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Renowned fisheries scientist and Oceana Board Member Dr. Daniel Pauly has authored or co-authored over 1,000 scientific articles that are referenced around the world.

OCEANA Protecting the World's Oceans

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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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CEO Note


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Dr. Daniel Pauly, his wife Sandra, and Oceana Board Member Valarie Van Cleave at Oceana's recent SeaChange event

Dear Friends:

Dr. Daniel Pauly is on the cover of this issue of our magazine, and if you do not know who he is, you will be pleased to meet him here. His research on the oceans has made him the most frequently cited ocean scientist in the world. His life, extraordinary for the scope of his research and insight (his career included long periods living and studying in Indonesia and the Philippines, followed by his current home in Canada), is even more amazing when you learn about his youth. He was born in France, the child of a Black American soldier and French mother, and adopted into a family in Switzerland. At 16, he dropped out of high school and moved to Germany to work in a Lutheran asylum, followed by a city hospital. Only later did he return to school, studying in the evening and working odd jobs during the day (including at a paint factory and brush factory) to support himself.

How does a person from such a disadvantaged start rise to be one of the most important people in the history of the world's oceans? You can get insight into the answer from his biography, *The Ocean's Whistleblower: The Remarkable Life and Work of Daniel Pauly*, just published this year. You can also see his interview, first published in *Scientific American* and republished here on page 26.

Dr. Pauly is one of Oceana's longest-serving board members, and we have benefited from his scientific advice and strategic sensibility since our earliest days. Joining him for the first time on our board at our most recent board meeting is Antha Williams, who someday will also intrigue a biographer's interest. She leads the Environment Program at Bloomberg Philanthropies, and for six years she has been a key adviser and strategic force behind our "Save the Oceans, Feed the World" campaigns. Her expertise includes a deep knowledge of grassroots campaigning gained from personal experience as a campaigner and trainer of organizers. You can learn more about her in the "Supporter Spotlight" section of this issue on page 25.

The combination of a world-class marine scientist and a world-class grassroots campaigner and strategist on Oceana's board is a vivid illustration of the mix of skills that enables us to win national-scale ocean conservation policy outcomes. Our campaigns require us to confront powerful and self-interested companies that are overfishing and polluting our oceans. Winning policy battles against them, even in countries led by notable anti-conservation presidents – Brazil's Bolsonaro, to mention one – requires us to be effective at science, law, communications, direct advocacy, and grassroots organizing. Happily, we rise to that difficult challenge, as our newest set of policy and corporate victories – including remarkable ones in Chile and Brazil controlling plastic pollution – make clear. Enjoy reading about them in this magazine on page 10.

Reporting policy outcomes to you in every issue of our magazine, published thrice a year, is one of the great pleasures of serving as Oceana's CEO. I never forget that these victories are possible only thanks to the generous contributions of our backers, and as a reader of this magazine, you are likely one of them. Thank YOU!

Together, we are steadily winning the policies that will restore an abundant ocean.

Sincerely,

Andy Sharpless
CEO
Oceana

For the Win

Cup corals and a sea star were spotted a mile beneath the ocean's surface in Heezen Canyon, located off the coast of the Northeast United States.

U.S. fisheries agency protects New England deep-sea corals from destructive fishing gear

The U.S. National Marine Fisheries Service issued a final rule to protect over 25,000 square miles (64,700 square kilometers) of New England deep-sea corals from bottom trawls, a destructive fishing method that is comparable to clear-cutting a forest. The agency implemented a "freeze the footprint" strategy developed by Oceana to limit bottom trawling to areas where it has already occurred, preventing its expansion into new areas.

These protections apply to Georges Bank and the Gulf of Maine, covering an area roughly the size of Vermont, New Hampshire, Connecticut, and Rhode Island combined. This brings the total protected deep-sea coral areas in the U.S. Atlantic – many of which Oceana and its allies campaigned for – to nearly 86,000 square miles (222,700 square kilometers). This is important because deep-sea corals can be long-lived and slow-growing. They provide essential habitat to fish and other marine animals, making them – and countless other species – vulnerable to disruptions along the seafloor.

"Fishing gear like bottom trawls and dredges act like bulldozers on the ocean floor, destroying centuries' worth of coral in only a few seconds," said Oceana Senior Campaign Manager Gib Brogan. "Protecting deep-sea corals is a win-win for both fishermen and healthy oceans. Healthy corals will help sustain robust fisheries and ocean ecosystems for years to come."

Oceana continues to identify and protect deep-sea coral areas from destructive fishing methods while also maintaining robust fisheries.

Belize agrees to publish vessel tracking data for commercial fishing fleet

Belize is the most recent country to publicly share its vessel tracking data on the Global Fishing Watch (GFW) platform, helping authorities detect and address illegal, unreported, and unregulated (IUU) fishing when it occurs. The agreement – signed by Oceana, GFW, and the Belize High Seas Fisheries Unit – resulted from Oceana's collaboration with the government to make fishing on the high seas more transparent. This agreement will allow anyone to monitor Belizean-flagged commercial fishing vessels in near real-time.

"This is a demonstration of Belize's fervent commitment to transparency and good governance," said Janelle Chanona, Oceana's leader in Belize. "The use of GFW technology is cost-effective, efficient, and enhances vessel monitoring."

Belize has taken decisive steps to improve the monitoring and regulation of its flagged vessels on the high seas since 2012, when the European Union rebuked Belize for failing to address IUU activities. The bloc banned Belizean imports the following year to keep illegally caught seafood out of European markets.

In response, the Government of Belize made sweeping changes, including regaining control of the national ships registry and passing legislation that created the Belize High Seas Fisheries Unit to regulate high seas fishing. Oceana continues to campaign for government action against illegal fishing.


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Tuna are a common species caught by Belizean vessels.

Chilean court rules in favor of science-based management for overfished southern hake

An environmental court in Santiago, Chile, ruled that a government decision to increase the global fishing quota for southern hake was illegal. The Undersecretariat for Fisheries and Aquaculture (Subpesca) increased the quota for the year 2019, even though southern hake have been overexploited in Chile's waters since 2013. The Ministry of Economy refused to invalidate this increase, ignoring the advice of an independent scientific committee, so Oceana took matters into its own hands and filed a legal complaint.

The 2nd Environmental Court of Santiago ruled that Subpesca had failed to justify the quota increase and had flouted precautionary measures that were put in place to protect marine ecosystems. The decision was precedent-setting in two ways: First, it confirmed that environmental courts have jurisdiction over fisheries management plans. Second, it reinforced the need for science in fisheries decision-making.

After ensuring that the environmental court's ruling is enforced, Oceana will continue to campaign for the improved management of southern hake across Chile.

Brazilian government restores Fisheries Management Councils

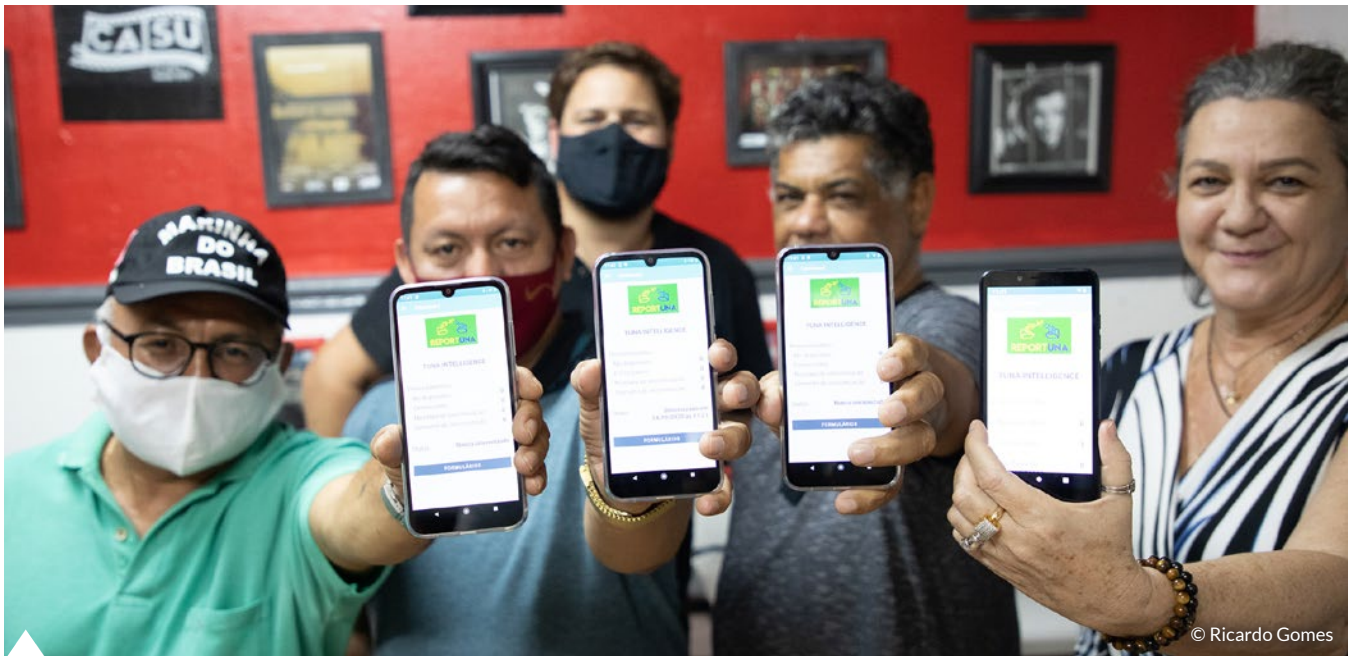
Following campaigning by Oceana, Fisheries Management Councils (FMCs) were restored in Brazil after the government created a new framework for fisheries decision-making called "Rede Pesca Brasil."

FMCs, which the government previously terminated in 2019, support a transparent and participatory decision-making process for Brazil's fisheries.

The 10 FMCs will allow the government, scientists, fishers, and non-governmental organizations to discuss important topics including fishing quotas and destructive forms of fishing like bottom trawling.

"Oceana has been campaigning for broader reform within Brazil's fisheries policy to make the management framework more stable," said Martin Dias, Oceana's science director in Brazil. "The government's decision to restore FMCs is important progress toward that goal."

