordance with Article II and IX of the Convention and paragraph 2 of Conservation Measure 91-04, the following general and specific objectives will assist the conservation of Antarctic marine living resources in the long term:

a) General Objectives

- G 1 Protection of representative examples of pelagic and benthic ecosystems, biodiversity and habitats (including the environmental and ecological conditions supporting them);
- G 2 Protection of pelagic and benthic habitats and ecosystems which are rare, unique, vulnerable, diverse and/or endemic;
- G 3 Protection of areas, environmental features and species (including populations and life history stages) on various geographical scales which are key to the functional integrity and viability of local ecosystems and ecosystems processes;
- G 4 Establishment of scientific reference areas to monitor the effects of climate change, fishing and other human activities and to study, in particular, representative, rare, unique and/or endemic examples of marine ecosystems, as well as biodiversity and habitats;
- G 5 Protection of essential habitats for top predators such as marine mammals and seabirds;

G 6 Protection of essential habitats as potential refugia for, inter alia, top predators, fish and other ice-dependent species, in order to maintain and /or enhance their resilience and ability to adapt to the effects of climate change.

b) Specific Objectives

Pelagic conservation objectives

S 1 Protection of representative examples of pelagic and sea ice ecosystems and habitats, such as the unique, persistent open ocean areas associated with the Maud Rise submarine plateau, or the areas along the shelf ice edge in the eastern and southern part of the WSMPA with no or very low sea ice cover throughout the austral summer;

S 2 Protection of Antarctic krill (*Euphausia superba*), ice krill (*Euphausia crystallorophias*) and Antarctic silverfish (*Pleuragramma antarctica*) as key species in the Antarctic food web as well as of important areas / habitats for their life cycle, e.g. spawning areas;

S 3 Protection of essential habitats for top predators such as flying seabirds, penguins and seals;

Benthic conservation objectives

S 4 Protection of representative examples of benthic ecosystems and habitats, such as the ecologically important sponge associations on the shelf in the eastern and southern part of the WSMPA;

S 5 Protection of Antarctic toothfish (*Dissostichus mawsoni*) as a top predator including, as far as possible, all life history stages and their habitats;

S 6 Protection of the integrity and life cycles of unique and diverse suspension feeding assemblages, including benthic sponge associations and thereby maintaining the associated benthic communities as efficient sources for recolonization;

S 7 Protection of rare and unique shallow (surface to –150 m water depth) sea floor areas with high habitat heterogeneity and species richness in order to preserve the ecologic function of these areas as “stepping stones” and sources for recolonization for associated communities and species;

S 8 Protection of spawning areas and nesting sites of demersal fish species including areas where fish have been observed exhibiting parental care;

Pelagic and/or benthic conservation objectives

S 9 Protection of high productivity areas to support key ecosystem processes and functional integrity of the ecosystems;

S 10 Protection of marine ecosystems and habitats vulnerable to effects of climate change, fishing and other human activities and critical to the function of local ecosystems, in order to maintain and/or enhance resilience and adaptive capacity;

Research objectives

S 11 Provision of scientific reference areas to monitor the natural variability and long-term changes on the Antarctic marine living resources and to study the effects of climate change and human activities on the Antarctic ecosystems;

S 12 Provision of areas for fisheries research in form of a dedicated Fisheries Research Zone to enhance the understanding of the fish stocks and to study the effects of fishing activities.

4. Management Zones of the WSMPA

1. In order to implement the objectives outlined in paragraph 3 of this Conservation Measure in a targeted, practical and feasible way, the WSMPA comprises the following three management zones:

   i) the General Protection Zone (GPZ),

   ii) the Special Protection Zone (SPZ), and

   iii) the Fisheries Research Zone (FRZ).

2. Maps and coordinates of the management zones are provided in Annex 91-XX/A. Descriptions of the management zones and the relevant management provisions are provided in Annex 91-XX/B.

5. Restricted, prohibited and managed activities in the WSMPA

1. Activities covered by this Conservation Measure are those activities undertaken by vessels specified in Conservation Measure 91-04 paragraph 6, subject to the provisions of Conservation Measure 91-04 paragraph 7.

2. The WSMPA will be managed by the Commission in accordance with the management provisions in this paragraph and the Management Plan set out in Annex 91-XX/B in connection with the Research and Monitoring Plan set out in Annex 91-XX/C.

3. The Commission shall not allow activities related to Antarctic marine living resources that would undermine the objectives outlined in paragraph 3 of this Conservation Measure to occur within the WSMPA.

4. Except as authorized under Annex 91-XX/B of this Conservation Measure, fishing activities are prohibited in the WSMPA.

5. Dumping or discharging of any waste or other matter and the introduction of any sewage within the WSMPA is prohibited.

6. Notwithstanding Conservation Measure 10-09, no fishing vessels may engage in transhipment activities within the WSMPA, except in cases where vessels are

involved in an emergency relating to safety of human life at sea or engaged in a search and rescue operation, or to prevent an environmental emergency.

7. When assessing notifications by Members for fishing and other activities related to Antarctic marine living resources in the WSMPA, the Commission may decide, on the advice of the Scientific Committee, on any additional specific research and monitoring activities to be carried out by the notifier in accordance with WSMPA objectives.

8. In the case of any emergency relating to safety of life at sea, or an environmental emergency, the provisions of this Conservation Measure shall not apply.

6. Compliance

1. In accordance with the CCAMLR System of Inspection set out in Conservation Measure 10-02, Members should carry out inspections within the WSMPA to verify compliance with this Conservation Measure and other relevant Conservation Measures.

2. For the purpose of monitoring vessel traffic within the WSMPA, in accordance with Conservation Measures 10-04 and 10-07, Flag States must notify the Secretariat prior to entry of their fishing vessels into the WSMPA. The Flag State may permit or direct that such notifications be provided by the vessel directly to the Secretariat. Other vessels, with the exception of those listed in CM 91-04 paragraph 7, are also encouraged to notify their entry into the WSMPA accordingly.

