



World-record-holding surfer and Oceana Board Member Maya Gabeira spoke at the World Ocean Summit in March, which highlighted ocean solutions to climate change.

Waves of Change

Maya Gabeira discusses her surfing career and overcoming fear

Climate Action

How stopping oil and plastic pollution can slow climate change

Supporter Spotlight

Oak Foundation's Masego Madzwamuse on ocean policies that help people

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To help navigate Oceana's work, look for these six icons representing our major campaigns.



Curb Pollution



Protect Habitat



Stop Overfishing



Increase Transparency



Reduce Bycatch



Protect Species

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As the fossil fuel industry's pollution drives us closer to a global climate catastrophe, you may be re-evaluating your commitment to ocean conservation. Do you wonder whether you now need to focus 100% of your time and philanthropic resources on tackling climate change? Your answer is that the two conservation agendas require each other. Ocean conservation is essential to averting this climate crisis.

A panel of experts, commissioned by the 14 heads of state that comprised The High Level Panel for a Sustainable Ocean Economy, concluded that ocean solutions can provide one-fifth of the carbon reduction the world needs to keep temperatures from rising more than 2.7 degrees Fahrenheit (1.5 degrees Celsius). Ocean conservation's contribution is also vividly conveyed by these facts:

1. Our campaign to stop new offshore oil and gas leasing in U.S. waters is ensuring that 19 billion tons of greenhouse gases stay locked in the ground — the equivalent of taking every car in the U.S. off the road for 15 years.
2. By rebuilding abundant ocean fisheries, we allow a hungry planet to substitute a climate-smart protein, wild seafood, for a primary driver of climate change, livestock. Globally, livestock production is responsible for nearly 15% of climate-changing emissions. A fully abundant and well-managed ocean can provide a billion people a daily seafood meal, forever.
3. When we and our allies stop the exponential growth in ocean plastic pollution, we'll stop the rapidly growing releases of carbon dioxide, methane, and other greenhouse gases by the fossil fuel polluters. The plastic industry's carbon footprint, in just the U.S., is expected to exceed that of coal-fired power plants by 2030. Globally, the plastic industry is responsible for 4.5% of greenhouse gas pollution.
4. By preventing coastal over-development, we can protect habitats that are vital to climate resiliency and mitigation. In the Philippines, for example, we are campaigning to protect mangrove forests from clear-cutting. Essential as fishery nurseries, mangroves are hugely effective at sequestering carbon, capturing roughly four times as much carbon per hectare as rainforests. Protecting habitat from bottom trawling ensures that carbon-capturing ecosystems, such as seagrasses, can continue to thrive. Oceana and our allies have protected nearly 4 million square miles (more than 10 million square kilometers) from bottom trawling, and we win more protections every year.
5. If the World Trade Organization were finally to act against subsidized overfishing by the world's distant-water fleets, \$7.8 billion in fuel subsidies would end. It's astonishing that this body continues to allow its member states to pay their fishing fleets to travel to other countries' waters, deplete their oceans, AND ALSO accelerate catastrophic climate change. The five countries with the largest distant-water fleets are responsible for 90% of the global distant-water fishing effort.

The fossil fuel industry is responsible for the worst global pollution catastrophe in history while convincing many that this crisis is everyone's fault. But the industry's responsibility becomes glaringly apparent when citizens organize to demand laws that convert the world's energy economy to a sustainable one. When citizens do that, the oil states and the fossil fuel polluters block action in the public interest.

The recent UN Climate Change Conference (COP26) in Glasgow, Scotland failed to endorse measures sufficient to save the planet from extreme storms, fires, floods, extinctions, and calamitous climate-driven migrations. However, they did, in a tragic irony, validate the destructive policy-blocking power of the carbon polluters. One of the last elements to be resolved in through-the-night negotiations over the precise terms of the final agreement was whether it would, for the FIRST time in 26 years of COP gatherings, include the words "fossil fuels."

Rescuing the planet from climate change means saving the oceans from overfishing, ocean pollution, and illegal activity. While we join the billions of people who demand global carbon reduction policies, we are also winning national-level policy outcomes that rebuild ocean abundance and mitigate the threat of catastrophic climate change. Please take a moment to enjoy the latest reports on our progress in this issue of *Oceana Magazine*.

In closing, please remember that ocean conservation and climate conservation are sister and brother. Thank you for your continued loyalty and generosity to Oceana.

Sincerely,

Andy Sharpless
CEO, Oceana

For the Win



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A recent law passed in the state of New York will help reduce the thousands of pounds of plastic waste that hotels produce. “This law will not only provide guests with plastic-free choices but could also save hotels money by eliminating the cost of these single-use plastic items,” said Oceana’s New York field representative, Brian Langloss.

Governments around the world are weeding out wasteful plastics



Over the last six months, Oceana and its allies have made measurable progress toward curbing the exponential growth of unnecessary single-use plastics around the world.

The state of New York passed an Oceana-backed bill that will prohibit hotels across the state from putting toiletries in tiny plastic bottles, which are discarded by the millions each year. The state of California also passed two significant laws recently: one that curbs restaurants’ usage of single-use plastic, and another that opens the door for single-use bottles to be sanitized and refilled by beverage producers. Oceana is

now supporting additional legislation in New York and California — along with legislation in Massachusetts and Florida — to reduce single-use plastics.

Meanwhile in South America, significant provisions of Chile’s plastics law — featured in the winter 2021 issue of *Oceana Magazine* — are now in effect. As of February, restaurants, bars, and other food outlets will be fined if they provide single-use plastic cutlery, straws, stirrers, and chopsticks, as well as plastic foam products. In addition, supermarkets are now required to sell and collect refillable bottles. More regulations, including a requirement that dine-in eateries phase out all disposable tableware, will roll out over the next couple of years.

Bill passed by U.S. House would ban shark fin trade, address illegal fishing, and better protect marine life and fishers



The U.S. House of Representatives passed the America COMPETES Act in February, which aims to strengthen U.S. leadership on issues important to ocean conservation and human rights. The Senate passed a comparable bill last June, and the differences between these two pieces of legislation will be reconciled before heading to President Joe Biden's desk for approval.

America COMPETES contains key provisions that Oceana and its allies have been campaigning for, including a ban on the purchase and sale of shark fins in the United States. Although shark finning — the cruel and wasteful practice of removing a shark's fins at sea and throwing its body back overboard — is illegal in U.S. waters, fins from countries with little to no protections for sharks can still be bought and sold throughout much of the country.

Another provision in the America COMPETES bill would end the use of large mesh drift gillnets — a deadly gear that's associated with high rates of bycatch — in U.S. waters. They are currently only used to catch swordfish off the coast of California, but in doing so they also injure and kill whales, dolphins, sea lions, endangered sea turtles, and many other species.

The bill also aims to close the U.S. market to illegally sourced seafood and give the government more tools to address illegal, unreported, and unregulated fishing. Beth Lowell, Oceana's acting vice president for the United States, applauded the House's passage of America COMPETES.

"This is a great day for Americans and for our oceans," Lowell said. "The U.S. has long been a leader in ocean conservation. Ending our role in these destructive practices is a necessary step to show the world that we're serious when it comes to protecting ocean wildlife, supporting responsibly managed fisheries, and leveling the playing field for U.S. fishers and seafood businesses."

U.S. state of California takes steps to prevent extinction of endangered Pacific leatherback turtles



The California Fish and Game Commission voted unanimously to designate the western Pacific population of leatherback sea turtles as endangered under the California Endangered Species Act. This decision will bolster efforts by the state to study, protect, and recover leatherbacks, which are the most endangered sea turtles in the Pacific Ocean.

After hatching on beaches in the western Pacific, full-grown leatherbacks travel roughly 6,000 miles (9,660 kilometers) to the California coast — one of the longest migrations of any animal — to feed on jellyfish. Along the way and after they arrive, these sea turtles face an underwater gauntlet of threats, including entanglement in fishing gear. Pacific leatherbacks have declined 95% over the last 30 years, and scientists say the population that feeds off the California coast is declining at a rate of 5.6% per year.

Oceana and its allies campaigned for this designation, as well as other recent regulations in California that better protect Pacific leatherbacks, blue whales, and humpback whales from entanglements in commercial Dungeness crab gear. The regulations will also allow approved alternative fishing gear that lower the risk

of entanglement, such as "pop-up" gear, to be used in areas closed to conventional gear.

International tuna commission enacts protections for endangered shortfin mako sharks



Endangered shortfin mako sharks in the Atlantic are now protected from fishing for two years, thanks to a decision by the International Commission for the Conservation of Atlantic Tunas (ICCAT). These pelagic sharks, which are classified as endangered by the International Union for Conservation of Nature, are unintentionally caught by longline fishers targeting swordfish and tuna. Instead of throwing them back, some fishers sell the sharks and profit from their valuable meat and fins.

These new rules prohibit fishers in member nations from keeping or bringing any shortfin mako sharks to port, effectively giving the species a chance to recover by preventing them from entering global seafood markets. This victory would not have been possible without campaigning by Oceana and its allies, who garnered support for the ban from U.S. Members of Congress and other government officials.

