Climate change affects marine animals on Antarctica's seabed

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Iceberg scouring the seabed

A rapid increase in the frequency of icebergs pounding the shallow seafloor around the West Antarctic Peninsula — as a result of shrinking winter sea ice — has caused the life expectancy of a tiny marine creature (bryozoans) to halve over the last 12 years. This is the first evidence of regional climate warming affecting marine animals living on the Southern Ocean seabed. The results are published this month in the journal *Nature Climate Change* and are being presented this week at the World Conference on Marine Biodiversity (WCMB) in Aberdeen.

Scientists from British Antarctic Survey (BAS) describe how colonies of bryozoans (Fenestrulina rugula) — one of the most abundant animals in the shallows around Rothera Research station — are unable to recover from frequent iceberg scouring. Twelve years ago colonies could live to

five years old but now they rarely reach two or three years of age — and most die before they are able to reproduce. Seabed life, such as bryozoans, may be an important carbon sink in the Southern Ocean, and their early deaths could signal wider, severe consequences on the whole ecosystem, with more carbon being released back into the sea.

Lead author, Dr. David Barnes from BAS, says: “The marine creatures living on the Southern Ocean seabed comprise the vast majority (80%) of the biodiversity known around Antarctica. Disturbance by icebergs can promote biodiversity across large areas by creating new space, but it can have catastrophic effects on biodiversity locally — it is becoming too frequent in the shallows for life to recover.”

The researchers examined concrete markers showing the rate of iceberg scouring — placed on the seabed by BAS SCUBA divers — as well as bryozoan encrusted rocks situated near them (with tens of thousands of colonies per square metre). In addition, collections of historical records of winter sea ice (called fast-ice) around Rothera Research Station showed a clear link between fast-ice loss and impacts on experimental markers on the seabed.

It’s likely that iceberg scouring has similarly increased in other areas of winter sea ice loss which means that increasing mortality of seabed creatures could become widespread.

More information: The paper *Reduced survival of Antarctic benthos linked to climate induced iceberg scouring* by David KA Barnes and Terri Souster is published in *Nature Climate Change.*
www.nature.com/nclimate/index.html

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