

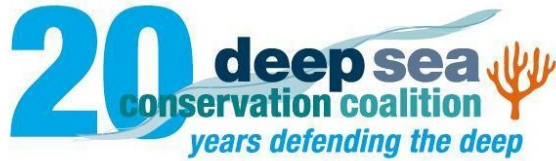
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SC 12 - Obs 06

**Implementing SPRFMO Decision 13-2023 on climate change requires a
'paradigm shift'**

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Implementing SPRFMO Decision 13-2023 on climate change requires a ‘paradigm shift’

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Observer paper from the Deep Sea Conservation Coalition to SPRFMO SC12

Abstract

The Commission’s adoption of [Decision 13-2023](#) Decision on Climate Change provides a strong starting point for the development and implementation of effective management mechanisms to address projected impacts of climate change within the SPRFMO Convention Area.

However, SPRFMO cannot afford to assume that climate impacts can be dealt with as ‘exceptional circumstances’. Nor can the Scientific Committee afford to sit back and wait for the results of its various research projects into observed and projected impacts in the Convention Area. As concerns about the uncertainties associated with ongoing climate change and ocean acidification grow, so too do fears about the capacity of regional fisheries bodies to address the problem.

DSCC proposes that the Scientific Committee immediately initiate a review of existing CMMs to identify where additional information and decisions will be needed, commit to additional research to support that review, review the effectiveness of the risk approach underpinning harvest strategies and associated decision rules and reference points, which are used to develop stock assessments and set fishery controls and catch limits, and initiate discussions on the potential risks of climate change and acidification impacts on maintenance of healthy ocean ecosystems.

Table of contents

| | | |
|-----|--|---|
| 1. | Introduction | 1 |
| 2. | A comprehensive approach to managing climate change impacts | 2 |
| 3. | Operationalising Decision 13-2023 | 4 |
| 3.1 | Review of responsiveness of existing CMMS | 4 |
| 3.2 | Accounting for uncertainties in fundamental decisions underpinning SPRFMO fisheries measures | 5 |
| 3.3 | Closed areas for climate and fisheries resilience | 5 |
| 3.4 | Data collection & science that illustrates potential climate change impacts | 6 |
| 4. | Conclusion | 7 |
| 5. | References | 8 |

1. Introduction

The Commission's adoption of [Decision 13-2023](#) Decision on Climate Change provides a strong starting point for the development and implementation of effective management mechanisms to address projected impacts of climate change within the SPRFMO Convention Area.

The Decision establishes the foundation for those mechanisms by stressing the urgent need to develop 'a comprehensive approach to understanding and addressing the impacts of climate on fishery resources in the Convention Area' (preambular para 7)', and tasks the SPRFMO Scientific Committee:

- In 2023 and annually thereafter to include climate change as an agenda item, and
- To make recommendations to the Commission (for the adaptation and resilience to climate change impacts in the Convention Area) on how
 - existing conservation and management measures (CMMs) could be designed or -
 - proposed new CMMS [be] established.

The 2023 SC11 subsequently adopted climate change as a permanent item on its agenda and incorporated new projects within its multiannual workplan (SPRFMO-SC, 2023, Annex 5). These include consideration of management implications of climate change on habitat and fisheries, climate change impacts in Salas y Gomez and Nazca ridges, consideration of the impacts of climate change on the jack mackerel and chub mackerel habitat, and the development of an inventory of available climate-related data and existing models applicable for SPRFMO fisheries and identification of gaps. The Environmental Defence Fund (EDF) also offered to host a side event at SC12 on the development of tools to improve fisheries management decision-making in the context of climate change.

SC12, however, cannot sit back and await for the outcomes of this work before providing advice to the Commission. As evidence of the impacts of climate change and ocean acidification on the marine environment continue to strengthen, there are growing concerns about the uncertainties in generating accurate projections, associated with poor quantification of individual responses and understanding of feedback mechanisms, and the capacity of regional fisheries bodies to address the problem (FAO, 2024; Pentz et al., 2018; Sumby et al., 2021). The impact of ocean acidification must be overtly considered in management responses to impacts (Greenhill et al., 2020; Kroeker et al., 2013).