7. Research and monitoring

1. Research to be authorised through CCAMLR within the WSMPA refers to research activities by either fishing vessels or vessels conducting scientific research activities on Antarctic marine living resources in accordance with the relevant Conservation Measures.

2. Research and monitoring associated with the WSMPA shall be carried out as specified in the Research and Monitoring Plan (Annex 91-XX/C) and in

accordance with the objectives of the WSMPA and with paragraph 5 of Conservation Measure 91-04.

3. Research beyond the competence of CCAMLR is also encouraged within the geographical boundaries of the WSMPA. Such research will be authorised and conducted in accordance with relevant national legislation and international law, including the Protocol on Environmental Protection to the Antarctic Treaty.

4. Without prejudice to the review procedure set out in paragraph 10 of this Conservation Measure, the Research and Monitoring Plan can be amended at any time by the Commission based on the advice of the Scientific Committee to ensure that it satisfactorily encompasses requirements for the following priority elements:

   i) research and monitoring to advise on management of the WSMPA;

   ii) research and monitoring appropriate for evaluating whether the objectives of the WSMPA are being achieved; and

   iii) research and monitoring appropriate for evaluating the effects of specific activities on the objectives of the WSMPA.

8. Communication

1. In accordance with Article X of the Convention, the Commission shall draw this Conservation Measure to the attention of any State that is not a Party to the Convention, whose nationals or vessels undertake activities in the Convention Area.

2. The Commission shall communicate information about the WSMPA to the Antarctic Treaty Consultative Meeting in accordance with Conservation Measure 91-04, paragraph 10.

9. Reporting

1. Members shall submit to the Secretariat, for review by the Scientific Committee, reports on their activities conducted as set out in the Research and Monitoring

Plan Annex 91-XX/C and the associated timeframe in Appendix 2, including any preliminary results.

2. Parties are encouraged to submit any other information from results of research pursuant to paragraph 7 (3) of this Conservation Measure.

10. Review

1. Unless otherwise agreed by the Commission upon advice by the Scientific Committee, the Commission shall review this Conservation Measure every 10 years after its adoption. The review period shall last no longer than 2 years.

2. The review shall be based on the evaluation submitted by the Scientific Committee pursuant Paragraph 4.2 and the reports of the Members pursuant to Paragraph 4.4 of the Management Plan (Annex 91-XX/B). The Commission will evaluate whether:

   i) the objectives of the WSMPA are still relevant or being achieved;

   ii) changes or adjustments to the provisions in this Conservation Measure are necessary, which may arise from new information pertinent to the design and/or management, including research and monitoring, of the WSMPA.

3. The Commission will decide whether any provisions of this Conservation Measure need to be changed or adjusted based on the outcome of the review. If no changes or adjustments are considered necessary, or no decisions on such changes and adjustments can be reached within the review period, the Conservation Measure will remain in force.

11. Duration of the WSMPA

1. The WSMPA as defined in Paragraph 2 and set out in Annex 91-XX/A of this Conservation Measure will remain in force until the Commission upon advice by the Scientific Committee decides to modify the boundaries of the WSMPA.

Weddell Sea Marine Protected Area and Management Zone Boundaries

1. The Weddell Sea Marine Protected Area (WSMPA) is shown in Figure 1.

2. **The WSMPA consists of 3 management zones:**

2.1 The **General Protection Zone** (GPZ) is comprised of two areas (Figure 1).

(i) The boundaries of the area easterly of the Antarctic Peninsula are:

- Northern border: 64.0°S (= northern border of the WSMPA planning area)
- Eastern border 1: 39.0°W
- Southern border 1: 67.0°S
- Southern border 2: 62.25°S
- Western border 1: 43.0°W
- Western border 2: Continental margin and shelf ice margin, respectively.

(ii) The boundaries of the second area of the GPZ are:

- Northern border 1: 71.5°S
- Northern border 2: 68.75°S
- Northern border 3: 65.0°S
- Northern border 4: 64.0°S (= northern border of the WSMPA planning area)
- Northern border 5: 65.0°S
- Northern border 6: 68.75°S
- Eastern border 1: 10.5°E
- Eastern border 2: 17.0°E
- Eastern border 3: 20.0°E (= eastern border of the WSMPA planning area)
- Southern border 1: Continental margin and shelf ice margin, respectively
- Western border 1: Continental margin and shelf ice margin, respectively
- Western border 2: 20.0°W
- Western border 3: 7.0°W
- Western border 3: 1.0°W.

2.2 The **Special Protection Zone** (SPZ) is comprised of in total ten areas (Figure 1).

(i) The SPZ includes nine demersal fish nesting sites with a buffer of 10 nautical miles (nm) surrounding each site.

Nesting Site No.	Latitude S	Longitude W
1	60.667	64.911
2	70.897	11.135
3	74.665	26.978
4	74.957	26.067
5	76.720	52.175
6	74.767	35.334
7	76.323	29.024
8	77.712	35.928
9	74.907	29.663

(ii) The SPZ also protects a shelf area, where particularly rich and dense sponge communities (=VMEs) have been observed and where a rare, unique shallow (surface to –150 m water depth) sea floor area is occurring with high habitat heterogeneity and species richness. The boundaries of this shelf area are as follows:

