11 GOLDEN RULES

for TRULY SOCIAL-ECOLOGICAL FISHERIES

A redefinition of the concept of sustainability towards a brighter future for the ocean and communities



BLOOM



This report presents the scientific work of around thirty of the world's leading ocean specialists. After an important process of consensus-building, these experts have agreed on a redefinition of the concept of "sustainable fishing" and propose eleven "Golden Rules" for truly social and ecological fisheries. If implemented, these rules would transform fisheries into assets for achieving our international objectives on climate, biodiversity, and food security.

The scientific article reporting on their work was published in September 2024 in the journal Nature's npj Ocean Sustainability. It is available free of charge at the following address: https://doi.org/10.1038/s44183-024-00078-2

This work was led by Prof. Callum ROBERTS (University of Exeter) and coordinated by the BLOOM Association.

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EVERYTHING YOU NEED TO KNOW IN TWO PAGES

LEADING SCIENTISTS REDEFINE THE NOTION OF 'SUSTAINABILITY' TO SAVE THE OCEAN AND FEED A HUNGRY AND WARMING PLANET

A week before Brussels' Ocean Week, and a few months before the UN Ocean Conference in Nice, a group including many of the world's top ocean experts publish the result of an unprecedented scientific effort: they redefine the concept of 'sustainable fishing' and propose eleven 'golden rules' that radically challenge the flawed notion that currently prevails in fisheries management. These eleven 'golden rules' have been devised to put an end to the ongoing destruction of the oceans caused by fishing, and ensure the renewal of abundant fish populations to feed future generations. They come at a time when scientists have drastically downgraded their assessment of the ocean's health status,[1] and two-thirds of the world's coral reefs are exposed to potentially lethal temperatures.[2] These eleven breakthrough actions are intended to be implemented by companies, governments, and legislators.

These rules unfold according to two guiding principles that would revolutionise the way we 'manage' the exploitation of the ocean: 1) fishing must minimize impacts on marine species and habitats, adapt to climate change, and enable the regeneration of depleted marine life and habitats; 2) fishing must support and enhance the health, well-being, and resilience of people and communities - in particular, the most vulnerable among us - and not simply benefit corporations that tightly steer profits to owners and shareholders while leaving others to bear the costs.

Their work, entitled 'Rethinking sustainability of marine fisheries for a fast-changing planet', was published in *Nature's* scientific journal *'npj Ocean Sustainability'*. This scientific endeavour has the ambition to serve as foundation for a complete reform of the appalling current mismanagement of the Earth's largest common. The scientists call on policymakers, retailers, fishers, and industry leaders to embrace this new vision and commit to its implementation.

The urgent need to produce a new framework for the world's fisheries

Today, fishing is globally recognized as the leading cause of ocean destruction.[3] In fifty years, global fish populations' health has declined by a third.[4] **The authors of the paper decided to work together over the course of years based on a shared consensus: the prevailing definition of 'sustainable fishing' is dangerously flawed** and leads to the ongoing depletion of marine species, the destruction of natural habitats, and carbon sinks as well as the disappearance of artisanal fishing communities around the world. *"The current concept of 'sustainable fishing', adopted by governments and private actors since the post-war period is scientifically obsolete. It relies on a simplistic, productivist theory which assumes that as long as global catch volumes remain below a set limit, anyone can fish just about anything, anywhere, with any method"* said Prof. Callum Roberts, the study's lead author. *"Can we truly claim that all fishing gear is environmentally and socially equal? We currently label fisheries as sustainable without considering their impact on marine ecosystems or human factors, such as crew safety and rights"* added Prof. Jennifer Jacquet.

The scientists denounce an outdated approach to so-called sustainability, which overlooks crucial environmental, human, and development factors. Despite their widespread acceptance by industrial entities and consumers, current standards of 'sustainability' fail to address the pressing global biodiversity and climate breakdown, and instead support high-capital industrial practices which benefit the Global North whilst they harm ecosystems and public finances, jeopardize artisanal fishing and food security, and threaten jobs. This model further imperils humans' universal right to a clean, healthy and sustainable ocean.[5] Producing a new framework for marine fisheries had therefore become urgently needed.

A comprehensive vision for the future of fisheries

Authors reached another consensus: fisheries must be managed in a way that minimizes environmental harm and maximizes social benefits in the context of a hungry and warming planet. The group of leading ocean researchers have therefore developed a visionary approach to ocean exploitation, based on a comprehensive and interdisciplinary definition of 'fisheries sustainability', integrating insights from biology, oceanography, social sciences, and economics. By outlining golden rules (two principles and eleven key actions), their research marks a decisive turning point, providing economic stakeholders and political leaders with foundations for an urgent transition to a viable fishing model for long-term sustainability in a rapidly changing world.

A new path forward: endless fish supply and thriving ecosystems

The new framework envisions a world where fishing ensures abundant fish stocks for humanity's long-term needs. *"Our work advocates for fisheries that preserve ocean ecosystems' vital functions, mitigate climate change, guarantee food security and respect human rights"*, stated Prof. Daniel Pauly. This innovative approach recognizes the social, ethical, and ecological roles of fishing, proposing a systemic sustainable model enacted by market players, policymakers, and the legal system. *"We must view fishing as a privilege rather than a right. Marine life is a public good that should both benefit society and nature, not be the object of a resource race driven by private gains"* emphasized Prof. Callum Roberts. Their proposals are ambitious yet realistic, with most recommended actions rooted in proven successful practices.

The urgent call for action

The scientists urge policymakers, retailers, and fishery managers to acknowledge the failings of current fishing practices and prioritize the adoption of the proposed golden rules. Supermarkets, responsible for nearly two thirds of European seafood sales,[6] play a pivotal role in this transition. They can influence fishing practices through their sourcing policies, scrutinize 'sustainability' labels, and address consumers' growing concerns about the hidden impacts of their food. *"We are witnessing a growing disconnect between the widespread availability of supposedly sustainable fish products, the collapse of ocean ecosystems and the frequency of reported human rights' abuses. Supermarkets must stop misleading consumers"* warned Pauline Bricault, BLOOM's markets campaign lead, *"both the IPCC and IPBES have set 2030 as a deadline for critical changes.[7] Industry stakeholders have no more excuses, they must act now"*.