News + Notes

Oceana reports that illegal commercial fishing detections declined in the Philippines

 Detections of commercial fishing vessels using banned “superlights” in municipal waters of the Philippines declined in 2021, according to data gathered via infrared technology and analyzed by Oceana. Across the country, there were 32,494 detectable cases of illegal encroachment in municipal waters last year – a 24% drop compared with the average from the previous three years.

Waters that are within 15 kilometers (9.3 miles) of the coastline are considered “municipal waters.” These fishing grounds are reserved for small-scale fishers who depend on marine resources for food and jobs, but that hasn’t stopped larger commercial vessels from fishing where they shouldn’t. Despite ongoing challenges, Oceana’s allies say this downward

trend is an encouraging sign that improved transparency and enforcement measures are working.

According to community reports, many enforcement agencies across the country are now relying on Karagatan Patrol, an online community platform established by Oceana and the League of Municipalities to monitor illegal fishing. The platform uses a Visible Infrared Imaging Radiometer Suite instrument, or VIIRS, to detect lure lights that are frequently used by commercial fishing boats. Oceana then processes that data and creates maps of the hotspots where illegal fishing is likely occurring.

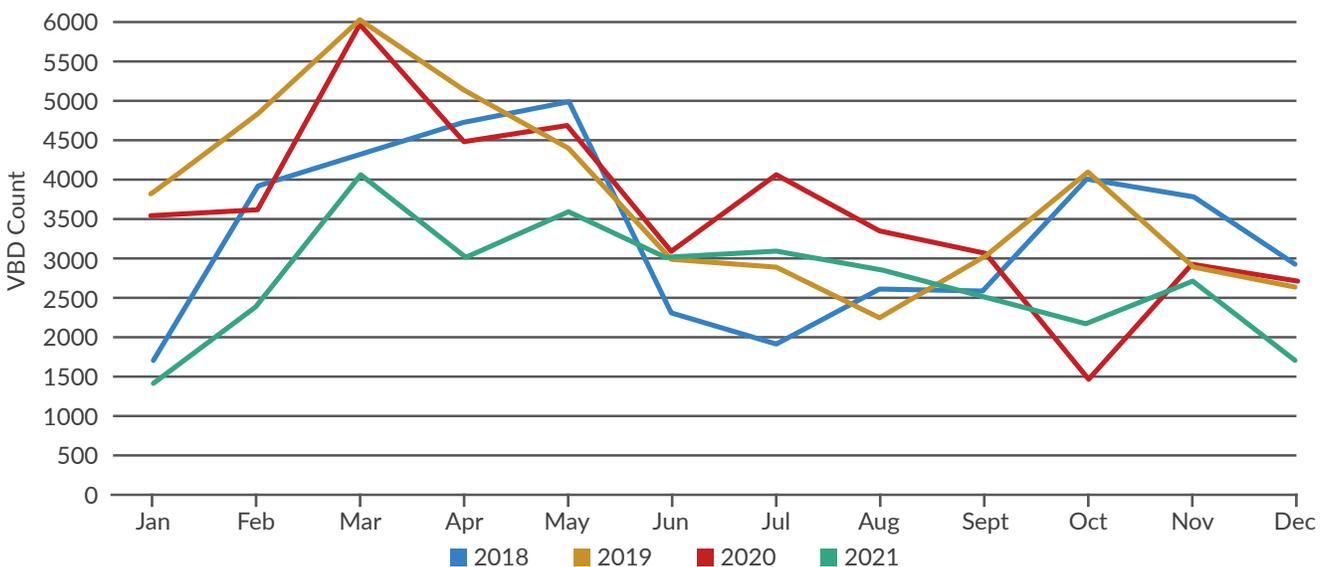
Thanks to the participation of Karagatan Patrol members and the prompt response of law enforcement, one of those hotspots – the municipality of Miag-ao – was recently removed from the list of the top 50 cities and municipalities in the Philippines with commercial fishing intrusion.

Police Colonel Fernando Cunanan Jr., a member of the Philippine National Police Maritime Group, told Oceana that this technology has brought multiple illegal fishing operations to a halt.

“We can’t patrol our whole maritime territory, which is so vast, but with the tool developed by Karagatan Patrol and our partner Oceana, you don’t need to scour every area of our seas,” he said.

VIIRS has its limits, though. Since it only detects visible lure lights, it could be missing other illegal activities that fly under the radar. Oceana is campaigning for more expansive transparency measures around the world, including the enforcement of a law that requires vessel monitoring measures (VMM) on every commercial fishing vessel in the Philippines. At the time of print, 50% of vessels had VMM, compared to only 10% of vessels last year.

Detections of illegal commercial fishing in the Philippines



The above graph shows instances of illegal commercial fishing with banned lure lights over a four-year period. Boat detection by Visible Infrared Imaging Radiometer Suite technology (or VBD for short) was significantly lower in 2021 than in 2018. This downward trend was observed in all Fisheries Management Areas of the Philippines.

Super Typhoon Rai's destruction in the Philippines highlights urgent need for climate action, coral protections



Communities across the Philippines are still reeling from Rai, a category 5 super typhoon that made landfall last December. Panaon Island, where Oceana hosted a 2020 expedition, was one of the most heavily hit areas. Homes were razed and families were left without permanent shelter for months. The area is just beginning to rebuild.



© Lauro Eljorde

Typhoon Rai — or Odette, as the storm was called in the Philippines — struck the country on Dec. 16. It affected nearly 10 million people and damaged or destroyed 1.7 million homes, 16,000 schools, and 330 health clinics, according to the United Nations.

Marine habitats were also affected. In the aftermath of the storm, Oceana learned of corals that were upturned or reduced to rubble. Residents in San Ricardo, a municipality of Panaon Island, reported a foul odor as dead corals washed ashore and baked in the sun. These animals, which Oceana has been campaigning to protect, are a crucial part of a healthy, biodiverse ocean. They also form a natural barrier that softens waves, protecting coastal communities from some of the worst effects of storms like Rai.

This illustrates a vicious cycle: A hotter ocean means stronger storms, and stronger storms are wreaking havoc on the very habitats that are needed to build climate resiliency. Corals around the world are also being bleached by high ocean temperatures — another consequence of unchecked greenhouse gas emissions. When corals die, the thriving ecosystems and jobs they support will suffer.

Faced with global inaction to curb climate change, habitat protections are needed now more than ever. Oceana is urging the government to make the waters surrounding

Panaon a nationally-designated marine protected area under the Expanded National Integrated Protected Areas System Act. Oceana is also campaigning for the effective implementation of Fisheries Management Areas, including the local FMA 8 Management Body, which passed a resolution supporting the declaration of Panaon Island as a protected area.

Seafood Watch advises consumers to avoid farm-raised Atlantic salmon from two regions in southern Chile



Seafood Watch, a Monterey Bay Aquarium program that helps consumers distinguish between sustainable and unsustainable seafood, placed a majority of the world's farm-raised salmon in the "avoid" category of its latest report. This includes all farm-raised Atlantic salmon from the regions of Los Lagos and Aysén in southern Chile, where Oceana is campaigning against harmful aquaculture and deceptive business practices.

"The high use of antimicrobials and pesticides to control diseases and parasitic sea lice is a critical concern," Seafood Watch wrote in its assessment of salmon from these two regions, which account for 59% of Chile's total salmon production.

This report affirms what Oceana has long known: The prolonged use of antimicrobials is likely contributing to greater bacterial resistance. The medication given to salmon is also considered highly important for human health by the World Health Organization (WHO).

In addition, if salmon escape from their near-shore pens into the surrounding ocean — and they often do — they can pose a serious threat to marine ecosystems and endemic species.

Oceana is calling on Chile to urgently approve a bill that would require stronger enforcement and disclosure of the amount of antibiotics and other chemicals that salmon farm operators are using nationwide.

Q+A



Maya Gabeira enjoys a challenge, whether it's a wave towering above her or a complex conservation problem lying deep below the ocean's surface. The professional big wave surfer joined Oceana's Board of Directors a year ago, and her unique life experiences have made her a valuable ally in the fight for a more abundant ocean. Most recently, she supported Oceana's successful plastic campaign in Brazil, which resulted in iFood, the country's leading food delivery company, taking bold action to tackle single-use plastic waste. Born and raised in Brazil, Gabeira now lives in Nazaré, a Portuguese fishing village that is known to surfers as the big wave capital of the world. It is where Gabeira successfully scaled a 73.5-foot wave (22.4 meters) and broke the world record for largest wave ever surfed by a woman. In a recent interview with *Oceana Magazine*, Gabeira shared her take on tackling waves, plastic pollution, and the fear of failure.

Record-setting surfer Maya Gabeira makes waves at Oceana

What are some of your earliest memories of the ocean?