News + Notes



Fishers in the northeastern Brazilian state of Rio Grande do Norte attended the launch of OpenTuna, a website that Oceana and Global Fishing Watch helped develop. For the first time, it publicizes the catch data and vessel monitoring system data for Brazil's tuna longline fleet.

Fishing transparency platform that Oceana helped develop wins international sustainability award

OpenTuna, an initiative that Oceana and Global Fishing Watch helped develop to track Brazil's tuna longline fleet, won the sustainability category of this year's international Tuna Awards. Hosted by the National Association of Canned and Fish Manufacturers in partnership with the Spanish Ministry of Agriculture, Fisheries, and Food, the award recognizes initiatives that promote innovation in the global tuna industry, which supports about 6,000 jobs in Brazil alone.

The OpenTuna website (opentuna.org) publicizes catch data and vessel monitoring system data for Brazil's tuna fleet, helping to make the industry more transparent. It was developed in cooperation with fishing companies and launched earlier this year.

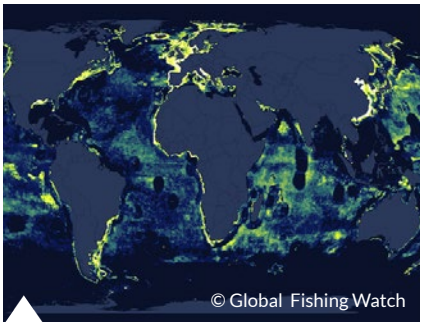
Oceana report: Majority of vessels not complying with speed limits in areas meant to protect endangered North Atlantic right whales

Most vessels along the U.S. Atlantic Coast are speeding in areas designed to protect critically endangered North Atlantic right whales, according to an Oceana analysis of vessel speeds from 2017 to 2020.

In one area, stretching from Wilmington, North Carolina, to Brunswick, Georgia, nearly 90% of vessels ignored mandatory speed limits. Even the area with the "best" compliance rate failed to meet expectations, with only about two-thirds of vessels slowing down for mandatory speed restrictions near Cape Cod, Massachusetts.

Vessel strikes and fishing gear entanglements are the two leading causes of death for North Atlantic right whales, whose population has been reduced to less than 340 whales. Studies have shown that slowing a vessel's speed to 10 knots (about 11.5 miles per hour, or 18.5 kilometers per hour) can reduce a North Atlantic right whale's risk of death by up to 90%. In 2008, the National Oceanic and Atmospheric Administration (NOAA) enacted speed zones to help protect these whales, but Oceana's report highlights the shortcomings of these measures.

"If NOAA is serious about its mandate to save North Atlantic right whales from extinction, speed zones must be designated in the areas where whales currently are, and they must be enforced," said Oceana Campaign Director Whitney Webber. "Until speed zone rules are mandatory and violators held accountable, North Atlantic right whales will continue to die on NOAA's watch."



Global fishing activity in 2020 is shown in yellow.

Oceana launches vessel-tracking tool to curb illegal fishing

Using data from Global Fishing Watch, an independent non-profit founded by Oceana, SkyTruth, and Google in 2015, Oceana created a new tool to keep tabs on vessels that have histories of unlawful fishing activities. The tool uses automatic identification system (AIS) data to map the movements of vessels that have been listed on illegal, unreported, and unregulated (IUU) vessel lists by regional management bodies. Dubbed the IUU Vessel Tracker, it lets users see where these IUU-listed vessels have apparently been fishing or transiting fish over a one-month period.

Though there are more than 160 vessels on the list, only two are visible because the rest are not broadcasting an AIS signal. AIS devices automatically broadcast vessel identity and location information (such as coordinates, speed, and direction) as often as once every few seconds. In order for the IUU Vessel Tracker to reach its full potential, though, governments must make transparency within the fishing sector a priority.

"These vessels are now on notice – we are watching them," said Beth Lowell, Oceana's deputy vice president for U.S. campaigns. "To increase the number of vessels visible on this map, governments should mandate AIS for all fishing vessels so they can be monitored and held accountable for their actions at sea."

To use this tool, visit usa.oceana.org/IUUVesselTracker.

U.S. House-passed federal spending bill blocks expansion of offshore drilling

A federal spending bill approved by the U.S. House of Representatives would prevent the Bureau of Ocean Energy Management from expanding offshore drilling in fiscal year 2022. If enacted, it would prohibit offshore drilling in unleased areas of the Atlantic, Pacific, and Arctic Oceans, as well as the Eastern Gulf of Mexico.

It would also stop the bureau from granting permits for seismic airgun blasting in these areas. Seismic airguns are used to find oil and gas reserves beneath the seafloor. In the process, they create one of the loudest human-made sounds in the ocean, which can disturb, injure, or even kill marine animals.

Meanwhile, new offshore drilling is still being proposed. Five days before Hurricane Ida made landfall in Southern Louisiana over the summer, the Department of the Interior announced that it would hold a lease sale for offshore drilling in the Gulf of Mexico, covering approximately 80 million acres. The U.S. Coast Guard has since received over 2,000 reports of pollution, including multiple oil spills caused by the storm.

On the West Coast, Oceana has been monitoring the effects of a devastating pipeline rupture off the coast of Huntington Beach, California, that released roughly 25,000 gallons of crude oil into the ocean in October.

Oceana mapped the locations of ecologically diverse and economically valuable ocean resources that are most susceptible to oil contamination in that area. Deep-water corals, endangered blue whales, migrating gray whales, kelp forests, and many other species are at risk.

Oceana continues to campaign for permanent protections from offshore drilling in the United States.

An Oceana analysis found that ending new leasing for offshore oil and gas could prevent over 19 billion tons of greenhouse gas emissions as well as more than $720 billion in damages to people, property, and the environment. Additionally, it will safeguard the U.S. clean coast economy, which supports around 3.3 million jobs and $250 billion in GDP through activities such as tourism, recreation, and fishing.

Q+A

Dr. Jessica Gephart is an Oceana Science Advisor and an Assistant Professor of Environmental Science at American University in Washington, D.C., where she studies the seafood trade and its impact on food security and environmental conservation. Gephart's research has also informed Oceana's Save the Oceans, Feed the World initiative. Recently, she led a study that compared the environmental impact of various aquatic foods. She and 17 other scientists – including fellow Oceana Science Advisor Dr. Christopher Golden – calculated the greenhouse gas, nitrogen, and phosphorous emissions, as well as the freshwater and land use, of "blue foods." Blue foods as a category include capture products (or "wild" foods from the ocean and inland waters) and aquaculture products (or farmed fish and shellfish). In a recent conversation with Oceana, Gephart discussed this paper, which appeared in *Nature* journal in September as part of the global Blue Food Assessment led by the Stockholm Resilience Center, Stanford University, and EAT.

Oceana Science Advisor Dr. Jessica Gephart leads new study on 'blue foods'

What unanswered questions did you want to address in your *Environmental performance of blue foods* paper?

JG: Our aim was to fill an important information gap by generating standardized estimates of the environmental performance of aquatic foods, focusing on the major environmental pressures of food systems: greenhouse gas emissions, nitrogen and phosphorus emissions, and land and freshwater use. This allowed us to look at which blue foods were already performing well and identify improvement opportunities.

Your study assessed 70% of the world's blue food production. What accounts for the other 30%?

JG: With over 2,500 different species of aquatic animals and plants caught or cultivated for food around the world, there are many for which there is insufficient data. For example, despite our efforts, we were not able to identify sufficient, representative fuel use data for inland fisheries. We were also unable to include freshwater crustacean aquaculture due to limited data. There are other groups that are included in our analysis, but have few observations compared to global production, such as edible seaweeds and carps. These all represent priority areas for future research.

How does your study differ from past research on blue foods?

JG: One thing that sets our study apart from many studies that look at emissions and resource use across the food system is that we include both aquaculture and capture fisheries, and we provide greater species resolution, whereas many past studies either did not include blue foods at all or presented them as "seafood." Our work therefore provides greater insights across the vast diversity of aquatic food production. Another major advancement is that we did not simply average the emission and resource use estimates of different studies, but instead extracted the underlying data and ran it through a standardized model. This is because individual studies have different purposes and therefore make modeling decisions that heavily influence the results, often preventing these studies from being able to be compared fairly.

Based on your results, what are some of the lowest-impact wild and aquaculture foods on the market, and what makes them so sustainable?

JG: It is important to note that our analysis does not look at final impacts, such as biodiversity loss, but only focuses on major emissions and resource use. For the five stressors considered, capture fisheries use negligible land and water and emit little nitrogen and phosphorus, but result in a range of greenhouse gas emissions. However, small pelagic fishes, such as sardines, generate lower greenhouse gas emissions than all fed aquaculture groups. Farmed seaweed and bivalves, such as mussels, result in the lowest emissions and resource use of all blue foods, while among farmed finfish and crustaceans, silver and bighead carps have the lowest greenhouse gas, nitrogen, and phosphorus emissions, and salmon and trout use the least water and land.

How does wild seafood compare to land-based animal proteins in terms of the environmental impacts you assessed?

JG: We compared blue food performance to industrial chicken performance, as this is often considered the most efficient terrestrial animal-source food. Many blue foods, such as sardines, cods, tunas, salmon, and bivalves, already outperform chicken on these five environmental metrics, on average, with chicken performing similarly to tilapia.

What do you want policymakers to take away from this paper?

JG: When steering food production toward greater sustainability, it is not only critical to consider blue foods alongside terrestrial foods, but also to look across the diversity of blue food production. Many seafood systems provide blue foods at relatively low environmental costs, and for others there are opportunities to reduce environmental pressures. For aquaculture, improving feed conversion ratios – that is, the amount of feed required to grow a certain weight of fish – can reduce the emissions of some fed fish by more than half.

Meanwhile, capture fisheries already have negligible freshwater and land use and emit little nitrogen and phosphorus, but there are great opportunities to lower the greenhouse gas emissions by improving management, prioritizing less fuel-intensive gear, and investing in renewable energy for fishing fleets. While this points to a promising role for blue foods in sustainable diets, decisionmakers must consider their local context to ensure sustainable stock management and avoid impacts on aquatic biodiversity. ■

“Small pelagic fishes, such as sardines, generate lower greenhouse gas emissions than all fed aquaculture groups.”

