

27th September 2021

Commission for the Conservation of
Antarctic Marine Living Resources - CCAMLR
181 Macquarie Street, Hobart,
7000, Tasmania, Australia

Re: Scientist Letter for the Southern Ocean

Dear CCAMLR Representatives,

The Special Reports of the Sixth Assessment Report cycle of the Intergovernmental Panel on Climate Change (IPCC) together with the recent contribution of Working Group I paint a stark picture. Due to anthropogenic warming, these reports describe an increasingly inhospitable planet, under assault by extreme weather events, in which the atmosphere, ocean, cryosphere and biosphere are experiencing rapid changes. Such impacts are no longer theoretical. July 2021 was the hottest month ever recorded, as skies from Europe to Siberia to the United States were shrouded in smoke from wildfires.

The polar regions are warming even faster than the rest of the worldⁱⁱ. And the ocean, which thus far has buffered humanity from the full extent of climate change, is experiencing a multitude of devastating climate impacts, including acidification and marine heat waves, with major consequences for marine ecosystems. Collectively, this means the potential for massive upheaval and destructive outcomes for nature in the Arctic and Antarctic. Such change also carries significant impacts for the human communities and industry interconnected to these areas by research, fisheries, tourism, and more broadly by the global climate system.

The IPCC has repeatedly stressed that “fundamental societal and systems transitions” are a prerequisite for successfully responding to the threat of climate change. All this points to the need for immediate and effective action by global bodies, notably the UNFCCC, in meeting the Paris Agreement targets. Coupled with regional and local-level action, from institutions such as CCAMLR (Commission for the Conservation of Antarctic Marine Living Resources) and other relevant bodies of the Antarctic Treaty System, which oversee the international governance of Antarctica’s Southern Ocean, accounting for 10% of the world’s ocean.

Without immediate and significant emissions reductions, the earth will soon reach tipping pointsⁱⁱⁱ - critical thresholds to irreversible, rapid, and substantial change – which will potentially lead to the most extreme future scenarios laid out by the IPCC. Whether the international community delivers emission cuts quickly enough to mitigate the threat of such enduring change remains to be seen. Such approaches can be adopted at national levels, or through constructive cooperation of organizations such as CCAMLR whose individual Member states must do their part, within their remit, to contribute to these transitions without further delay.

The Southern Ocean plays a crucial role in modulating global climate – and the polar regions are experiencing the most pronounced impacts of climate change. In March this year, an ad hoc expert Working Group of leading Antarctic scientists warned that climate change is pushing this remote polar region, which connects all ocean basins and keeps the planet habitable, towards several tipping points with global ramifications for humanity and biodiversity^{iv v}.

Within the cold southern waters of the planet, there are clear science-based policy interventions that should be implemented by CCAMLR, to build resilience into ecosystems, giving nature the best opportunity possible to withstand the climate crisis.

1. Creating a **circumpolar network of marine protected areas around Antarctica** by agreeing on new protections in East Antarctica, the Antarctic Peninsula, and the Weddell Sea
2. Incorporating **climate change considerations** into **fisheries management policies**
3. Re-emphasizing a **precautionary approach** to decision-making in the Southern Ocean

Marine Protected Areas: MPAs would significantly enhance protection of the Southern Ocean, building resilience^{vi} against climate impacts by mitigating the effects of additional anthropogenic stressors such as industrial fishing^{vii} ^{viii}. In the Southern Ocean, there is evidence MPAs can generate benefits for fisheries and biodiversity by protecting key habitats, while delivering significant climate resilience gains. MPAs can also serve as climate reference areas to support understanding as our world continues to change. A globally significant protected area already lies within the CCAMLR region in the Ross Sea, and an opportunity exists to implement an interconnected network of several protected areas, including the Weddell Sea, and waters of East Antarctica and the Antarctic Peninsula.

Climate and fisheries management: Krill, a small crustacean which forms the foundation of the Southern Ocean ecosystem as critical food for whales, penguins, and other species, also represents the largest fishery managed by CCAMLR. Given the projected detrimental impacts of warming and acidification on krill and krill-dependent predators, management measures must ensure that krill fisheries are managed in consideration of climate change, so to avoid cumulative impacts and localized overfishing. However, at present this is not the case. To build resilience, CCAMLR and its Scientific Committee must prioritize the integration of climate change into fisheries management and decision-making. This could include advancing an ecosystem-based management system for the krill fishery and implementing a Climate Change Response Work Programme to integrate climate change considerations into all the conservation measures it adopts.

The Precautionary Approach: CCAMLR pioneered the use of an ecosystem-based and precautionary approach for fisheries management. This approach requires that management be proactive and not delay conservation action when faced with uncertainty and the risk of irreversible ecosystem damage. While held as a gold standard in management, this ethos does not appear to have been upheld in CCAMLR in recent years. The severity of the threats to the region under a changing climate present an urgent need to re-emphasize a precautionary approach to decision-making in the Southern Ocean, to prevent irreversible changes to this globally important region.

The science of climate change is beyond debate^{ix}. Scientists have declared that clearly and unequivocally the planet earth is facing a climate emergency and are calling on decision-makers to employ science-based policy towards addressing climate change, immediately.

We call on CCAMLR during its upcoming annual meeting in October to make a significant contribution against the biodiversity and climate crisis by delivering the key interventions listed above.

ⁱ IPCC (2021): Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

ⁱⁱ IPCC (2019): IPCC Special Report on the Ocean and Cryosphere in a Changing Climate [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]

ⁱⁱⁱ Lenton, T. M. (2011). Early warning of climate tipping points. *Nature Climate Change*, 1(4), 201–209.

^{iv} Capurro et al. (2021). Climate Change and Southern Ocean Resilience. Wilson Center *Polar Perspectives* No. 5.

^v Cavanagh et al. (2021). Future Risk for Southern Ocean Ecosystem Services Under Climate Change. *Frontiers in Marine Science*, 7, 1–21.

^{vi} Grant et al (2021). Local Drivers of Change in Southern Ocean Ecosystems: Human Activities and Policy Implications. *Front. Ecol. Evol.*, 24 June 2021.

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- ^{vii} Klein ES, Watters GM (2020) What's the catch? Profiling the benefits and costs associated with marine protected areas and displaced fishing in the Scotia Sea. *PLoS ONE* 15(8): e0237425.
- ^{viii} Dahood et al. (2020). Evaluating Antarctic marine protected area scenarios using a dynamic food web model. *Biological Conservation*. Volume 251
- ^{ix} Cook et al. (2016). Consensus on consensus: A synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters*, 11(4).

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