MG: My earliest memories of the ocean are holidays with my parents in a place called Angra dos Reis, near Rio de Janeiro. We used to go there and ride around on a schooner — one of those big tourist boats. My dad was learning to swim at the time, so my sister Tami and I were actually swimming better than he was [laughs]. We lived in Ipanema, which is a beach town, but I come from an intellectual family that wasn't really into the beach scene. We mostly visited on holidays.

So how did you discover surfing?

MG: At 13 or 14 I changed schools and befriended a group of boys, and one of them became my boyfriend. They were all surfers, and their passion impacted me a lot. Our weekends were always spent on the beach, and at some point I realized I didn't want to be left in the sand. I went out on my own and joined a surf school because obviously the boys didn't want to cater to a girl who was a complete beginner.

What was your first time on a surfboard like?

MG: It was so hard to learn at that age because I wasn't a child anymore. Everything is so instinctive when you're a kid, but I had to work on feeling comfortable with the sea and I had to learn how to read the ocean. Still, I remember the first time I caught a wave and went sideways, which is when you're on the face of a wave. That was at Arpoador Beach in Rio and I fell in love with it right away.

When did you realize the oceans were under threat?

MG: My dad was one of the founders of Brazil's Green Party, so I always understood the climate crisis and global warming because we talked about it at home. But if I'm being honest, it wasn't until the last five years or so that I started to really understand the impact on our oceans. It's not that I didn't see the plastic trash. That has always been a visual problem for those of us who have spent the last 15 years in the ocean or on the beach. We see the effects of single-use plastic more and more, and that's undeniable. But it's a little more challenging to see that fish are not as abundant or as big as they once were, and to realize that certain changes are happening underneath us. It's a huge ocean, and we're always on our surfboards



“As a new board member, I feel extremely privileged to attend board meetings. I feel like I’m in one of the best schools in the world, and I’m learning from the very best teachers how to save the oceans.”

looking up. It takes studying and connecting and educating ourselves to understand what is happening beneath the surface that we don’t see with our eyes.

Which ocean issue resonates with you most?

MG: I wish there was just one. I wish we could say, ‘Let’s just fight offshore drilling’ or ‘Let’s just fight single-use plastic.’ That would be a luxury in this day and age. I am very concerned about multiple issues, whether it’s single-use plastic, offshore drilling, overfishing, or destruction of habitat. All those things are on Oceana’s agenda, and I think they’re equally important. They’re all connected to the destruction of nature, which affects our ability to live in harmony and have enough resources to thrive in the future.

What do you like most about being on Oceana’s Board of Directors?

MG: As a new board member, I feel extremely privileged to attend board meetings. I feel like I’m in one of the best schools in the world, and I’m learning from the

very best teachers how to save the oceans. To be a part of those discussions is enlightening. It not only inspires me, but also gives me the knowledge and tools to go out and spread the message. It makes me feel like it’s possible to accomplish all the tasks that are necessary for a healthier world and healthier ocean.

You recently supported Oceana’s plastic campaign in Brazil, which succeeded in convincing iFood to eliminate 1.5 billion single-use plastic items per year. What does this victory mean for Brazil and for the oceans?

MG: I’m extremely proud of the Brazilian team because it was a very well-structured campaign. It took a lot of strategy to pull that off. The company, iFood, accounts for most of the food deliveries in Brazil, and with the pandemic, we saw a huge rise in those numbers. A lot of deliveries were made, and they were using an immense amount of single-use plastic. We fought hard through a petition and learned that consumers were in favor of having a plastic-free option. Understanding that, and proving that to iFood, was why the campaign succeeded.

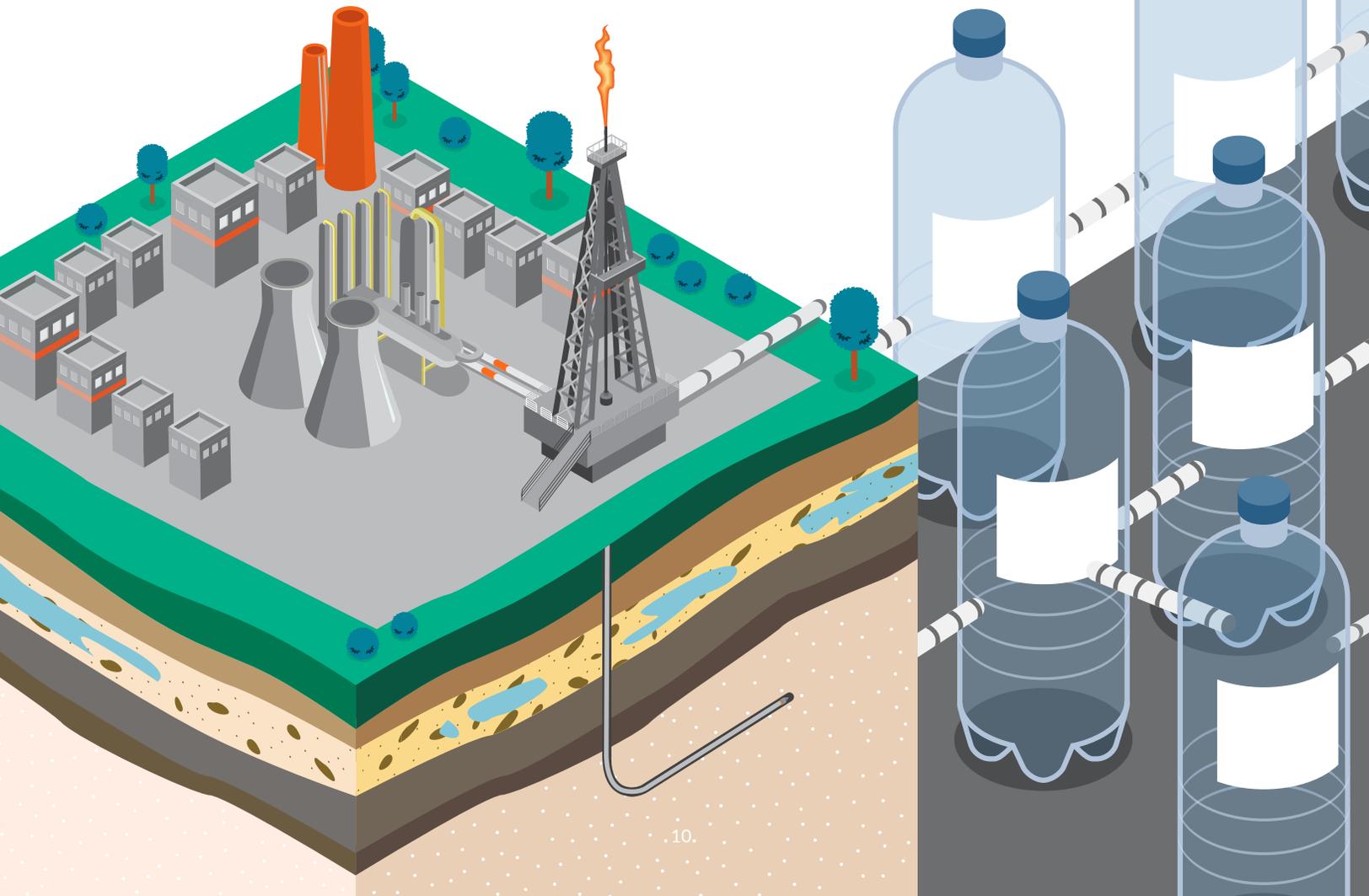
You’ve spoken openly about fear, especially after suffering a near-fatal surfing accident in 2013. While “climate anxiety” is a different kind of fear altogether, do you have advice for those grappling with global problems that may feel scary or insurmountable?

MG: For me, the fear of failure was something I had to overcome. It was very challenging if I’m being honest. After I fell on that huge wave I attempted years ago and almost drowned, I was afraid to try again and fail — not only because it could cost my life, but also because of other people’s opinions. I had to accept failing as a possibility and not let that get to me. I think the only thing we can do is understand the problem and work daily towards what we feel is right.

Having anxiety is normal, but there is no solution to a problem you don’t face. Fear creates a sense of urgency, forcing us to act quickly and make changes that are necessary. Maybe fear and anxiety are the emotions we need to finally break through and create the change we need if we want to survive on a planet that is healthy. Fear can be a great teacher. ■

The plastic to pollutant pipeline

Most single-use plastics are made from fossil fuels, so why aren't they part of climate change conversations?



Take a moment to consider the origins of a plastic bottle. What comes to mind? Maybe it's a mental image of water bottles stacked on shelves at your local supermarket. Maybe it's a factory that manufactures small plastic "nurdles," or a plant that melts and molds those pellets into beverage bottles, yogurt cups, and clamshell containers.

If you trace the process back far enough, you might arrive at a plot of land, perhaps in rural Pennsylvania, Colorado, or Texas. A mile or two below the surface is where you'll find natural gas, which contains one of the main building

The plastics industry expects its annual production will more than triple by 2050. Oceana asserts that this will take a heavy toll on our oceans, which are already inundated with plastic and suffering the effects of global warming and acidification.

blocks of plastics produced in the United States: ethane.

