

The state of the seas

The current health level of the world's coastal oceans is not abysmal, but neither is it anything for humans to collectively brag about. This was the key conclusion from an Ocean Health Index (*Nature* **488**, 615–620; 2012) that the researchers and environmentalists who created it say is the most holistic attempt ever made to assess the well-being of the seas.

Dozens of researchers from universities, conservation and policy groups and a government agency spent years devising a way to quantify a broad view of ocean ecosystems. Their hope was to aid policymakers and the public in prioritizing management, research and conservation efforts and resources. The group recognized that any scheme used would be controversial, and could never fully describe such complex systems.

They considered hundreds of options to finally settle on ten goals that they felt would work as standardized, quantifiable indicators of health and the benefits oceans provide to humans. These ranged from social measures such as the degree to which a given region supports tourism and recreation, to biodiversity and geophysical concerns such as carbon storage capacity. The team then used the best data available to establish a ranking on each goal, as well as a composite score, for the waters surrounding every coastal nation on the planet.

Developing nations often, but not always, fared better. Only a few countries



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The journalist's take

Because the Ocean Health Index was designed from the outset for public attention, it had built-in media advantages. Leading media outlets around the world covered the unveiling of the scores. The research behind the index involved some complex calculations. But the global score, although it only tells a portion of the research story, offered something that just about anyone could latch onto as a starting point for understanding the work. And it was a big idea, generally easier to tout than some incremental advancement.

Many news editors probably also liked the idea that there was some positive news to report, unlike the standard modern environmental story. Some of the countries assessed ranked very well on at least some parameters, and the overall assessment could have been much worse.

The story also offered regional outlets one of the things they crave most — the potential for a local angle. Indeed, given that every coastal country received its own assessment, few research papers could ever offer quite so many local angles. A paper in Germany could announce the country's ranking at the top of the list. And a TV station in Singapore could explore why their country was

ranked higher than a score of 70, and the global average ranking was 60 out of 100. The researchers also generated composite scores using different weightings for certain components, such as placing a higher value on preservation goals, or more direct human benefits. The leaders of the research team have cautioned against considering a low score a failing grade as it might be in school, because getting even a low score meant that there had to be some quantifiably positive aspects of ocean health.

To avoid the typical discouragement of environmental stories that report only negatives, the team chose to focus on achievable targets. They considered humans as an integral part of ocean ecosystems, seeking ways to measure the impact humans make on and the benefits they receive from the oceans.

For instance, with fisheries, along with mariculture (a sub-category in a food provision parameter), the researchers

doing poorly overall as compared with most other industrialized nations.

The sheer size of the research group — the study lists 33 authors from 22 institutions — was another media asset, with many of the individual researchers and their institutions being veterans of significant press attention with established networks of media contacts to tap.

The index was widely covered, but the paper didn't garner as much attention as other key ocean conservation papers published in the past few years, some by the same researchers and groups involved in this one. One likely reason was that the index lacked context. Rankings, whether a cholesterol level or a country's gross domestic product, really only take on meaning in comparison to previous ratings, or in comparison to a known ideal. With the Ocean Health Index, neither existed. Nobody knew what the rating should be, or how the current ocean status might compare to days gone by.

As the team runs future updates, such comparisons will become possible, and they could potentially draw even wider attention. Five or ten years from now, either a significant jump or a precipitous dive in any country's or the world's score will be worthy of serious media coverage.

assessed the degree to which each country is achieving the measure known as maximum sustainable yield. This is a theoretical point where both fish catches and reproduction are at their most productive levels simultaneously.

The team's comprehensive approach resulted in a recognized series of trade-offs. Ranking high in an area such as tourism might mean a lower ranking in water quality because of associated pollution. And something like minimal visitation, which some might view as a positive, might raise a water quality ranking while lowering tourism and recreation.

Ultimately the team hopes to regularly update ranking to provide a long-term view of the progress towards research and conservation goals, and to help better direct the allocation of limited resources in these efforts. □

Mark Schrope is a freelance writer and editor based in Florida.