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Marine biologist Ayana Elizabeth Johnson swimming in Jamaica’s seagrass. | Photo courtesy of Jeremy McKane

What I Know About the Ocean We Need Ocean Justice

By [Ayana Elizabeth Johnson \(/sierra/authors/ayana-elizabeth-johnson\)](/sierra/authors/ayana-elizabeth-johnson) | Dec 12 2020

Here is what I know. The ocean is not separate from us or our daily concerns. It is our nourishment, protection, livelihood, and the air we breathe. It is culture, joy, and freedom. All this is at risk, and we need ocean justice.

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Ocean conservation is about people—more specifically, it's about marginalized people. Sometimes it seems we've been duped into

thinking ocean conservation is just about fish, dolphins, whales, corals, and remote tropical islands. The well-being of communities of color and of poor and working-class folks is deeply affected as the ocean's health degrades. No different than on land, we are either excluded from accessing ocean resources or relegated to the most denuded and polluted places. Although we bear the greatest brunt of the impacts, we often had the least hand in causing them.

A healthy ocean is critical to food security, economies, cultures, and our own health. Right now, overfishing, pollution, coastal development, and climate change are jeopardizing all of that. In addressing these threats to ocean health, we must consider who benefits from ocean exploitation and from conservation, and who does not.

We need ocean justice. While the concept of environmental justice—defined by the US Environmental Protection Agency as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies”—may have finally permeated the zeitgeist, the concept seems to end at the shore.

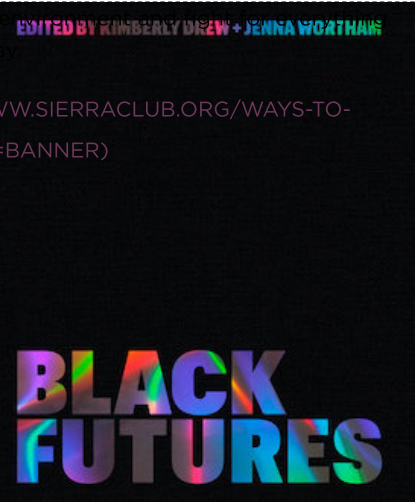
Communities of color and poor communities remain most disastrously affected by pollution, overfishing, human rights abuses, loss of coastal ecosystems, storms strengthened by climate change, and sea-level rise. Tackling these challenges will require working at all levels, from micro-local to global, and building political power. We cannot afford to wait for governments and international bodies to lead. We—coastal communities who have the most at stake—must chart a path out of this mess mostly not our making.

There are not, in fact, many fish in the sea. Nearly 94 percent of fish populations are over (<http://www.fao.org/documents/card/en/c/ca9229en>)fished or fished to their maximum capacity (<http://www.fao.org/documents/card/en/c/ca9229en>). Biggie rapped about “remember when we had to eat sardines for dinner” as a sign of poverty. But that’s actually what we should be eating: small, fecund fish rich in omega-3s, not top predators like tuna, whose numbers have plummeted by more than 50 percent (<https://www.pnas.org/content/108/51/20650>)t (bluefin by 97 percent (<https://www.wcpfc.int/node/31024>)) since we got a taste for them. Technologies developed for war—radar, sonar, helicopters, spotter planes—are used to seek and destroy the remaining fish. While some places are fished sustainably (<https://www.fisheries.noaa.gov/national/2017-report-congress-status-us-fisheries>), wild fish simply can’t make babies fast enough to keep up with our plunder. Yet, around 3 billion people rely on seafood as a significant source of protein (<http://www.fao.org/documents/card/en/c/ca9229en>). The adage about teaching a man to fish doesn’t work if there are no fish to catch.

We must kill fewer fish. We must go from the 2 percent of the ocean that is currently protected to the 30 to 50 percent that scientists recommend (<https://mpatlas.org/>). Closing the high seas to fishing—the poorly managed two-thirds of the ocean that no one “owns,” and where fishing is often profitable only with massive subsidies (<https://advances.sciencemag.org/content/4/6/eaat2504.full>)—is a key step.

