Ocean protection gaining momentum, but still lags progress made on land

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Many fish species call Easter Island's coral reefs home. Credit: Geografica, Oregon State University

Extraordinary progress in the past decade has brought 1.6 percent of the world's ocean to a category of "strongly protected," researchers say in a

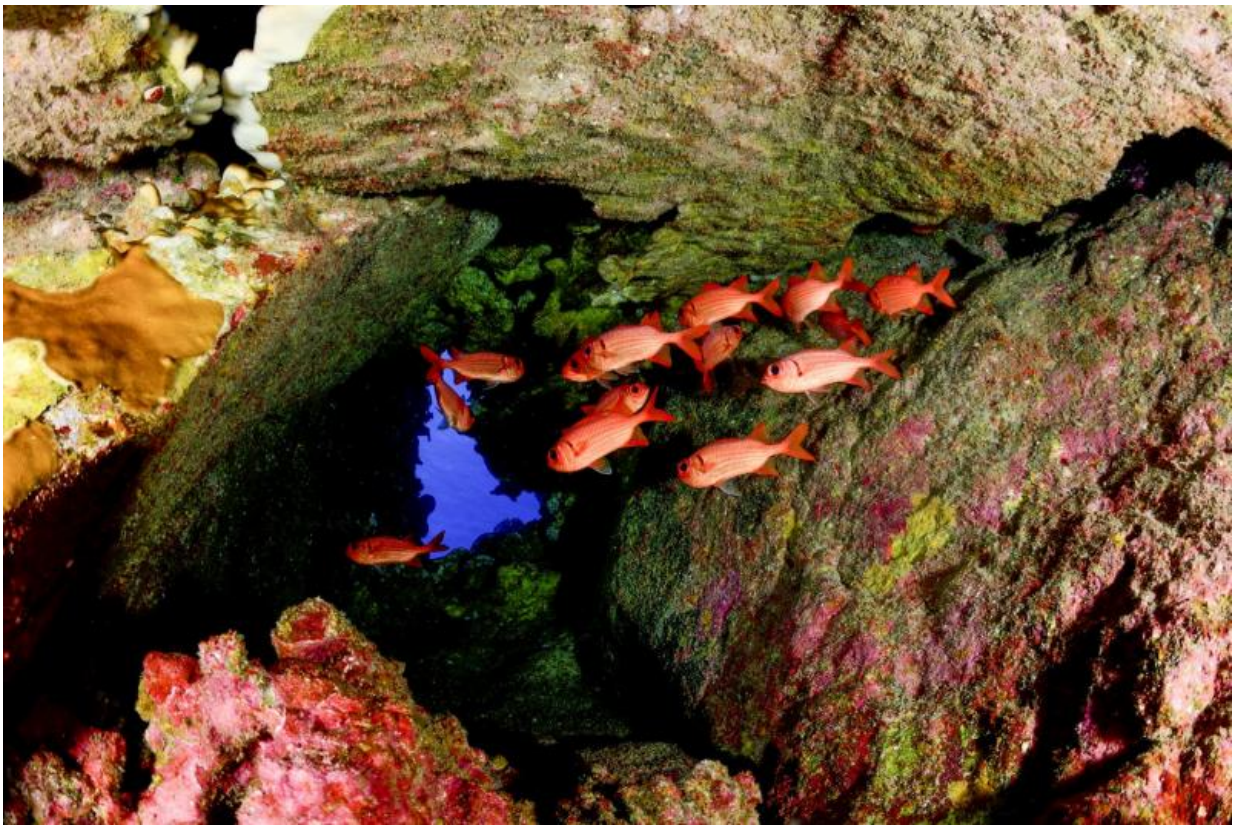
new analysis, but the accomplishments are still far behind those that have been achieved on land, and those that are urgently needed.

In a report published today in the journal *Science*, researchers from Oregon State University point out that numerous international policy agreements call for protection of 10 percent of coastal and marine areas by 2020, while some conservation organizations and most scientists say 20-50 percent of ocean protection is needed.