[1] Edgar et al., 2024, *Stock assessment models overstate the sustainability of the world's fisheries*, accessible here.
[2] The Guardian, 2024, *As record heat risks bleaching 73% of the world's coral reels, scientists ask 'what do we do now?'*, accessible here.
[3] IPBES, 2019, *Biodiversity and ecosystem services*, accessible here.
[4] *'health' meaning "within biologically sustainable levels"* from FAO, 2024, *the state of World fisheries and aquaculture*, accessible here.
[5] Bennett, et al. 2024, *The human right to a clean, healthy and sustainable ocean*, accessible here.
[6] GlobalData, 2023, *Fish and Seafood in Europe*.
[7] United Nations' Sustainable Development Goals, the Kunming-Montreal Global Biodiversity Framework.

11 GOLDEN RULES

for TRULY SOCIAL-ECOLOGICAL FISHERIES

A redefinition of the concept of sustainability towards a brighter future for the ocean and communities

I. REGENERATE THE OCEAN'S HEALTH

PRUDENT
Fish less and minimize impact

HARMLESS
Ban destructive fishing methods

MEASURED
Restrict fishing boats' size

CAUTIOUS
Source from well-managed fisheries

HOLISTIC
Actively protect ecosystems

PROTECTIVE
Fully protect vulnerable species and habitats

II. PUT HUMANS BEFORE PROFITS

SAFE
Protect human rights and livelihoods

FAIR
Ensure fair and transparent management

EQUITABLE
Harmonize good corporate practices

ETHICAL
Cut harmful subsidies

LEGAL
Strictly ban illegal fisheries

BLOOM

KEY RESULTS

A revolutionary framework: eleven golden rules to protect the ocean

This new concept is based on **two fundamental principles**. On the one hand, fishing must minimize impacts on marine species and habitats, adapt to climate change and enable the regeneration of depleted marine life and habitats.

On the other hand, it must support and enhance the health, well-being and resilience of people and communities - in particular, the most vulnerable among us - and not simply benefit corporations that tightly steer profits to owners and shareholders while leaving others to bear the costs.

The scientists propose a pragmatic vision of the definition and break it down into eleven actions, symbolized by 11 values:

Principles	#	Golden rules (actions)	Values
1 **Fisheries must minimize environmental harm, allow for the regeneration of marine life and habitats, and adapt to climate change**	1	Fish less and manage fisheries for lower impact	**PRUDENT**
	2	Rule out gears and fisheries that generate significant collateral damage	**HARMLESS**
	3	Set limits on the size of boats and gears	**MEASURED**
	4	Source only from fisheries with good governance, sustainable stocks, and sufficient data to assure sustainability	**CAUTIOUS**
	5	Pro-actively incorporate ecosystem protection into fisheries management	**HOLISTIC**
	6	Place the most vulnerable species and areas off limits	**PROTECTIVE**
2 **Fisheries must support and enhance the health, well-being and resilience of people and communities, not corporations**	7	End fisheries that abuse human rights, including those that threaten food security and livelihoods of people in the places they fish	**SAFE**
	8	Create fisheries management systems that fairly and transparently distribute access and benefits	**FAIR**
	9	Apply good practices wherever fishing companies operate	**EQUITABLE**
	10	End the flow of harmful subsidies to fisheries	**ETHICAL**
	11	Apply zero-tolerance to companies that engage in illegal fishing	**LEGAL**

A summary of the golden rules and why they are necessary

Principle 1 Regenerate the ocean's health

Action 1 – Fish less and minimize impact

Overfishing, caused by inadequate regulation and flawed Maximum Sustainable Yield (MSY)-based management, depletes vulnerable species and breaks down the complexity of ecosystems. Maintaining higher biomass levels for all species would restore ecosystem functioning, reduce management risk, and buffer environmental changes. Climate-adaptive management and a biomass target of at least 60% of unfished levels are essential for sustainable fishing and enhancing carbon sequestration.

Action 2 – Ban destructive fishing methods

Destructive fishing methods like trawling, dredging, and demersal seines harm marine habitats, disrupt carbon stores, and cause significant bycatch, threatening vulnerable species and ecosystems. Mitigating these impacts involves using more selective fishing gear, redesigning equipment, or altering practices to reduce bycatch. Enforcing stricter sustainability standards and promoting less damaging methods like handlines are essential for securing long-term resource rights and preserving cultural connections to marine life.

Action 3 – Restrict fishing boats' size

Technological advancements have concentrated fishing power in fewer hands and ever larger vessels, leading to local species depletion and carbon-intensive practices, especially in distant water fisheries and those using heavy mobile gear like trawls. Some boats are now so vast they provoke controversy and protest wherever they fish. Small-scale, employment-intensive fleets can mitigate these impacts by spreading effort and supporting coastal communities, though they can also face challenges like overfishing. Addressing unintentionally lost or discarded fishing gear, such as gill nets, traps, and drifting fish aggregating devices, through mandatory labeling and recycling initiatives is essential for reducing ocean pollution.

Action 4 – Source from well-managed fisheries

Fisheries management often relies on collective decision-making by multiple states, which has often led to unsustainable decisions overlooking scientific recommendations, as is the case for the Indian Ocean yellowfin tuna. Yet, the once notorious mismanagement of the Atlantic bluefin tuna has shown that more responsible decision-making can restore marine life. Harvest control rules or rights-based management have proven to be effective, although both have their limits. Diversifying fishing to new stocks requires foreknowledge and pre-emptive regulation to avoid repetition of historic mistakes. Fishing activities that target species that underpin critical ecosystem services, such as krill or mesopelagic fish (deep water), could have far-reaching impacts on the ocean health and functioning.

