The Five Biggest Threats to Our Oceans

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Tools such as the Ocean Health Index have allowed us a better understanding of the determinants of our oceans' health. There is no one-size-fits-all solution to improving ocean health, but there are challenges which, if addressed with urgency, will allow the oceans to recover and support our growing population far into the future.

1. Overfishing
We have methodically depleted the fish in our oceans. First, we exhausted those we could catch with small boats and rods close to the shore. Then we went further and exhausted the pelagic fish, such as herring and tuna. Then we went deeper, catching species such as the orange roughy, which can live to 150 years and don't breed until they are 20 years old.
As a rule, it's unwise to eat things that are older than you are: we should eat food lower down the chain that can reproduce quickly. The oceans are like a deep freezer full of fish, which we've now almost emptied.
The good news is that scientists know exactly how to replenish the stocks - by creating marine protected areas, or fish regeneration zones - and how to fish sustainably. This is not a question of knowledge, but of will: we could take action today, if we want to.

2. Coastal pollution
Everyone remembers the Deepwater Horizon oil spill, but few people realize that the Gulf of Mexico suffers an even greater insult daily from the chemicals routinely carried into it by the Mississippi. Industrial agriculture is pouring reactive nitrogen and phosphorous into the oceans through every river on Earth, creating what are called "ocean dead zones".
As with overfishing, we already have the scientific knowledge to rectify coastal pollution quickly by changing our practices on land; it's about the will to act.

3. Habitat destruction
While marine habitats deal with the pressure of coastal pollution, most notably coral reefs, there are other ways we are systematically destroying the ecosystems that marine plants and animals need to survive. These include clearing mangrove forests for shrimp production and scraping entire ecosystems off seamounts, or underwater mountain ranges, through deep-sea trawling.
Again, these issues are well understood. We could act now.

4. Warming
The rate at which oceans are warming may not sound dramatic - the temperature rise over the past century is estimated at about 0.1 degree Celsius - but that is enough to kill the algae that keep corals alive, move species into new areas, and cause sea levels to rise.
Even if we stopped pumping additional carbon dioxide into the atmosphere, the effects of climate change would continue to play out for a century. That's not to say that we shouldn't act on emissions; we must. But we also need to adapt, which will be especially disruptive in relation to rising sea levels. Unfortunately, there is no immediate solution to address global warming, which makes a response similar to...

5. Acidification
Like warming, acidification is related to carbon dioxide, which dissolves in oceans to form carbonic acid. The greater the acidity, the less able marine-calcifying organisms are to form shells, disrupting their reproductive process.
Addressing acidification is also an issue of knowledge and will. There are some localities where, for reasons we do not yet fully understand, the water's pH is lowering more slowly. We need to investigate these areas while protecting them as well as we can by tackling the first three items on this list - the ones where we already know what we have to do.

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This was originally published on the World Economic Forum Blog.
Greg Stone is Executive Vice-President and Chief Scientist at Conservation International. He is a member of the World Economic Forum's Global Agenda Council on Oceans.

Call for a Hippocratic Oath on Protecting the World's Oceans

Interview by Diane Toomey, June 1, 2017

https://e360.yale.edu/features/a-call-for-a-code-of-conduct-in-the-creation-of-marine-protected-areas

In a Yale Environment 360 *interview, scientist Nathan Bennett explains why he and other marine experts are calling for a code of conduct for ocean conservation to ensure that local communities benefit from newly created marine reserves.*


Nathan Bennett

In a provocative paper released last month, an international group of marine conservation experts called for the creation of a code of conduct for their profession to ensure that the rights of local people are not trampled as the number of marine protected areas grows worldwide. The two-dozen scientists and conservationists proposed what they called a Hippocratic Oath for marine conservation, which would involve local people in the establishment of marine protected areas, would create mechanisms for conflict resolution, and would ensure equitable distribution of benefits from marine reserves.

