Healing the Seas - Acknowledging the Impact of Humans on the World Ocean

Stephan A. Schwartz

The SchwartzReport tracks emerging trends that will affect the world, particularly the United States. For EXPLORE *it focuses on matters of health in the broadest sense of that term, including medical issues, changes in the biosphere, technology, and policy considerations, all of which will shape our culture and our lives.*

Looking out across a twilight sea so vast I can see the curvature of the Earth, four boats– all no more than 58 feet in length by law–are spread out before me in a hauntingly beautiful scene. Their bright-as-day lamps rigged to their masts wink on one by one and shine down upon them like spotlights until each stands within its cone of light, a private world. In this latitude, there is still light deep into the summer night, and twilight is forever. In this misty light, the loaf-shaped islands hover like ghosts. Dense, forever-green conifers come down the flanks of the island hills to a waterline that looks just trimmed by a gardener. We are in the coastal waters of southeast Alaska, where they have a sustainable fishery, a successful balance of commerce, and ecology.

This part of Alaska is so remote as to be virtually devoid of humans. It compels the mind to recognize the impact we have upon the planet. This is a world much as it has been for millennia. Many might use the word *pristine.* But I would use another: *harmonious.* Nature, although we know it to be impacted even here, is sufficiently unsullied that the interlocking systems that make up the biosphere are still able to operate in harmony with incredible vitality.

Getting to this point was not easy. It took an amendment to the state constitution. But it works. To maintain this balance, the number of boats is strictly regulated through licensure and fishermen are licensed only to a specific time–12 hours a day on Mondays and Thursdays, mid-May until August, for one fishery. Another species might be only a week. Fish farming, which might seem the obvious alternative but which can negatively impact the natural order in major ways, is illegal in Alaska. They are actually trying to work with nature, not bend her to their will.

I am here aboard a private boat to see this hidden world that few see except on television, and no screen can convey the sense of remote and isolated grandeur I am experiencing. In these still waters of the evening all the boats, including us, are in slow motion. As is the tidal sea. Cruising and fishing happen slowly.

We are standing in the pilot house of the boat, as we have spent each day for a week, in a long conversation winding through our common interests and ideas, given as gifts to each other. There is time for thought here, not least to contemplate the power of slowness, and remember: less than 200 years ago, a human could not move faster than an animal could carry them, or the wind could blow them. There was time for long conversations that ran for days, or even weeks, living within a couple of hundred square feet and moving this slowly. Speed is very modern and its benefits come with a shadow I had not fully appreciated. The 140 characters of a Tweet seem absurdly simplistic. Moving at this speed there is room for nuance. And it has given me the time to really consider what I am seeing and what it means.

If this fishery is managed in a sustainable manner, it is one of the few in the world that is. Most fisheries have already collapsed or are on the verge of collapse. The cod banks that gave Cape Cod its name, a fishery so rich that generations of Americans and Canadians and other national fishing fleets made their livings from it. Looking at these Alaskan boats reminds me of a memory from the 1980s driving up through the small Cape Cod fishing villages that formed so much of America's character. In marina after marina, rusting fishing boats rocked against their docks. Boats whose purpose had ceased to exist. The cod that everyone back to before Benjamin Franklin ate was gone. Fished out because rational sustainability was beyond the various interest groups. In Newfoundland, one of Canada's more lightly populated provinces lost 40,000 jobs.[1] Decades later, the cod fishery has still not come back enough to lift the moratorium imposed to try and protect the cod from becoming extinct. A desperate last measure to which the short-term interests could finally agree.

I cannot get out of my head something I saw yesterday when we stopped at one of the very few places along this remote coast, Point Baker, Alaska, where anyone lives. Point Baker consists of a tiny collection of cabins in a small cove a few hundred yards across. About 25 people live there year round. It can be reached only by air and water. As we come into the dock, I imagine what it must be like to live here in Alaska's winter. We have come here to get online, and while eating grilled halibut sandwiches in the only restaurant for many, many miles, we learn the latest on the destruction of the Gulf of Mexico, one of only two known Atlantic bluefin tuna breeding grounds. As we watch oil spill out of the damaged well, I wonder what will come out of the spawning next year? This is not a hypothetical question. Elizabeth Kolber, writing in *The New Yorker,*

states the reality: "By most estimates, bluefin stocks have fallen by eighty per cent in the past forty years. According to other assessments, the situation is even grimmer. Callum Roberts, a professor of marine conservation at England's University of York, has calculated that there is now only one bluefin left for every fifty that were swimming in the Atlantic in 1940."[2]

And downward trends like this have been going on for years, particularly in Asia and Africa. The Asian Pacific Ocean is home to the world's largest fisheries. It accounts for 48% of the fish caught according to the UN food security agency, the Food and Agriculture Organisation.