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Smaller fish like sardines (pictured fleeing striped marlin) are often a sustainable choice because they have a low carbon footprint and require no freshwater or land to harvest.

Chile and Brazil take on Big Plastic

Recent examples from two coastal countries in South America show that policy change and corporate commitments are achievable means of reducing single-use plastic pollution.

Imagine that every minute of every day, two dump trucks full of single-use plastic drive onto the beach, back up to the shoreline, and raise their beds, sending a torrent of trash into the ocean. This is essentially what's happening around the world, with nearly 15 million metric tons of mismanaged plastic – or 33 billion pounds – polluting marine ecosystems each year.

Compared to other continents that consume ample amounts of plastic, South America isn't the world's worst offender. Nevertheless, key players in two South American countries are taking bold action to curb single-use plastics. Earlier this year, the Chilean government passed a law that will practically eliminate single-use plastics from the food and beverage sector, while also bringing refillable beverage bottles back to supermarkets and stores for the first time in decades.

Less than three months later and on the opposite coast, the Brazilian company iFood – a market leader in online food ordering and delivery – agreed to drastically reduce the amount of single-use plastic it gives customers. In doing so, it makes takeout a more environmentally-friendly option for millions.

These victories would not have been possible without campaigning by Oceana and its allies, including Plastic Oceans Chile, the Clean Seas Campaign of the United Nations Environment Program (UNEP) in Brazil, and the thousands of people across both countries who spoke out and demanded plastic-free options.

Oceana fights plastic pollution in two ways: by campaigning for plastic-free policies and by persuading powerful companies to reduce their environmental impact. Well-designed policies require businesses to take responsibility for their plastic waste, and corporate-led changes attract public attention and make it easier for lawmakers to pass meaningful plastic legislation.

Single-use plastic foodware from restaurants, such as clamshell containers and disposable utensils, are common items found on Chile's beaches.

When people think about the effects of plastic on marine life, turtles usually come to mind. However, seabirds and many other animals also die or become seriously injured after eating or becoming entangled in plastics.

These complementary strategies, proven successful in Chile and Brazil, could convince other countries and companies that it's possible to meaningfully reduce plastic waste and protect oceans.

Fries and a shake, sans plastic

Chile's new law will all but eliminate the estimated 23,000 metric tons of single-use plastic that restaurants, cafes, and other food establishments discard each year in Chile.

The law will achieve this by requiring dine-in eateries to phase out all disposable tableware – including plastic cutlery, cups, straws, expanded polystyrene (such as Styrofoam) containers, and more – by 2024. As for delivery and take-out orders, customers must be offered foodware that is plastic-free or made of certified plastic. The latter material is sometimes needed for containers that hold liquids, but it must be made from renewable raw materials (as opposed to fossil fuels) and must be able to break down in a home composting bin or industrial composting facility.

While most restaurants already provide reusable utensils to dine-in customers, throwaway plastics are ubiquitous in fast food settings, explained Catalina Sapag,

a Santiago-based science and campaigns coordinating manager for Oceana. That won't be true for much longer, though.

"Three years from now, if you go to a food court in a shopping center or sit down to eat at a McDonald's in Chile, all the foodware they give you will be reusable," Sapag said. "I personally wouldn't have been able to imagine this."

The law also requires stores to display, sell, and receive refillable beverage bottles. Larger supermarkets must comply by next February, followed by smaller stores by 2023. By 2024, at least 30% of beverages displayed in stores across Chile must come in refillable bottles – and that percentage will keep increasing.

In short: Refillable bottles will become widely available across Chile at a time when drastic reductions in single-use plastics are needed most. A report by Oceana found that just a 10% increase in the global share of beverages sold in refillable bottles would take as many as 7.6 billion bottles out of the ocean.

This may seem like a massive shift in consumer culture, but for Chile, disposable soda bottles are a far newer concept than refillable ones.

"When I was little, I remember going to a supermarket and there was always a refillable machine where you could bring your soda bottle back. There used to be at least one in every supermarket," Sapag said. "That's no longer the case, but the law will change that."

Coca-Cola Andina – the third largest Coca-Cola bottler in Latin America – has shown that refillable bottle schemes can be successful in the 21st century. It sold nearly 45% of its products in refillable bottles in Chile during the 2019 fiscal year.

In addition to reducing single-use plastics and prioritizing refillables, Chile's new law contains an important enforcement aspect: Anyone has the power to report businesses breaking the rules. Establishments can be fined between $64 and $1,379, depending on the number of illegal disposable products used by businesses that serve food, or the number of days a market or grocery store failed to offer refillable bottles. The severity of the fine will also be determined by their economic capacity and whether or not it's their first offense.

No national plastic law in the world contains such comprehensive mandates, including a requirement to prioritize reusable bottles over disposable ones. Previously, this type of legislation had only been successful at the citywide level in places like Berkeley, California and Hobart, Tasmania.

The law is unique not only because of its breadth, but also because of the widespread support it received. Oceana and Plastic Oceans met with the beverage and bottling sector, the plastics industry, and lawmakers across the political spectrum to convince everyone of its merit.

"Just as we're experiencing the climate change crisis, we are experiencing a more silent one, which is plastic pollution in oceans," said Senator Guido Girardi, who backed Chile's single-use plastic law. "This makes it very important to reduce its production, and one of the ways is to put an end to plastics that are non-essential, such as those regulated by this law."

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Before World War II, Coca-Cola primarily sold its beverages in returnable and refillable bottles. That system has all but disappeared in the U.S., but still continues in varying forms in many countries, including Chile and Brazil.

"Just as we're experiencing the climate change crisis, we are experiencing a more silent one, which is plastic pollution in oceans." **–Senator Guido Girardi**

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Think back to the last time you ate at a food court (like this one shown in Santiago, Chile), grabbed takeout, or ordered from a food delivery service. How much plastic did you receive with your food? Chile and Brazil are proving that fast food doesn't have to take such a heavy toll on the environment.

> *"In Brazil, when you think about environmental problems, people are usually concerned about deforestation in the Amazon. Ocean-related issues are still very low on the list of things that people think about."*
>
> **–Lara Iwanicki, Oceana campaign manager in Brazil**

Delivering a plastic-free promise

In South America, Brazil has the largest population and land area, longest coastline, and heftiest plastic waste problem (with 325,000 metric tons of the stuff entering the ocean each year, according to an Oceana report on Brazil's plastic footprint). Fittingly, for its first corporate-focused plastic campaign in Brazil, Oceana set its sights on several food delivery platforms, including the largest in both Brazil and Latin America: iFood.

Oceana and UNEP launched an ambitious campaign to reduce waste in the food delivery sector that hinged on persuading the public to put pressure on companies. This was no small feat in a country where plastics are pitted against many other pressing concerns.

"In Brazil, when you think about environmental problems, people are usually concerned about deforestation in the Amazon," said Lara Iwanicki, an Oceana campaign manager in Brazil. "Ocean-related issues are still very low on the list of things that people think about."

So what changed? For many Brazilians, the COVID-19 pandemic brought this issue home. In 2020, when "stay inside" became a rallying cry, spending on food delivery apps in Brazil increased by 187%, according to a survey by the startup Mobills Labs.

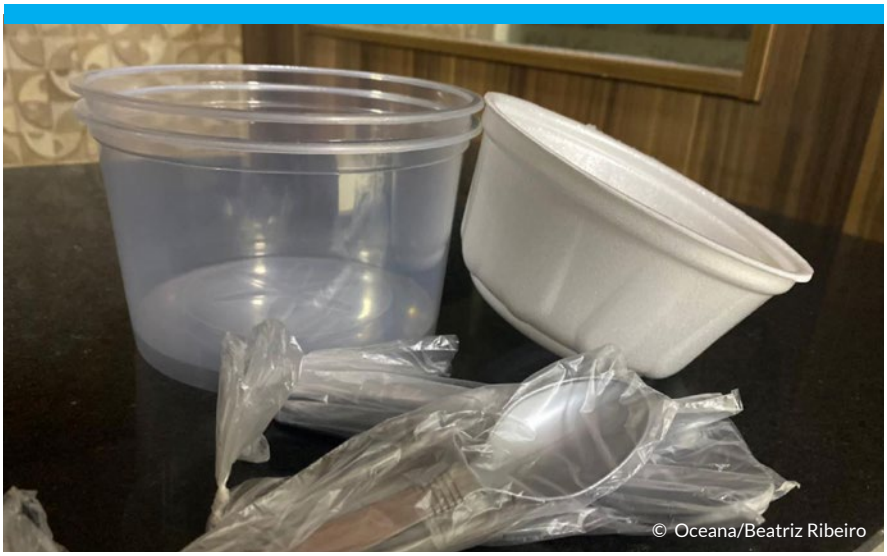
These companies were delivering millions of orders each month, and customers started to notice the plastic forks, spoons, and containers piling up.

After Oceana and UNEP launched their #DeLivreDePlástico campaign – a play on words meaning both "plastic delivery" and "free from plastic" – they received a swell of support from Brazilians who wanted a change. A poll commissioned by Oceana and UNEP found that 72% of consumers want to have their food delivered without single-use plastic items.

A critical moment in the campaign occurred when the participants of *Big Brother Brasil* – a reality TV show watched by millions – received an on-air delivery rife with iFood-branded plastic packaging. Dismayed, viewers took to social media to vent their frustration.

Plastic bottles and other trash are shown on a beach in Salvador, a coastal city in northeastern Brazil. Of the single-use plastic items that Brazil produces each year, 13% are products such as plates, glasses, cutlery, plastic bags and straws.

> *"This corporate victory is a big win for the oceans: It will eliminate 1.5 billion single-use plastic items per year. It also sends an important message to policymakers, demonstrating the feasibility of national legislative reductions."*
>
> **– Ademilson Zamboni, Oceana's leader in Brazil**



According to a poll commissioned by Oceana and UNEP in Brazil, 15% of respondents have chosen not to order food from a delivery service because they were uncomfortable with the amount of plastics provided.

The company listened to feedback and sent a second order to *Big Brother* the following week, but once again received flak because the paper takeout containers were lined with plastic.