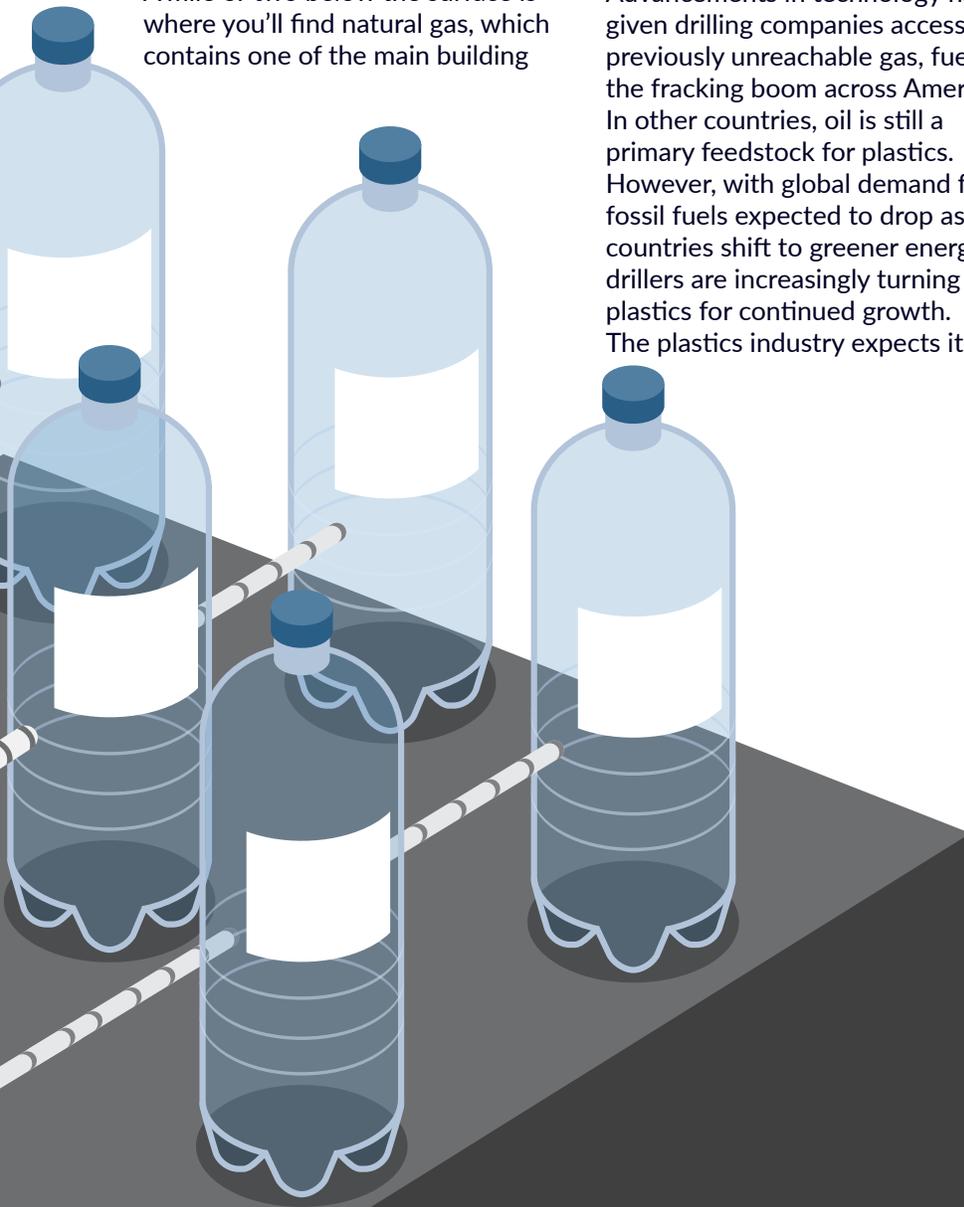
Advancements in technology have given drilling companies access to previously unreachable gas, fueling the fracking boom across America. In other countries, oil is still a primary feedstock for plastics. However, with global demand for fossil fuels expected to drop as countries shift to greener energies, drillers are increasingly turning to plastics for continued growth. The plastics industry expects its

annual production will more than triple by 2050. Oceana asserts that this will take a heavy toll on our oceans, which are already inundated with plastic and suffering the effects of global warming and acidification. Greenhouse gas emissions are associated with the entire life cycle of a plastic object, from the extraction of fossil fuels to the incineration of unrecyclable plastic trash.

In fact, the plastic industry's carbon footprint has doubled since 1995, according to a recent study led by Livia Cabernard from the Swiss Federal Institute of Technology. In 2015, plastics were responsible for 4.5% of global greenhouse gas emissions.

"To put this in context, if plastics were a country, it would be the fifth largest emitter of greenhouse gases in the world," said Christy Leavitt, Oceana's plastics campaign director in the United States. "Climate change and plastic pollution are intrinsically linked, making it impossible to fight one problem without considering the other."

Oceana's global plastic campaigns are focused on implementing changes that slow the production — and pollution — of plastics. Reducing single-use plastics is one step governments and private industry can and must take to confront climate change. ➔





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Hydraulic fracturing, or fracking, is one method of extracting the raw materials needed to produce many plastic items. In the United States, plastics are primarily produced from natural gas.

In the U.S. alone, the plastic industry's carbon footprint is expected to exceed that of coal-fired power plants by 2030, according to a Beyond Plastics report titled *The New Coal: Plastics & Climate Change*.



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Only 9% of all the plastic waste ever produced has been recycled. Of the remainder, 79% entered landfills or the natural environment, and 12% was incinerated.

'The new coal'

The production of single-use plastics in the U.S. depends in large part on the fracturing of rock formations that are hundreds of millions of years old, the extraction of fossil fuels that are rapidly driving climate change, and the pollution of fenceline communities. In the end, consumers get products that are used for just a few fleeting moments, then thrown away.

For these plastics to get from the ground to grocery stores, millions of gallons of water and a cocktail of chemicals — some of which have been found to be toxic — are injected into the ground to “frack,” or hydraulically fracture, a single well. The pressure causes the shale to shatter, allowing gas to escape and flow up to the surface. It's effective, but with a catch: The process is notorious for leaking methane, a potent planet-warming gas, into the atmosphere.

And fracking is just the first step. Natural gas has to be processed into separate components, including ethane and methane. Next, at sites called cracker plants, ethane molecules are exposed to extreme heat until they “crack,” or separate, into a highly flammable and hazardous gas called ethylene. That gas can then be processed into a resin, such as polyethylene, and turned into plastic products. Emissions are released during all of these steps — not to mention the carbon footprint associated with offshoring parts of this process to other countries.

In the U.S. alone, the plastic industry's carbon footprint is expected to exceed that of coal-fired power plants by 2030, according to *The New Coal: Plastics & Climate Change*, a report

published by Beyond Plastics, a research project at Bennington College in Vermont.

Though the links between plastic production and the climate crisis are glaring, international conferences on climate solutions seldom mention policies to curb single-use plastics. Much like ocean issues, plastic production is easy to ignore because, for most people, it is out of sight and out of mind.

Alexis Goldsmith, the national organizing director of Beyond Plastics, said their report shows that more than 90% of the emissions associated with plastics in the U.S. are released into just 18 communities. The people living in these communities are 67% more likely to be people of color, and they earn 28% less than the average U.S. household.

“The actual production of plastic is happening in a very small number of places, which makes it easy for the general population to be unaware of what it looks like to produce plastic,” Goldsmith said. “However, for those 18 communities, plastic production facilities and ethane crackers are located right on top of them.”

Places like these are sometimes called “sacrifice zones,” highlighting the systemic practice of placing polluting industries in areas where marginalized groups have been living for decades or centuries. Goldsmith said one example is a proposal from a subsidiary of Formosa, a Taiwanese company, to build one of the world’s largest plastic facilities in St. James Parish, Louisiana, which is home to historically Black communities.

St. James Parish is part of a longer strip of land along the Mississippi River that has been called “Cancer



A petrochemical plant looms over the Holy Rosary Cemetery in Taft, Louisiana, which is one of the communities in “Cancer Alley,” an area along the Mississippi River with a high density of industrial plants. In one of these communities, St. Gabriel, the cancer risk is as high as 1 in 210 cases, according to a ProPublica analysis of U.S. government data.

Alley” for its high number of oil refineries, chemical facilities, and plastic plants. Last year, human rights experts with the United Nations said Formosa’s plant, if built, would more than double the cancer risk that residents of St. James Parish face. They also expressed concerns that this facility could destroy at least four ancestral burial grounds of enslaved peoples.

“The African-American descendants of the enslaved people who once worked the land are today the primary victims of deadly environmental pollution that these petrochemical plants in their neighborhoods have caused,” the UN experts said in a statement, which urged the U.S. government to deliver environmental justice across the country, beginning with St. James Parish.

Globally, there is strong evidence that climate change — caused by plastics and other polluting industries — has the largest impact on the people least responsible for the crisis we are currently facing. According to Oxfam, people living in lower-income countries are more than four times as likely to be

displaced by extreme weather than people in wealthy countries like the United States.