The science of marine protected areas is now mature and extensive, they said, and the multiple threats facing the Earth's ocean from overfishing, climate change, loss of biodiversity, acidification and many other issues warrant more accelerated, science-driven action.

"The world is well on its way to meeting targets set for protection on land, but far from its goals for ocean protection," said Jane Lubchenco, who is the OSU University Distinguished Professor and Adviser in Marine Studies, former NOAA administrator, U.S. Science Envoy for the Ocean and a marine biologist in the OSU College of Science.

"We've seen an acceleration of progress in recent years, and that's good," Lubchenco said. "But the politics of ocean protection are too often disconnected from the science and knowledge that supports it, and there are many things we can do to help bridge that gap."



Easter Island is home to a myriad of marine species, including 142 found only in its waters. Credit: Eduardo Sorensen of The Pew Charitable Trusts

There have been significant and recent success stories, the scientists pointed out.

Earlier this month three new, large and fully protected areas were announced at the United Nations and at the Our Ocean conference, which encompass waters around Chile and New Zealand. Last year, the U.S. expanded by six times the Pacific Remote Island Marine National Monument; and the United Kingdom created what will be the world's largest fully protected marine area, the Pitcairn Islands Marine Reserve.

"Even if we lump together all protection categories, however, only 3.5

percent of the ocean has any form of protection," said Kirsten Grorud-Colvert, an OSU assistant professor of research and director of the Science of Marine Reserves Project.

"In contrast, the target to protect 17 percent of the terrestrial part of the planet is expected to be met by 2020, and it already stands at 15 percent," Grorud-Colverts said. "There is so much more that needs to be done to protect the ocean, and we have the scientific knowledge to inform the decision-making."

Marine protection can range from "lightly protected" which allows some protection but significant extractive activity, to the "full" protection usually identified as marine reserves. Such areas, covering an almost undectable total area of the ocean a decade ago, are rapidly gaining attention as their social, economic, and environmental benefits become more clear.

Butterfly fish flourish in Easter Island's waters. Credit: Eduardo Sorensen of The Pew Charitable Trusts

To further speed that progress, the OSU researchers highlighted seven key findings. They include:

- Full protection works. Fully protected and effectively enforced areas generally result in quite significant increases in biomass, size of individuals and diversity inside a reserve. Those benefits in turn often spill over to adjacent areas outside the reserve.
- Habitats are connected. Many species move among habitats during their life cycles, so a range of protected areas will aid in protecting biodiversity and enhancing benefits inside and outside the reserve.

- Networks allow fishing. A network, or set of reserves that are connected by the movement of juveniles and adults, can provide many of the benefits of a single large area, while still allowing fishing between the reserves.
- Engaging users usually improves outcomes. Fishers, managers, conservation advocates, and scientists can work together to address both conservation and fishery goals.
- Reserves can enhance resilience. Large and strategically placed reserves can assist in adapting to environmental and climatic changes.
- Planning saves money. Smart planning can reduce costs of creating reserves and increase their economic benefits, in some cases making them more valuable than before the reserve was created.
- Ecosystems matter. Complementary efforts to ensure sustainable uses outside a reserve are needed, and should be integrated to ensure viable levels of activities such as fishing, aquaculture, energy generation, recreation and marine protection. The goal is to use the ocean without using it up.

The scientists said that policy improvements can be aided by embracing more options, bringing more users into the discussion, and changing incentives so that economic and social impacts can be minimized. New enforcement technologies can also help, along with integrating reserves with other management measures.

"An accelerated pace of protection will be needed for the ocean to provide the full range of benefits people want and need," the scientists wrote in their conclusion.

More information: "Making waves: the science and politics of ocean protection," by J. Lubchenco et al. www.sciencemag.org/lookup/doi/ … 1126/science.aad5443

Provided by Oregon State University