

Bill Eichbaum

World Wildlife Fund

The ocean is sending us a lot of signals that things are changing and not for the better. Probably the most significant of those from a human perspective is the fact that our productivity of fish – wild caught fish out of the ocean – really peaked about two decades ago. We've exceeded or met in about 60 or 75% of the world's fisheries the actual ability of the ocean to even produce basic protein for people. Also, we see that many of the larger species in the oceans that are familiar to people – sharks, the large pelagic-wide ranging fish such as tuna – are beginning to disappear and are at perhaps as small as 10% of their historical stocks. So, we're seeing really negative signals from the sea.

What [this] means is that unless we do a better job of managing human impacts on the sea and its resources, we will lose the benefits that the sea offers to people but also the rich biodiversity of the oceans will also be lost. And that biodiversity is important for the very health of the seas. But it's also important for the resilience of life on earth generally.

We find that the oceans provide a great deal of overall resiliency of life systems, biological systems, and chemical systems that function globally to maintain the stable earth that we know. One example would be climate. As the world's oceans change because of human impacts, currents in the ocean change. The food that is produced by the nutrients in those currents moves, disappears, or is diminished. So we see a real change in our overall condition of the globe.

As the Earth's climate changes and the globe warms, the most severe and immediate impact happens to the marine environment. It's probably very important to recognize that global warming will affect the marine realm more rapidly and more severely than will be the case in terms of the terrestrial environment. There are some arguments in the terrestrial world that there will be winners and losers from a global perspective. But the reality is that in a marine environment, everybody and everything loses. Sea levels rise, flooding resources. Temperatures rise causing life forms, such as corals, to not be able to survive. Ocean acidification is occurring, which is an almost impossible concept to understand, but it really inhibits the ability of life forms to even create themselves in the marine environment. So there are very serious consequences for climate change for the life in the sea.

It's a very interesting relationship between population growth and the health of the oceans. First of all, the majority of people in the world live near the sea and that proportion is increasing every year. Just the fact of those people living at the edge of the sea has negative consequences with the pollution that they dump into the ocean. And in most parts of the world, that pollution is not treated. Secondly, those people living at the ocean's edge they convert coastal habitats and they harden those habitats. They destroy mangroves. They destroy sea grass beds. And as an example of the impact of that, probably about 60% of the commercially valuable fisheries in the world's seas spend a critical part of their life cycle in those coastal habitats. Thirdly, that coastal population is demanding resources out of the sea [in the form of] protein. Perhaps as many as a billion people in the world

[receive] their primary source of protein from the sea. And so these are all growing impacts which if we do not manage them better than we have we'll lessen the ability of the sea to provide the resources that we need and also lessen the overall biodiversity of the sea.

People in coastal communities are incredibly dependent upon the fisheries' resources that occur within 10, 20, 30 miles. They have a very limited ability to move across the sea. So first of all they are dependent upon those resources and secondly as those resources may move in response to global warming and changes in ocean conditions they will either have to replace those resources or move with them. And we do see this happening in different places around on the world.

Equally seriously though is the degree to which industrial-scale fishers from far afield – from Europe, from China, from Russia – out compete those local communities for food because they have better technology and they may get a fishery source and sell it at a very high price in St. Petersburg or in London. They have taken [the fish] out of the stomach of a poor person in Mexico or in Mozambique.

Illegal or unregulated or even unreported pirate fishing is a global problem and it's one which is really working to the detriment especially of the poor people of the world and providing a resource to rich people who don't really need it. There are fish that are just stolen out of waters where poor countries don't have the ability to adequately police the fishing that goes on. Secondly, many of the developed countries negotiate access agreements that are very unfair to these poor countries. They make their aid for developmental purposes conditional on those access agreements. They may not offer a decent price for the product that they're taking and they may negotiate for rights of access that are detrimental to the people in those countries.

WWF has worked hard to improve access agreements and to work with developing countries so that they do have a better control over the access that developed countries have to their fisheries.

Marine protected areas and networks of marine protected areas are one of the most important tools that we have in order to really do two things. One is to protect the basic biological richness of the seas, and secondly – in places where that richness has been depleted – to allow opportunities for the biodiversity and the productivity to return. So it's not just a question of one reserve. It's the question of a network of reserves that operates across a large area of the sea and the coast to protect a variety of habitats and a variety of places that are important for species at particular points in their life cycle.

What is important for a species when it spawns may be very different for that species when it is mature and in a different [part of] its life cycle. So the network of marine protected areas is very important.

We can be successful at creating marine reserves, but unless they are also well managed they often will not perform the functions that governments and peoples have hoped that they would form. So we are doing a lot of work today at WWF and in other conservation

organizations to try and work with not only governments but also local communities to have them understand the benefits they get from marine protected areas.

