

Complex marine forests collapsing into flat turf seascapes

July 27 2021, by Simone Hewett



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An international study led by The University of Western Australia has found that temperate marine ecosystems dominated by marine forests are collapsing into flattened seascapes of short turf algae across the globe.

The study, published in *Global Change Biology*, reveals that in Western Australia alone, thousands of hectares of underwater forests have collapsed into short carpets of seaweed [turf](#).

Some of the other worst affected areas globally include southern Norway, eastern North America, the Mediterranean Sea and southern parts of Japan.

Lead author Albert Pessarrodona, from the UWA Oceans Institute and School of Biological Sciences, said marine forests were formed by large seaweeds that towered up above the [ocean floor](#), forming underwater canopies that house many species of fish, invertebrates and algae.

"Although many studies have reported the local decline of these forests, ours is the first to quantify its global consequences," Mr Pessarrodona said.

"Not only is seaweed turf replacing [marine forests](#) in many areas of the globe, but once turfs are able to expand, the seascape structure of those areas converges into very similar and simpler habitats, stripping oceans of the rich diversity of habitats supporting sea life."

Mr Pessarrodona said the results of the study were concerning, and could be attributed to a variety of impacts that varied from place to place, but humans were often the root cause.

"It's like your local woodland turning into garden turf—that is essentially what is happening under water."

Co-author Dr. Karen Filbee-Dexter, from the UWA Oceans Institute, said once turf algae was established, their carpets acted as sediment traps, retaining sediment in between the short algal filaments.

"In the affected areas in Western Australia, turf habitats now additionally retain approximately 242 million tons of sediment, which is 1,000 times more than what is delivered through the rivers every year," Dr. Filbee-Dexter said.

Co-author Professor Thomas Wernberg said all this sediment on the reef had been shown to limit the re-establishment of [forest](#)-forming species and feeding by fishes.

The scientists are currently working on ways to restore forests in the face of this global phenomenon, including the development of "green gravel," an innovative new restoration tool.

More information: Albert Pessarrodona et al, Homogenization and miniaturization of habitat structure in temperate marine forests, *Global Change Biology* (2021). [DOI: 10.1111/gcb.15759](https://doi.org/10.1111/gcb.15759)

Provided by University of Western Australia

Citation: Complex marine forests collapsing into flat turf seascapes (2021, July 27) retrieved 23 April 2024 from <https://phys.org/news/2021-07-complex-marine-forests-collapsing-flat.html>

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