“Everyone should have breathable air, drinkable water, and clean oceans,” Leavitt said. “If we want to work toward that kind of future, tackling single-use plastics is a crucial place to start.” ➤



Flaring is the intentional burning of natural gas that often cannot be transported fast enough. In 2018, flaring in the U.S. alone was responsible for 32.8 million metric tons of carbon dioxide emissions.



© Oceana/Danny Ocampo

An estimated 33 billion pounds (nearly 15 million metric tons) of plastic pollutes the oceans from land-based sources each year. This is the equivalent of dumping two garbage trucks full of plastic into the oceans every minute.

The way forward

So how do we get there? Oceana's plastic campaigns are focused on two complementary strategies: persuading global brands to choose plastic-free alternatives and urging governments to pass laws that ban or reduce wasteful plastics.

Past victories have shown that change is possible. In 2020, the government of Belize passed a law to eliminate single-use plastics from the food sector by the end of 2021. That deadline was postponed due to the pandemic, but Oceana continued to campaign for its effective implementation. In February, the Department of Environment announced that the sale of prohibited plastics would be phased out by Feb. 28, and a ban on the possession of prohibited items would be enforced starting March 31.

Peru also passed a law — largely developed by Oceana — that bans plastic bags and restricts other single-use plastics. The strongest anti-plastic pollution law, however, was passed by the Chilean

government last year. Parts of it are now in effect, and once it is fully realized, it will all but eliminate single-use plastics from the food and beverage sector and bring refillable beverage bottles back to supermarkets and stores for the first time in decades.

Oceana won a big brand partner in Brazil last year when iFood, a major food delivery service, agreed to drastically reduce the amount of single-use plastic it gives customers. It's the largest company of its kind in Brazil, and with Uber announcing it will be pulling out of the country, iFood's market share is expected to increase.

Another component of Oceana's strategy is calling on companies to increase the share of products they sell in refillable bottles, which can be returned, cleaned, and resold up to 50 times, depending on the material. In a major milestone, Coca-Cola recently announced it will make 25% of its worldwide packaging reusable by 2030. This commitment follows campaigning by Oceana, which found that just a 10% increase in the market share of refillable bottles sold in coastal countries could take 7.6 billion plastic bottles out of the oceans each year.

Looking ahead at what's to come, Oceana continues to campaign for Amazon to reduce its single-use plastic packaging. In a report released in December, Oceana analyzed e-commerce packaging data and found that Amazon generated 599 million pounds (271,700 metric tons) of plastic packaging waste in 2020. This is a 29% increase over Oceana's 2019 estimate of 465 million pounds (210,920 metric tons).

On the political front, there has been progress. Canada's government recently shared a first draft of regulations that would ban

several types of single-use plastic. Oceana's team in the Philippines is also petitioning the government to include single-use plastics on a list of non-environmentally acceptable materials, which would essentially ban wasteful plastics.

In the United States, Oceana is ramping up outreach ahead of a ballot initiative that Californians will vote on this November. If successful, it would require plastic producers to reduce single-use plastic packaging and foodware by at least 25% over the next eight years. It would also prohibit plastic foam food containers and place a fee on single-use plastic packaging and foodware while requiring them to be reusable, recyclable, or compostable by 2030.

Oceana is also petitioning the National Park Service to stop the sale and distribution of unnecessary single-use plastics within national parks. A poll commissioned by Oceana found that 82% of American voters would support this decision, with 76% agreeing that single-use plastic items have no place in national parks.

Finally, Oceana and its allies are rallying support for the Break Free From Plastic Pollution Act, which now has 124 cosponsors in the House and 15 cosponsors in the Senate. If passed, the act would phase out problematic plastics and put the onus on producers — not municipalities and ordinary citizens — to manage their waste. It would also prevent the widespread shipping of unwanted plastic trash to developing countries.

"We won't eliminate single-use plastic overnight," Leavitt said, "but policy change by policy change, we can start reducing its presence in our day-to-day lives and help ensure a better future for people and for the oceans." ■

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Where they drill, they spill

From oil leaks to greenhouse gas emissions,
the offshore drilling industry is dirty, dangerous,
and driving climate change.



Repsol, the Spanish oil company whose refinery was the site of a catastrophic spill in Peru in January, hired untrained workers to clean the beaches at Playa Cavelo. Lacking proper equipment and tools, they used dustpans, shovels, wheelbarrows, and buckets to painstakingly remove oil. “That’s like sending a firefighter into a forest fire with a water gun,” said Oceana CEO Andy Sharpless.

Sarah Bedolfe was visiting Laguna Beach in California last October, but the sunshine was overshadowed by some troubling news. Hours earlier, media began reporting an oil spill off the coast of Huntington Beach, just a short drive from where Bedolfe, her family, and friends were enjoying their day.

It was not immediately clear how much had spilled or how far the slick might spread. Bedolfe remembers thinking to herself, “How long will it be before I can swim in the ocean again?”

As a marine scientist with Oceana, she knew that oil spills were an ever-present threat, but this one felt personal. The beaches south of Los Angeles were where she learned how to surf, attended junior lifeguard camp in the summer, and got her scuba diving certification.

She watched in horror as signs reading “The water is closed” and “Do not pick up tar balls” started appearing on beaches, and as clumps of oil, dead fish, and dead birds washed in with the tide. The mayor of Newport Beach reportedly saw dolphins swimming through the oil slick, which coated 13 square miles of water (or 34 square kilometers) with 25,000 gallons (95 metric tons) of oil.

Oceana believes that when it comes to offshore drilling, the question is not whether they will spill – it’s when, where, and how much.



A closed and deserted Huntington Beach is shown following an oil spill off California last October. Local fisheries were closed for weeks.



Buckets and wheelbarrows were used in an improvised and largely unsuccessful attempt to remove oil from Peru’s beaches following a massive oil spill in January.

The affected area also includes ecologically important wetlands that are home to around 90 species of bird, which are often the first animals to be killed by oil.

This spill is not an anomaly in an industry that repeatedly fails to prevent the worst-case scenario. Just three months after Huntington Beach, a tanker spilled oil off the coast of Lima, contaminating two protected areas in an incredibly biodiverse region and triggering the “worst ecological disaster” in Peru’s recent history. This was followed closely by the explosion of an oil processing ship off the coast of Nigeria with 10 crewmembers aboard, as well as two spills in a span of three weeks off the coast of Thailand’s Rayong province.

Oceana believes that when it comes to offshore drilling, the question is not whether they

will spill – it’s when, where, and how much. In addition to marine pollution, offshore drilling generates carbon dioxide and methane emissions. These greenhouse gases contribute to climate change, which exacerbates the storms that are damaging oil and gas infrastructure and triggering more spills.

We cannot afford to wait and see which coastal community will be hit next. Following campaigning by Oceana, Belize’s government placed an indefinite moratorium on offshore oil drilling, acknowledging the havoc an oil spill could wreak on the country’s reef, fisheries, and jobs. Oceana is now working to hold fossil fuel companies accountable around the world and stop the expansion of offshore oil in the United States – before the next blowout occurs.

'The only way to protect our ocean'

Oil spills are disastrous to coastal economies and workers. In the aftermath of the Huntington Beach spill, tourists canceled hotel reservations, city organizers called off a popular air show, boaters lost access to harbors, and local fisheries closed due to health and safety concerns.

U.S. Rep. Mike Levin, who represents southern Orange County and northern San Diego County, said this is not the first spill to affect California's beaches, nor will it be the last if offshore drilling isn't stopped. He introduced legislation that would prohibit new leasing for offshore oil drilling along the Southern California coast, citing the need to cut emissions and protect coastal communities.

"Along with the 1969 Santa Barbara blowout and the Refugio Beach spill of 2015, fossil fuel companies have released more than 4 million gallons of oil into the Pacific Ocean," Levin said. "Clearly, the only way to protect our ocean and our coastal economy is to end dangerous offshore drilling activity along California once and for all. I'm proud to lead that effort in Congress, and I will keep fighting to get it done."

In the U.S. alone, there were at least 5,900 oil spills between 2010 and 2019 – an average of almost two spills per day. That figure doesn't even begin to account for all the offshore oil spills that occur around the world, many of which

go unreported and undetected. According to a recent analysis of satellite images from West Africa, the amount of oil silently spilled into the Gulf of Guinea over a 10-year span may have exceeded that of BP's *Deepwater Horizon* spill in the Gulf of Mexico. Some of the spills off West Africa's coast were reported, but others likely were not.

This is a familiar tale. Oceana asserts that Repsol, a Spanish energy company, underestimated the amount of oil spilled into Peru's ocean and squandered time that could have been spent mitigating the damage. While unloading crude oil at a Repsol refinery, a tanker was struck by powerful waves triggered by an underwater volcano eruption near Tonga. Repsol initially claimed the spill was "limited" and "contained," and that only 7 gallons of oil had leaked, according to *The New York Times*.