In 2023 the UNGA Resolution 78/68 (2023) “calls on RFMO to take into account the potential impacts of climate change and ocean acidification”.

In addition, the intrinsic value of a healthy ocean ecosystem to both human and planetary health, and the growing recognition of the potential for climate change to reduce that value must be considered.

Management responses that treat climate change impacts and acidification as ‘exceptional circumstances’ and merely ‘bolt-on’ to existing regulations will be insufficient to address climate change and the uncertainties surrounding its impacts. Rather, SPRFMO, guided by its Scientific Committee, must apply a climate change lens to all existing Measures and Decisions on a regular basis, taking account of the static nature of the decisions underpinning stock assessments and the setting of fishery controls. SPRFMO must also consider how to protect the biodiversity of the SPRFMO area, including vulnerable marine ecosystems, for both SPRFMO Members and the global community. This will necessitate the application of a risk strategy and a highly precautionary approach.

Recommendation: DSCC suggests that management responses that treat climate change impacts and acidification as ‘exceptional circumstances’ and merely merit ‘bolt-on’ to existing regulations will be insufficient to address these uncertainties, and that SPRFMO must apply a climate change lens to all existing Measures and Decisions on a regular basis, take account of the static nature of the decisions underpinning stock assessments and the setting of fishery controls, and also consider how to maintain the biodiversity of the SPRFMO area including vulnerable marine ecosystems. This will necessitate the application of a risk strategy and a highly precautionary approach.

2. A comprehensive approach to managing climate change impacts

There is growing global recognition of the fundamental importance of healthy oceans to both human and planetary health. The United Nations established SDG 14 - Life below water because it recognised that the ocean was “in a state of emergency as increasing eutrophication, acidification, ocean warming and plastic pollution worsen its health.” Ten years later they report the continued decline in fish stocks caused by ‘overfishing, pollution, climate change and poor management’ (U.N. DESA, 2024).

Observed and projected impacts of anthropogenic climate change and associated acidification on the ocean and marine resources have been increasingly reported in recent years (see for example

IPCC, 2019, 2022; Mills et al., 2023; Pecl et al., 2017). These changes are intensifying but varied in their emergence as warming continues and ‘feedback loops’ are triggered (Bunsen et al., 2024; Gruber et al., 2023; Heinze et al., 2015; Lawrence et al., 2020; IPCC, 2007; Pescaroli et al., 2016; Rocha et al., 2018), and is likely to ‘transition to unprecedented conditions’ (IPCC, 2019). If these changes continue unabated such changes will ultimately cause a lasting impact on marine biodiversity, and the lives and livelihoods of coastal communities and beyond. As FAO (2024) notes, climate change is likely to undermine the ability of regional management bodies ‘to adapt in the context of increased uncertainty and non-analogous conditions.’ The IPCC 2019 noted “Continued carbon uptake by the ocean by 2100 is virtually certain to exacerbate ocean acidification.”

Thus, rather than a focus centred around target species, the response to climate change and ocean acidification impacts must take a comprehensive, highly adaptive and precautionary risk-focused approach that integrates considerations of ecosystem assessments, fisheries assessments and cumulative impacts.

A broad range of suggestions already exist in the literature on appropriate management responses for marine environments experiencing rapid environmental changes associated with climate change (see e.g., CBD, 2017; CBD, 2019; FAO 2024; Fleming et al., 2024; I PBES, 2019; Laffoley, 2020; Laffoley et al., 2019; Lo, 2016; Michonski & Levi, 2010; Pentz et al., 2018; Tittensor et al., 2019; UNFCCC, 2019). These include, inter alia:

- implementing the precautionary approach to address the current lack of certainty around predicted effects of rapid climate change on individual species and broader ecosystems and the potential advent of feedback loops;
- implementing the ecosystem approach to resource management to ensure that relationships between harvested species and those dependent or related, as well as the impact on broader ecosystems, are considered when determining sustainable fishery levels and controls;
- undertaking proactive research and monitoring to enhance early detection and understanding of climate change effects;
- developing both medium (3–5 year) and long-term management strategy considerations, proposals and decisions in concert with risk assessments and dynamic and responsive action;
- strengthening monitoring and compliance measures to reduce impacts of unregulated activities that may exacerbate the effects of climate change;
- incorporating values, uses and benefits beyond fisheries opportunities in management decisions;
- establishing networks of marine protected areas explicitly designed to address climate change, biodiversity loss and ocean health;
- prioritising cooperation among States to ensure effective collaboration on climate-focused responses;
- intensifying international cooperation to maximise distribution of the latest available scientific information and joint scientific initiatives;

- intensifying International governance cooperation across scales, jurisdictions, planning and policy domains to maximise policy responses;
- including climate impact considerations in all proposals and working documents to facilitate the integration of climate change considerations in decisions;
- adopting substantive precautionary and ecosystem-based protection and control measures for human activities; and
- recognising ocean acidification as a risk to ecosystems and resources, and as a risk to ecosystem-based efforts to contribute to protection, resilience and enhancement, and planning accordingly.

In addition, recent research by Edgar et al. (2024) concludes that globally, many stock assessments are inaccurate and likely to be overstated, and suggests that to improve fishery sustainability, particularly under a changing climate, more effort must be placed on precautionary management approaches, ensuring suitable models that incorporate climate effects and take account of uncertainties, and collating fishery-independent population surveys and comparative data from 'no-fishing' reserves.

Recommendations:

1. SC 12 should undertake an initial review of all Decisions and CMMs to assess their adequacy in responding to the projected impacts of climate change and acidification and are precautionary enough to handle the substantial uncertainties of those impacts; and
2. All future stock assessments, Decisions and CMMs must be developed with a climate change lens, follow a highly precautionary approach and include measures to collect data and build on the understanding of climate change impacts.

3. Operationalising Decision 13-2023

3.1 *Review of responsiveness of existing CMMS*

Decision 13-2023 requires the SC to utilise analyses and data collection programs directed at understanding the potential impacts of climate as the basis to 'make recommendations to the Commission on how existing conservation and management measures (CMMs) could be designed or proposed new CMMs established for the adaptation and resilience to climate change impacts in the Convention Area.

Recommendation: While awaiting outputs from recently initiated research programmes, the DSCC proposes that the SC review all existing CMMs to:

- identify where climate impact information will need to be incorporated;
- identify potential new decision points within each CMM;
- advise where a stronger precautionary management approach should be implemented in the interim; and

- advise where more substantive amendments may be required.

3.2 Accounting for uncertainties in fundamental decisions underpinning SPRFMO fisheries measures

Management of SPRFMO fisheries are based on agreed harvest control rules, reference points, fishery assessment processes and risk criteria. These ‘yardsticks’, established to ensure a long-term healthy fishery, rely on an understanding of population dynamics of the targeted and related species, and the biological processes driving those dynamics. Unaccounted for shifts in the system may impact the reliability of these baselines (Heino *et al.*, 2013).

In addition, as noted above, Edgar et al (2024) has recently shown that globally, many models used to determine stock biomass and health are seriously inaccurate and are contributing to the ongoing decline of many targeted species. They recommend a review of models used to take account of known bias, climate change effects and uncertainty, and to generate fishery-independent population surveys and comparative data from areas closed to fishing to improve the accuracy of reference data.

While setting allowable catches according to latest stock assessments will provide some buffer, such uncertainties in the system generated by ongoing and cumulative climate change impacts will require a more precautionary and risk averse approach, and stronger focus on maintaining updated information to capture changes.

Recommendation: To improve the accuracy and relevance of its stock assessment and related scientific decision tools the SC should:

- Initiate discussions on how to address the increasing uncertainties of evolving climate change and acidification impacts on agreed harvest decision rules;
- review the efficacy of its assessment models to incorporate uncertainties;
- undertake fishery-independent population surveys to contribute to accuracy of assessment processes; and
- propose the establishment of closed areas for the purposes of comparative data collation.