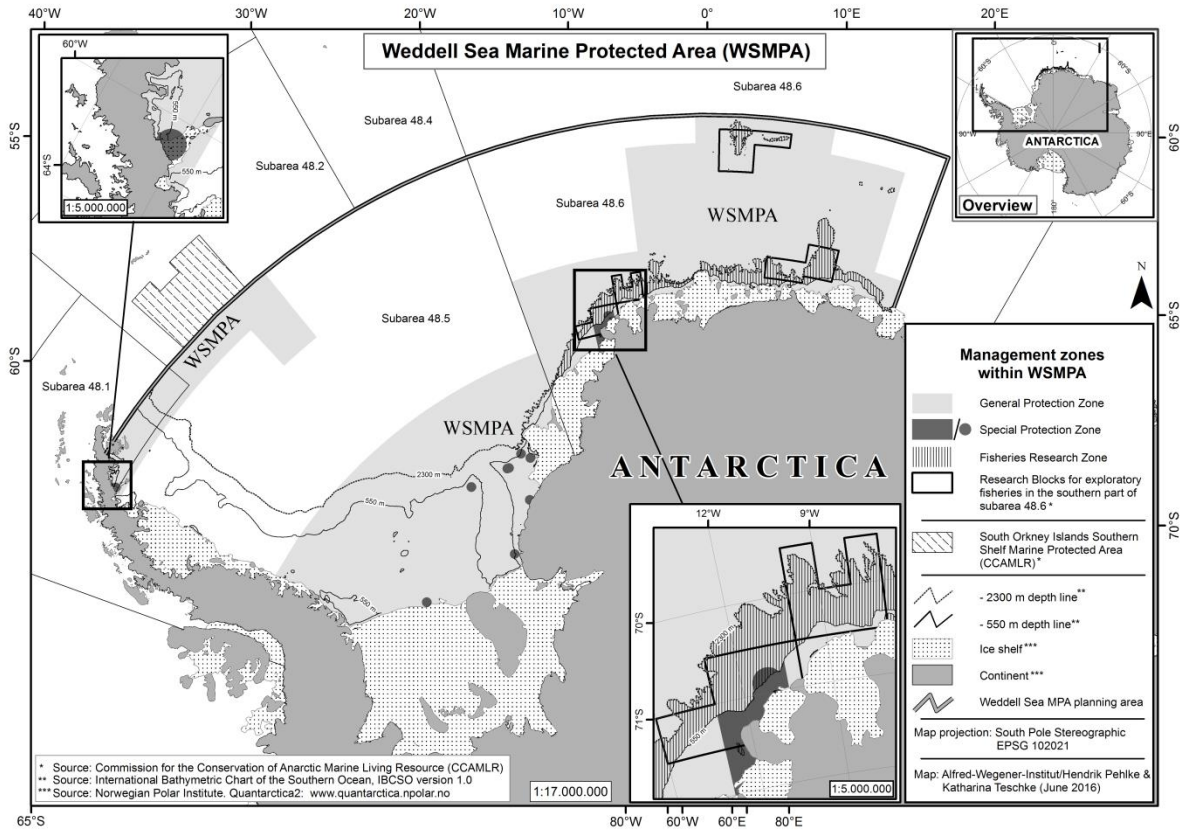
- Northern border: 550 m isobath
- Eastern border: 10.5°W
- Southern border: continental margin and shelf ice margin, respectively
- Western border: 13.0°W.

(iii) The areas and boundaries of the SPZ reflect a minimum area based on current knowledge on known and potential vulnerable marine ecosystems (VMEs), nesting sites of demersal fish species, unique, rare or biodiverse and/or endemic habitats and features. If new information on locations of VMEs or such habitats and features within the WSMPA become available, notifications (for VMEs in accordance with CM 22-06, Annex B or CM 22-07) and relevant scientific information are to be submitted to the Secretariat. The SPZ will then be amended by the Commission upon advice of the Scientific Committee by including the coordinates.

2.3 The **Fisheries Research Zone (FRZ)** comprises the area between 550 m and 2300 m water depth in the statistical subarea 48.6, which represents approximately 90 per cent of the toothfish habitat in this statistical subarea. The FRZ includes both fished and unfished reference areas. The unfished reference areas of the toothfish habitat within the WSMPA in 48.6 shall remain part of the GPZ.

2.4 The Commission, on advice from the Scientific Committee will identify modifications to the FRZ subareas/blocks where members may conduct fishing activities as set out under paragraph 3.6.1. At the time of adoption of this Conservation measure, three such research blocks (48.6_3, 48.6_4 and 48.6_5, identified by shaded boxes in ANNEX 91-XX/A Figure 1) had been agreed by CCAMLR and published in the schedule of Conservation Measures in force in the 2015/2016 season (ANNEX 41-04/A).

Figure 1. The Weddell Sea Marine Protected Area (WSMPA), including the boundaries of the General Protection Zone (light grey), the Special Protection Zone (dark grey) and the Fisheries Research Zone (shaded).



Weddell Sea Marine Protected Area – Management Plan

1. Purpose of the Management Plan

1.1. The purpose of this Management Plan is to provide further details about the areas and features within the Weddell Sea Marine Protected Area (WSMPA) associated with the objectives in paragraph 3 of Conservation Measure (91-XX (20XX)), as well as the management provisions and administrative arrangements for achieving them.

1.2. This Management Plan, prepared in accordance with the provisions of Conservation Measure 91-04, shall determine the management of activities within the WSMPA as required and in accordance with paragraphs 4 and 5 of this Conservation Measure (91-XX (20XX)).

2. Weddell Sea Marine Protected Area - Management Zones

The WSMPA includes three management zones designed to achieve the specific objectives of the WSMPA.

2.1 General Protection Zone (GPZ)

The General Protection Zone (consisting of the light grey areas in ANNEX 91-XX/A Figure 1), is designed to provide protection of representative examples of pelagic and benthic ecosystems, biodiversity and habitats, including key species, top predators, and higher productivity areas, and the environmental and ecological conditions supporting them, to mitigate a number of actual and potential effects of human activities, to increase resilience to climate change, and to support research and monitoring to increase our understanding about the Antarctic ecosystems and the effects of climate change and human activities on these ecosystems.