Action 5 – Actively protect ecosystems

Fisheries managers should pro-actively protect habitats and the ecological integrity of fishing grounds, considering when, where and how fishing is conducted. Ensuring the exclusion of fisheries from species or places of high vulnerability or difficult to monitor should be part of modern fisheries management. Good practices include the spatial and temporal management of the Canadian lobster fishery to protect whales, the no-take marine reserves to protect artisanal reef fisheries in the Caribbean, and the restriction to static fishing methods to restore the seabed in the UK.

Action 6 – Fully protect vulnerable species and habitats

Some species and places are inherently more vulnerable to fishing, incompatible with even low levels of exploitation. For instance, deep-sea species' vulnerability to depletion and altered environmental conditions means that fishing deeper than 500m with industrial gears should not be undertaken. Conservation action can be supported by ecosystem recovery to more natural states, thereby providing intact reference sites not yet disturbed, that help us more fully understand the impact of anthropogenic activities, and prevent damaging expansion of fisheries into the most sensitive ecosystems.

Principle 2
Put humans before profits

Action 7 – Protect human rights and livelihoods

Human rights abuses, including bonded labor and unsafe conditions, are widespread, including in distant water fisheries, exacerbated by overfishing and rising costs. Complicit fisheries should be boycotted and dismantled. These fisheries often undermine local communities' food security and livelihoods, as seen in West Africa. Fisheries should focus on producing premium products for local markets, ensuring greater profit retention by small-scale actors and prioritizing direct human consumption, rather than supplying distant markets or non-food industries.

Action 8 – Ensure fair and transparent management

Fishing rights allocation often favors groups with historical precedent, concentrated capital, and significant lobbying power, marginalizing others. To enhance fairness and transparency, fishery managers must prioritize equity alongside sustainability, and establish equitable resources allocation processes, ensuring Indigenous Peoples and small-scale fishers' rights are considered first. Additionally, inclusive and transparent participatory decision-making processes are needed to embed local rights-holders and stakeholders, including civil society, to ensure equitable distribution of benefits.

Action 9 – Harmonize good corporate practices

Multinational companies, including in fisheries, are often criticized for inconsistent standards, such as using child labor or unsafe working conditions in less regulated areas, or operating under flags of convenience to avoid strict regulations. This practice, though legal, is not ethical and increases the risk of illegal fishing and labor abuses. A more inclusive definition of sustainability requires companies to apply good practices globally, avoid flags of convenience, engage in corporate social responsibility, and promote local wellbeing rather than merely avoiding harm.

Action 10 – Cut harmful subsidies

Harmful subsidies, such as tax breaks on fuel, discounted fishing gear, vessel construction support, and payments for access to foreign waters, undermine sustainable fishing by increasing fishing power and profits of private companies. In 2018, global capacity-enhancing subsidies amounted to $22.2 billion, with over 80% benefiting large-scale industrial fisheries, leading to overfishing, ecosystem degradation, and poor social investment. Despite the 2022 World Trade Organisation agreement to ban certain subsidies for illegal or unregulated fishing, an agreement that has not yet come into force, many harmful subsidies outside the agreement remain due to lack of consensus, delaying comprehensive reform.

Action 11 – Strictly ban illegal fisheries

Illegal, unreported, and unregulated (IUU) fishing undermines fisheries management and human rights, necessitating a zero-tolerance approach from retailers in their procurement practices. IUU fishing, linked to transnational crime, modern slavery, and food insecurity, generates $9-17 billion annually from 8-14 million metric tons of illegal catch. Retailers should avoid companies engaged in IUU fishing and those using ports not regulated by the Port State Measures Agreement, which permit weaker oversight. Strong deterrents and the elimination of government subsidies and sustainability certifications for offenders are crucial to combating IUU fishing.

QUOTES OF AUTHORS

"If fisheries are to feed future generations, we must help ocean ecosystems and species adapt and respond to rapid climate change. This means fishing less, using less destructive methods, wasting less, polluting less and protecting more."
— Pr. Callum Roberts, first author

"Unsustainable fishing is neither good for the environment, nor for people. And yet, we allow environmentally destructive and socially harmful fishing activities to continue. It is time for a step change in how fisheries are managed. This requires a new philosophy, a new approach, and new rules. In this paper, we have tried to chart a new course for fisheries."
— Pr. Nathan Bennett

"Fisheries are in a bad shape worldwide and are degrading rapidly with overexploitation and climate change. Efficient and renewed fisheries management can really help to restore marine ecosystems and to reconcile exploitation and biodiversity"
— Pr. Philippe Cury

"Business as usual has failed dramatically, as visible in the increasing number of stocks and fisheries that have collapsed not because of climate change but because of mismanagement."
— Pr. Rainer Froese

"This paper extends the work I develop on 'pesco-ecology' and on the need to thoroughly rethink fisheries management. This must be based on a dual principle: harvesting the available natural production with the least possible impact on all components of the ecosystem, and allowing society as a whole, in particular coastal communities, to benefit from the wealth created by fishing. Everything needs to be rethought: the calculation and sharing of fishing quotas, the protection of juveniles, the seabed and sensitive species, fisheries governance, in particular the representation of fishermen and NGOs..."
— Pr. Didier Gascuel

"This initiative brought together a diverse group of experts, including those from fisheries science, social sciences, economics and conservation. By doing so we were able to develop a roadmap to move away from the traditional view of fisheries that tends to focus on the social and economic context of those who utilize them. Sustainability, however, requires the integration of the social, economic and environmental domains. This paper provides a manifesto that will help secure our fisheries for sustainable exploitation by future generations."
— Pr. Paul Kemp

"Analyses such as this, from a wide range of experts working globally, are essential if we are to change course on fisheries management, including the cessation of destructive fishing practices within our marine protected areas."
— Pr. Jessica Meeuwig

