UC SANTA BARBARA

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A Steady Pulse

For perhaps the first time ever, the world's oceans have a health record — and it's revealing clues about what might be behind symptoms of ocean improvements or declines alike.

A study by a team of researchers from the National Center for Ecological Analysis and Synthesis (NCEAS) at UC Santa Barbara and Conservation International synthesized five years' worth of vital signs on a host of indicators — ranging from water quality to food provision to tourism potential — and found that while overall ocean health appears to be stable, the oceans around many of the 220 countries analyzed are changing, and in many cases not for the better. Their results are published in the journal PLOS ONE.

"With five years of assessments about where oceans are healthy and not as healthy, we finally have enough information to get a clear signal of what might be causing changes," said lead author Ben Halpern, executive director of NCEAS, referring to the Ocean Health Index, the innovative tool his team used to make the assessments.

According to Halpern, countries that are seeing notable improvement in their oceans are taking concrete actions to make things better, like creating marine protected areas and improving their management of wild-caught fisheries. Indonesia, Mexico and Samoa are examples of such countries.

Among the countries that saw a decline in ocean health were those with consistent political instability, as well many Arctic and sub-Arctic countries, where coastlines

are losing natural protection from storm damage and erosion — sea ice — which is rapidly melting.

“The Ocean Health Index created the first opportunity any of us has had to measure the health of our oceans in a comprehensive way and track changes with a single measure,” Halpern said.

A collaborative effort between Conservation International and NCEAS, the Ocean Health Index is like the Fitbit for oceans. It allows scientists to assess ocean health by measuring environmental, economic and social factors that reflect how people benefit from and affect oceans, and is designed to guide ocean policy and management.

“Imagine going to your doctor, and she tells you your resting pulse is 75 and your temperature is 99.1. Those single data points are barely useful,” explained Halpern. “But now imagine you’ve done regular annual exams, and you’ve been keeping track of your diet and exercise regime. Your doctor shows you most of your stats are stable and last year, when you were exercising regularly and eating healthy, your blood pressure and cholesterol went down. That’s profoundly more insightful information.”

A regular, comprehensive diagnostic exam for the world’s oceans provides decision makers with information and knowledge they can use to implement effective actions for improved sustainable ocean management, he added.

In terms of how well oceans globally have been doing over time, the index has scored their overall health at a steady 71 out of 100 since 2013, indicating that oceans aren’t dying but neither are they thriving. The researchers will continue to monitor ocean health on an annual basis.

“We believe the Ocean Health Index gives reason for hope by providing a detailed diagnosis of the state of ocean health and a framework that allows countries to identify and prioritize the most necessary resilience actions to improve ocean health,” said co-author Johanna Polsenberg, senior director of governance and policy for Conservation International’s Center for Oceans. “This is where our work is most valuable. It helps identify and highlight the necessary steps to ensure a healthy ocean into the future.”

The data from this study can be explored via an interactive website found here.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.