In 2006, the *South China Morning Post* reported: "A study by the Penang-based World Fish Centre, an international resource organisation, of eight nations in Southeast Asia indicated that in regions where more than 25 years of data was available, fish stocks had declined to between 6 per cent and 33 per cent of what they were. Some areas had experienced a decline in fish numbers of 40 per cent in the past five years alone. The areas with the worst declines were the Gulf of Thailand and the waters off East Malaysia."[3]

That same year, in November, Canadian marine biologist Boris Worm, at Dalhousie University, Halifax, published a study on global fisheries in *Science* that stunned the fisheries industry.[4] The abstract says its all:

> Human-dominated marine ecosystems are experiencing accelerating loss of populations and species, with largely unknown consequences. We analyzed local experiments, long-term regional time series, and global fisheries data to test how biodiversity loss affects marine ecosystem services across temporal and spatial scales. Overall, rates of resource collapse increased and recovery potential, stability, and water quality decreased exponentially with declining diversity. Restoration of biodiversity, in contrast, increased productivity fourfold and decreased variability by 21%, on average. We conclude that marine biodiversity loss is increasingly impairing the ocean's capacity to provide food, maintain water quality, and recover from perturbations. Yet available data suggest that at this point, these trends are still reversible.[4]

If it wasn't done, Worm predicted that by 2048 the ocean would be empty of fish. Essentially there would be nothing left to catch. Already, Worm reported, fishing stocks had collapsed in 29% of the world's fisheries.

But this is a hopeful story. Two years later, a second paper appeared in *Science.* Christopher Costello, economist at the Bren School of Environment Science, was its lead author. It was so thorough–studying 53 years worth of data from 11,325 fisheries–that its conclusions overwhelmed all other arguments.[5]

It showed the ancient, "get as much as you can, wherever you can" system was twice as likely to cause the collapse of a fishery as a system called "catch shares." Reduced to its principles, catch shares limits the total amount each year of a particular species that can be taken, and the total number of fisherman who can take them. Each licensed fisherman has shares in that total permitted catch. The shares are fungible, like a corporate stock they can be bought, sold, or traded, and their value fluctuates. The more fish there are, the more the shares are worth, so Aikidoing the human drive for profit–turning it to ecological good–is in everyone's interest for there to be healthy fisheries.

"The difference is comparable to renting an apartment versus the house you own," says Costello. "If you own something, you take care of it–you protect your investment or else it loses value. But there's no incentive for stewardship when you don't own the rights to it."[6]

Worm, looking at Costello's paper two years after his own, said: "[The] study gives us a solution to work with in fighting the global fishery crisis. There are fisheries which are doing well because of rights-based management. It's the silver lining that we have been looking for. Now we need to implement these solutions more widely."[6] And, in the two years since Costello published, the catch shares system has grown to more and more fisheries. Worm has extended his 2048 prediction to 2050 and hopes that catch share programs such as the one I am looking at will effect the necessary changes. But he still fears that the world's fisheries will collapse around 2050 unless there is an international effort by all the fishing nations of the world to control unregulated fishing. People who think the government should get out of the business of regulation and just let market forces sort things out are not just ignorant, they are dangerous. Without regulatory programs like catch shares, the oceans will die and hundreds of millions of humans will follow.