While contributing to the general objectives G 1, 3 and 4, the GPZ also aims at achieving the specific objectives S 1 – 5 and S 9 and S 11.

2.2 Special Protection Zone (SPZ)

The Special Protection Zone (consisting of the dark grey areas in ANNEX 91-XX/A Figure 1) provides enhanced protection of known and potential vulnerable marine ecosystems, unique, rare or biodiverse and/or endemic habitats and features. The SPZ also provides scientific reference areas to monitor the natural variability and long term changes on the Antarctic marine living resources, and to study effects of climate change and human activities on Antarctic ecosystems.

While contributing to the general objectives G 2 and 4, the SPZ also aims at achieving the specific objectives S 6-8, S 10 and S 11.

2.3 Fisheries Research Zone (FRZ)

The Fisheries Research Zone includes both fished areas[2] and unfished reference areas to advance our understanding about the ecosystem effects of longline fishing, and to continue to inform the science-based management of the region's toothfish stock (including life history hypotheses, biological parameters, ecological relationships, and variations in biomass and production of fish).

While contributing to the general objective G 4, the FRZ also aims at achieving the specific objective S 12.

[2] At the time of adoption of this Conservation measure, three such research blocks (48.6_3, 48.6_4 and 48.6_5, identified by boxes in ANNEX 91-XX/A Figure 1) had been agreed by CCAMLR and published in the schedule of Conservation Measures in force in the 2015/2016 season (ANNEX 41-04/A).

3. Management activities

3.1 Fishing activities within the WSMPA are prohibited except as authorized under this paragraph.

3.2 Specific management provisions for the management zones are provided in paragraphs 3.4 (for the GPZ), 3.5 (for the SPZ) and 3.6 (for the FRZ).

3.4 **Specific management provisions within the General Protection Zone:**

General Protection Zone		
3.4.1.	**Research fishing**	(i) Directed fishing for *Dissostichus* spp. within the GPZ is prohibited except as follows. (ii) Members are encouraged to conduct research fishing consistent with the WSMPA Research and Monitoring Plan (Annex 91-XX/C), which does not undermine the WSMPA specific objectives, and is in accordance with Conservation Measure 24-01 Annex B, with the following additional conditions: a. Fishing for *Dissostichus* spp. irrespective of gear type is limited to 5 tonnes per vessel per year. b. Directed fishing for all other finfish taxa is prohibited. (iii) Directed fishing for all non-finfish taxa including krill is prohibited.
3.4.2.	**Other research on Antarctic marine living resources**	(i) The use of any towed gear that interacts physically with the seafloor (e.g. beam/otter trawls, dredges, sledges) is limited to 1 square kilometer per vessel per season, subject to prior approval by the Commission. (ii) Other research within the GPZ will be coordinated by the Commission on the basis of the annual progress reports in the context of the Research and Monitoring Plan (see paragraph 6 of the Research and Monitoring Plan of this Conservation Measure (Annex 91-XX/C)) to ensure that the activities are mutually supportive and do not hinder or disturb each other.

3.5 **Specific management provisions for activities within the Special Protection Zone:**

Special Protection Zone		
3.5.1	**Research fishing**	(i) Fishing activities are prohibited.
3.5.2	**Other research on Antarctic marine living resources**	(i) The use of towed gear that interacts physically with the seafloor (e.g. beam/otter trawls, dredges, sledges) is prohibited.

3.6 **Specific management provisions for activities within the Fisheries Research Zone:**

	Fisheries Research Zone	
3.6.1	**Research fishing**	(i) Members are encouraged to conduct research fishing in accordance with the provisions for research fishing set out for the GPZ (paragraph 3.4). (ii) Directed fishing for *Dissostichus* spp. will be managed and organised by CCAMLR in accordance with established CCAMLR procedures and conservation measures, also considering the WSMPA specific objectives. (iii) Directed fishing for all non-finfish taxa including krill is prohibited.
3.6.2	**Other research on Antarctic marine living resources**	(i) Activities consistent with the WSMPA specific objectives and the Research and Monitoring Plan of this Conservation Measure (Annex 91-XX/C) are permitted.

4. Management and Administrative Arrangements

4.1 The Responsibilities of the Commission in respect of the management of the WSMPA include the following pursuant to this Conservation Measure (91-XX/20XX):

(i) ensure that future Conservation Measures do not compromise the objectives of the MPA, as set forth in paragraph 3;

(ii) manage the WSMPA, including the assessment of activities to be carried out in the WSMPA according to paragraph 5;

(iii) authorize Research and Monitoring activities according to Paragraph 7, including any amendment of the Research and Monitoring Plan according to Paragraph 7 (4);

(iv) communication on the WSMPA according to paragraph 8;

(v) review the WSMPA according to paragraph 10 of this Conservation Measure (91-XX/20XX).

4.2 The Responsibilities of the Scientific Committee in respect of the management of the WSMPA include the following pursuant to paragraphs 7, 9 and 10 of this Conservation Measure (91-XX/20XX):

(i) review and provide advice to the Commission regarding proposals for research and monitoring in the WSMPA, noting whether the proposed research and monitoring is consistent with Annex 91-XX/C and the objectives of the WSMPA as identified in paragraph 3 of this Conservation Measure;

(ii) review reports of research and monitoring activities that have been undertaken, and advise the Commission on issues related to the operationalization of the WSMPA Research and Monitoring Plan and Management Plan;

(iii) advise the Commission on any recommended changes or adjustments, which may arise from new information pertinent to the design and/or management, including research and monitoring, of the WSMPA;

(iv) recommend research designs to optimize contributions to the toothfish tagging program by vessels fishing in the Fishery Research Zone and review any research plans submitted under Conservation Measure 41-04;

(v) provide recommendations and advice regarding the optimal use and equipping of fishing vessels to collect data needed to support research and monitoring

being undertaken in the WSMPA and the evaluation of the WSMPA;

(vi) prepare an evaluation, based on available data and at least every 10 years following the establishment of the WSMPA, to ensure that research goals and specific objectives are being met; and

(vii) prepare a report as a basis for each of the reviews of this Conservation Measure for the Commission according to paragraph 10 of this Conservation Measure (91-XX/20XX).