"A more holistic approach to fisheries management has been called for repeatedly yet prevailing paradigms and practices have largely remained unchanged to the great detriment of marine life and people. The need for fisheries reform is now urgent, and this paper provides essential guiding principles and actions to get the job done".
"Studies have shown that protecting ecosystems and leaving more fish in the water can yield greater benefits than extracting the maximum possible".
— Pr. Ellen Pikitch

"The bottom line is that humans have to abandon the notion that we have to take 'everything everywhere all at once' in the ocean"
— Pr. U. Rashid Sumaila

"The deep sea is particularly vulnerable to disturbance. Many of the species of corals and sponges that provide relevant ecosystem functions to commercial fish live for hundreds to thousands of years. For example, a black-coral garden has a life span similar to that of giant sequoia trees. No one would accept logging those forests. Why in the deep sea? Sustainable fisheries can only be achieved if we protect those vulnerable environments and limit deep-sea fishing to only those gears and areas that do not produce significant adverse harm."
— Pr. Telmo Morato

"For centuries humans have treated fish as a commodity to be removed from the ecosystem, not as a part of the ecosystem. As a result, almost all bottom habitats within the reach of bottom trawls have been turned into the equivalent of a weed bed, and the water column has been turned into an aquatic desert due to the use of gill nets. As large as the ocean is, it has been modified in the same way that agriculture and forestry have modified the terrestrial environment."
— Pr. Les Watling

PRESENTATION OF THE SCIENTIFIC AUTHORS

1. **Callum Roberts** - Professor of Marine Conservation at the Centre for Ecology and Conservation, University of Exeter (Cornwall, UK).
2. **Christophe Béné** - Senior Policy Advisor to the International Center for Tropical Agriculture (Cali, Colombia).
3. **Nathan Bennett** - Chief Scientist of WWF's Global Oceans Program and Adjunct Professor at the University of British Columbia's Institute of Oceans and Fisheries (Vancouver, Canada).
4. **James S. Boon** - Researcher at the University of Nottingham (Nottingham, UK).
5. **William W.L. Cheung** - Director and Professor at the Institute of Oceans and Fisheries, and Director and Principal Investigator of the Changing Ocean Research Unit at the University of British Columbia (Vancouver, Canada).
6. **Philippe Cury** - Senior Emeritus Researcher at the Institute of Research for Development (IRD), former Director of the Mediterranean and Tropical Fisheries Research Center (CRH) (Sète, France) and former President of the Scientific Counsil of Oceanographic Institute of Monaco (Monaco).
7. **Omar Defeo** - Professor at the Faculty of Marine Sciences at the University of the Republic (Montevideo, Uruguay).
8. **Georgia De Jong Cleyndert** - Head of Marine Services, Cumbria Wildlife Trusts (North West) (Kendal, UK).
9. **Rainer Froese** - Senior researcher in marine ecology at the Helmholtz Center for Ocean Research (GEOMAR) (Kiel, Germany).
10. **Didier Gascuel** - Director of the Fisheries and aquatic sciences center and professor of marine ecology and fisheries sustainability at the *Institut Agro* (Rennes, France).
11. **Christopher D. Golden** - Professor of Nutrition and Global Health at the Harvard T.H. Chan School of Public Health (Boston, USA).
12. **Julie Hawkins** - Senior Lecturer at the Centre for Ecology and Conservation, University of Exeter (Cornwall, UK).
13. **Alistair J. Hobday** - Director of Marine Resources and Industries Research at CSIRO Oceans and Atmosphere (Hobart, Australia).
14. **Jennifer Jacquet** - Professor of Environmental Science and Policy at the Rosenstiel School of Marine, Atmospheric and Earth Sciences at the University of Miami (Miami, USA).
15. **Paul Kemp** - Professor of Ecological Engineering at the University of Southampton (Southampton, UK).
16. **Mimi E. Lam** - Researcher at the Center for the Study of Science and the Humanities at the University of Bergen (Bergen, Norway).
17. **Fréderic Le Manach** - Scientific Director of the BLOOM association (Paris, France).
18. **Jessica J. Meeuwing** - Director of the Centre for Marine Futures at the University of Western Australia (UWA) (Crawley, Australia).
19. **Fiorenza Micheli** - Professor and researcher in marine ecology and conservation biology at Stanford University's Hopkins Marine Station (Stanford, USA).
20. **Telmo Morato** - Scientist and senior researcher at the Okeanos research unit of the University of the Azores (Ponta Delgada, Portugal).
21. **Catrin Norris** - Responsible for the marine plastics program at Fauna & Flora International (Cambridge, UK).
22. **Claire Nouvian** - Founder and director of the BLOOM association (Paris, France).
23. **Daniel Pauly** - One of the world's leading experts on marine resources, director of the Sea Around us project and professor at the University of British Columbia (Vancouver, Canada).
24. **Ellen Pikitch** - Director of the Institute for Ocean Conservation Science at Stony Brook University (Stony Brook, USA).
25. **Fabian Piña Amargos** - Professor of protected areas at the Marine Research Center of the University of Havana (Havana, Cuba).
26. **Andrea Saenz-Arroyo** - Professor, Department of Biodiversity Conservation, Southern Border College (ECOSUR) (San Cristóbal de las Casas, Mexico).
27. **Ussif Rashid Sumaila** - Director of the Fisheries Economics Research Unit at the UBC Institute of Oceans and Fisheries Professor of Oceans and Fisheries Economics at the University of British Columbia (Vancouver, Canada).
28. **Louise Teh** - Research Associate, Fisheries Economics Research Unit (FERU), University of British Columbia (Vancouver, Canada).
29. **Les Watling** - Professor of Biology at the University of Hawaii at Mānoa (Hawaii) and Professor Emeritus of Oceanography at the Darling Marine Center of the University of Maine (USA)
30. **Bethan O'Leary** - Researcher at the University of York (York, UK) and the University of Exeter (Cornwall, UK).