The lead author of the paper, published in the journal *Marine Policy*, is Nathan Bennett, a geographer and postdoctoral fellow at the University of British Columbia and the University of Washington. In an interview with *Yale Environment 360*, Bennett describes the backlash to what some communities view as "ocean grabbing" by conservation organizations, discusses why working closely with local people will pay environmental dividends in the long run, and explains why the need to develop a set of ethical standards for creating marine reserves is urgent.
"We see this code of conduct as being able to make the difference between the success and failure of marine conservation," says Bennett.

Yale Environment 360: Why is there a need for a code of conduct for marine protected areas?
Nathan Bennett: The marine environment globally is challenged by a number of factors, including environmental degradation, habitat destruction, overfishing, and climate change, so there is a real need for protection. Under the Convention on Biological Diversity, the international community has agreed that we will protect 10 percent of the oceans in marine protected areas by 2020.
The danger is that as we're rapidly ramping up to meet the targets, at times mistakes have been made in the way that conservation is done. In some places, local people have really not been considered when marine protected areas are being put into place. They're not involved in decision-making. They're not even consulted until after the marine-protected area has been announced.

We're seeing strong backlash from some local communities and small-scale fishers because marine protected areas are being done in areas that they rely on for their livelihoods and survival. In the worst-case scenarios, we're starting to see some complaints about human rights transgressions [against communities] and even violence by local people against efforts to do marine conservation.

Recognizing these issues, we've come together and said, "We need marine conservation, but we need to move forward in a positive way." We see this code of conduct as being able to make the difference between the success and failure of marine conservation.

'We're increasingly realizing how important the human dimensions of conservation are.'

1. e360: Your proposed code of conduct, which you refer to as a Hippocratic Oath for marine conservation, aims to take into account the rights and needs of local people. In broad-brush strokes, how would it do that?
Bennett: The first is fair governance and decision-making. The second is support for social justice, and the final category is ensuring that there is accountability in the implementation of marine conservation. Those are big categories under which we have some principles, such as human rights, indigenous rights, and food security.

2. e360: In the paper, you write that "ecological rationales alone will not be enough to guide conservation actions." Talk a bit about that.
Bennett: Traditionally, conservation and environmental decisions have been made purely on natural science or ecological information. But we're increasingly realizing how important the human dimensions of conservation are – the social, the cultural, the economic, and the political context within which conservation happens. We really need to take into account these factors as we design, implement, and manage protected areas and other conservation initiatives.

3. e360: You conducted a study in Thailand after a marine protected area was established there. An indigenous community had to, as a local put it, "steal from the sea to make a living." What went wrong in that case?
Bennett: I studied the marine protected areas along the northern Andaman coast of Thailand. The way those protected areas were implemented was not really appropriate, in that they neglected to consider the thousands of small-scale fishers that live in communities within the bounds of those marine protected areas, or just on the edge, and that have fished within those areas for some time.
Understandably, when you implement a marine protected area in an area that many people rely on for their livelihoods and survival, people are going to come out in opposition. In one case on the Andaman coast, local people burned a ranger station in protest because this was an area they relied on to make money and to feed their families.

Pearl and Hermes Reef, Papahānaumokuākea Marine National Monument.NOAA

4. e360: Why was this implemented in such a radically wrong way? Is it because the entities that are setting up the conservation area are so concerned about preserving these resources that it was full steam ahead, no matter what?
Bennett: I can't speak on behalf of the people who created those particular protected areas. But one of the things that's happening around the world is that people are taking their concern for the marine environment and for protecting species and habitats, like coral reefs and mangroves, and they're advocating for the protection of the natural world, while forgetting to think about the people who live in those areas, rely on those areas, and have claims or rights to those areas. Perhaps it's ignorance that they neglect to think about those things, but we need to start thinking about conservation in a different way. We need to start thinking about seascapes and landscapes as places where people and nature connect. Therefore, when we're thinking about conservation, we need to think about how to maintain those connections, rather than simply undermining them and excluding people.