4.3 The responsibilities of the Secretariat in respect of the management of the WSMPA include the following:

(i) warehouse, manage and disseminate information and data that are pertinent to the development, management, and review of the WSMPA (e.g. data collected during research and monitoring surveys);

(ii) support Members' monitoring and compliance of activities within the WSMPA; and

(iii) provide URLs on the Secretariat website that link to the management plans, maps, and coordinates for Antarctic Specially Protected Areas and Antarctic Specially Managed Areas within or adjacent to the WSMPA.

4.4 The responsibilities of Members in respect of the management of the WSMPA include the following:

(i) when possible and practicable, participate in and cooperate in the conduct of research and monitoring consistent with activities outlined in the Research and Monitoring Plan (Annex 91-XX/C); and

(ii) report on activities undertaken in the WSMPA as set out in paragraph 9 of this Conservation Measure and in the Research and Monitoring Plan (Annex 91-XX/C), including provision of:

a. catch, effort and biological data to the Secretariat in accordance with the catch and effort reporting systems in the Conservation Measures relevant to the activity;

b. the results of those activities to the Scientific Committee for their review in accordance with the requirements in Conservation Measures relevant to those activities; and

c. the results of research and monitoring in accordance with the requirements set out in the Research and Monitoring Plan (Annex 91-XX/C).

ANNEX 91-XX/C

Weddell Sea Marine Protected Area – Research and Monitoring Plan

1. Purpose of the Research and Monitoring Plan

1.1 The purpose of this Research and Monitoring Plan (R&M Plan) is to support the implementation of the specific objectives and the review of the WSMPA. The R&M Plan identifies and specifies the research pursuant to / consistent with the specific objectives of the WSMPA, and the monitoring in order to evaluate to which degree these specific objectives are being achieved (cf. Appendix 1). Research and monitoring provide data and information to evaluate the potentially adverse effects of specific activities and whether the management measures are being effective. Other research and monitoring activities, that are consistent with the specific objectives of the WSMPA but not explicitly outlined here, are encouraged.

2. Responsibilities for and participation in the Research and Monitoring Plan

2.1 The responsibility for the WSMPA R&M Plan lies with the Commission. Therefore, all Members are encouraged to participate in the long-term development and implementation of the WSMPA R&M Plan.

2.2 In the first 10 years after adoption of the WSMPA, CCAMLR will hold at least 4 international expert workshops to exchange information about any planned activities in the WSMPA to coordinate these activities (incl. identification of any gaps) in the implementation of the R&M Plan and to prepare the WSMPA R&M reports and assessments (for details see timetable in Appendix 2).

3. Operationalisation of Research and Monitoring Plan

3.1 All CCAMLR members are encouraged to undertake research and monitoring governed by CCAMLR Conservation Measures as specified in this R&M Plan. Research and monitoring proposals to be carried out in the WSMPA should be examined and reviewed by the relevant CCAMLR Working Groups with a view to:

i) ensuring that the proposed research/monitoring is in accordance with and does not undermine the objectives of the WSMPA;

ii) establishing that the proposed research/monitoring is likely to increase our knowledge about the Antarctic marine living resources, habitats and the

functioning of the ecosystems preserved by the WSMPA, including those which are used in a rational manner;

iii) streamlining proposals and activities into a coherent WSMPA R&M Plan for final consideration by the Scientific Committee and adoption by the Commission at its annual meeting at least one year in advance of any field work.

3.2 The most important steps in the operationalisation of this R&M Plan in the first 10 years after adoption of this Conservation Measure are outlined in Appendix 2.

4. Research and Monitoring relevant to the WSMPA

4.1 Research will be conducted within this WSMPA in order to improve our knowledge of the Antarctic marine living resources, habitats and marine ecosystems in the WSMPA, including their natural variability and the direction in which they develop in the future. Such research will also help in assessing to what extend observed changes can be attributed to climate change and/or fishing activities (or other natural or anthropogenic changes, incl. combined effects).

4.2 Monitoring will be conducted under this R&M Plan in order to serve as a basis for:

i) assessing whether the areas protected by the WSMPA are adequate to fulfill the specific objectives and to what extent the general and specific objectives are being met and have been achieved;

ii) assessing the effectiveness and contributing to the review of the management provisions;

iii) evaluating the contribution of the WSMPA to Article II (3) of the Convention.

5. Principal issues for Research and Monitoring in the WSMPA

5.1 The research and monitoring activities in the WSMPA should seek to address the following questions. This guidance is not exhaustive and can be further elaborated, expanded or specified by CCAMLR, e.g. in the context of the international expert workshops foreseen in the first 10 years after adoption of this Conservation Measure.

i) Is the WSMPA conserving an adequate proportion of all benthic and pelagic ecosystems, habitats and species?

ii) Are the WSMPA boundaries adequate to achieve the specific objectives and does the WSMPA continue to adequately encompass the populations, features and areas included pursuant of the WSMPA objectives?

iii) Has the WSMPA effectively contributed to the achievement of Article II (3) of the Convention?

iv) What is the impact of specific anthropogenic activities on the WSMPA specific objectives?

v) Are the ecosystems, habitats or species included in the WSMPA affected by climate change and/or fishing activities (or other natural changes or other anthropogenic effects)? Are there any combined effects?

vi) Is there further information about the ecological importance of the habitats, processes, populations, life-history stages, or other features included and protected by the WSMPA?

vii) Does the structure and function of the marine ecosystems protected by the WSMPA, including populations or subpopulations of marine organisms that occur or forage inside the WSMPA, differ from those outside the WSMPA[3]?

viii) Can effects of research and exploratory fishing operations and/or climate change on the Antarctic marine living resources be observed in the WSMPA?

ix) Do habitats or ecosystems where fishing is prohibited (e.g. in reference areas) differ from those in areas where fishing is allowed?

x) Are WSMPA communities stable and resilient, especially ecosystems, habitats and populations of key species (e.g. Antarctic krill, ice krill, Antarctic toothfish, Antarctic silverfish)?

xi) Are the WSMPA specific objectives being achieved and are they still valid?