Building on this momentum, Oceana and UNEP quickly circulated an online petition calling for delivery apps to grant customers a plastic-free option, and more than 20,000 people signed their names. The campaign received celebrity support from Oceana Board Member and world-record-holding big wave surfer Maya Gabeira, UNEP's Clean Sea ambassador and actor Mateus Solano, and actress and environmental activist Laila Zaid.

Behind the scenes, Oceana and UNEP were also negotiating with iFood to agree on specific and measurable reductions in plastic waste. Ultimately, they succeeded: In August, iFood agreed to phase out plastics in several stages.

By the end of December 2021, customers will have to tick a box at checkout if they want disposable cutlery because it will no longer be provided automatically. Reduction targets for disposable bags and packaging will be developed by March 2022, and iFood will increase its share of reusable packaging beginning in 2023.

Lastly, iFood will ensure that 80% of its deliveries do not include napkins, plastic cutlery, plates, cups, and straws by 2025.

"This corporate victory is a big win for the oceans: It will eliminate 1.5 billion single-use plastic items per year," said Ademilson Zamboni, Oceana's vice president in Brazil. "It also sends an important message to policymakers, demonstrating the feasibility of national legislative reductions."

Plastic pollution doesn't just float on the ocean's surface. Studies show that 99% ends up in the deep sea, where it can wreak havoc on fragile coral reefs and other marine life.

The plastic-free movement is picking up

In the U.S. alone, nearly 1,800 animals, including endangered Hawaiian monk seals (pictured here), swallowed or became entangled in plastic between 2009 and early 2020, according to Oceana.

These commitments follow on the heels of several victories won by Oceana and its allies. In 2018, the government of Belize passed a law to eliminate single-use plastics from the food sector by the end of 2021. Not long after, Peru passed a law – largely developed by Oceana – that bans plastic bags and restricts other single-use plastics, including straws.

Across the U.S., various local and state governments have passed laws that limit the sale and distribution of single-use plastics and ban activities that harm animals, including intentional balloon releases.

Most recently, the state of California passed two laws: one that curbs restaurants' use of single-use plastic, and another that removes the requirement that single-use bottles be crushed for recycling, allowing them to be washed and refilled by beverage producers.

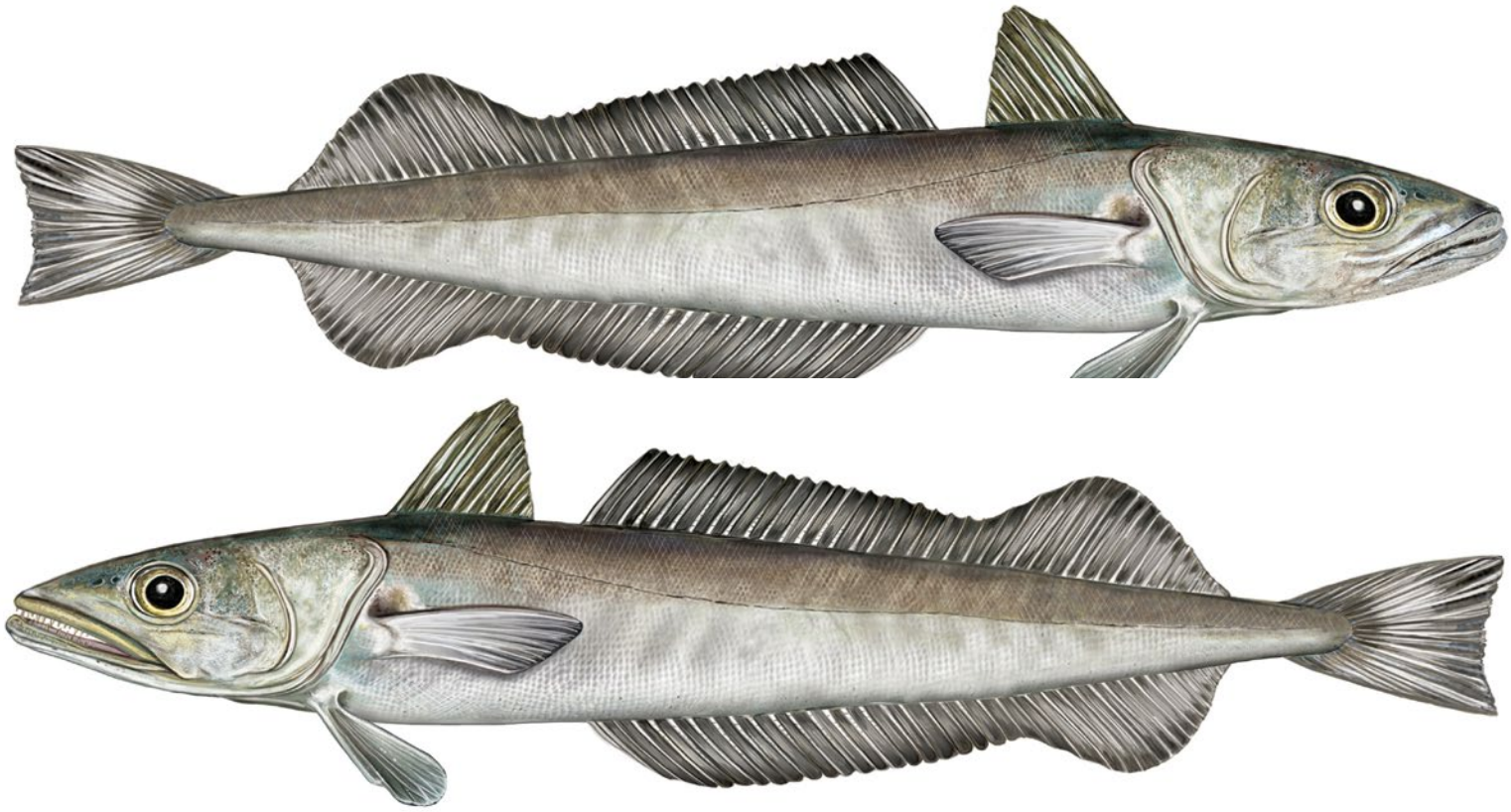
A major milestone in Oceana Canada's campaign to ban unnecessary single-use plastics occurred this past May, when the federal government classified plastic items as "toxic" under the *Canadian Environmental Protection Act*, giving it the authority to start regulating the material.

Oceana's team in the Philippines is also urging the National Solid Waste Management Commission to issue a list of non-environmentally acceptable products that includes single-use plastic, which would essentially ban the material across the country.

The work doesn't end there, though. Oceana's plastics campaign spans the globe, with teams working in eight countries plus the European Union to substantially reduce plastic pollution.

Chile and Brazil have already made measurable progress towards this goal. It's high time for the rest of the world to follow suit.

A tale of two hake



What can separate stocks of the same species teach us about bringing fish back in Europe? A lot, according to scientists.

If you've ever ordered seafood in Spain, there's a good chance you've had European hake. Called *merluza* in Spanish, this relative of cod and haddock is a strong contender for the nation's favorite fish. Its filets are mild-flavored and flaky, pairing perfectly with roasted vegetables or pan-fried clams.

Whether or not it's sustainable, though, depends entirely on where it's coming from. Formerly overfished northern hake – a specific European hake stock found in the northern Bay of Biscay, Celtic Seas, and Greater North Sea – are once again thriving under a robust fisheries management plan. Hake in the Mediterranean Sea, on the other hand, are fighting for their lives.

"Hake is the most overexploited species in the Mediterranean, which is the world's most overfished sea," said Javier López, Oceana's director of sustainable fisheries campaigns in Europe. "In some cases, the fishing mortality is four times above sustainable levels, which is unacceptable."

Though the geographic distance between these stocks is relatively small, their management plans are worlds apart. To understand what went wrong with the management of hake in the Mediterranean, it helps to understand what went right in the northern Atlantic.

A record-breaking biomass

European hake (scientific name: *Merluccius merluccius*) is a species of groundfish that appears not only in Europe's waters, but also those off Northwest Africa's. It supports thousands of jobs across the Black Sea, Mediterranean, and open Atlantic, from as far south as Mauritania to as far north as Norway.

© Shutterstock/Miguel AF

"In Spain and Southern European, we eat everything from the sea, but hake is quite important in terms of culture," said Javier López of Oceana.

This fishery's economic and cultural significance is strongly felt in the European Union (EU), where it's among the top 15 species caught and top 10 species consumed. This is especially true for France, Spain, and the United Kingdom (UK), whose fleets catch the most northern hake by volume.

The story of hake hasn't always been rosy, though. Like many other groundfish, northern hake were overfished to the brink of collapse in the '90s, with their biomass (or collective weight) hovering near or below the safe biological limit for about a decade. This reference point is a dangerous threshold to cross because it diminishes a fish's ability to reproduce and carry on its species.

The European Union stepped in at a crucial moment, adopting a recovery plan in 2004 that reversed the stock's trajectory. Science-based limits on how much hake could be caught, and what types of fishing gear could be used, alleviated some of the pressure and gave hake a chance to recover.

As a result, the stock's biomass hit a record high in 2016, weighing in at more than 307,000 metric tons. This is more than three times higher than 1980 levels, which were the highest biomass on record prior to 2004. In this case, a higher biomass means there are more fish to catch.

Then, in 2019, Oceana supported the EU's adoption of a new mixed fisheries management plan that covers nearly 40 different stocks – including northern hake – and requires them to be maintained at maximum sustainable yield (MSY). MSY refers to the maximum amount of fish that can be removed from the ocean while still allowing

the population to replenish and sustain itself in the long-term. In other words, scientists can calculate the amount of fishing that will ensure a healthy hake population while still allowing fishers to keep catching hake indefinitely.

"The goal and the target of the new management plan is even more ambitious because it is in line with MSY," López said. "Nowadays, the scientific knowledge is much better and the management standards are higher – and it seems like it is working for now."

Med still in the red

European hake are no longer considered a species of concern by the International Union for Conservation of Nature (IUCN), but at the regional level, Mediterranean hake stocks were listed as vulnerable to extinction due to overfishing.

In 2017, Paul Fernandes, marine biology professor at the University of Aberdeen in Scotland, led a study that assessed the status of 115 fish stocks across Europe, including 39 in the Mediterranean Sea. The takeaway? Not a single one of the Mediterranean stocks could be classified as "sustainable," including all 12 Mediterranean hake stocks.