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Unsustainable, unregulated fishing is a human rights disaster. Working conditions for fish workers are often perilous, and labor law violations and wage theft abound. In Africa and Asia, fish scarcity has spurred women traders to barter sex (http://pubs.iclarm.net/resource_centre/WF_973.pdf) to get priority to purchase fish—not sex for fish, but sex to get to the front of the line to buy fish. This has contributed to the spread of HIV. Meanwhile, large seafood companies are enslaving fishermen on Pacific tuna vessels, and if your shrimp was imported, it may have been peeled by slaves in Thailand (<https://www.theguardian.com/global-development/2015/dec/14/shrimp-sold-by-global-supermarkets-is-peeled-by-slave-labourers-in-thailand>).

Then there are the pirates. Overfishing by Asian corporations in the Gulf of Aden caused some Somali fishers to turn to piracy (<https://www.theguardian.com/world/2011/may/24/a-pioneer-of-somali-piracy>) since they could no longer make a living fishing, which (<https://www.theguardian.com/global-development/2012/sep/25/somalia-fishermen-struggle-pirate-infested-seas>) in turn makes it dangerous for the remaining fishermen to go out and fish (<https://www.theguardian.com/global-development/2012/sep/25/somalia-fishermen-struggle-pirate-infested-seas>). We must think beyond the science of sustainability and economics of the supply chain and consider the people upon whose work this industry is built.

Emptied and polluted oceans hollow out cultures. Overfishing happens in shallow areas first, and governments often sell off fishing rights to the highest, often foreign, bidder. This means coastal communities that have relied on seafood for centuries can no longer put fish on the table. Artisanal fishermen can't afford the gas and the bigger boats required to go farther from shore and don't have access to capital to join this race for fish. Degraded coastal ecosystems destroy not just economies but cultures. Water too dirty to swim in. Sand riddled with plastic. No teaching kids and grandkids to fish. No fish fry on the beach. No jambalaya, no crawfish boils.

We must acknowledge that some traditions don't scale, that some of the old ways can't be sustained with this many people and with such depleted ecosystems. We must also find ways to preserve invaluable cultural connections to the sea.

We need to farm the ocean. No, not industrial salmon farms that pollute the water and require tons of feed. For our food security and for sustainability, the future must include seaweed and shellfish farms dotting our coastlines. With "regenerative ocean farming," (<https://www.greenwave.org/>) mussels grow on hanging ropes while oysters and clams grow in cages on the seafloor, and kelp grows on lines between it all. No fertilizer, freshwater, or feed required. Through photosynthesis and the formation of shells, ocean farms absorb tons of carbon, so can be a significant climate solution while also creating a habitat for a cornucopia of wild marine life (<https://www.yesmagazine.org/environment/2016/04/04/the-seas-will-save-us-how-an-army-of-ocean-farmers-is-starting-an-economic-revolution/>). A single acre of ocean can produce 25 tons of seaweed and 250,000 shellfish in five months. We must farm the ocean to health, not hunt it to death.

The ocean stabilizes the climate, but that's ruining the ocean. The ocean has absorbed 90 percent of the excess heat created by burning fossil fuels (<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2012GL051106>). This comes at a cost. Warmer seawater evaporates more easily, leading to more devastatingly torrential rains with hurricanes. Fish and other species are making a one-way migration (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0196127>) toward the poles to stay cool. Corals can't move, so they are frying in place.

The ocean has also absorbed around 30 percent of the excess carbon from the atmosphere (<https://research-information.bris.ac.uk/en/publications/carbon-and-other-biogeochemical-cycles>). This has changed the very chemistry of seawater, a phenomenon called ocean acidification. Humans have changed the pH of the entire ocean. It boggles the mind. This makes it harder for corals to form their skeletons and harder for shellfish to make shells. Lost with coral reefs will be food and income for around 500 million people (<https://portals.iucn.org/library/node/9361>), many in the Caribbean and Africa. We must break our addiction to fossil fuels, turning instead to offshore wind farms and harnessing wave energy.