6. Annual progress report in the context of the Research and Monitoring Plan

6.1 CCAMLR members should ensure that the data and results of the research and monitoring carried out by their scientists in the context of this WSMPA R&M Plan will be submitted to the Secretariat.

6.2 The CCAMLR members involved in the WSMPA research and monitoring activities are invited to deliver an annual R&M up-date to CCAMLR through WG-EMM. These up-dates should:

i) summarise the research and monitoring activities of the previous year and, as far as possible, the data and (preliminary) results obtained;

ii) outline the plans, goals and arrangements for research and monitoring activities to be carried out in the next year;

iii) recommend, if deemed necessary, actions to be taken by CCAMLR regarding the objectives, restricted and prohibited activities in the WSMPA and management of the WSMPA as set out in this Conservation Measure.

[3] Where research and monitoring outside the WSMPA is necessary to assess the achievement of the specific objectives within the WSMPA, this research and monitoring, including their location, have to be specified.

6.3 In the fourth and the ninth year after adoption of the WSMPA (see Appendix 2), the annual R&M up-dates will be combined and extended into a WSMPA report prepared by CCAMLR in accordance with the format agreed at SC-CAMLR-XXXI (2012), § 5.33 and Annex 6, §§ 3.71 – 3.75.

7. Data usage, storage and accessibility in the context of the Research and Monitoring Plan

7.1 The data and results obtained by the research and monitoring activities specified in this R&M Plan will be taken into account when:

i) preparing the WSMPA report according to Paragraph 9 of this Conservation Measure;

ii) reviewing the WSMPA according to Paragraph 10 of this Conservation Measure;

iii) planning and implementing the research and monitoring activities in the subsequent cycle.

7.2 All data resulting from research and monitoring activities will be handled in accordance with the Rules for Access and Use of CCAMLR Data and will be stored in a dedicated WSMPA Geographical Information System (WSMPA-GIS).

Appendix 1

Research[4] & Monitoring to assess the achievement of the specific objectives of the WSMPA

Pelagic conservation objectives

1. Protection of representative examples of pelagic and sea ice ecosystems and habitats, such as the unique, persistent open ocean areas associated with the Maud Rise submarine plateau, or the areas along the shelf ice edge in the eastern and southern part of the WSMPA with no or very low sea ice cover throughout the austral summer.

Parameters / indicators to assess the achievement of the above mentioned objective[5]:

- sea ice concentration and thickness (incl. polynyas) as an indicator for sea ice ecosystems and habitats and unique, persistent open ocean areas
- abiotic indicators for primary production in pelagic and open water areas
- abundance / biomass of zooplankton (meso- and macro-zooplankton, micronekton) as biotic indicator for primary production in pelagic and open water areas
- abundance / biomass of adult and larvae of Antarctic krill, ice krill and Antarctic silverfish as indicator for the distribution of key pelagic species
- size of penguin colonies as indicator for production in the pelagic, open water areas they use for foraging

Location / areas / zones:

- inside and outside the WSMPA (see footnote 6 above) - indicators for sea ice ecosystems and habitats and unique, persistent open ocean areas; abiotic indicators for primary production
- selected areas of the WSMPA (e.g. around Maud Rise or in front of Filcher shelf ice) in comparison with data from outside the WSMPA; biotic indicators

Research and monitoring to assess the achievement of the above mentioned objective:

- research based on the indicators (mentioned above) on pelagic and sea ice ecosystems and habitats protected by the WSMPA to improve the knowledge of their protection and representativeness to those outside of the WSMPA (see footnote 6 above)
- improvement of models to better predict sea ice concentration and thickness, sea water temperature, salinity, dissolved oxygen, inorganic nutrients and chlorophyll-a concentration in the WSMPA

2. Protection of Antarctic krill, ice krill and Antarctic silverfish as key species in the Antarctic food web as well as important areas / habitats for their life cycle, e.g. spawning areas.

[4] Research in accordance with paragraph 7 of this Conservation Measure

[5] Unless stated otherwise, the baseline for these assessments will be the data and information contained in the scientific background document for the WSMPA (*reference to be inserted*).

Parameters / indicators to assess the achievement of the above mentioned objective:

- abundance and biomass of adult and larvae of Antarctic krill, ice krill and Antarctic silverfish as indicator for the distribution of key species in the Antarctic food web

Location / areas / zones:

- selected areas of the WSMPA (e.g. around Maud Rise or in front of Filcher shelf ice)

Research and monitoring to assess the achievement of the above mentioned objective:

- in situ research into the ecology and population dynamics of Antarctic krill, ice krill and Antarctic silverfish
- life cycle analyses of Antarctic krill, ice krill and Antarctic silverfish with specific focus on identifying important areas / habitats for these species, e.g. spawning areas, and how they could be protected

3. Protection of essential habitats for top predators such as flying seabirds, penguins and seals.

Parameters / indicators to assess the achievement of the above mentioned objective:

- development of Emperor (*Aptenodytes forsteri*) and Adélie (*Pygoscelis adeliae*) penguin colonies as indicator for the productiveness in their foraging areas
- development of flying seabird colonies, including changes of feeding and foraging areas
- development of seal reproduction sites on sea ice
- changes in the distribution, abundance and important feeding areas (hotspots) of seals and penguins

Location / areas / zones:

- selected areas of the WSMPA, e.g. foraging areas around penguin and flying seabird colonies or the Filchner overflow region as an important feeding area (hotspots) for seals

Research and monitoring to assess the achievement of the above mentioned objective:

- regular surveys and remote sensing observations of the flying seabird and Emperor and Adélie penguin colonies protected by the WSMPA
- research, including remote sensing, aerial photography and observations of underwater-vocalisation with acoustic hydrophones into the seal populations and reproduction sites protected by the WSMPA

Benthic conservation objectives

4. Protection of representative examples of benthic ecosystems and habitats such as the ecologically important sponge associations on the shelf in the eastern and southern part of the WSMPA.