We actually have areas where when one community has heard about the benefits that another community has gotten because of the marine protected areas that have been established they actually work to get them established and they work to protect them. This is building on a long tradition that many communities have had in managing their own coastal resources. But today that tradition is almost overwhelmed by the global search for benefits from the sea. So we have to work to strengthen the role and the ability of those local communities to retain their traditional ability to wisely manage natural resources.

I have been working at marine conservation since the early 1980s when we started an effort to clean up the Chesapeake Bay in the United States. I have been working on this issue for nearly 20 years with WWF. We are making progress, but we have a lot more to do. On the terrestrial environment, more than 10% of the land is in some form of protected area. At sea, it's only one percent or less. We need to move forward much more aggressively in that regard. We need to get a better handle on our marine fisheries, management activities, and give people in local communities and global fishermen a stake in the wise management and protection of fisheries resources and not have it just be a wild hunt for the last individual in a particular population. And we need to do a better job of managing our coastal resources so that the habitats at the coast are protected and protect people which is an important function coral reefs and mangroves performed as we learned in the recent tsunami.

As fisheries decline or are reduced, there is a great deal of pressure just to poach or steal the last few fish that remain or perhaps for fishermen to move from what was once a productive fishery into what is a new and perhaps not well-regulated. A good example is sea cucumbers in the Galapagos. The demand from Asia for that resource really created a boom in fishing, which became almost unregulated and now there has been a complete collapse of that fishery and there are virtually no sea cucumbers in the Galapagos that can be harvested at a scale. This has had a bad impact for those local fishermen that had a classic boom-and-bust kind of experience. They now may be driven to do illegal fishing on other species. [Another example] is West Africa, where there is both heavy community fishing as well as industrial fishing from European fleets. As those stocks have been depleted, it has forced people to go into the forest and into the jungles to find alternative source of protein. And this has really been a major reason for the increase that we think has occurred in the poaching of terrestrial wild life. So the mismanagement in the sea really results in serious pressures on land also.

Tourism is by many measures the largest industry in the world. It is one of the biggest employers. For many poor countries, it's the largest source of foreign exchange and that's not just ecotourism, but all forms of tourism. Ecotourism is a very fast growing piece of the overall tourism market, maybe accounting for 15% depending on how you define ecotourism. It can be very beneficial because as people become aware and are experience the glories and the wonder and the beauty of the sea and of habitats at the water's edge they become more concerned with saving and protecting these. But by the same token, this

growth that has occurred in [the tourism] industry is one of the primary sources of the destruction of habitats at the sea's edge.

One of things that we're working on very hard at WWF is to reverse that trend and make sure that not just ecotourism which is often environmentally benign, but tourism and coastal development in general is done in a way that better protects the marine environment.

The life of people at the sea's edge very intimately involved with nature and trying to wrest a living from the sea is a very a long story in human history and it's a very rich one. And it's a very dangerous one often. People lose their lives at sea going after fish. I think that as communities change, as fishing changes we will see an evolution and there will be a difference in those communities. Aquaculture is going to become an important part of producing protein from the sea.

Different technologies will develop, but the intimate involvement with nature and its ability to produce resources will always be there. And these communities need to retain that. The cultural look of a New Bedford, Massachusetts may be quite different in a hundred years but it may well still depend upon and be involved with the natural productivity of the sea. That'll be important.

I think you do tend to lose a way of life that is romantic, is dangerous, and appeals to individuals but it just may be that the requirements of a modern society of a world approaching 10 billion people can't efficiently and effectively and respectfully harvest the bounty of the sea with that old approach and that we'll need to have new technologies new skill sets, but ones that are still intimately tied to working with nature in a way that is respectful of nature and also works for the communities that are doing it.

The ocean is sending some very strong signals that human activity is causing real stress and problems. First of all, we are losing and we have at least peaked at the productivity of the world's fisheries over the last couple of decades. With maybe 75% of those fisheries being fully harvested or over-harvested, the ocean cannot produce anything beyond what we are taking out and we in fact need to manage it better if we're going to maintain that productivity.

We are also losing the large species that are so familiar to people – the sharks, the wide-ranging species such as tuna. Perhaps as much as 90% of the populations of those species have been taken out of the sea, which is just a pauperized resource and place.

We also have problems with pollution that are affecting coastal environments where you have dead zones due to human waste. As people move to the sea's edge, this becomes a more serious problem and then of course climate change is having major impacts – virtually all negative and quick. I find it ironic that the extremes of the sea, the arctic regions and the coral reefs, one very cold, one temperate if not tropic, are experiencing the first and completely negative impacts of climate change.