



SeaBlue  
CANADA



# HARNESSING BLUE CARBON TO EXPAND MARINE PROTECTION IN CANADA

IMPAC5



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# IDENTIFYING GAPS IN BLUE CARBON KNOWLEDGE IN CANADA

Canada's blue carbon ecosystems demonstrate significant variability - ranging from scientific to legislative. Their ecological and spatial variability contributes to differences in carbon stocks and accumulation rates, species diversity and the threats they face. In addition, the management of Canada's coastline is equally complex, with jurisdiction varying among Indigenous rights holders and federal, provincial, territorial and municipal governments pursuant to the location and type of management interventions endeavoured.

Because of these in-situ differences, Canada's blue carbon ecosystems require enhanced data collection and subsequent modelling along the nation's extensive coast using standardized methods and protocols for comparability across and within studies. Likewise, knowledge sharing will be critical to improve the efficiency and scale of scientific advancement in this field. Research, however, is only one part of the equation. Changes to policy and legislation will also be necessary to effectively protect, manage and restore blue carbon ecosystems in Canada. Likewise, given the jurisdictional challenges associated with coastal ecosystems, collaboration and integration among jurisdictions and rights holders will be necessary to facilitate a more holistic approach to implementation.

## Blue Carbon

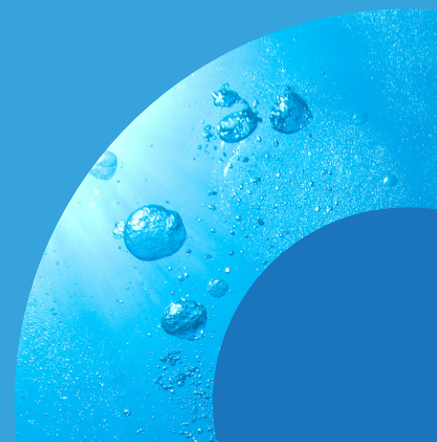
The term "blue carbon" refers to coastal and marine ecosystems that are particularly important for their capacity to fix CO<sub>2</sub> and/or store organic carbon for centennial to millennial time scales. CO<sub>2</sub> is absorbed by plants and algae in coastal ecosystems such as mangroves, tidal marshes, seagrasses and macroalgal beds, and then stored in the sediments below or exported to the seafloor. These habitats not only fix carbon, but also promote deposition of organic carbon that has been transported from elsewhere.<sup>1</sup>

## Nature-Based Solutions

Nature-based solutions (NbS) harness the power of nature to boost natural ecosystems, biodiversity and human well-being while addressing major societal issues, including climate change. Blue carbon ecosystems are classified as a nature-based solution because of their significant capacity to drawdown and prevent CO<sub>2</sub> from entering the atmosphere, while also contributing to a wide range of other ecosystem services.<sup>2</sup>

1. <https://ioc.unesco.org/our-work/blue-carbon>

2. [https://www.panda.org/discover/our\\_focus/climate\\_and\\_energy\\_practice/what\\_we\\_do/nature\\_based\\_solutions\\_for\\_climate/](https://www.panda.org/discover/our_focus/climate_and_energy_practice/what_we_do/nature_based_solutions_for_climate/)





## **FILLING GAPS IN BLUE CARBON KNOWLEDGE IN CANADA**

A new NSERC Alliance funded project called "Blue Carbon Canada" aims to produce a first nationwide assessment of the potential for Canada's oceans to serve as blue carbon. This collaborative research effort - spearheaded by Dr. Julia Baum (University of Victoria)- brings together a consortium of four universities, three government agencies, and four environmental non-governmental organizations. Together we are estimating the extent of vegetated blue carbon habitats - salt marshes, seagrasses, and kelp forests - in all three of Canada's oceans, using state-of-the-art ensemble species distribution models and dynamically down-scaled ocean-climate models. Combining a nationwide synthesis of carbon sequestration and emissions rates, we will also calculate the current and future carbon drawdown potential of these habitats out to 2050 under different climate change scenarios.

To improve our understanding of seabed sediment blue carbon and its risks to human pressures, the Blue Carbon Canada project also aims to produce the first nationwide assessment of shelf sediment organic carbon. Using best available data on the sediment type, carbon concentration and associated oceanographic and biochemical variables, we will create a predictive map of seabed carbon stocks across the Canadian shelf. This will be coupled with spatial information on marine protected areas (MPAs) and other effective area-based conservation measures (OECMs) to assess the carbon management potential of current seabed conservation strategies. Data on the distribution and intensity of bottom contacting mobile fishing will be used to calculate the magnitude of carbon disturbance in different areas and identify the potential for carbon benefits from improved management of the activity.

## **HOW BLUE CARBON CAN SUPPORT MARINE PROTECTION IN CANADA**

Understanding the distribution of blue carbon ecosystems, the rates of carbon sequestration and storage - and even more importantly the impact of climate change on these systems is imperative for conservation planning in Canada. From salt marshes, eelgrass, kelp and carbon stored in sediments, there are myriad living systems that help mitigate sea level rise and storm surge, and provide important habitat for marine species. However, it is important not to underestimate the risk of using NbS as climate action - when the focus should be very firmly on emissions reduction and mitigation.

As Canada seeks to meet its marine conservation targets, and the newly agreed Kunming-Montreal Agreement biodiversity targets, blue carbon systems will have to be factored in. Protecting carbon rich coastal ecosystems can offer an opportunity for strategic and science-based collaboration with subnational government agencies and communities. However, it is critical that the best available scientific information is used and that carbon offset systems are not developed without free, prior and informed consent by Indigenous peoples and at the expense of meeting our net zero commitments through emissions reductions.



## CONTACT INFORMATION:

Blue Carbon Canada is a collaborative research effort to produce a nationwide assessment of the potential for Canada's oceans to serve as blue carbon. We will estimate the extent of potential blue carbon habitats - marsh, seagrass, kelp, soft sediments - in all three of Canada's oceans, calculate their current carbon drawdown potential, and project this out to 2030 and 2050 under different climate change scenarios.

[www.bluecarboncanada.ca](http://www.bluecarboncanada.ca)

SeaBlue Canada is a joint project of the Canadian Parks and Wilderness Society, David Suzuki Foundation, Ecology Action Centre, Nature Canada, Oceans North, West Coast Environmental Law and WWF-Canada. SeaBlue Canada partners combine resources, networks and capacities to ensure equitable, inclusive and robust protection of Canadian waters on the pathway to 30x30.

[www.seabluecanada.org](http://www.seabluecanada.org)

World Wildlife Fund Canada draws on scientific analysis and Indigenous guidance to expand and protect habitats, decrease the amount of carbon in the atmosphere, reduce industrial impacts and, as a result, reverse wildlife loss. As part of WWF-Canada's [Regenerate Canada](#) strategy, they are advocating for policy-based protections, investing in strategic research and supporting the restoration of blue carbon habitats while bringing together scientists, policymakers, Indigenous knowledge holders and community organizations to build a nationwide blue carbon network to spark collaboration and accelerate conservation.

[www.wwf.ca/stories/what-is-blue-carbon](http://www.wwf.ca/stories/what-is-blue-carbon)