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# DRAMATIC ECOLOGICAL CHANGES AFTER AN UNUSUAL WINTER COLD SNAP

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Study Description

Although average temperatures are increasing globally, abrupt cold stress in winter can occur regionally. For example, the winter thermal gradient between the Arctic and middle latitudes is weakening because Arctic temperatures are rising faster. This phenomenon can lead to pronounced cold air outbreaks in Eurasia and North America in winter. In eastern Canada, an unusual cold snap occurred in February 2023. In intertidal habitats from southeastern Nova Scotia, entire mussel stands disappeared and some seaweeds experienced massive bleaching shortly afterwards. Winter extremes related to climate change can therefore be as important for species survival as summer heat waves.

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Photo 1. Stand of intertidal mussels (*Mytilus* spp.) from southeastern Nova Scotia, Canada, as seen in October 2021 (top panel) and intertidal substrate as seen in April 2023 after the February 2023 cold snap, showing byssal threads as the only remains of mussels (bottom panel). The PVC frame measures 10 × 10 cm. Photo credit: Ricardo A. Scrosati.



Photo 2. Massive bleaching in the intertidal algae *Corallina officinalis* (top panel), *Chondrus crispus* (middle panel), and *Laminaria digitata* (bottom panel; scale bar = 5 cm) from southeastern Nova Scotia as seen in April 2023 after the February 2023 cold snap. Photo credit: Ricardo A. Scrosati.

These photographs illustrate the article "Mass disappearance of intertidal mussels after an unusual winter cold snap in eastern Canada", published by Nicole M. Cameron, and Ricardo A. Scrosati in *Ecology*. https://doi.org/10.1002/ECY.4179.