BLOOM'S NOTES

Ocean health, which is vital to the stability of our planet, has been degraded by fishing

The ocean represents over 99% of Earth's living space and ensures climate stability: it absorbs a third of our CO_2 emissions, 90% of our excess heat, and produces half the oxygen we breathe.[8] In a world where almost half the population depends on fish to cover its animal protein needs, it is key to the equilibrium of coastal economies and global food security.[9] **A healthy ocean is therefore essential to the stability of our planet and our societies.**

However, today our ocean is far from healthy.

- Between 1974 and 2021, so-called 'sustainable fish stocks' have decreased from 90% to 62% of those we exploit.[10]
- Since 1970, the global abundance of oceanic sharks and rays has declined by 71% due to an 18-fold increase in relative fishing pressure.[11]
- The ocean is acidifying, heating up to record temperatures, losing oxygen, and is subject to bio-invasions, all due to climate change and greenhouse gas emissions.[12]

Above climate change and plastic pollution, **industrial fishing has been designated by the scientific community as the primary cause of the destruction of the ocean:**[13]

- Today more than 90% of our ocean spaces are exploited at or beyond their full capacity.[14,15]
- Scientists evaluated that 85% more stocks than currently recognized have probably collapsed.[16]
- Worldwide fisheries now exploit a surface that is four times bigger than agricultural land.[17]
- Industrial fishing is also prone to human rights violations: cases of abuse and serious violence are constantly coming to light.[18]
- As we explain below, the current 'sustainable fisheries management' concept is flawed and unable to safeguard marine biodiversity and health.

It is therefore imperative and urgent to radically transform our global fishing model, so that its practices are compatible with preserving the vital functions of marine ecosystems, mitigating and adapting to climate change, guaranteeing food security for populations and respecting human rights.

[8] United Nations, *Goal 14: Conserve and sustainably use the oceans, seas and marine resources*, accessible here.
[9] United Nations, *How is climate change impacting the world's ocean*, accessible here.
[10] FAO, 2024, *The state of world fisheries and aquaculture*, accessible here.
[11] Pacoureau et al. 2021, *Half a century of global decline in oceanic sharks and rays*, accessible here.
[12] Laffoley at al., 2020, Eight urgent fundamental and simultaneous steps needed to restore ocean health, and the consequences for humanity and the planet of inaction or delay
[13] IPBES, 2019, Biodiversity and ecosystem services, accessible here.
[14] Teh et al., 2017, *Can we meet the target? Status and future trends for fisheries sustainability.*
[15] FAO, 2024, *The state of world fisheries and aquaculture*, accessible here.
[16] Edgar et al., 2024, *Stock assessment models overstate the sustainability of the world's fisheries*, accessible here.
[17] Kroodsma et al., 2018, *Tracking the global footprint of fisheries*, accessible here.
[18] BLOOM, 2023, *Canned Brutality*, accessible here.

The concept of sustainable fishing in use today is too simplistic and productivist

A deceptive narrow concept

The vision of 'sustainability' that underlies our conventional fisheries management system is aligned with achieving the Maximum Sustainable Yield (MSY, see below). Yet this conception of 'sustainability' is limited because it is purely production-driven and simplistic: **it views limits on fish catches as the primary, and often sole, objective of fisheries management, treating these limits as the only criterion for sustainability.** It provides a definition by the negative, by trying to push fishing to its limit before a fish stock collapses. It does so by looking exclusively at individual fish stocks, as if they were independent entities, in denial of the reality of intertwining ecosystem dynamics. The approach puts the fish stock at risk if the ecosystem on which it relies collapses, and the wider ecosystem at risk if the fish stock collapses. It also ignores economic and social dimensions, as if fish could be magically caught, denying the importance of countries' sovereignty, the importance of a fair and equitable distribution of fishing access, the living conditions and rights of workers aboard vessels, among others.

It is not a system suited to implementing the commonly accepted meaning underlying the 'sustainability' concept, which implies *"meeting the needs of the present without compromising the ability of future generations to meet their own needs"*.[19] A holistic sustainability vision is essential.

The MSY, an obsolete and simplistic global standard for sustainable fishing

Until now, the global standard behind the 'sustainable' management of fisheries has been the Maximum Sustainable Yield (MSY). Introduced in 1954, it is *"the largest quantity of biomass that can be extracted on average [...] from a fish stock [...] without affecting [its] renewal process"*.[20] Simply put, this is the maximum quantity of fish that can be extracted from a population year after year, without endangering its renewal.[21]

This indicator is largely inadequate, outdated and simplistic: its principal objective is to maximize economic productivity.

While the MSY's simplicity was critical in the 1950s, given the limited computational power available at the time, this very oversimplification has ultimately led to its downfall. The concept currently rests on extremely problematic foundations:

1. it uses a single-species approach to managing 'stocks', neglecting important ecological linkages with other species and the need to preserve marine ecosystems as a whole;

2. it assumes that ecosystems are healthy and sufficient to support the production of the target species;

3. it does not take into account catches of non-target species known as 'by-catches';

4. it does not consider Marine Protected Areas as management solutions;

5. it makes the assumption that the climate and biosphere are stable, whereas it has been proven that ocean warming has already affected the productivity and behavior of many exploited populations.[22]

Moreover, MSY has been, and still is, abused and misused: it has given rise to excessively flexible adaptations of the original model, leaving open the possibility of associating arbitrary values to its variables; it has been used in an overly simplistic way, neglecting the complexity of the fish populations studied and the future of the marine ecosystems on which they depend; and above all, it is very often used as a target rather than a limit that should never be crossed.[23] That target has become increasingly risk-prone as estimates of the number of fish needed to support MSY have been downgraded by fisheries modellers.

"MSY is not only blind to the dynamics and interdependencies of marine ecosystems, but it also fails to take into account the social and economic functions of fisheries." Ocean experts have been warning us for several years of the imperative need to abandon this *"outdated notion, which has been bypassed by a better understanding of ecological and human systems"*.[24]

[19] United Nations, 1987, Brundtland Commission.
[20] Henichart Laura-Mars, Lesueur Marie, D. Gascuel Didier, 2011, *Rendement maximal durable, concept et enjeux*, accessible here.
[21] BLOOM, *Surpêche et pêche durable*, accessible here.
[22] Pauly Daniel, Froese Rainer, 2021, *MSY needs no epitaph—but it was abused*, accessible here.
[23] Ibid.
[24] Pauly Daniel, Froese Rainer, 2021, *MSY needs no epitaph—but it was abused*, accessible here.

