

Team uncovers new marine source of carbon emissions into atmosphere

January 18 2024



Credit: Pixabay/CC0 Public Domain

Bottom trawling is a previously unaccounted for source of atmospheric carbon emissions, scientists reveal in a study published today. As the world scrambles to slash emissions caused by fossil fuels, deforestation

and other sources, the study finds bottom trawling—the act of dragging a heavy fishing net across the ocean floor and resuspending some of the carbon in the seafloor sediment—to be a significant source of atmospheric carbon pollution.

The work is published in *Frontiers in Marine Science*.

A previous [study](#) had found that part of that disturbed sediment carbon turns into [carbon dioxide](#) underwater. Today's study finds that 55%–60% of the carbon dioxide produced underwater by bottom trawling will make it into the atmosphere within nine years.

The amount of carbon released by bottom trawling into the atmosphere each year is estimated to double the annual emissions from fuel combustion of the entire global fishing fleet—about 4 million vessels.

"We have long known that dragging heavy fishing nets—some as large as ten 747 jets—across the ocean floor destroys sea life and habitats," said Dr. Trisha Atwood of Utah State University and National Geographic Pristine Seas.

"Only recently, we have discovered that bottom trawling also unleashes plumes of carbon, which otherwise would be safely stored for millennia in the ocean floor. Our study is the very first to show that over half the carbon released by bottom trawling eventually escapes into the atmosphere as carbon dioxide over the span of about ten years, contributing to [global warming](#). Much like destroying forests, scraping up the seafloor causes irreparable harm to the climate, society and wildlife."

The study, "Atmospheric CO₂ emissions and ocean acidification from bottom-trawling," was conducted by a global team of climate and ocean experts from Utah State University, NASA Goddard Institute for Space

Studies, the University of California Santa Barbara, Columbia University, James Cook University and National Geographic Pristine Seas.

The researchers used data on bottom trawling carried out globally between 1996-2020 and sophisticated models to calculate how much of the carbon dioxide produced by bottom trawling ultimately enters the atmosphere. This study builds on [recent foundational research](#) finding that the amount of carbon dioxide released into the ocean from bottom trawling is larger than most countries' annual [carbon emissions](#) and on the same order of magnitude as annual carbon dioxide emissions from global aviation.

The new research identifies ocean areas where carbon emissions from bottom trawling are especially high, including the East China Sea, the Baltic and the North Seas, and the Greenland Sea. The researchers conclude that Southeast Asia, the Bay of Bengal, the Arabian Sea, parts of Europe and the Gulf of Mexico are also likely major sources of carbon emissions due to trawling, but we currently lack sufficient data on the extent and intensity of bottom trawling in these areas.

"Right now, countries don't account for bottom trawling's significant carbon emissions in their climate action plans," said Dr. Enric Sala, National Explorer in Residence and Executive Director of Pristine Seas. "Our research makes it clear that tackling these and other ocean emissions is critical to slowing the warming of the planet, in addition to restoring [marine life](#). The good news is that reducing bottom trawling carbon emissions will deliver immediate benefits. The bad news is, delaying action ensures that emissions from trawling will continue seeping into the atmosphere a decade from now."

The new study also assesses what happens to the carbon that remains trapped in ocean waters after bottom trawling takes place. It concludes

that between 40%–45% of the total carbon dislodged from the [ocean floor](#) by [trawling](#) remains in the water, leading to greater localized [ocean acidification](#). This increased acidity damages plant and animal life in the area where the fishing activity takes place.

"There are more issues with [bottom trawling](#) than just the impacts from [carbon](#)—biodiversity and sustainability for instance," said Gavin A. Schmidt, the Director of the NASA Goddard Institute for Space Studies. "But this 'marine deforestation' is large enough to be noted and assessed. Hopefully, this can lead to policy efforts that can try to maximize benefits across all of the impacts."

More information: Atmospheric CO₂ emissions and ocean acidification from bottom-trawling, *Frontiers in Marine Science* (2024). [DOI: 10.3389/fmars.2023.1125137](https://doi.org/10.3389/fmars.2023.1125137)

Provided by National Geographic Pristine Seas

Citation: Team uncovers new marine source of carbon emissions into atmosphere (2024, January 18) retrieved 27 April 2024 from <https://phys.org/news/2024-01-team-uncovers-marine-source-carbon.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--