5. e360: Is there an example where a marine protected area has been set up correctly?
Bennett: There is the Locally Managed Marine Area Network that's based out of Fiji and the South Pacific islands. This is an example where it's local people who are setting up marine protected areas. Some areas might be closed and some areas might be open. Local people help to decide what's done.
There's also the coast of British Columbia and Canada, where indigenous people and fishers' needs and rights are being taken into account in the planning of the marine environment. And there's the northern Hawaiian islands and Papahanaumokuakea. That's a national marine monument where Hawaiian culture and traditions were integrated into the design and planning of the area and will be applied in the management. All decisions around management need to go through a cultural committee before they're implemented.

'Careful deliberation with local communities about trade-offs will ultimately help both the community and the environment.'

6. e360: Your paper has some key principles that should guide a code of conduct. One of them is informed consent. How challenging is it to achieve informed consent?
Bennett: Many of the principles that we discuss in this paper are obviously very big ideas. We do not have our blinders on to the fact that these are challenging processes. It's going to be challenging to spend the time that's needed to communicate with communities about decisions, about what the impacts might be on their communities, and to help them navigate and negotiate that decision with you, rather than just implementing a conservation initiative in a top-down way.
The process itself might be difficult, but one thing I want to emphasize is that in thinking about all of these different considerations, this is going to be an investment. It's going to take more time. It's going to cost more money. People are going to need to be involved, but in the end, it's going to cost less because it will pay dividends, because it will help to avoid some of the costly mistakes that are being documented around the world in marine conservation.

7. e360: You and your colleagues propose a number of objectives that a code of conduct should have, including, "Maintain food and livelihood security for local people and communities." Do you envision situations in which a resource is teetering on extinction, where that simply isn't possible? How do you balance those two competing needs?
Bennett: There's no easy answer to that question. Part of the reason is because everywhere in the world is different. There are different social contexts, different levels of dependence on resources. That's where careful science, careful research, and careful deliberation with local communities about trade-offs will ultimately help both the community and the environment.

8. e360: Would there be a situation where there needs to be some short-term pain for some long-term benefit?
Bennett: Yes. There will be times when communities or individuals may not be able to harvest resources and ultimately that will lead to long-term benefit. A challenge, though, is that often organizations will come in and promote the creation of a marine protected area and they'll implement it from the top down, without considering how to either provide adequate capacity for the management of the area or how to ensure that local people can have some sort of alternative livelihoods or access to benefits from other economic mechanisms, such as payments for ecosystem services. Sometimes there are cases where governments have chosen to buy out fishers' licenses when the fishers wanted to move on.

'There are marine protected areas that are being called out as forms of ocean grabbing.'

9. e360: In your paper, you describe the need for a code of conduct as urgent. Why urgent?
Bennett: There are marine protected areas that are being called out as forms of ocean grabbing, which refers to the robbing of areas of the marine environment or of resources from local people who rely on those areas. As we see these different issues emerge, we're starting to see some backlash against marine conservation in different places.
At the same time, we're starting to see that people are calling for a code of conduct for marine conservation. Notably, last year at an international meeting on the human dimensions of large-scale marine protected areas, a group of those present started calling for a code of conduct. That inspired us to develop the draft of a code and to call for a longer conversation and next steps. It's really important to emphasize that we see this code of conduct as being able to make the difference between the success and failure of marine conservation.

10. e360: Where is the marine conservation community on this issue, compared to the terrestrial conservation community?
Bennett: We have a long history of documenting issues in the terrestrial realm and where terrestrial protected areas unduly impacted communities. This past year, at the World Conservation Congress in Honolulu, the U.N. special rapporteur on the rights of indigenous peoples presented a report that documented human rights complaints in the context of conservation. What this can do is really make conservation the enemy. In some cases, there have been NGO's and advocacy organizations advocating against conservation.
A better-case scenario is that we learn from those mistakes, from the human rights transgressions that have occurred on the land. We learn how indigenous cultures might be integrated into conservation decisions, and we take those lessons and apply them to the marine realm.

Diane Toomey is an award-winning public radio journalist who has worked at *Marketplace*, the *World Vision Report*, and *Living on Earth*, where she was the science editor. Her reporting has won numerous awards, including the American Institute of Biological Sciences' Media Award. She is a regular contributor to *Yale e360* and currently is an associate researcher at the PBS science show NOVA.