Labels have embraced a deficient ‘sustainability’ concept and certify harmful fishing

Private labels and eco-certifications claiming to guarantee the ‘sustainability’ of seafood products are proliferating on our supermarket seafood shelves based on this flawed ‘sustainability’ definition. Two initiatives, **Friends of the Sea (FOS) and the Marine Stewardship Council (MSC)**, dominate the wild fish certification market. In 2015, each accounted for around 6% of the global wild catch and these initiatives have been steadily growing since 2008.[25] Less than 10 years later, **in 2023, the MSC declared having reached 19% of global wild catches being engaged with its standards.**[26] However, these standards are too weak in conception and application, certifying many fisheries as ‘sustainable’ when in fact they are damaging to the ocean, the climate and human beings.

This mass certification strategy by labels means they have embraced large-scale industrial gears. Some of the world’s largest fishing vessels are currently certified. Here are just a few:



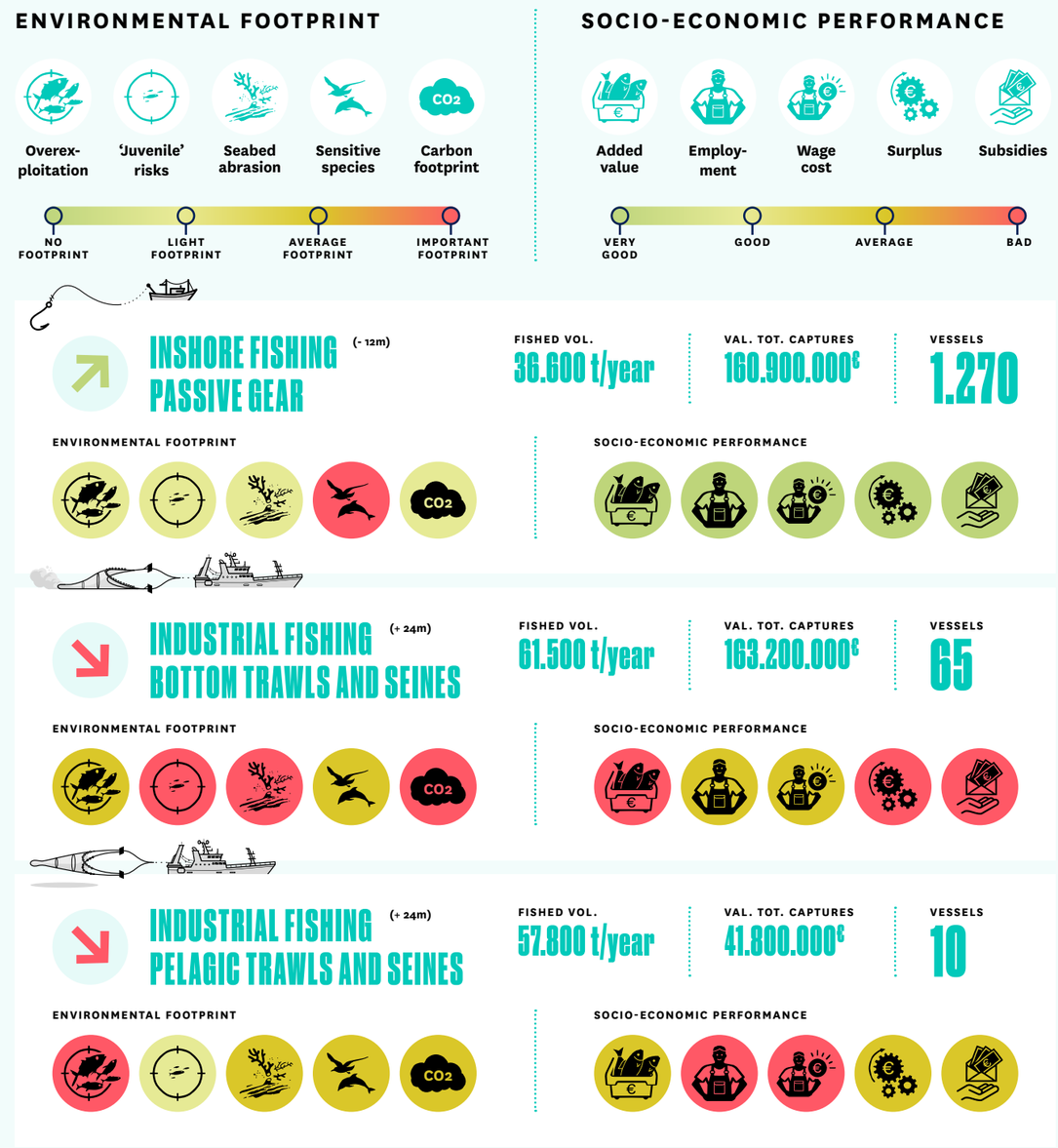
Vessel Name	*Vessel Length (m)*	Gear	Certification[27,28,29,30]
Annelis Ilena	144.6	Pelagic trawler	MSC
Margiris	136.1	Pelagic trawler	MSC
Mark	90.7	Bottom trawler	MSC
Prins Bernhard	88.4	Pelagic trawler	MSC, Ecolabel Pêche durable
Jan Maria	88.1	Bottom trawler	MSC
Albacora cuatro	83.5	Purse Seiner	MSC, FOS
Scombrus	81.4	Pelagic trawler	MSC, Ecolabel Pêche durable

Yet scientific research has shown that fishing gear certified as sustainable has the poorest environmental and social performance. In 2024, researchers from the Institut Agro and AgroParisTech carried out an assessment of the ecological footprint and economic and social performance of French fishing fleets operating on the north-east Atlantic coast.[31] The results of this study highlight the high environmental impact of industrial pelagic trawls and seines, and especially industrial bottom trawls and seines (see opposite).