Parameters / indicators to assess the achievement of the above mentioned objective:

- distribution, composition and abundance of meio- and macrobenthic assemblages (incl. important sponge and suspension feeding communities) as an indicator to ensure that representative examples are protected by the WSMPA

Location / area/ zone:

- selected areas within the WSMPA (e.g. on the eastern and southern shelf areas of the WSMPA) in comparison with selected areas outside the WSMPA (see footnote 6 above)

Research and monitoring to assess the achievement of the above mentioned objective:

- Surveys on benthic communities with quantitative, semi-quantitative and non-invasive methods, within and outside of the WSMPA

5. Protection of Antarctic toothfish as a top predator including all life history stages and their habitats.

Parameters / indicators to assess the achievement of the above mentioned objective:

- (1) distribution, abundance, biomass, proportion of mature fish and stock size of Antarctic toothfish as part of the data collection / monitoring requirements for the exploratory toothfish fisheries in the FRZ (as reference for a fished area)
- (2) dedicated data collection / monitoring for toothfish in the GPZ
- (3) distribution, abundance and biomass of early life history(larvae, pelagic juveniles) stages of Antarctic toothfish.

Location / area/ zone:

- (1) Fisheries Research Zone (FRZ)
- (2) Within selected areas of the GPZ, which CCAMLR will identify and approve
- (3) within selected slope and shelf areas of the WSMPA

Research and monitoring to assess the achievement of the above mentioned objective:

- research with traditional (e.g. longline surveys, trawls) methods and new underwater observatory methods (e.g. electronic tags) on the ecology and the population composition / dynamics of Antarctic toothfish to allow comparison of fished and unfished areas within the WSMPA
- autecological research on individual Antarctic toothfish specimens (e.g. via analyses of otoliths and/or electronic pop-up GPS tagging) to reveal their life history characteristics and identify migration routes and spawning grounds

6. Protection of the integrity and life cycles of unique and diverse suspension feeding assemblages, particularly large benthic sponge associations, and thereby maintaining the associated benthic communities as efficient sources for recolonization.

Parameters / indicators to assess the achievement of the above mentioned objective:

- (1) distribution, abundance and composition of suspension feeding assemblages
- (2) distribution, abundance and composition of other meio- and macrobenthic assemblages

Location / area/ zone:

- (1) selected areas on the eastern and southern shelf areas of the WSMPA
- (2) selected areas of the WSMPA

Research and monitoring to assess the achievement of the above mentioned objective:

- Benthic surveys with quantitative, semi-quantitative or non-invasive methods
- research into recolonization sources and strategies

7. Protection of rare and unique shallow (surface to 150 m water depth) sea floor areas with high habitat heterogeneity and species turnover in order to preserve the ecologic function of these areas as "stepping stones" and sources for recolonization for associated communities and species.

Parameters / indicators to assess the achievement of the above mentioned objective:

- distribution, composition and abundance of macrobenthos in shallow sea floor areas in order to detect any changes in habitat heterogeneity and species turnover over time

Location / areas/ zones:

- 'Hillman' area of the Norsel bank

Research and monitoring to assess the achievement of the above mentioned objective:

- Observations (benthic surveys) with non-invasive techniques/ methods
- Research on whether and how these rare and unique shallow sea floor areas are biogeographically connected to other similar areas within and outside of the WSMPA (see footnote 6 above).

8. Protection of spawning areas and nesting sites of demersal fish species including those exhibiting parental care.

Parameters / indicators to assess the achievement of the above mentioned objective:

- location and number of spawning areas and nesting sites of demersal fish to ensure their adequate protection

Location / areas/ zones:

- selected areas of the WSMPA

Research and monitoring to assess the achievement of the above mentioned objective:

- surveys of the seafloor of the WSMPA with non-invasive systems in order to observe existing and to identify additional spawning areas and nesting sites of demersal fish

Pelagic and / or benthic conservation objectives

9. Protection of higher productivity areas to support key ecosystem processes and functional integrity of the ecosystems.

Parameters / indicators to assess the achievement of the above mentioned objective:

- sea ice concentration and thickness (incl. polynyas, sea water temperature, salinity, dissolved oxygen, inorganic nutrients and chlorophyll-a concentration) as abiotic primary production indicators to assess the development and the protection of higher productivity areas in the pelagic realm
- abundance / biomass of zooplankton (meso- and macro-zooplankton, micronekton) as biotic primary production indicator to assess the development and the protection of higher productivity areas in the pelagic realm
- abundance / biomass of adult and larvae of Antarctic krill, ice krill and Antarctic silverfish as indicator of higher productivity areas in the pelagic realm
- size and population development of colonies and foraging areas of top predators (flying seabirds, penguins and seals) as indicator to assess the development and the protection of higher productivity areas in the pelagic realm
- distribution, composition and abundance of important sponge and suspension feeding communities as an indicator to assess the development and the protection of higher productivity areas in the benthic realm
- distribution, abundance, biomass, and stock size of top predators (Antarctic toothfish) as indicator to assess the development and the protection of higher productivity areas in the benthic realm

Location / areas/ zones:

- the whole WSMPA - abiotic and biotic primary production indicators
- selected areas of the WSMPA - above mentioned biological indicators

Research and monitoring to assess the achievement of the above mentioned objective:

- research based on field studies and modelling of the higher productivity areas protected by the WSMPA and the support they provide to key ecosystem processes and functional integrity of the ecosystems in the WSMPA

10. Protection of marine ecosystems and habitats vulnerable to cumulative effects of climate change, fishing and other human activities and critical to the function of local ecosystems, in order to maintain and/or enhance resilience and adaptive capacity, such as benthic three-dimensional suspension feeder communities in the eastern and

southern part of the WSMPA or the marine areas important for the foraging and life cycle of top predators.

