# [***Methane emissions offset carbon uptake in Baltic macroalgae habitats***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:67ST-NM71-DYDW-71X2-00000-00&context=1516831)

India Engineering news

March 16, 2023

Copyright 2023 FFC Information Solution Private Limited All Rights Reserved



**Length:** 711 words

**Dateline:** New Delhi

**Body**

March 16 -- Bladderwrack in the Baltic Sea emits significant amounts of methane, which, to some extent, can offset the uptake of atmospheric carbon dioxide by these algae. This is shown by a new study from Askö Laboratory, where the fluxes of greenhouse gases between surface waters and the atmosphere were measured continuously over several seasons.

"It was a bit surprising that methane was emitted from the bladderwrack, since this algae grows on hard substrates and not on soft sediments, where methane is produced normally," says Christoph Humborg, scientific director of Stockholm University Baltic Sea Center and co-author of the new study published in Nature Communications. "But what we found was that these algae form pockets of sediment where methane forming microorganisms, archaea, could be detected. We found these archaea also on floating filamentous algae and organic matter debris associated with dense stands of bladderwrack."

Coastal ecosystems can take up and store large amounts of carbon dioxide from the atmosphere, so-called "***blue carbon***." Restoring such ecosystems could therefore be an important nature-based solution to mitigate climate change. Well-known ***blue carbon*** ecosystems include ***mangrove***, sea grass meadows and salt marshes. However, more recently, it has been suggested that also macroalgae, such as the bladderwrack (Fucus vesiculosus)-common to the Baltic Sea-can take up large amounts of atmospheric carbon. If this carbon is, for example, exported to and sequestered in the deep sea, macroalgae could be one of the most important ***blue carbon*** ecosystems globally.

Bladderwrack forests take up significant amounts of carbon dioxideIn the recently published study, with Florian Roth as first author, researchers from Stockholm University and University of Helsinki in the collaboration CoastClim measured greenhouse gas fluxes between the water surface and atmosphere outside the Askö Laboratory in Trosa over a whole year, using the Water Equilibration Gas Analyzer System, WEGAS. The measurements confirmed that mixed vegetation and bladderwrack forests in the coastal zone do take up significant amounts of carbon dioxide from the atmosphere. The fluxes vary over the year, but altogether the uptake of carbon dioxide from the atmosphere over the bladderwrack habitats added up to 0.52 tons CO2 per hectare and year, which can be compared with 0.71 ton CO2 per hectare and year for areas with mixed vegetation.

However, this uptake is offset by methane fluxes from the water to the atmosphere from the very same environments. As methane is a stronger greenhouse gas than carbon dioxide, the net carbon uptake is reduced to 0.38 ton and 0.46 ton CO2-eq. (carbon dioxide equivalents, meaning the global warming potential of the gases converted to that of carbon dioxide) per hectare and year for bladderwrack and mixed vegetation sites, respectively.

Macroalgae habitats important from a climate perspectiveAs awareness is rising of the potential of ***blue carbon*** habitats and the possibility to include them in climate mitigation strategies, it is increasingly important to quantify the fluxes of greenhouse gases and the net carbon uptake in these environments correctly.

"Caring for and restoring macroalgae habitats could still be important from a climate perspective. Our study shows that these environments are net carbon sinks, just not as large as has sometimes been suggested," Christoph Humborg clarifies.

From a management perspective, it is also important to know whether methane production in the macroalgae habitats is influenced by their health status, i.e., whether macroalgae habitats in eutrophic degraded systems produce more methane than healthy macroalgae stands. This hypothesis will be tested by the Swedish-Finnish researcher group in mesocosm-experiments next year.

"Our measurements were done in situ in the Baltic Sea, which is affected by eutrophication," says Christoph Humborg. "A less eutrophic ecosystem with less organic matter accumulation and less filamentous algae growth could likely produce less methane. If so, taking measures to help the Baltic Sea recover from eutrophication would substantially improve the ***blue carbon*** potential of these habitats and contribute to mitigating climate change."

**Classification**

**Language:** ENGLISH

**Publication-Type:** Web Publication

**Subject:** GREENHOUSE GASES (99%); BLUE ECONOMY (90%); CARBON OFFSETS (90%); CLIMATE CHANGE (90%); ECOSYSTEMS & HABITATS (90%); EMISSIONS (90%); FRESHWATER ECOSYSTEMS (90%); RESEARCH REPORTS (90%); SALTWATER ECOSYSTEMS (90%); SEAWEED & ALGAE (90%); CLIMATOLOGY (89%); EXPERIMENTATION & RESEARCH (89%); COASTAL AREAS (78%); ECOSYSTEM CONSERVATION (78%); GLOBAL WARMING (78%); WETLANDS (78%); WRITERS (75%); CONSERVATION (73%); LAND RECLAMATION (73%); COLLEGES & UNIVERSITIES (70%)

**Company:**  SEA LTD (90%)

**Ticker:** SE (NYSE) (90%)

**Industry:** NAICS519290 WEB SEARCH PORTALS AND ALL OTHER INFORMATION SERVICES (90%); METHANE (91%); BLUE ECONOMY (90%); CARBON OFFSETS (90%); EMISSIONS (90%); GLOBAL WARMING (78%); WRITERS (75%); COLLEGES & UNIVERSITIES (70%)

**Geographic:** STOCKHOLM, SWEDEN (73%); NEW DELHI, INDIA (59%); ATLANTIC OCEAN (93%); FINLAND (58%)

**Load-Date:** March 16, 2023

**End of Document**