About 250,000 gallons later, oil has coated coastlines, killed penguins

and seabirds, and put hundreds of small-scale fishers out of work. It also threatens two protected areas that are home to Humboldt penguins, sea otters, and other iconic marine life. Daniel Olivares, Oceana's leader in Peru, said Repsol must be held accountable for this disaster.

"They continued to process oil despite dangerous conditions at sea and have since failed to take appropriate actions to address the aftermath," Olivares said. "Peru needs to reassess its reliance on fossil fuels and promote an energy transition that gradually frees us from this dirty and dangerous practice that is hurting our oceans and greatly contributing to climate change."

Around the world, citizens are demanding that their coasts and livelihoods be protected from offshore drilling. Now, it's a matter of getting governments to listen. ▶



Above, Oceana marine scientist Sarah Bedolfe speaks a press conference following the Huntington Beach oil spill. Below, workers attempt to clean up Peru's oil-coated coast.



The world's largest offshore oil spill was triggered by the explosion of BP's *Deepwater Horizon* oil rig in the Gulf of Mexico in April 2020. The disaster killed 11 people and released 4 million barrels of oil into the sea. Oceana reported that as many as 800,000 birds and 170,000 sea turtles were killed; certain populations of fish, shrimp, and squid decreased by up to 85%, and critically endangered Rice's whales (formerly known as Bryde's whales) declined by about 22%, among many other impacts.



Clean coasts aren't controversial

After the Huntington Beach oil spill, the city became the 100th community on the West Coast to pass a resolution opposing new offshore drilling. Combined, these communities represent more than 26 million people.

It isn't just "blue states" that are speaking up, either. Almost every East and West Coast governor — Democrats and Republicans alike — opposes the expansion of offshore drilling activities. Joining them are over 2,300 local, state, and federal bipartisan officials; alliances representing over 56,000 businesses; Pacific, New England, South Atlantic, and Mid-Atlantic fishery management councils; more than 120 scientists; and more than 80 former military leaders.

An Oceana analysis found that ending new leasing for offshore oil and gas in the U.S. could prevent over 19 billion metric tons of greenhouse gas emissions, or the equivalent of taking every car in the U.S. off the road for 15 years. It could also prevent more than \$720 billion in damages and protect the

3.3 million jobs and \$250 billion in GDP that depend on a clean coast economy.

Oceana campaign director Diane Hoskins said that once communities understand what's at stake, it becomes clear that offshore oil operations are a ticking time bomb.

"It's a no-brainer for folks on the coast," Hoskins said. "The threat of an oil disaster is too great, and folks don't want oil sludge washing up on their beaches."

Take *Deepwater Horizon*, for example. When BP's oil drilling platform exploded in the Gulf of Mexico in 2010, killing 11 workers and unleashing the worst oil spill in U.S. history, it disrupted marine ecosystems and devastated the coastal economies of five Gulf Coast states. Oil washed up on 1,300 miles (2,092 kilometers) of shoreline between Texas and Florida and killed tens of thousands of birds, sea turtles, dolphins, and fish. Restoration projects have been underway for the last decade and will continue for at least another decade.

Offshore oil drilling is "simply not worth the risk" of another *Deepwater Horizon*, said U.S. Rep. Kathy Castor, who represents Hillsborough County, including the city of Tampa, and heads the House Select Committee on the Climate Crisis. In both the current and previous Congress, the House passed legislation inspired by her Florida Coastal Protection Act, which would permanently ban oil drilling off Florida's coast permanently.

"Florida's beautiful beaches, our economy, and our way of life are tied to clean water and clean beaches. Oil drilling off our coast poses a direct threat to our pocketbooks and natural environment," Castor said. "Floridians have not forgotten the devastation of the BP *Deepwater Horizon* disaster. We have an obligation to act now to protect our beautiful Florida coastline, our wildlife, and our future."

Bills like these are being introduced across the country and building momentum for something even bigger: a nationwide law that would bring the expansion of offshore oil drilling to a halt. ➔



Wildlife and fisheries employees extend a net toward an oil-slicked pelican in Barataria Bay, Louisiana, two months after the BP oil spill. The pelican was later taken to a rehabilitation center.



Workers remove oil from a beach in Rayong, Thailand, following a pipeline leak in 2013. The area also suffered two more oil spills in 2022.



Volunteers don protective gear while handling the aftermath of an oil spill in Mauritius, a small island nation in the Indian Ocean that lies east of Madagascar. In July 2020, a ship carrying fuel oil struck and became grounded on a coral reef, spilling 1,000 tons of oil into the ocean and affecting the livelihoods of coastal communities that depend on a healthy ocean.



Building a better future

Creating a broad, bipartisan coalition has been central to Oceana’s offshore drilling campaign in the U.S., which rallies grassroots opposition to offshore drilling at the local, state, and federal levels. In September 2020, this culminated in then-President Donald Trump scrapping his plan to open nearly all U.S. waters to offshore drilling. Instead, he made offshore oil and gas leasing off limits in Florida, Georgia, South Carolina, and North Carolina for 10 years, as of July 1, 2022.

It was an important victory, but the work won’t end until all coastal states are protected from new offshore drilling. This goal seemed within reach when President Joe Biden took office and vowed to ban “new oil and gas permitting on public lands and waters.” The ambitious budget reconciliation bill he championed, called Build Back Better, contained a provision that would permanently ban future offshore oil and gas leasing in the Pacific, Atlantic, and Eastern Gulf of Mexico.

The bill passed through the House, but with Senate Republicans united in opposition, it needed the support of every Democrat in the Senate to make its way to the president’s desk. At the time this issue went to print, the package remained stalled.

Build Back Better isn’t the only means of achieving an offshore drilling ban, though. President



Following the Huntington Beach oil spill, attendees at a press conference overlooking Moonlight State Beach in Encinitas, California, hold signs demanding immediate action to protect U.S. coasts.

Biden has the authority to take executive action on offshore oil drilling, just as former President Trump did. Oceana is urging the Biden administration to seize the opportunity to protect our oceans and coastal communities, once and for all.

“Oceana and its allies are calling on the president to uphold his

commitment to protecting our communities, our climate, and our economy from the threat of offshore drilling,” Hoskins said.

“Our oceans can and must be a major part of our clean energy future through clean energy like offshore wind, but the time for President Biden and Congress to act is now.” ■



A worker stands atop an oil slick on Ao Prao Beach in Rayong, Thailand, following a 2013 spill.

“Oceana and its allies are calling on the president to uphold his commitment to protecting our communities, our climate, and our economy from the threat of offshore drilling.”

–Diane Hoskins, Oceana campaign director

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Our victories over the last year

With the help of its allies, Oceana has won over a dozen victories in the last 12 months

- Philippines government protects marine ecosystems and fishers from harmful coastal development projects
- International Commission for the Conservation of Atlantic Tunas protects endangered North Atlantic shortfin mako shark from fishing for two years
- Brazil agrees to publish vessel tracking data for its commercial fishing fleet
- U.S. state of California enhances protections for endangered western Pacific leatherback sea turtles
- U.S. President Joe Biden restores protections for critical marine habitat in New England
- California enacts two laws that reduce single-use plastic waste
- U.S. state of Delaware protects marine life, coast from plastic balloon pollution
- Brazilian food ordering platform iFood commits to deliver plastic-free meals by 2025
- U.S. expands critical habitat protections for endangered Southern Resident orcas
- Brazil restores Fisheries Management Councils
- California funding protects whales, dolphins, and sea turtles from deadly drift gillnets
- U.S. National Marine Fisheries Service protects over 25,000 square miles (65,000 square kilometers) of New England deep-sea corals from destructive fishing
- Belize agrees to publish vessel tracking data for its commercial fishing fleet
- U.S. state of Maryland protects marine life from choking on balloons
- Chile protects oceans from single-use plastics and mandates refillable bottles
- Chile's Environmental Court reinforces need for science-based management of southern hake following legal challenge by Oceana
- U.S. state of Washington bans polystyrene foam and limits ocean-polluting single-use plastic at restaurants

Supporter Spotlight

Masego Madzwamuse of the Oak Foundation on championing environmental polices that also protect people



Masego Madzwamuse was born in Botswana and partly raised in Zimbabwe, with her mother's side hailing from the Kalahari Desert. She witnessed the ways in which her family's culture and livelihoods depended on natural resources, so when she started a career in conservation, she was surprised to see the criminalization of local communities in the name of environmental protection.

"It struck me at the time that conservation planning responses were pushing communities to the periphery," Madzwamuse said. "Environmental planning for protected areas was behaving as though the territories were not occupied, and as if these were territories that human beings and communities did not have a relationship with."

This emphasis on protecting people — not just places — has informed much of her career as a grantmaker, policy analyst, and advocate for social and economic justice. She was the youngest person and first woman of color to lead the International Union for the Conservation of Nature's office in Botswana. Later, as CEO of the Southern Africa Trust, she helped strengthen the agency of impoverished populations.