It's not uncommon to see undersized juvenile hake on the menu in Spain and France, compounding the problem and making it even harder for Mediterranean hake to replenish their population.

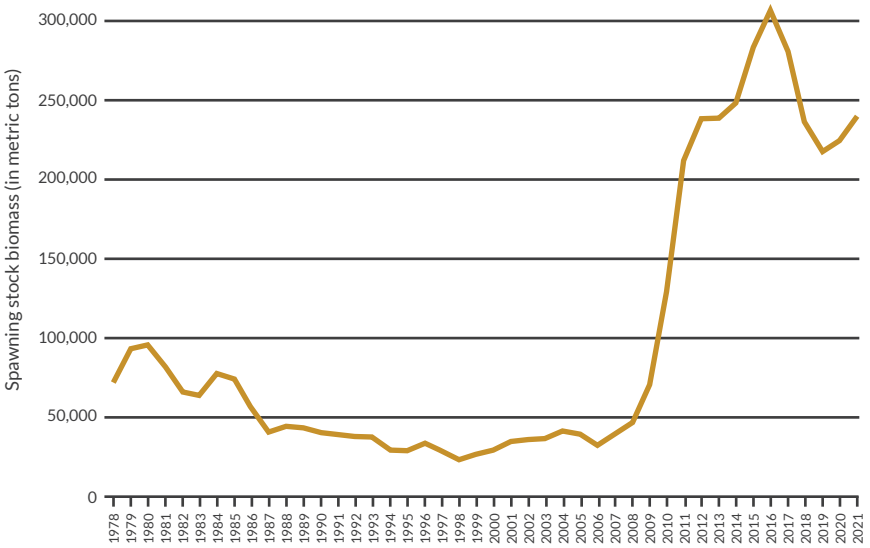
"They have a tradition of eating small fish, small hake. How those populations are still alive with the fishing mortality that they have is just amazing," said Fernandes. "[Mediterranean hake] are sort of hanging on, and they've been subject to high exploitation rates for decades."

Part of the problem is poor enforcement, Fernandes said. Northern Europe's fishing fleet is fairly small and concentrated, so it's easier to check whether fishers are complying with regulations. Compare that with a country like Greece, which has thousands of small vessels scattered across hundreds of islands, and it becomes clear that enforcing fisheries policies in the Mediterranean is more difficult.

According to López, the other problem is that Mediterranean hake didn't have a recovery plan until 2019, and even then, its scope was limited. While the management of northern hake is focused on the big picture – regulating the total allowable catch, or TAC, of all northern hake in accordance with scientific advice – management in the Mediterranean is focused on fishing effort restrictions at a smaller scale.

These restrictions apply to certain aspects of the fishery, such as the number of days per week that a fisher can catch hake. Notably,

Northern hake



Not long after a recovery plan was enacted in 2004, the biomass (or collective weight) of northern hake began to rise.

> *"Spain and France have a tradition of eating small fish, small hake. How those populations are still alive with the fishing mortality that they have is just amazing."*
>
> – Marine biologist Paul Fernandes

Mediterranean hake have been showing small signs of recovery, but it's far too early to celebrate. Some Mediterranean hake stocks are so precarious that even a 30% reduction won't be enough to ensure the species' recovery.

© Oceana/LX

Fishers bring hake and forkbeard fish to port in Cudillero, Spain. Seafood is a major component of Spanish cuisine, but not all of it is sustainable.

this does not preclude a fisher from catching the same amount of hake in four days that they previously caught in five, López said. Oceana is campaigning to fix this problem, but member states in the Mediterranean are reluctant to implement catch limits.

Fishing effort restrictions for certain species in the western Mediterranean equate to a fishing reduction of 30% over five years. Mediterranean hake have been showing small signs of recovery, but it's far too early to celebrate. Some Mediterranean hake stocks are so precarious that that even a 30% reduction won't be enough to ensure the species' recovery, López said.

The Food and Agriculture Organization of the United Nations (FAO) takes a similar position, recommending improved management plans for hake and other depleted species in a recent report. Earlier this year, Oceana urged fisheries ministers to make good on their previous promises to fight illegal fishing and protect vulnerable ecosystems and essential fish habitats in the Mediterranean and Black seas.

The success of northern hake has proven it's possible to restore fisheries to their former abundance – often in just 10 years or less – but the longer policymakers wait to take action, the harder it gets.

Mediterranean hake's failure to rebound is largely due to shortcomings in its management plan, according to Oceana.
© Shutterstock/Edward Westmacott

A worker holds up a freshly caught European hake at a fish market in Porto, Portugal.

Nowhere to go but up

According to scientists, northern hake have become so plentiful and so dense that they've outgrown their usual territory, prompting them to swim further north in search of space. This has led them to areas they haven't frequented since the 1950s, including the uppermost part of the North Sea.

"We don't have estimates of the population's status at that time [in the 1950s], so we don't know whether the population was at a similarly high level or higher, but we do know that there were large catches taken from the northern North Sea, and there were a lot of hake in the North Sea at that time," Fernandes said.

This means that northern hake are not expanding into new areas; they are merely returning to old ones as their population surges. While hake's increased abundance is an encouraging sign, its renewed presence in the northern North Sea has highlighted the failings of fisheries management in that region. According to Fernandes, quotas for Northern European countries were modeled after fishing patterns in the 1970s. This was the period when hake were absent from many of the areas they've since returned to, so the quotas for hake were – and still are – small.

When fishers in these areas catch haddock, cod, and whiting, for which they have a quota, they also catch hake, for which they have little or no quota. Considering that these are mixed fisheries with multiple species managed under one plan, the current framework limits opportunities for fishers to catch other species when hake turn up in their nets.

This European hake was spotted in the São Vicente Canyon area of Portugal during an Oceana expedition in 2011. The species is mostly found at depths of up to 300 meters (more than 980 feet).

"The high increase in biomass in the north has produced a mismatch between the biomass and catch quotas available," said senior researcher Dr. Dorleta Garcia of AZTI, a marine and food technology research institute in northern Spain. "This has led to an increase in discards in some countries."

When the quota for hake is reached, the entire mixed fishery should theoretically be closed to prevent the quota from being exceeded and the fish from being discarded, but this has not occurred. Instead, illegal discards persist, potentially posing significant risks to the status of the stock.

"Decisive steps must be taken to introduce robust controls and remedy the current poor implementation of the discard ban," López said.

Other possible solutions could include updating the hake quotas in those countries or devising better technology and fishing gear. Some researchers are using industry data to map out "hot spots" of various species, with the ultimate goal of enabling fishers to access this information in real-time.

Fernandes is working on a "Smartrawl" capable of capturing underwater images to determine the size and species of an animal. This information is then passed to a gate which allows the trawl to be opened or closed, bringing wanted species in or letting unwanted species out. Once developed, the Smartrawl has the potential to reduce bycatch of hake as well as other species, including endangered charismatic megafauna like sharks, sea turtles, and dolphins.

In the meantime, Oceana continues to monitor northern hake, advocating for catch limits in line with the best available science. Though northern hake are a success story – proving that effective management can bring fish back – the work is never finished. Fisheries management is a constant battle of ensuring that catch limits adapt to any population or environmental changes.

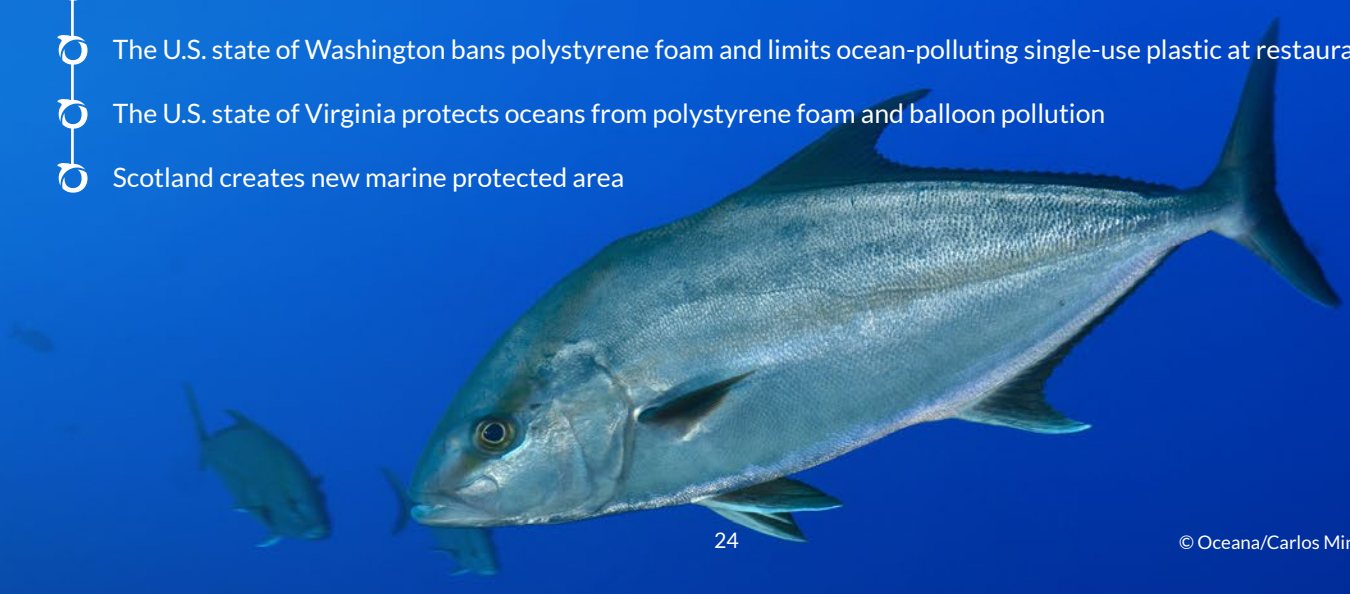
"We are always trying to push the EU and UK to implement the highest possible standards, and sometimes we succeed," López said. "After all, when you have access to the best scientific advice in line with MSY, why not use it?" ■

OCEANA

Our victories over the last year

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

- U.S. state of California enhances protections for endangered 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
- U.S. expands critical habitat protections for endangered Southern Resident orcas
- California funding protects whales, dolphins, and sea turtles from deadly drift gillnets
- Brazil launches online logbooks for its fisheries catch data
- Chile prevents the construction of harmful salmon farms in Patagonia
- Brazil agrees to publish vessel tracking data for its commercial fishing fleet
- Brazilian food ordering platform iFood commits to deliver plastic-free meals by 2025
- Brazil restores Fisheries Management Councils
- Chile's Environmental Court reinforces need for science-based management of southern hake following legal challenge by Oceana
- In the U.S., the 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
- The U.S. state of Maryland protects marine life from choking on balloons
- Chile protects oceans from single-use plastics and mandates refillable bottles
- The U.S. state of Washington bans polystyrene foam and limits ocean-polluting single-use plastic at restaurants
- The U.S. state of Virginia protects oceans from polystyrene foam and balloon pollution
- Scotland creates new marine protected area



Supporter Spotlight

Antha Williams of Bloomberg Philanthropies joins Oceana's Board of Directors

Antha Williams is one of Oceana's newest board members. However, she is no stranger to Oceana. As the Environment Program lead at Bloomberg Philanthropies, Williams has been a leading force behind Oceana's Save the Oceans, Feed the World campaign since the foundation began funding Oceana six years ago.