The sea level is rising and will continue to rise. As the ice melts, the ocean swells. As the seawater warms, it expands. Global mean sea level has already risen about 20 centimeters (<https://www.ncei.noaa.gov/news/usgcrp-climate-science-special-report>) and could rise another meter by the end of the century (<https://www.nature.com/articles/nature17145?foxtrotcallback=true>). This will force mass exodus from the Marshall

Islands (<https://www.sierraclub.org/sierra/2019-1-january-february/feature/atolls-arkansas-marshall-islands-marshallese>), the Maldives (<https://www.theguardian.com/environment/damian-carrington-blog/2013/sep/26/maldives-test-case-climate-change-action>), Kiribati, and other low-lying countries, creating many millions of “climate refugees.” Bangladesh produces only 0.3 percent of global carbon emissions, yet 18 million residents are expected to lose their homes by 2050 (<https://www.nytimes.com/2014/03/29/world/asia/facing-rising-seas-bangladesh-confronts-the-consequences-of-climate-change.html>).

New York’s Rikers Island prison, already prone to flooding, has no evacuation plan, putting those incarcerated at great risk (<https://grist.org/justice/a-sinking-jail-the-environmental-disaster-that-is-rikers-island/>). Entire communities in coastal Louisiana and Staten Island, New York, have already had to relocate (<https://www.nytimes.com/2016/05/03/us/resettling-the-first-american-climate-refugees.html>). Likely next are Native Alaskan villages (https://www.huffpost.com/entry/shishmaref-alaska-climate-change-relocation_n_6296516), Miami (<https://www.nytimes.com/2016/11/24/science/global-warming-coastal-real-estate.html>), and the Carolinas (including Princeville, the first town chartered by African Americans (<https://www.nytimes.com/2016/12/09/us/princeville-north-carolina-hurricane-matthew-floods-black-history.html>)).

Conservatively, 190 million people globally live in places below the projected high tide line for 2100, and 630 million live in places that will soon flood annually (<https://sealevel.climatecentral.org/research/papers/new-elevation-data-triple-estimates-of-global-vulnerability-to-sea-level-ri/>). We must find just ways to move communities out of harm’s way, ways to say goodbye to some of the coastal places we treasure, ways to mourn that loss, ways to adapt. It is pure hubris to think we can hold back the ocean.

Coastal ecosystems protect us. Literally. There are deadly repercussions of destroying coastal ecosystems for development. In Southeast Asia, extensive swathes of coastal mangroves have been bulldozed for shrimp aquaculture. Then, in the 2004 tsunami, locations without mangroves were the most severely impacted (https://ejfoundation.org/resources/downloads/tsunami_report.pdf.PdfCompressor-1022348.pdf), because residents were left without natural protection from the deadly waves. Likewise in the Mississippi Delta. By the time Hurricane Katrina hit in 2005, southern Louisiana had already lost more than 4,900 square kilometers of wetlands, so there wasn’t enough left to buffer the power of the storm (<https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.114-a40>). Likewise, the archipelagic New York City, once surrounded by more than 40 square kilometers of wetlands and by oysters so abundant they were a navigational hazard, is now unprotected (<https://www.sciencedirect.com/science/article/abs/pii/S2352485516301001>). Poor and working-class folks are still reeling from Hurricane Sandy, seven years later, which wasn’t even hurricane-strength when it smashed into my hometown.

This story plays out again and again. These massive storms are becoming regular occurrences, becoming stronger and wetter, fueled by warmer waters, fueled by global warming. They are devastating Black, brown, poor, and working-class communities. Storms are also a chance to consider how we rebuild. The answer is not simply to construct walls to try to keep the ocean out—our barriers will never be as effective as nature. We must restore and replant.

We have polluted the entire ocean. Drilling for oil exacerbates the climate crisis, plus inevitably and incessantly leads to spills. Across the Mississippi River Delta, pollution from industrial plants triggers high rates of cancers (<https://pulitzercenter.org/reporting/cancer-alley-big-industry-big-problems>) in nearby communities of color. Chemicals from this “Cancer Alley” end up in the ocean. Rivers run to the sea. Those rivers take pesticides, antibiotics, synthetic fertilizer, and other toxins with them, harming wildlife, making seafood unsafe to eat, disrupting the balance of nutrients, and causing dead zones and blooms of toxic algae (https://www.huffpost.com/entry/opinion-algal-blooms-health_n_5b802b9be4b0cd327dfc5b91). Our poisonous, chemical-based industrial agriculture is ruining our health and the ocean. Hurricane Florence caused massive lagoons of excrement from factory-farmed pigs to overflow (<https://www.newyorker.com/news/dispatch/after-florence-manure-lagoons-breach-and-residents-brace-for-the-rising-filth>), with the putrid waste hitting poor and brown communities particularly hard before it wound its way to the sea. There are pesticides even in seawater and krill in Antarctica (<https://www.sciencedirect.com/science/article/abs/pii/O967064595000860>). We must transition to regenerative agriculture (<https://www.drawdown.org/solutions/regenerative-annual-cropping>), which goes beyond

organic and actually restores soil by planting cover crops and perennials, and by eliminating monocultures, tilling, and pesticides.