She is now based in Geneva, Switzerland, where she leads the Environment Programme at Oak Foundation, an organization addressing social and environmental issues on a global scale. Oak was one of five organizations that founded Oceana 21 years ago, and it was instrumental in helping Oceana safeguard Belize's reef and fisheries from the pollution of offshore drilling; protect habitats from destructive bottom trawling in places like the U.S. and EU; and establish marine protected areas (MPAs) in the Philippines and Chile.

Part of Oak's global strategy aims to support campaigns that protect small-scale fishers and ocean ecosystems from the impacts of bottom trawling. Madzwamuse said Oak is currently supporting a global coalition called Transform Bottom Trawling, which aims to ban this gear in all MPAs, prevent its expansion into new areas, and strengthen exclusive fishing zones for small-scale fishers, among other key goals.

"The coalition is supported by a broad range of actors, including Oceana," Madzwamuse said. "We know Oceana has been active in this area for decades, and we are excited to have them as a partner in this work, especially in Brazil and Alaska."

Distant-water fishing and bottom trawling have had a detrimental effect on coastal communities, especially in West Africa, where Oak is supporting projects to protect the rights of small-scale fishers. Climate change is amplifying these impacts, further hurting fish stocks, livelihoods, and local economies.

"In Tanzania, 1.6 million people living in coastal areas will face devastating impacts of climate change," Madzwamuse said, citing one example. "The fisheries sector accounts for 35% of employment in rural areas. The numbers are significant when we add close to 4 million people who are involved in the value chain of the fisheries sector — processing, marketing, and others. As such, the impacts of climate change go beyond the environment; they pose an economic and development challenge."

Tanzania and many other countries depend on the ocean for jobs, food, and nutrition. Oak has supported Oceana's research on the links between fisheries and food systems — a key interest of both organizations. Last year, Oak helped fund the Blue Food Assessment, which highlights the role of aquatic animals and plants in global food systems.

"From a human health point of view, there is also not a full appreciation of the nutritional qualities of different types of blue food and how human health benefits and risks differ across these types. An understanding of this is critical for coastal communities, especially in developing countries," Madzwamuse said.

"Oak wants to see a just, equitable, and sustainable food system: one in which we rebalance meat consumption, transform the wild food supply chain, and promote a real blue economy in which seafood is allowed to recover and be harvested sustainably, ensuring the food security of coastal and Indigenous communities." ■

Ask Dr. Pauly



Dr. Daniel Pauly is the founder and principal investigator of the Sea Around Us project at the University of British Columbia's Institute for the Oceans and Fisheries, as well as an Oceana Board Member.

How is global warming affecting fisheries?

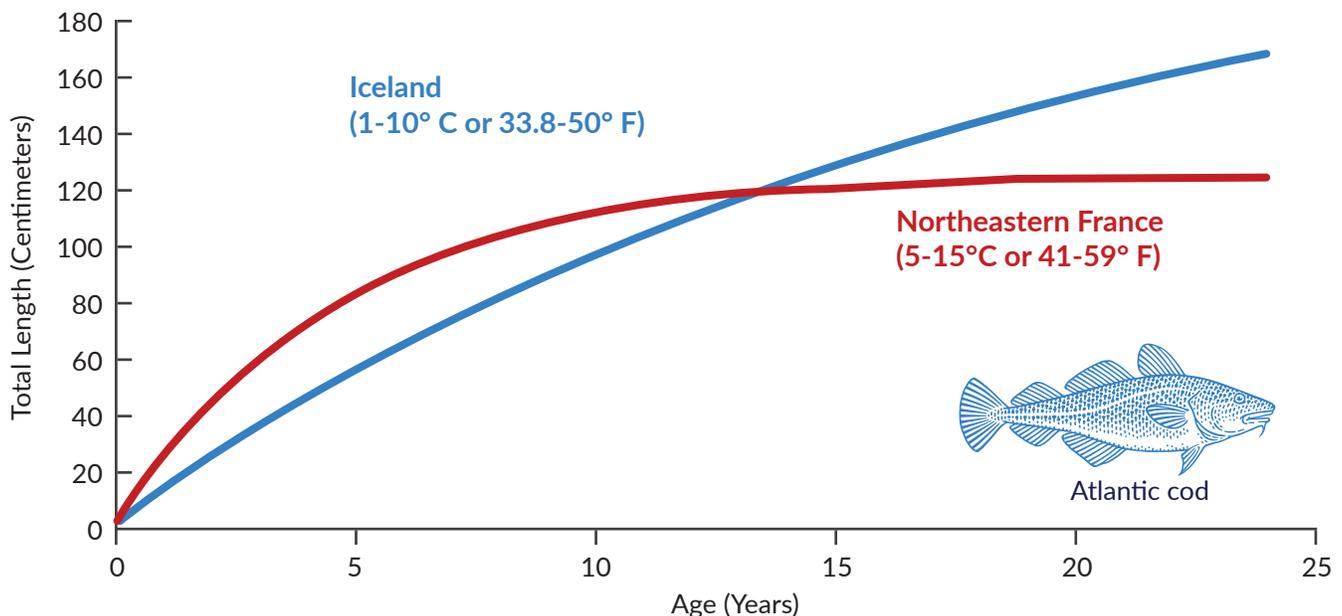
The news about the impact of global warming on the oceans – or, more precisely, of ocean warming and deoxygenation – are gradually becoming more serious and wide-ranging, so much so that a brief review of the issues involved may be helpful. Here, contrary to my earlier columns, I will add a number of scientific or other references to the summary below of these issues, so that readers get a feel of the existing literature. My excuse for being associated with several of these references is that I do work on these topics.

1. Elevated temperatures increase the oxygen requirements of fish while decreasing the oxygen content of the water¹ (see also *Oceana*

Magazine, Winter 2015). This effect is worse in oxygen-poor zones of the ocean, which are spreading². One major effect of these challenges is that the maximal size that fish and invertebrates (such as lobsters and squids) can reach declines, along with the size at which they become mature¹, which reduces the number of eggs they can produce;

2. Another major effect of increasing ocean temperatures is that fish populations (which usually occur over a range of latitudes) do well on the cool edge of their distributions and badly on the warmer edge³. Thus, rising ocean

Atlantic cod sizes in higher versus lower temperatures



The above graph – adapted from one that appears in reference 1 – shows how water temperature affects the growth and size of Atlantic cod in two different regions. In Iceland, they reach much larger sizes than in French waters.

temperatures cause fish populations to shift their distribution ranges poleward, and the fish populations in tropical waters become depleted⁴;

3. The population range shifts described above are well documented throughout the world and are known to cause many fish “stocks” that are traditionally exploited by a given country (or state) to move away from the waters of that country or state and into the waters of other countries (or states)⁵;
4. This situation can cause fisheries management problems in the best case, e.g. between South and North Carolina on the eastern seaboard of the United States, and actual conflicts or “fish wars” in other cases⁶, with the worst cases occurring in tropical countries, whose fish will tend to slowly disappear⁴;
5. Therefore, this will require arrangements to be made between countries and states to either share or swap exploitation rights. However, such arrangements must be



Atlantic cod is one of the world’s most important fisheries. British and Icelandic fishers fought “Cod Wars” over the rights to cod fishing grounds from the 1950s to 1970s, and climate change could fuel more “fish wars” as species move into new territories in search of cooler waters.

6. Unfortunately, we can also expect a recurrence of heat waves such as the one that affected the Pacific Northwest in the summer of 2021, killing an estimated 1 billion shore animals along the coast of British Columbia⁷. Heatwaves make fisheries management procedures and agreements vain.

In other words, if we want to have fish in the ocean and fisheries to

exploit them in the longer term, we need to reduce our greenhouse gas emissions urgently and massively.

This will also involve getting rid of bottom trawlers, which not only use huge quantities of fuel to drag giant nets along the seafloor, and thus emit huge amounts of carbon dioxide into the atmosphere, but also stir up the carbon that had been buried in sediments on the seafloor⁸.

If we don’t reduce our greenhouse gas emissions, we will be in trouble⁹. ■

¹ Pauly, D. 2021. The Gill-Oxygen Limitation Theory (GOLT) and its critics. *Science Advances*, 7(2), <https://doi.org/10.1126/sciadv.abc6050>.

² Levin, L.A., 2018. Manifestation, drivers, and emergence of open ocean deoxygenation. *Annual Review of Marine Science*, 10: 229-260; <https://doi.org/10.1146/annurev-marine-121916-063359>.

³ Cheung, W.W.L., V.W.Y. Lam, J.L. Sarmiento, K. Kearney R. Watson and D. Pauly. 2009. Projecting global marine biodiversity impacts under climate change scenarios. *Fish and Fisheries* 10: 235-251; <https://doi.org/10.1111/j.1467-2979.2008.00315>.

⁴ Cheung, W.W.L., R. Watson and D. Pauly. 2013. Signature of ocean warming in global fisheries catch. *Nature* 497: 365-368; <https://doi.org/10.1038/nature12156>.

⁵ Cheung, W.W.L., V.W.Y. Lam, J.L. Sarmiento, K. Kearney, R. Watson, D. Zeller and D. Pauly. 2010. Large-scale redistribution of maximum fisheries catch potential in the global ocean under climate change. *Global Change Biology* 16: 24-35; <https://doi.org/10.1111/j.1365-2486.2009.01995>.