"Oceana stands out as the only global organization dedicated solely to protecting our ocean, and it is uniquely aligned with the Bloomberg approach," Williams said. "Neither of our organizations shy away from controversy, both support advocacy and hard-hitting litigation, and we applaud Oceana for standing up for the ocean community in court and through public campaigns."

One of the cornerstones of Bloomberg Philanthropies is, "If you can't measure it, you can't manage it," and Oceana shares that guiding principle. In 2014, Oceana became part of Bloomberg Philanthropies' Vibrant Oceans Initiative, which has protected over 8 million square miles of ocean through a combination of evidence-based conservation and data-driven policies. Starting with work in Brazil, Chile, and the Philippines, the partnership expanded in 2018 to also include Oceana's work in Peru and the United States.

One current focus of the Vibrant Oceans Initiative is to protect corals that are most likely to survive the effects of climate change. If carbon emissions are not curbed, scientists predict that up to 90% of coral reefs will die by 2050 due to ocean warming and acidification. Williams said this bleak possibility makes it even more imperative to protect resilient reefs. Recently, thanks to support from Bloomberg Philanthropies and Sobrato Philanthropies, Oceana led an expedition to Panaon Island in the Philippines and is now campaigning to protect the area's pristine reefs.

The Vibrant Oceans Initiative is one of many programs under Williams' direction. The Environment Program at Bloomberg Philanthropies leads U.S. and global efforts to fight climate change, drive the transition to clean energy, and preserve important ocean ecosystems.

One top priority of both Bloomberg Philanthropies and Oceana is getting the U.S. to permanently ban offshore drilling. This is an especially timely goal, considering the devastating oil spill that occurred off the coast of California in October.

"It's frustrating that much of the Gulf of Mexico, and even parts of California, are already leased for drilling, which makes it harder to stop," Williams said. "This is despite the fact that we are seeing the market move toward renewables and away from fossil fuels. In the end, we have to show that it's possible to get off fossil fuels, to move to renewable power and electric vehicles, and to stop the flood of fossil fuels used to make plastics. The public wants it to happen, so I remain hopeful."

Prior to her leadership roles in philanthropy, Williams worked as a campaigner and organizer, directing large-scale voter protection efforts. It was through this experience that Williams said she learned the value of grassroots organizing, which informs her work to this day.

"There's lots of focus on lobbying for top-down change, which plays a key role, but we've seen just as much critical change occur from bottom-up, impassioned advocacy in communities on-the-ground, and we're dedicated to supporting those efforts," Williams said. "With environmental campaigns, we're all about elevating the voices of local communities, which actually complements our national policy and advocacy work."

In addition to serving on Oceana's Board, Williams also sits on the Board of Directors of the C40 Cities Climate Leadership Group, European Climate Foundation, League of Conservation Voters, and Oceans 5.

Ask Dr. Pauly

How can we bring fisheries back from the brink?

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.

The below conversation between journalist Richard Schiffman and Dr. Daniel Pauly was published by 'Scientific American' in September. It has been lightly edited for republication.

—

Overfishing is wiping out commercial fisheries, and climate change is making certain fish species smaller. But Daniel Pauly says the world can still save endangered fisheries. Pauly is called "the ocean's whistleblower" in a new biography, for good reason. The French-born marine biologist, who teaches at the University of British Columbia, spent much of the past quarter-century documenting the swift decline of fish within the seas. Now he says that warming waters are depleting the oceans of oxygen that fish need to grow to their full size.

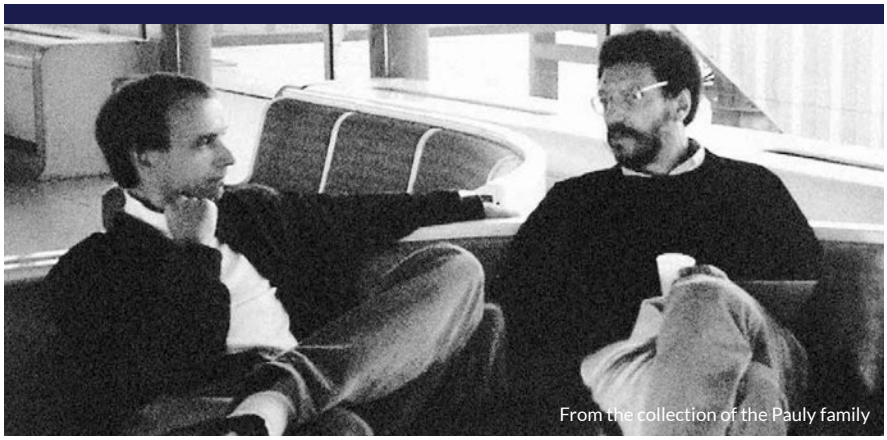
In an interview with *Scientific American*, Pauly addresses whether fisheries are doomed or if there is still hope for sustaining them. He speaks about how his early experiences working in Southeast Asia convinced him that fisheries science had become a captive of the fishing industry, promoting industrial methods such as bottom trawling that devastated underwater ecosystems and threatened the livelihoods of small-scale artisanal fishers.

From the personal collection of Jay Maclean

Daniel Pauly is pictured during a diving trip to Tubbataha in the Philippines in 1992.

From the collection of the Pauly family

He grew up in La Chaux-de-Fonds, Switzerland.



Rainer Froese and Daniel Pauly are pictured at an airport in Paris in 1991. Together, they worked with a team of researchers to create FishBase, a comprehensive database of thousands of fish species.

Pauly is credited with helping to develop a new kind of science, one that pays more attention to the ocean's ecology and what fish need to thrive. He coined the term "shifting baseline syndrome" to describe how scientists and others forget the biological abundance of earlier times – thinking that today's meager fisheries are somehow the norm. This "collective amnesia," as he describes it, has led researchers and regulators to routinely misjudge the magnitude of the ecological disaster taking place in the seas.

In his most influential research project, Pauly assembled hundreds of scientists to create a global database to document the impact of fisheries on marine ecosystems. The team found that governments had routinely underestimated their catch and that fisheries everywhere are close to collapse. If current trends continue, Pauly warns, the world's oceans will end up as marine junkyards dominated by jellyfish and plankton.

Nevertheless, the outspoken fisheries scientist says that solutions are readily available. If nations close the high seas to fishing and end wasteful government subsidies, fish populations would rebound, he claims. And of course, the world also ultimately needs to get climate change under control. Pauly is currently researching how global warming drives fish stocks toward the poles and makes fish smaller. The new biography of him is *The Ocean's Whistleblower: The Remarkable Life and Work of Daniel Pauly*, by David Grémillet (Greystone Books). It was released on September 21.

You were born in Paris, the son of a Black American GI and a white Frenchwoman, and grew up in Switzerland, far from the ocean. Through some twists and turns, you became an employee of the German government in Indonesia in the 1970s, where you worked on a research trawler as part of a project to introduce industrial fishing to the country.

Yes, I regret that now. Trawlers in Southeast Asia devastated reefy habitat – giant sponges and soft coral that structured the habitat. [Trawling] transformed a productive, diverse ecosystem into a muddy mess. We simply didn't know what we were doing. We didn't even have the words to describe this kind of ecological destruction at the time. Trawlers [also] encouraged the capture of fish for export. There was little left over for local fishers. In Indonesia, I encountered such poverty among the fishers. They were going out with three or four men and coming back with one kilogram of fish. Introducing industrial trawling into such an environment was madness.

Trawling allowed the fishing industry to exploit places that had earlier been unreachable.

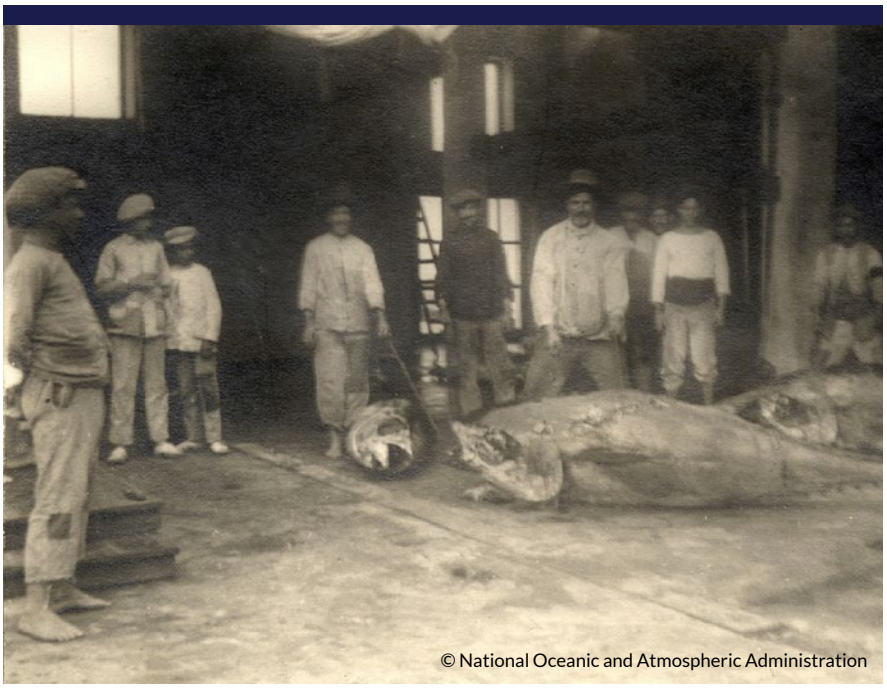
That's right. This expansion of fisheries has eliminated all the protection that fish had naturally from us. Depth was a protection, cold was a protection, ice was a protection, rocky grounds were a protection. With successive technological developments, we can now go everywhere where the fish were protected before.