[25] International Institute for Sustainable Development, 2016, *Standards and the Blue Economy*, accessible here.
[26] MSC Annual report 2022-2023, accessible here.
[27] MSC, 2024, *PFA, SPSG, SPFPO, DFPO, and DPPO north sea herring fisheries page*, accessible here.
[28] MSC, 2024, *Doggerbank Seefischerei West Greenland Halibut fisheries page*, accessible here.
[29] MSC, 2024, *Germany North sea saithe trawl*, accessible here.
[30] MSC, 2024, *AGAC four oceans integral purse seine Tropical Tuna Fisheries*, accessible here.
[31] BLOOM, 2024, *« Changer de Cap »*, accessible here.

KEY TAKEWAYS

COMPARISON OF 3 FISHING TECHNIQUES



BLOOM infographic based on the performance assessment of French fishing fleets in the Northeast Atlantic carried out by the Institut Agro and AgroParisTech in 2024.

As a result, while the sale of so-called 'sustainable' fish products increases, the health of our ocean continues to deteriorate. The labels are insufficient; their vision and indicators are inadequate and do not meet the criteria set by the newly proposed scientific definition of sustainable fishing. The current fisheries management system allows the market to certify practices as 'sustainable' while they are incompatible with the preservation of the ocean.

A wide gap between MSC standards and the new 'golden rules'

The MSC sustainable fishing label is one of the best-known and most widely used wild fisheries label in the world. It is the perfect example of a defective 'sustainability' standard, far from meeting the golden rules for a sustainable fishing as established by this unprecedented scientific effort.[32]

Industrial volumes certified

In 2023, 19% of all marine wild catch was engaged with the MSC (certified, in assessment, suspended, or in-transition to MSC).[33] This represents more than 20,000 products, in over 70 countries, for total sales of $12.6 billion over the 2022-2023 period.[34]

High-impact fishing methods

Fishing with explosives or poison are the only techniques banned by the MSC standard.[35] It considers that all other gears can be 'sustainable', including gears that are destructive such as deep-sea bottom trawling,[36] fisheries that target dolphins, other mammals[37] or overexploited fish populations,[38] fishing practices that generate large quantities of by-catch, or fisheries targeting invasive species.[39] In May 2020, BLOOM had calculated that **high-impact industrial fisheries represented 83% of MSC certified volumes between 2009 and 2017**[40], which is inconsistent with the 'sustainability' principles it claims to promote.

Concerns about the MSC were already raised by civil society as early as 2013. At that time, a group of scientists –some of whom are among the authors of the golden rules paper– conducted a review of 19 formal objections made to MSC fisheries certifications by conservation organizations. Among the major concerns identified were: the high impact of trawling on the seabed and marine habitats, the high impact of dredging on ecosystems, high levels of by-catch on species such as fur seals, seabirds and threatened or endangered sharks and turtles, fishing for species with low stock levels and catch limits set at historically high levels while fish stocks are in decline.[41]

In 2019, these concerns about the MSC were also expressed to the UK Parliament, which conducted an enquiry to assess the effective contribution of the MSC certification scheme to sustainable fisheries. The NGO collectives *Make Stewardship Count* and *On the Hook* had warned that an increasing number of controversial fisheries *'which have lasting negative impacts on vulnerable species and sensitive habitats'* have received MSC certification. The Parliament concluded its enquiry by recommending that the MSC respond to specific criticisms and strengthen its standard accordingly.[42]

The MSC currently certifies nearly 50% of the world's annual tropical tuna catches, more than half of which come from fisheries using drifting Fish Aggregating Devices (drifting FADs),[43] which have a strong negative impact: by-catch of turtles, sharks and rays, fishing of juveniles, major source of electronic and plastic pollution (60% to 90% of drifting FADs are abandoned or lost at sea).[44]

The MSC fails to exclude fisheries with human rights abuses

The failure of the MSC label to ensure genuine sustainability is not limited to the certification of destructive fishing methods: **the label still turns a blind eye to human rights violations in fisheries.**

[32] MSC, 2022, *MSC Fisheries Standard*, accessible here.
[33] MSC Annual report 2022-2023, accessible here.
[34] MSC, 2023, *Blue foods : the role of sustainable fishing in feeding a growing population*, accessible here.
[35] MSC, *Frequently asked questions: "Are there any commercial fisheries that cannot be MSC certified?"*, accessible here.
[36] MSC, *Track a fishery (list of active MSC certifications for bottom trawl fisheries)*, accessible here.
[37] BLOOM, 2023, *The death label*, accessible here.
[38] Froese Rainer, Proelss Alexander, 2012, *Evaluation and legal assessment of certified seafood*, accessible here.
[39] Kourantidou Melina, Kaiser Brooks, 2019, *Sustainable seafood certifications are inadequate to challenges of ecosystem change*, accessible here.
[40] BLOOM, 2020, *The sham of the MSC*, accessible here.
[41] Claire Christian, David Ainley, Megan Bailey, Paul Dayton, John Hocevar, Michael LeVine, Jordan Nikoloyuk, Claire Nouvian, Enriqueta Velarde, Rodolfo Werner, Jennifer Jacquet, 2013, *A review of formal objections to Marine Stewardship Council fisheries certifications*, accessible here.
[42] UK Parliament, 2019, Environmental Audit – Sustainable Fisheries, accessible here.
[43] BLOOM, 2023, *The death label*, accessible here.
[44] BLOOM, 2023, *The death label*, accessible here.



