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Intelligence

Can tapping into environmental DNA reveal kelp's carbon sequestration potential?

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By Responsible Seafood Advocate

New global research project leverages environmental DNA to better measure and understand the carbon sequestration potential of kelp

A new global research project is tapping into environmental DNA to investigate the carbon sequestration potential of kelp. The project, which is funded by Oceankind, is led by Aotearoa New Zealand's Cawthron Institute and involves Sequench (NZ), Kelp Forest Foundation (Netherlands) and NatureMetrics (UK), could be "a significant step forward in ocean conservation and sustainability."

"We are happy to support this strategic partnership to design and test molecular tools for species-specific carbon tracing," said Elif Demir-Hilton, advisor at Oceankind. "The capacity to track the fate of kelp carbon can inform restoration and conservation efforts and fill an important gap in the toolkit for carbon sequestration."

Seaweeds, in particular kelp, could be a significant source of the carbon sequestered in the ocean. However, kelp's contribution to the carbon cycle has remained largely unknown due to a lack of tools to

A new global research project is investigating the carbon sequestration potential of kelp by using environmental DNA. Photo by Pexels/Kindel Media (https://www.pexels.com/photo/yellow-and-green-plant-under-water-8849640/).

measure it, said Dr. Xavier Pochon, project leader at the Cawthron Institute.

"We've assembled a project team with the expertise to unlock this important information," said Pochon. "Our challenge is to quantify the kelp-derived carbon in marine sediments which would revolutionize our comprehension of the role kelp forests' are playing in the global carbon cycle and their potential for climate change mitigation."

Kelp farms believed to help reduce coastal marine pollution

The water-filtering abilities of kelp farms could help reduce marine pollution in coastal areas, according to a new study.

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Traditional methods of measuring kelp-derived carbon in marine sediments, such as stable isotope, pigments and lipid analysis, have been limited in their ability to accurately detect and identify kelp-derived carbon in marine sediments. This project's approach leverages the power of environmental DNA, which involves the extraction of genetic material directly from environmental samples without any obvious signs of biological source material.

"If this project demonstrates that eDNA is a reliable and traceable marker for tracking giant kelp-derived carbon, it will allow for a more accurate assessment of carbon sequestration potential in kelp forests," said Pochon. "Successfully identifying and quantifying giant kelp DNA in sediment samples will establish a direct link between source and sink habitats, informing conservation and blue carbon initiatives."

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