

Is your seafood climate friendly? Scientists outline the benefits of marine aquaculture

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A typical seafood meal. Credit: Farhad Ibrahimzade

As a major source of greenhouse-gas (GHG) emissions, food production has long occupied an important place in the climate-change discussion. Writing in *BioScience*, Alice Jones of the University of Adelaide, and an international team of scientists from the University and The Nature Conservancy, discuss the potential of marine aquaculture, or mariculture, to sustainably feed a growing human population.

Mariculture already constitutes 52% of the aquatic animal products people consume, say the authors, and these products may offer a way to deliver high-protein foodstuffs without the high carbon footprint of equivalent terrestrial products. "The GHG emissions per unit of protein produced by aquaculture generally compare favorably with most [livestock production](#)," say Jones and colleagues. A major contributor to mariculture's climate-friendly profile is that, unlike livestock grazing, it doesn't require substantial land-use change such as the razing of rainforest to make room for cattle.

To further improve mariculture's sustainability advantage, the authors describe ways that its emissions could be reduced. For instance, say Jones and colleagues, there are opportunities for supply chain improvements that would permit the transport of mariculture products to consumers with a considerably improved GHG footprint. Regional markets for mariculture would help, too, with the added benefit of greater food security. At the mariculture sites themselves, opportunities to improve the carbon profile abound, for instance by "cofarming bivalves with seaweed, which can lead to a net reduction in CO₂ emissions, and cofarming fed finfish with seaweed or bivalves." Such measures, say the authors, would result in greater absorption of excess nutrients, reducing eutrophication and, ultimately, the degradation

habitats that already store carbon.

The authors conclude with the hope that their efforts to integrate mariculture with its related environmental benefits, such as GHG abatement programs, can "support the development of climate-friendly mariculture practices that generate sustainable ecological, social, and economic outcomes."

More information: Alice Jones et al, *BioScience* (2021). [DOI: 10.1093/biosci/biab126](https://doi.org/10.1093/biosci/biab126)

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