Paper refutes assertion that effects of bottom trawling on blue carbon can be compared to that of global air travel

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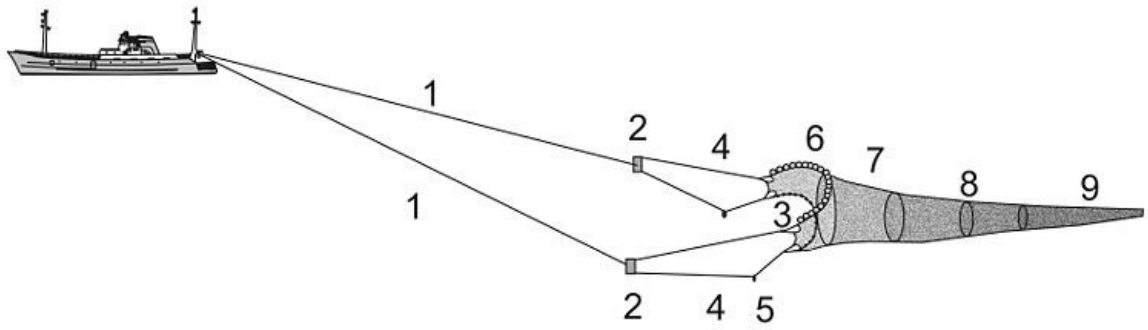

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A paper published in *Nature* today refutes the findings of a paper by Sala et al on the amount of CO_2 released from the seabed by bottom trawling. The paper made significant headlines around the world when it was released in 2021, as it equated the carbon released by bottom trawling to be of a similar magnitude to the CO_2 created by the global airline industry.

In their paper quantifying the carbon benefits of ending bottom trawling, Prof. Jan Hiddink of Bangor University's School of Ocean Science and others, explain that the methodology used in the original paper was far

too simplistic and vastly overestimates carbon emissions. In calculating the CO_2 released by bottom trawling, the paper modeled the amount of carbon that would be disturbed, and they assumed that most of this would be converted into CO_2. However, the majority of this organic carbon on the seabed would decompose and be released as CO_2 regardless of whether it is disturbed by bottom trawling. Hiddink and colleagues therefore show that only a very small fraction of seabed carbon reacts to trawling disturbance.

"The carbon benefits of ending bottom trawling have been massively overstated in this paper," Hiddink explains. "While bottom trawling undoubtably disrupts the natural carbon fluxes and disturbs the bottom-dwelling sea life, seabed carbon flows are highly complex and need further research."

Questioning whether the estimates in the paper were realistic, Hiddink reviewed 49 other studies on the measured CO_2 differences before and after trawling, and the findings were varied, with 60% of the papers finding no significant effect, 29% finding lower organic carbon and 10% finding more. If the findings of Sala et al were correct, surely these massive and significant numbers would be reflected in these studies?

Hiddink argues that the Sala paper has confounded the fresh carbon in the top layer, which would be quickly released by natural processes in any case, with the much less reactive carbon stored in the deeper sediment. As the surface layer carbon will be converted to CO_2 in any case, assuming it is affected by trawling makes no sense, and massively inflates the estimated CO_2 emissions.

Hiddink suggests a figure that is a factor 100 to 1,000 times lower than calculated in the Sala paper for the amount of carbon released by trawling would be more appropriate.

"We don't know enough about what bottom trawling does to seabed carbon stores to be able to make robust global estimates about the effects of bottom trawling," says Hiddink.

"Using these figures is worrying, as many governments and others are proposing banning bottom trawling and using the 'carbon credits' to offset other activities, but if the carbon emissions are overestimated by several orders of magnitude, we risk increasing overall CO_2 emissions while reducing the global food supply."

More information: Jan Hiddink, Quantifying the carbon benefits of ending bottom trawling, *Nature* (2023). DOI: 10.1038/s41586-023-06014-7.
www.nature.com/articles/s41586-023-06014-7

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