Every year around 8 million metric tons of plastic enter the ocean

(<https://science.sciencemag.org/content/347/6223/768.full>). That's the equivalent of a garbage truck full of plastic being dumped into the ocean every single minute, every day of the year (<https://www.weforum.org/agenda/2016/10/every-minute-one-garbage-truck-of-plastic-is-dumped-into-our-oceans/>). There are 500 times more pieces of plastic in the ocean than there are stars in our galaxy (<https://news.un.org/en/story/2017/02/552052-turn-tide-plastic-urges-un-microplastics-seas-now-outnumber-stars-our-galaxy>). Once plastic is in the ocean, it is broken down into smaller pieces by the sun and salt. It becomes microplastic and gets incorporated into the food chain. There is plastic in the seafood we eat (<https://www.sciencedirect.com/science/article/abs/pii/S0269749114002425>), the sea salt on our tables (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194970>), our drinking water, and even beer. Even animals in the Mariana Trench, the deepest place in the ocean, have plastic in their guts (<https://royalsocietypublishing.org/doi/10.1098/rsos.180667>). By 2050, there may be more plastic in the ocean than fish (<https://www.weforum.org/agenda/2016/10/every-minute-one-garbage-truck-of-plastic-is-dumped-into-our-oceans/>).

We created a material that lasts forever, and then we throw it away, all day, every day. That doesn't make any sense. And of course, there is no "away." Almost all the plastic that has ever been created is still with us (<https://blogs.scientificamerican.com/observations/we-need-to-kick-our-addiction-to-plastic/>). We must break our addiction to plastic, to a culture built around disposability. We must sit down and break bread together, look each other in the eye—and then wash the dishes.

The ocean produces over half of the oxygen we breathe. Perhaps you somehow find none of the above compelling. You hate seafood, and care neither for your fellow humans nor for nature's splendor. Perhaps, however, you would like to keep breathing. Phytoplankton, the base of the marine food web, produces over half the oxygen in the air (<https://science.sciencemag.org/content/281/5374/237.full>). Prochlorococcus is both the smallest and most abundant photosynthetic organism on Earth (<https://mmbr.asm.org/content/63/1/106>). Humans have managed to even mess with this—phytoplankton is declining by about 1 percent a year (<https://journalistsresource.org/studies/environment/ecology/global-phytoplankton-decline-over-the-past-century/>) due to warming waters with fewer nutrients. To continue respiring, we must address the climate crisis and protect the ocean.

We need a healthy ocean for our own health. And it's ocean, singular. It's all one thing, this 71 percent of the planet connected by currents and migrating animals. While people often discuss ocean health as all or nothing, as a dead ocean or a healthy one, there is a whole spectrum in between, from zero to one hundred. We must be honest with ourselves that with almost 8 billion people on the planet, one hundred is now out of our reach. But whether we land at 20 or at eight is within our control. So many lives, livelihoods, and cultures hang in that balance. So many Black lives, livelihoods, and cultures hang in that balance. Plus, the ocean is valuable for our mental health—being near it can literally keep us sane (<https://academic.oup.com/heapro/article/35/1/50/5252008>). The ocean will be fine without us; in fact, it would be much better off. However, the opposite is unequivocally untrue. We need the ocean.

It's time to radically re-envision our relationship with the ocean. The way forward will be imagined and created as we build community around solutions. We must shift public opinion, corporate practices, and political will toward sustainability. Our future could be less plastic, with less toxic pollution coming from land, and less extractive. Our future could be more oysters on the half shell, more seaweed salads, more mangrove forests, more wind turbines, more vibrant coastal cultures, more joy, more justice. That's what we should all be fighting for.

Now you know what I know. Perhaps now you will see this is your fight too.

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