After working in Southeast Asia, you moved on to West Africa and Peru. Offshore fleets were putting small-scale fishers out of business. You've written that this is not just an economic problem, it is a health problem.

Up to 50 percent or more of the protein consumed in many poor regions comes from fish. In these countries, most of the calories come from carbs, from corn, cassava and rice. The only way these carbs are nutritionally efficient is by adding a little fish. Also, the micronutrients, the vitamins, the various minerals and metals such as zinc – all of this comes from fish.

Your work with a team of researchers in a group that you founded, the Sea Around Us, was critical in establishing the fact that industrial fishing was rapidly wiping out local fish stocks all over the globe. You basically created a massive data set that proved that we were fishing unsustainably. How did you pull that off?

Reconstructing the catch of every country from 1950 to 2018 was an immense job that involved about 300 researchers. We came up with a much higher catch than was being reported officially. Many countries had a completely distorted view of their own fisheries: recreational fisheries were not included in the catch totals; illegal fisheries, local artisanal fisheries were not included. We found that catches have been sharply declining globally since 1996.



Tuna fishers are pictured in Spain in 1910. Many fish have declined in both number and size over the decades.

Some scientists initially argued that fishing was not to blame but rather natural fluctuations in fish populations. It reminds me of the argument that climate change is a natural phenomenon, so we don't need to worry about it.

I was about to say that!

Nations also denied that they were engaged in overfishing.

I remember talking to the minister of fisheries in Australia. She said fish in Australia are being exploited sustainably. But you look at the statistics, and the catch there is going down, down, down. So what can she possibly mean? In Canada, the catch of cod has collapsed to 1 percent or 2 percent of its value in the 1950s. If a country can somehow maintain such a meager catch, they call it "sustainable exploitation," but the bar is set so low that it is meaningless.

You've said that if human destruction of the seas continues unchecked, they will end up as marine junkyards dominated by jellyfish and plankton.

It's already happening. Dead zones without oxygen are spreading; fish are getting smaller and smaller both because of being caught and also because of global warming.

Not only is this an ecological disaster, but in the long run, it is not in the interest of the fishing industry either.

I have described the form of fishing where you devastate one area, then move on to another, as a Ponzi scheme. As long as you find new suckers, you can go on. Bernie Madoff [a New York City–based financier who was convicted of running the largest Ponzi scheme in history] got money from investors and then paid them back with the money he got from new investors. That works so long as you find new investors, right? But ultimately you run out of investors – you run out of new areas to fish – and the whole thing collapses.

Your latest research has focused on the impact of climate change on fish size. Can you talk about that?

The big problem for us mammals is getting enough food to maintain our temperature. Fish don't need to maintain their own temperature, so basically they eat much less. Their problem is getting enough oxygen rather than eating enough food. Fish breathe through gills. As the fish grows, its volume grows faster than the surface of its gills. Also, as water grows warmer, it contains less oxygen, and the fish themselves get warmer. And as fish get warmer, they need more oxygen. So you have a perfect storm – the fish are squeezed. The result is that they are getting smaller and smaller.

Fish are also moving to cooler waters.

Fish have to stay at the same temperature that they are adapted to because their enzyme system functions best at a certain temperature. So as the seas warm, it means that South Carolina and North Carolina will be in conflict because the South Carolina fish stocks have moved to North

Carolina. These migrations are occurring on a grand scale. In the tropics, the fish that leave are not replaced by anything else.

You say that we should stop fishing on the high seas to help fish stocks recover.

Fishing in the so-called high seas generates only about 5 percent or 6 percent of global catches, mostly tuna. The central part of the oceans are actually a desert. The tuna are like camels in the Sahara. They swim from one oasis to another. Tuna is not a fish that poor people in the developing world eat anyway, so limiting their catch would have no impact on food security.

If the high seas account for such a small percentage of the catch, how will closing them to fishing save fish populations?

Fisheries existed intact for hundreds of years because we couldn't go after the last fish. But now we can. And you not only catch the fish you want but kill everything else in the process – there is a huge bycatch. If you close the high seas to fishing, you give fish a sanctuary where they can replenish themselves. Research shows that no-fishing sanctuaries help to rebuild stocks, some of whose individuals will then move into coastal waters, where they can be caught.

International negotiations are currently underway at the World Trade Organization about getting rid of subsidies given by most rich countries to their industrial fishing fleets. Are you hopeful?

I'm somewhat hopeful. I have researched subsidies myself. Many fishers nowadays don't fish for fish. They fish for subsidies. They couldn't operate without massive subsidies. So, yes, eliminating them would greatly reduce overfishing. Actually, fisheries issues are not difficult or intractable problems. We need to fish less and to create sanctuaries where fish populations can revive.

Throughout your career, you've done science that aims to help people. What is your advice to young scientists?

My advice is to choose problems that are global and not local. We need to attack problems that feed into policy. And we need solutions that can work throughout the world.

You have a reputation as a workaholic, as someone who has tackled ambitious scientific problems. Was there extra pressure on you to prove yourself in a way that a white scientist would not have to?

Yes. But the way that I experienced that is somewhat different. What motivated me is that I was living a privileged life and was working with colleagues in the developing world who were as smart and well educated as I was but were paid one tenth of what I was getting. I felt a responsibility to the people I was working with and the countries I was working in.

Some universities are trying to increase participation in the sciences among students from minority groups. Are they doing enough?

The problem is these kids don't trust themselves to be scientists. The vision for minority students from poor backgrounds is to become a doctor or lawyer but not a scientist, because frankly, scientists don't make money. What you understand when you are actually in science is that most people in the profession love what they do. They can't believe that they are being paid to do it. Science, in its own way, is as creative as the arts. Impoverished young people don't know that. They don't know that science is fun and that you don't have to be a robot or a nerd to do it. ■

From the personal collection of Deng Palomares

Pauly's research has taken him around the world. Here, he's shown in a restaurant in the Philippines.

New York Gala

On October 4, leaders in philanthropy, business, and entertainment gathered at a historic sailors' haven in New York City to support Oceana's mission and to celebrate 20 years of winning policy victories that restore ocean abundance. The event raised $1.5 million in support of Oceana's global campaigns and featured poetry readings, live music, dancing, and an auction.

Actors, activists, and Oceana Board Members Ted Danson and Sam Waterston shared remarks via video, and Oceana CEO Andy Sharpless delivered a keynote address emphasizing the ocean's role in human and planetary health.

"What does saving our ocean have to do with saving our planet? Everything," Sharpless told attendees. "Oceana's job is to save the ocean to help feed the world. And feeding the world from a rebuilt, abundant ocean helps save us from climate change."

He described the low carbon footprint of nutritious seafood and provided examples of depleted fish populations around the world that came roaring back once management policies were put in place. Sharpless also highlighted one of Oceana's newest campaigns to

Co-Chair Dede McMahon with Oceana Board Members and Co-Chairs David and Susan Rockefeller

Holly DeSantis and Patrick Banno, both from Konica Minolta, and Co-Chair Kay Fernandez

Ahmad Shahriar of Blancpain, Oceana Board Member Susan Rockefeller, Zaneta Norvel and Andrew Handschin of Blancpain, and Oceana CEO Andrew Sharpless

All photos by Bob Rich

Oceana Board Members Susan Rockefeller and Antha Williams with Maya Lin and Anita Conti


Ocean Council Member Sutton Stracke


Co-Chairs Jim and Kelly Hallman


Vice-Chairs Stephen and Angela Kilcullen


Matthew Puzio and Daria Blyskal

stop the threat of pollution from a potential salmon farm off the U.S. coast of Maine.

Oceana Board Member Susan Rockefeller, who co-hosted the event with her husband and fellow Board Member David Rockefeller, Jr., thanked Oceana's supporters – especially those who stayed with Oceana during the tumult of 2020 caused by the COVID-19 pandemic.

"It's because of you that in just 20 years Oceana has led the way with science and advocacy-based campaigns to deliver impact that counts for our oceans – securing 225 victories and protecting nearly 4 million square miles of ocean and counting," she said.

The Gala was co-chaired by Susan and David Rockefeller, Jr., Kay and Frank Fernandez, Kelly and Jim Hallman, Melony and Adam Lewis, Dede McMahon, Regina K. and John Scully, Oceana Board Member Jean Weiss and her husband Tim Weiss, and Linda and Larry Weiss.

The event's vice-chairs included Barbara Cohn, Sydney Davis, Angela and Stephen Kilcullen, Andy Sabin, Samriti and Scott Seltzer, Leslie and Robert Zemeckis, and Mercedes Zobel.

Corporate partner attendees included Ahmad Shahriar, Zaneta Norvel, and Andrew Handschin from Blancpain, Jonathan Propper from Dropps, Larry Weiss from Atlantic Business Systems, Michael DeLellis and Erin Healey from Nautica, and Patrick Banno from Konica Minolta. Oceana's exclusive watch partner, Blancpain, was the presenting partner, and the auction featured items donated by Soneva, Shangri-La Hotels and Resorts, Fairmont Sonoma, and Six Senses Ibiza.

The night ended with spirited dancing fueled by the high-energy performance of the Rakiem Walker Project. ■

SeaChange

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Celebrity attendees at SeaChange included Brooklyn Decker, June Diane Raphael, January Jones, Billy Magnussen, Oscar Nunez, Ursula Whittaker, Sally Pressman, Christina Ochoa, Austin Nichols, and Aimee Teegarden.

On October 23, nearly 300 supporters gathered in Laguna Beach, California to celebrate Oceana's 20th Anniversary and honor Academy Award–winning actor and activist Laura Dern. The 14th annual SeaChange Summer Party, held at a hilltop estate overlooking the Pacific Ocean, raised more than $1.8 million for Oceana's ongoing campaigns and brought attention to the vulnerability of coastlines to oil pollution.