⁶ Palacios-Abrantes, J., Frölicher, T.L., Reygondeau, G., Sumaila, U.R., Tagliabue, A., Wabnitz, C.C. and Cheung, W.W., 2021. Timing and magnitude of climate-driven range shifts in transboundary fish stocks challenge their management. *Global Change Biology*; <https://doi.org/10.1111/gcb.16058>.

⁷ <https://www.cbc.ca/news/canada/british-columbia/intertidal-animals-ubc-research-1.6090774>.

⁸ Sala, E., Mayorga, J., Bradley, D. et al. 2021. Protecting the global ocean for biodiversity, food and climate. *Nature* 592, 397–402; <https://doi.org/10.1038/s41586-021-03371-z>.

⁹ Oreskes, N. and E.M. Conway. 2014. *The Collapse of Western Civilization: A View from the Future*. New York: Columbia University Press, 2014. 105 p.

Chef's Corner

Bloody Good Oysters

By Chef Michael Smith



If you've read *The Perfect Protein* by Oceana CEO Andy Sharpless, you may remember his rule of thumb for selecting seafood: Whenever possible, shop local, choose smaller species, and opt for wild-caught species or farmed bivalves.

Depending on where you live, oysters may meet all of the above criteria. Bivalves like oysters, clams, and mussels are filter feeders, meaning they strain the water for food and leave it cleaner than they found it. Unlike other types of aquaculture, some of which are associated with pollution or the abuse of antibiotics to stave off sea lice, oysters are low-maintenance and low-impact when managed properly. No freshwater is needed to harvest oysters, and they eat microscopic plants and animals, so they don't require fishmeal or other dietary supplements that can come from overexploited species.

Wild oysters can also be sustainable. The recipe on this page comes from Chef Michael Smith, and it's served as his Inn at Bay Fortune on Canada's Prince Edward Island. The Inn uses wild oysters that are harvested from the Gulf of St. Lawrence using rake-like gear — a fishery that the Monterey Bay Aquarium's Seafood Watch guide rates as a "best choice."

As The Inn puts it: "Oysters are a big deal to us. They are an edible introduction to everything we do, representing our profound connection to the sea around us, to our fisherman, our bay, and the bounty of our feast."

So next time you shuck, rest assured that you are shucking sustainably.

Chef Michael Smith is one of Canada's best-known chefs, as well as a restaurateur, cookbook author, and TV personality. His numerous cooking shows have aired on Food Network Canada and around the world. He and his wife, Chastity, are also the proprietors of The Inn at Bay Fortune. As a sustainability advocate, he has supported various environmental causes. This includes Oceana's successful seafood fraud campaign, which helped persuade the Canadian government to develop a boat-to-plate traceability system — an important first step towards seafood transparency.

Chef Michael Smith's Bay Fortune Oysters with Bloody Mary Ice

Serves: 6 cups of Bloody Mary ice (enough for 12 dozen oysters)

Time: 30 minutes to prep, plus at least 12 hours to freeze the ice

Ingredients:

A few dozen fresh, local oysters, washed and rinsed

A 28-ounce can (796 ml) of premium whole ripe tomatoes

1 cup of your favourite vodka, aquavit, or gin

1 cup of sugar

1 teaspoon of Worcestershire sauce

1 tablespoon of your favourite hot sauce

The zest and juice of 4 large lemons

1/4 teaspoon of salt

Instructions

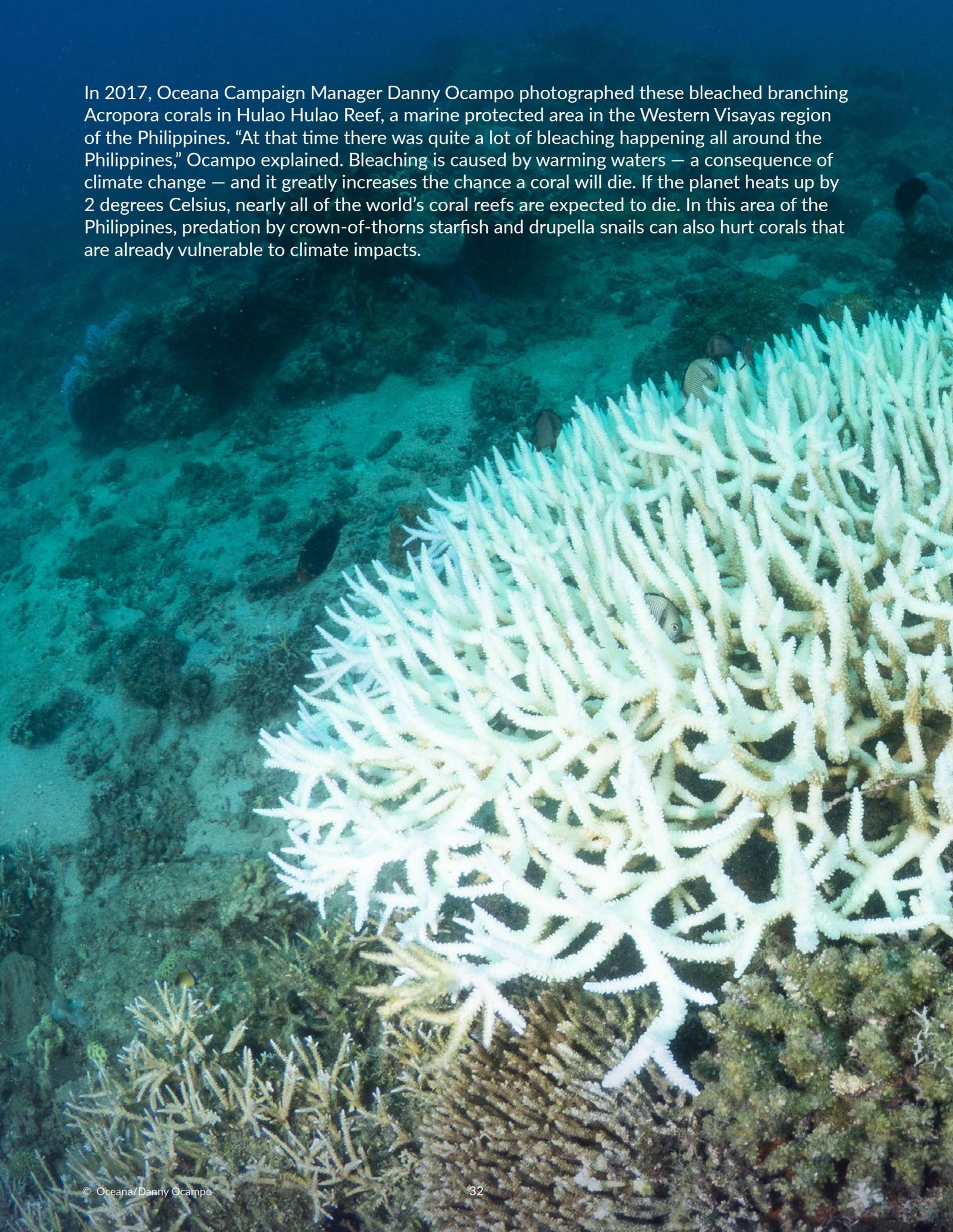
Instructions for frozen Bloody Mary ice:

In your blender or food processor, purée the tomatoes, liquor, sugar, Worcestershire sauce, hot sauce, lemon, and salt. Pour into a pair of standard mason jars. Cover tightly and freeze. Every hour or so, give them a good shake until they freeze solid. Make the ice at least a day before you plan to serve it. You can refreeze leftovers for months.

Instructions for shucking the oysters:

When the party begins, gather your fellow shuckers and carefully get to work. Think "key in the lock" and not "lever." Your knife works best when you twist it in the hinge of the oyster shell. Levering invariably breaks the shell. The liquor (the briny liquid) in the oyster is delicious and precious. Try not to spill even a single drop. On a festive platter, steady the shucked oysters as you go by alternating upside-down empty top shells with fully laden bottoms. Just before serving, top each oyster with a chilly dollop of the frozen Bloody Mary ice.

In 2017, Oceana Campaign Manager Danny Ocampo photographed these bleached branching Acropora corals in Hulao Hulao Reef, a marine protected area in the Western Visayas region of the Philippines. “At that time there was quite a lot of bleaching happening all around the Philippines,” Ocampo explained. Bleaching is caused by warming waters — a consequence of climate change — and it greatly increases the chance a coral will die. If the planet heats up by 2 degrees Celsius, nearly all of the world’s coral reefs are expected to die. In this area of the Philippines, predation by crown-of-thorns starfish and drupella snails can also hurt corals that are already vulnerable to climate impacts.





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A nudibranch (*Facelina auriculata*) dons a technicolored coat in the North Sea, near the United Kingdom's Farne Islands. Oceana launched a North Sea expedition in 2017 as part of a larger effort to strengthen the existing network of marine protected areas there. Oceana is now expanding its presence in the UK in response to Brexit.



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