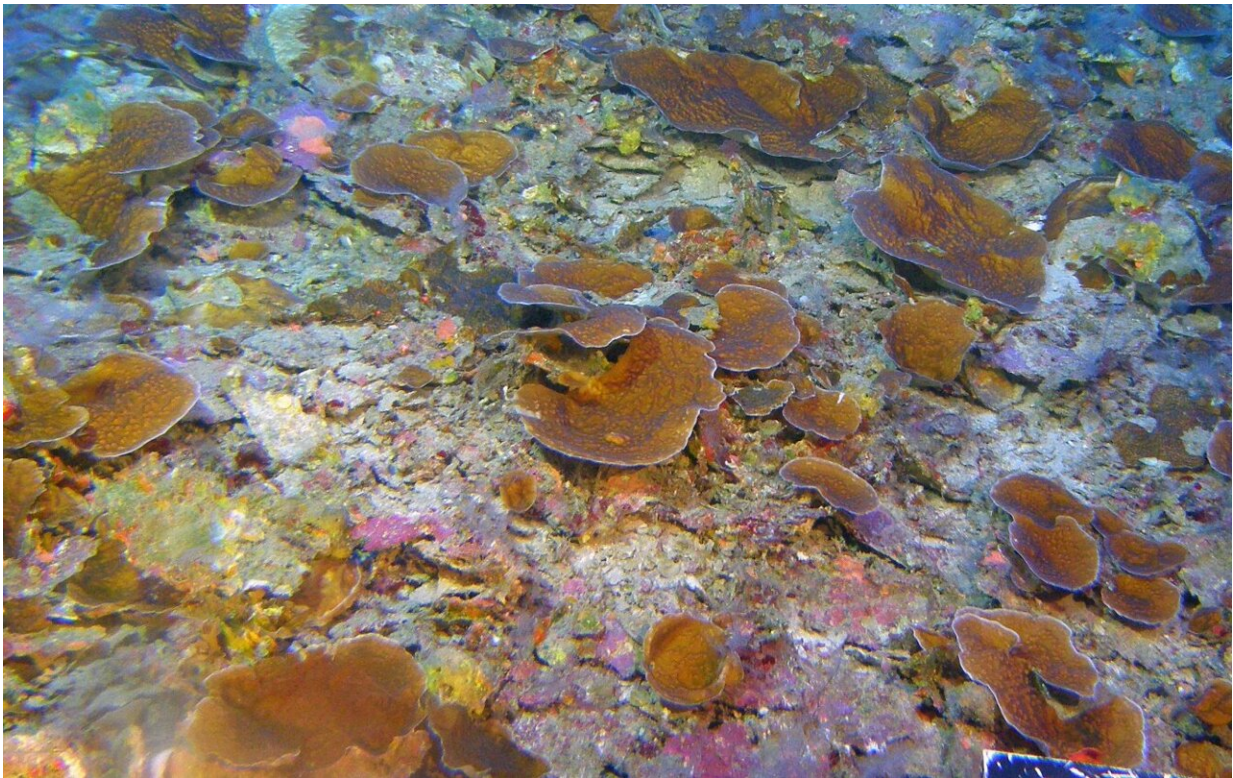


World's deepest coral calcification rates measured off Hawaiian Islands

August 16 2023



Leptoseris spp. at 95 m (~300 feet) in the Au'au Channel in Maui, Hawai'i.
Credit: University of Hawai'i/SOEST HURL

In the waters off the Hawaiian Islands, rates of calcification were measured in the deepest coral colonies and reported recently in a study led by a University of Hawai'i (UH) at Mānoa oceanographer.

Reef building corals require light for photosynthesis to build the reef structure through calcification, but available light declines quickly with increasing water depth. Below about 200 feet, calcification rates for light-dependent corals had previously not been measured.

In the new study published in *Coral Reefs*, Samuel Kahng, lead author and graduate affiliate faculty of oceanography in the UH Mānoa School of Ocean and Earth Science and Technology (SOEST), reported the first calcification rates from corals (*Leptoseris* spp.) in Hawai'i at depths of 230-360 feet.

"In addition to being from the deepest coral analyzed, these are by far the lowest calcification rates ever measured for healthy, light-dependent corals in their [natural habitat](#)," said Kahng. "These rates are 20-40 times slower than observed in shallow water corals."

Leptoseris spp. dominate the coral community in deep, low-light zones throughout the Indo-Pacific region. This species of coral exhibits a strategic approach to expanding the [surface area](#) with which it captures downwelling light—they form very thin horizontal plate-like skeletons to maximize the area that can be built by their very low calcification rates. Kahng and colleagues published a [previous study](#) revealing that the lateral growth rates of these plate-like skeletons are unexpectedly high, given the low light availability.



Large colonies of *Leptoseris hawaiiensis* at 90 m (~300 feet) in the Au'au Channel in Maui, Hawai'i. Credit: University of Hawai'i/SOEST HURL

"The corals' ability to quickly grow horizontal surface area is impressive, especially given the low [calcification rates](#)," said Kahng. "What this points to is the incredibly efficient use of calcification."

Because Hawai'i has such clear water, coral reef ecosystems extend offshore to extreme depths, with specialized light-dependent coral communities as deep as 500 feet.

"Hawai'i has much more vertical habitat compared to other coral reef ecosystems around the world," said Kahng. "These deep 'mesophotic' coral ecosystems can cover more habitat area than shallow water [coral reefs](#). However, the [general public](#) rarely see them, so they present unique ecosystem management and conservation challenges."

In future studies, Kahng and colleagues will continue to try to unlock the secrets that enable these deep corals to thrive using the limited [light](#) in

one of the ocean's least studied habitats.

More information: Sam Kahng et al, Calcification rates in the lower photic zone and their ecological implications, *Coral Reefs* (2023). [DOI: 10.1007/s00338-023-02410-7](https://doi.org/10.1007/s00338-023-02410-7)

Provided by University of Hawaii at Manoa

Citation: World's deepest coral calcification rates measured off Hawaiian Islands (2023, August 16) retrieved 28 April 2024 from <https://phys.org/news/2023-08-world-deepest-coral-calcification-hawaiian.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.