Biodiversity's healthy byproduct—nutrient-rich seafood

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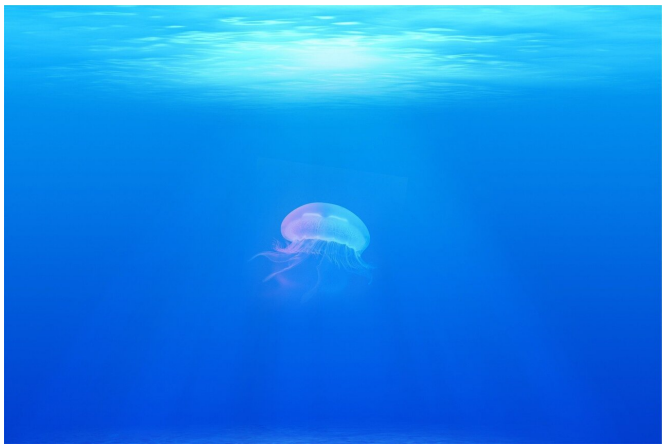

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High levels of biodiversity in aquatic settings offers a wide range of vitamins, minerals, and fatty acids crucial for human health, a range of nutrients that are lacking in ecosystems where the number of species have been reduced by overfishing, pollution, or climate change, researchers report April 5 in the journal *Proceedings of the National Academy of Sciences*.

"What we found is that biodiversity is crucial to human health," said Yale's Joey Bernhardt, a G. Evelyn Hutchinson Postdoctoral Fellow in the Department of Ecology and Evolutionary Biology and co-author of the paper.

While humans can achieve their protein requirements even with seafood from less-diverse systems, meeting their need for key micronutrients such as calcium, iron, and zinc requires high levels of biodiversity. Seafood sourced from biodiverse ecosystems can help combat a phenomenon known as "hidden hunger," in which people have access to enough calories, but not enough micronutrients, Bernhardt said.

The effects of aquatic biodiversity change on human health are particularly acute in coastal areas of the world where populations are heavily dependent on seafood in their diets.

For the study, Bernhardt and co-author Mary I. O'Connor of the University of British Columbia, analyzed 7,245 nutrient samples from 801 marine and freshwater finfish and invertebrates. They found that different species have distinct and complementary nutrient profiles. While they detected little difference in the protein content among the aquatic species, they found that concentrations of micronutrients—including calcium and iron—and essential fatty acids varied significantly.

The results illustrate the importance of monitoring and preserving biodiversity in changing aquatic ecosystems across the globe, the authors say.

"While we have known that biodiversity on land is important for benefits such as forest production, this study provides new evidence that the benefits of biodiversity in oceans and freshwaters are as great as on land," Bernhardt said. "Ecological concepts of biodiversity can deepen our understanding of nature's benefits to people and unite sustainability goals for biodiversity and human well-being."

More information: Joey R. Bernhardt el al., "Aquatic biodiversity enhances multiple nutritional benefits to humans," *PNAS* (2021). www.pnas.org/cgi/doi/10.1073/pnas.1917487118

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