The October oil spill off Southern California that closed beaches and fisheries was top-of-mind for many guests and speakers, including event Chair and Oceana Board Member Elizabeth Wahler. "The latest spill along our coast is just part of the looming catastrophe waiting just offshore," Wahler said.

"As bad as this recent spill here was, it could have been worse. You could be dealing with many more wells and many more leaky pipelines," Andrew Sharpless, CEO of Oceana, told attendees. "With your help, Oceana stopped new oil and gas drilling plans – proposed by presidents from both parties. We turned 17 governors in coastal states – again, both Republicans and Democrats – into allies in our battle. Thanks to you, this is now a bipartisan and winning message."

Sam Waterston, chair of Oceana's board, reminded guests that by supporting Oceana's proven science-based campaigns, they are helping to protect and restore the world's oceans.

"Your love for the ocean is what is going to save her now." Waterston said. "Our faith is that the future

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SeaChange Co-Founder Valarie Van Cleave, Chair Elizabeth Wahler, and Vice-Chair Jeff Blasingame

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Oceana Board Member Ted Danson, Mary Steenburgen, honoree Laura Dern, and Board Chair Sam Waterston

Ursula Whittaker and Oscar Nunez

January Jones

Billy Magnussen

Oceana Board Member Jean Weiss and Tim Weiss

Honoree Laura Dern

Karen and Bruce Cahill

will bend to good sense, that something apparently impenetrable and impossible will give way to persistence. Oceana has proved that faith to be true."

SeaChange host Ted Danson, a founding Oceana board member, told attendees: "Twenty years ago, we set out to change the way that we all treat the world's oceans. It sounded far-reaching at the time, and yet here we are – just 20 years later – and we're doing it." His wife, Mary Steenburgen, introduced event honoree Laura Dern.

"When I get afraid for our future with the overwhelming worries of climate change, you know what I do? I remember what the ocean can do for us, if we just give it a little bit of help," said Dern. "Restore the ocean and we drive the future to a better, healthier, happier, and more beautiful place – a legacy to our kids and grandchildren and godchildren that they deeply deserve."

The success of this year's SeaChange was made possible by Wahler serving as chair, along with Oceana Board Member Valarie Van Cleave as chair emeritus and Jeff Blasingame as vice chair. Generous support came from various distinguished businesses and philanthropists as well as event corporate partners including presenting partner Blancpain, Biossance, BMW and the Southern California BMW Centers, The Grand Daphne and Burgess Yachts, Conscious Step, Dropps, E&J Gallo,

Christina Ochoa and Cru Ennis

Lindblad Expeditions, Moroccanoil, Nautica, Nolet Spirits, One Ocean Beauty, Soneva Resorts, The Sak, and Vitamin A. Oceana is especially grateful to SeaChange partners and underwriters Monique Bär, Jena King, The Offield Family Foundation, Jean and Tim Weiss, Tricia and Michael Berns, Karen and Bruce Cahill, Karen Jaffe, Karen Jordan, Elizabeth Wahler, Valaree Wahler, Alexander McQueen, The Marisla Foundation, and South Coast Plaza.

The evening concluded with a performance by Southern Californian professional surfer turned musician Donavon Frankenreiter, who inspired the crowd with a selection of his hit songs as the waves rolled in from the Pacific Ocean. ■

Chef's Corner

Asian shore crabs

By
Chef Bun Lai

In the United States alone, there are an estimated 50,000 non-native species, some of which become invasive species that cause widespread environmental and economic damage. The human appetite is one of the most destructive forces on Earth – responsible for the extinction of countless creatures – so shifting that appetite from overfished or factory-farmed species to invasive species is part of the solution.

I have hunted, fished, and foraged a smorgasbord of invasive species, including pythons, Japanese knotweed, a swamp rodent called nutria, and Asian shore crabs, which are eaten shell and all. Many of these have appeared on the menu at Miya's Sushi, my family's restaurant in New Haven, Connecticut. Our goal is to create new ways of eating that encourage greater balance in the relationship between humankind and the living planet.

Asian shore crabs are a problem where I live. You won't find a beach in Connecticut that's not crawling with these crabs, which grow to be about the size of a nickel. First introduced to North America in the 1980s, they now infest intertidal habitats from Maine to Florida, competing with native species for food.

You can catch them by hand during low tide by lifting large rocks in the craggy areas of the coast. Be sure that you are harvesting the crabs in areas that are certified shellfishing grounds. If it's an area that's clean enough for clamming, it's clean enough for crabbing!

Chef Bun Lai is the recipient of the White House Champions of Change Award for Sustainable Seafood, as well as a James Beard Foundation nominee for Best Chef in the Northeast region. He has participated in various Oceana events and campaigns, including co-hosting a live seafood demonstration with Oceana staff to highlight the importance of responsible fisheries management. Miya's, the family restaurant his mother founded in 1982, has opened pop-ups around the country and is hailed as the first sustainable sushi restaurant in the world.

Chef Bun Lai's Fried Asian Shore Crabs

Serves: 4
Time: 30 minutes

Ingredients:
Around 100 Asian shore crab
Canola oil (enough to fill a pan or pot with an inch of oil)
Juice of 1 lime
Old Bay or seasoning of your choice, to taste

Instructions

1. After you have collected a hundred or so crustaceans, put them in the freezer to kill them humanely.

2. When you are ready to cook them, put them in cold water and bring it to a boil. If you toss them in boiling water without gradually raising the temperature of their bodies, the sudden temperature change will cause their arms to pop off. As soon as the crabs come to a boil, strain, drain, and air dry them.

3. Carefully fry them in canola oil heated to 375 degrees. After the crabs have stopped bubbling, they are ready to remove. Drain on a sheet of paper towel and season with fresh lime juice and your favorite spice mixture, such as Old Bay Seasoning.

4. Eat the crispy little monsters like popcorn while watching the prophetic horror classic, *Attack of the Crab Monsters.*

Researcher Yoalli Quetzalli Hernández led the marine invertebrates census during Oceana's expedition to the Bajos del Norte National Park in Mexico over the summer. Prior to this expedition, there was no record of the species that live in this important reef. Scarlet hermit crabs and coral banded shrimp were just a couple of the vibrant species she found.

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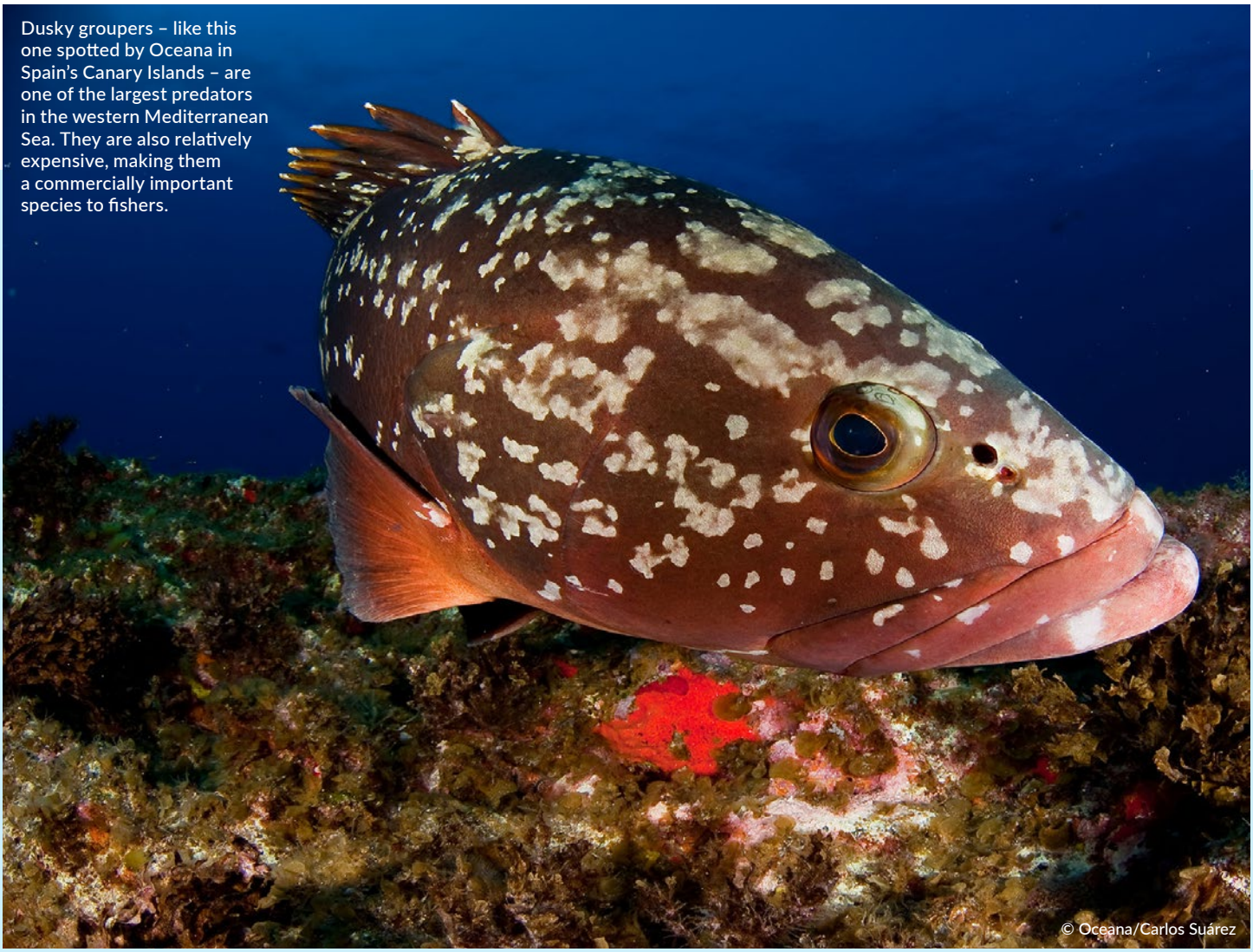

Dusky groupers – like this one spotted by Oceana in Spain's Canary Islands – are one of the largest predators in the western Mediterranean Sea. They are also relatively expensive, making them a commercially important species to fishers.

Go to oceana.org and give today.

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