3.3 Closed areas for climate and fisheries resilience

The role of closed areas for resilience, refugia and in slowing the global decline in high seas health and biodiversity in a climate changing environment has been well researched (e.g., Edgar et al., 2014; Hannah et al., 2007; IUCN, 2017; McLeod et al., 2009; McClanahan et al., 2008; Sala & Giakoum, 2018). Closed areas can also play a role in providing long term protection for habitats, including vulnerable ecosystems, and systems that act as ‘blue carbon’ such as seagrasses.

SPRFMO also needs to be prepared for future consultations with the UNCLOS Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction, generally referred to as the ‘BBNJ Agreement’ (Kachelriess, 2023; U.N., n.d.), which aims to ensure the conservation and sustainable use of marine biological diversity of areas beyond

national jurisdiction, for the present and in the long-term. It is expected to enter into force by late 2025 or early 2026 (120 days after the deposit of the 60th instrument of ratification), and will apply to high seas areas. Part of its mandate is to establish area-based management tools, including marine protected areas, and environmental impact assessments for planned activities, on the high seas. This will generate consultations with RFMOS such as SPRFMO over proposals for the application of area-based management tools, including marine protected areas (BBNJ Arts. 19, 21) as well as regular consultations (BBNJ Art. 22).

Recommendation: The SC initiate discussions:

- On the role that closed areas can contribute to management responses to evolving climate change and ocean acidification impacts to provide advice;
- on ensuring the full protection of blue carbon ecosystems and highly productive seamounts; and
- on a program for reviewing measures for climate change and ocean acidification matters;
- with a view to establishing a working group on climate change and ocean acidification.

3.4 *Data collection & science that illustrates potential climate change impacts*

The impacts of climate change and ocean acidification on species will inevitably vary. The impact of ocean acidification on marine organisms' sensitivities needs to be considered when combined with the impact of ocean warming. This approach indicates the need to consider species interactions and considering management approaches that consider the “enhanced sensitivity to acidification when taxa are concurrently exposed to elevated seawater temperature” (Kroeker et al (2013).

As noted in the DSCC review of Seamounts, a study of 47 seamounts in the Northeast Pacific revealed significant long-term chemical changes, including an expanding oxygen minimum zone (OMZ), a 15% decline in deep oxygen levels since 1960, and increasingly corrosive waters above the OMZ (Ross et al., 2020). The authors suggest that VME indicator species, particularly cold-water corals, are likely to face compounded impacts on their distribution, metabolism, growth, and reproduction, potentially threatening their survival or leading to local extinctions.

The need to consider and research the combined effect on marine organisms and ecosystems of ocean acidification and increased seawater temperature has been highlighted by several reviews (eg IPCC2019). As the IPCC AR6 report stated: “Continued carbon uptake by the ocean by 2100 is virtually certain to exacerbate ocean acidification.”

The Scientific Committee should consider research needs which look at the impact of warming, ocean acidification and other ocean changes on marine ecosystem and the sensitivities of target fish species.

A recent review of stock assessment models (Edgar et al 2024) has highlighted the problem with historical models generally overstating estimates of biomass in regions affected by rising temperatures. This gives further weight for the SC to take a precautionary approach when making management recommendations to the Commission.

Recommendation: The SC should develop an element of the work plan which focuses on the impact of ocean warming, ocean acidification on target species and the associated ecosystem.

4. Conclusion

DSCC suggests that management responses that treat climate change impacts and acidification as ‘exceptional circumstances’ and merely merit ‘bolt-on’ to existing regulations will be insufficient to address these uncertainties, and that SPRFMO must apply a climate change lens to all existing Measures and Decisions on a regular basis, take account of the static nature of the decisions underpinning stock assessments and the setting of fishery controls, and also consider how to maintain the biodiversity of the SPRFMO area including vulnerable marine ecosystems. This will necessitate the application of a risk strategy and a highly precautionary approach.

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