Parameters / indicators to assess the achievement of the above mentioned objective:

- distribution of indicator species (e.g. penguins and seals as top predators; Antarctic krill, ice krill and Antarctic silverfish in the pelagic realm; Antarctic toothfish and important sponge and suspension feeding communities for the benthic realm) for marine ecosystems and habitats vulnerable to cumulative effects of climate change, fishing and other human activities and critical to the function of local ecosystems

Location / areas/ zones:

- Selected areas of the WSMPA

Research and monitoring to assess the achievement of the above mentioned objective:

- combining the results of:

  (1) research (incl. habitat suitability modelling) to further identify those marine ecosystems and habitats, which are critical to the function of local ecosystem and most vulnerable to the cumulative effects of climate change, fishing and other human activities

  (2) research into the resilience and adaptive capacity of those marine ecosystems and habitats identified under (1)

  (3) research to identify the areas protected by the WSMPA, where climate change, fishing and other human activities are expected to have the most severe effects (e.g. the Filchner overflow zone)

Research objectives

11. Provision of scientific reference areas to monitor the natural variability and long-term changes on the Antarctic marine living resources and to study the effects of climate change and human activities on the Antarctic ecosystems.

Parameters / indicators to assess the achievement of the above mentioned objective:

- key oceanographic parameters and climate change indicators (temperature, direction and velocity of water masses will be measured in the Filchner Overflow Area as indicators to study the effects of climate change in this region of the WSMPA)
- abundance and biomass of adult and larvae of Antarctic krill, ice krill and Antarctic silverfish as indicator for the natural variability and long-term changes on key Antarctic marine living resources in the pelagic realm
- data on top predators (e.g. Antarctic toothfish) and other parameters (to be determined) within and outside the FRZ to study the effects of fishing on Antarctic ecosystems and food chains.

Location / areas/ zones:

- Areas in the GPZ and SPZ

Research and monitoring to assess the achievement of the above mentioned objective:

- in situ observation, supported by modelling, of the natural variability and long-term changes on the Antarctic marine living resources based on key oceanographic parameters and climate change indicators in the Filchner Overflow area
- comparative studies on effects of climate change and human activities on Antarctic marine living resources and the Antarctic ecosystems within and outside of the scientific reference areas and the FRZ established by/ in the WSMPA

12. Provision of areas for fisheries research in form of a dedicated Fisheries Research zone to enhance the understanding of the fish stocks and to study the effects of fishing activities

Parameters / indicators to assess the achievement of the above mentioned objective:

- distribution, abundance, biomass, length composition and stock size of Antarctic toothfish as part of the data collection / monitoring requirements for the exploratory toothfish fisheries

Location / area/ zone:

- Fisheries Research Zone (FRZ)

Research and monitoring to assess the achievement of the above mentioned objective:

- Fisheries-based research in accordance with Conservation Measures 41-04 as well as the Research Plan and Tagging Program described in Conservation Measure 41-01, Annex 41-01/B and Annex 41-01/C respectively

The most important steps in the operationalization of the WSMPA Research and Monitoring Plan **Appendix 2**

	1 year	2 year	3 year	4 year	5 year	6 year	7 year	8 year	9 year	10 year
Jan					***POLARSTERN cruise with 20 CCAMLR experts*** for research and monitoring activities					***POLARSTERN cruise with 20 CCAMLR experts*** for research and monitoring activities
Feb	***1st CCAMLR International R&M expert WS*** - review of who is doing what, where and when in terms of research and monitoring in the context of the WSMPA			***CCAMLR to prepare 1st WSMPA report***					***CCAMLR to prepare 2nd WSMPA report***	***CCAMLR to compile info and start preparing documentation for WSMPA review***
Mar										
Apr				***2nd CCAMLR International R&M expert WS*** - review of R&M activities and of draft WSMPA report - preparation of 1st *POLARSTERN* cruise with CCAMLR experts					***3rd International CCAMLR R&M expert WS*** - review of R&M activities and of draft WSMPA report - assessment of achievement of General and Specific Objectives - planning for 2nd *POLARSTERN* cruise with CCAMLR experts to fill R&M gaps	***4th International CCAMLR R&M expert WS*** - finalisation of draft assessment report concerning achievement of General and Specific Objectives; - review of draft scientific documentation for WSMPA review
May										
Jun										

	1 year	2 year	3 year	4 year	5 year	6 year	7 year	8 year	9 year	10 year
Jul	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM WSMPA report to EMM	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM	Annual national R&M up-dates to EMM WSMPA report to EMM	Annual national R&M up-dates to EMM Scientific WSMPA review documentation to EMM
Aug										
Sep										
Oct	Reporting to SC-CAMLR	Reporting to SC-CAMLR	Reporting to SC-CAMLR	WSMPA report to SC-CAMLR	Reporting to SC-CAMLR	Reporting to SC-CAMLR	Reporting to SC-CAMLR	Reporting to SC-CAMLR	WSMPA report to SC-CAMLR	Scientific WSMPA review documentation to SC-CAMLR Overall WSMPA review documentation to Commission ***CCAMLR review of WSMPA***
Nov										
Dec				***POLARSTERN cruise with 20 CCAMLR experts*** for research and monitoring activities					***POLARSTERN cruise with 20 CCAMLR expert*** for research and monitoring activities	