But it isn't just the fish that concerns researchers like Costello and Worm and others. The life network that stitches together the Earth's biosphere linkages that are critical to our own survival are breaking down far before one gets to top of the watery pyramid of life. Tuna and sharks are just the most visible species in decline. Last July, a research team including Worm, and his colleagues, Daniel Boyce and Marion Lewis, at Dalhousie University, published a paper in *Nature,* "Global Phytoplankton Decline over the Past Century," that shocked even scientists familiar with the devastation that is occurring in the world's ocean. They reported that the stocks of phytoplankton had decreased by 40% since 1950. This conclusion was not lightly made or unfounded. It arose from close to 450,000 data points from measurements taken between 1899 and 2008. The Halifax research team said that there had been "declines in eight out of ten ocean regions, and estimate(d) a global rate of decline of approximately 1% of the global median per year."[7] Why does this matter? *Because phytoplankton are the first link in the entire ocean food chain.* These microscopic organisms–diatoms, green algae, dinoflagellates, cyanobacteria–make all life in the ocean possible as the original food source, and life on Earth possible because half of the oxygen produced by plants comes from phytoplankton. And climate researchers have, indeed, reported a small but measurable decline in the oxygen content of Earth's atmosphere.

The story hardly registered with media in the United States, but *Der Speigel* of Germany decided to cover it in depth and interviewed a wide range of researchers to this end. Heinz-Dieter Franke of the Biological Institute Helgoland, part of the Alfred Wegener Institute for Polar and Marine Research, expressed the response many felt: "A retreat of 40 percent in 60 years, that is so serious that it is almost unbelievable."[8]

> "We had suspected this for a long time," Worm told *Der Speigel,* " 'But these figures still surprised us.' At this point, he said, one can only speculate

as to what the repercussions might be. 'In principal, though, we should assume that such a massive decline is already having tangible consequences,' said Worm. He said that the lack of research on the food chain between phytoplankton and larger fish in the open ocean is a hindrance to knowing the extent of the damage."[8]

No one is even sure why all this is happening. However, most researchers feel that the principal cause is probably human-mediated activities producing climate change. Nor is it clear how the decline in phytoplankton stocks correlates with three other ocean crises, as bad in their own way as the collapse of the world's fisheries or the vanishing of the tiny organisms that are the first step in the chain of life. Each of these crises comes with its own calamitous implications: ocean warming, the death of the coral reefs, and ocean acidification.

John M. Guinotte of the Marine Conservation Biology Institute in Bellevue, Washington, and the School of Tropical Environment Studies and Geography at James Cook University, Townsville, Australia, and Victoria J. Fabry, a biological oceanographer at University of California, Santa Barbara, spelled out ocean acidification very clearly: "Ocean acidification is rapidly changing the carbonate system of the world oceans. Past mass extinction events have been linked to ocean acidification, and the current rate of change in seawater chemistry is unprecedented."[9]

As I work my way through all this, dark night has finally fallen and we glide slowly into the protected bay, in the lee of an island, where we will anchor for the night. I cannot avoid thinking that these last hours, as darkness slowly increased, are a metaphor.

Healing and health are more than medicine. And healing involves, must involve, far more than people. To heal ourselves, we must heal the damage we have done to the Earth. It is not the earth so much that concerns me. The Earth was here for billions of years before we were, and it will be here billions of years after we are gone. Its capacity for regeneration can be seen in the planetary near death experience the Earth had some 250 million years ago when, at the end of the Permian Period, through a series of mass extinctions, almost all life on the planet simply ended. Yet here we are. The Earth endured and new life arose. What concerns me is the equation of our measure of destructiveness, and the capacity of the Earth to continue to maintain the biosphere which we need to thrive.

Healing the seas, as these Alaska waters show me, is possible. It just requires a change of attitude. This may sound simple, but for many people it has proven very hard to do. It isn't just their conviction that market forces trump all other considerations. That's really just a manifestation of a much deeper philosophical, one may even say religious, perspective. For several thousand years, our cultures have been predicated on the assumption that humans stand apart from the Earth, a special case, following different rules. The Earth from this view is like a bank account given to us by a rich parent, a source of wealth we can do with as we please. Our present circumstances prove this is utterly false, and that it is time to awaken from this deadly fantasy. We don't have much time left in which to grow up.

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Stephan A. Schwartz *is the editor of the daily Web publication The SchwartzReport (Available at: http://www.schwartzreport.net), which concentrates on trends that will shape the future, an area of research he has been working in since the mid-1960s. He is also the Senior Samueli Fellow in Brain, Mind, and Healing at the Samueli Institute. For over 35 years Schwartz has also been an active experimentalist doing research on the nature of consciousness, particularly remote viewing, healing, creativity, religious ecstasy, and meditation. He is the author of several books and numerous papers, technical reports, and general audience articles on these topics.*