In 2018, twenty years after its creation, the MSC had announced it would require stronger human rights and labor measures for certification.[45] Yet, the few human rights measures required by the updated standard are insufficient and unfit to tackle the issue seriously. They are and have proven ineffective:

- In 2023, Human Rights at Sea's report revealed the MSC alarming shortcomings, as its standard includes only 3 out of 16 minimum human rights protection measures.[46]
- In 2023, an investigation by 'The Outlaw Ocean Project' has shown that ten Chinese factories processing MSC-labelled fish and squid fillets were involved in the forced labor of Uighurs.[47]

In August 2024, the MSC publicly recognized that it disengaged from any human-rights allegations and that its standards solely focused on environmental sustainability.[48] Therefore, the MSC's definition of sustainable fishing overlooks all human rights and fair labor aspects, misleading consumers that expect ecological and social best practices when they buy MSC certified products.

The MSC's 'charitable activities' run on a lucrative business model

The MSC, which presents itself as a science-based nonprofit organization, operates like a profit-driven entity by accumulating significant financial reserves, funded by royalties from logo licensing. In 2023, their total funds amounted to almost 49 million euros[49] (compared with 25 million euros in 2016).[50] The MSC also raises concerns by using a trading subsidiary to funnel these revenues as 'charitable activities (logo licensing)' enabling tax avoidance and highlighting a conflict of interest, all while certifying industrial fisheries that contribute to biodiversity loss.[51]

The responsibility of retailers in the failure of 'sustainable fishing'

Retailers make massive use of private label certification for seafood products, such as the MSC. **86% of EU retailers use the MSC** either as a marketing argument or as a target to be achieved as part of their seafood sourcing policy.[52]

Retailers and the MSC label have a mutually advantageous collaboration:

- Companies claim to guarantee the 'sustainability' of their seafood products to meet shifting consumer expectations, but in reality, they sidestep their responsibilities by outsourcing them to the MSC.
- Through large marketing efforts, retailers drive revenue growth for the labeling industry, which, in turn, supports the label's expansion.

[45] MSC, 2018, *MSC announces changes to labour reporting, objections and stakeholder engagement*, accessible here.
[46] Human Rights at Sea, 2023, *Does it do what it says in the tin?*, accessible here.
[47] The Outlaw Ocean Project, *China, the superpower of seafood: findings*, accessible here.
[48] 2024, Seafood source, *MSC steps away from fair labour claims to concentrate on environmental mission*, accessible here.
[49] MSC, 2023, MSC annual report 2022-2023, accessible here.
[50] MSC, 2017, MSC annual report 2016-2017, accessible here.
[51] BLOOM, 2023, *The death label*, accessible here.
[52] BLOOM, 2023, *Willful ignorance*, accessible here.

Supermarkets have the power, moral and legal duty to initiate the transition to real sustainability

Mass retailers must pave the way for the transition, not only by changing their sourcing policies to bring about changes in manufacturers' practices, but also by putting pressure on national brands[53] with regard to their specifications (retailers claim commitments to 'sustainable fishing', but 72% ignore national brands, which usually make up over 70% of their seafood sales).[54]

- Hypermarkets and supermarkets account for 63% of seafood sales in Europe[55] and 60% worldwide.[56]
- The food market is highly concentrated, with a handful of players dominating. For instance, in France 6 supermarket chains dominate 88% of the food retail market.[57]

Retailers have a moral duty to respond to the interests of consumers, who expect their supermarkets to sell products that are free from abusive practices concerning human rights, the environment and people's health.

While up to **80% of consumers say they think about sustainability in their day-to-day purchases**, 70% are disillusioned and skeptical of corporate 'sustainability' claims, suspecting these commitments are merely tactics to enhance their reputations and attract customers.[58] **Yet consumers say they are willing to spend 9.7% more, on average, for sustainably produced or sourced goods.**[59]

The retailers' duty is not only moral, but also legal. Under international human rights law, all businesses, regardless of their specifics, must respect human rights, including the right to a healthy environment.[60] According to the UN Guiding Principles on Business and Human Rights, companies in the ocean economy must prevent, mitigate, and remedy human rights impacts related to ocean environments through clear policies, due diligence procedures, and grievance mechanisms.[61]

Large retailers are also legally obliged to identify, mitigate and prevent environmental, and social risks in their supply chain. They need to draw up, publish and implement an appropriate duty of vigilance plan with effective measures. This is required for French players since 2017 with the Corporate Duty of Vigilance law.[62] From July 2027, large European retail chains will also have to apply similar standards, due to the recent adoption of the EU Directive on Corporate Duty of Vigilance.[63]

The golden rules put forward by scientists are an absolute necessity to clearly re-state what can be considered sustainable fishing or not and reveal sustainability failures that have tremendously grown in the past decade (further explained below). The pragmatic approach taken provides stakeholders with an invaluable roadmap to engage in the urgent transformation of their activities, to stop contributing to or leading the destruction of the ocean and its dependent people, and start regenerating it.

[53] A brand that is available in different supermarkets, distinct from supermarket own-brands.
[54] BLOOM, 2023, *Willful ignorance*, accessible here.
[55] GlobalData, 2023, *Fish and Seafood in Europe.*
[56] GlobalData, 2023, *Global fish and seafood.*
[57] Kantar Worldpanel, (2024) ; *Market share breakdown of food retail groups in France between 22 January and 18 February 2024*, accessible here.
[58] BCG, 2022, *Consumers are the key to taking green mainstream*, accessible here.
[59] PwC, 2024, *Shrinking the consumer trust deficit*, accessible here.
[60] Bennett, et al. (2024), *The Human right to a clean, healthy and sustainable ocean*, accessible here.
[61] United Nations, (2011), A/HRC/17/31, accessible here.
[62] *LOI n° 2017-399 du 27 mars 2017 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre*, accessible here.
[63] Directive (EU) 2024/1760, on corporate sustainability due diligence, accessible here.

THE ARTICLE'S WRITING PROCESS

About the construction process

This paper results from a collective work initiated in 2020 which included two series of collaborative scientific workshops held over the following two years. While the first workshop series aimed to clarify the rules behind the concept of sustainable fishing, and to arbitrate on the various questions they raise, the second discussed the results of an evaluation of the ecological sustainability of different fishing methods, dived into the practical aspects of implementing sustainable fisheries, and initiated the preparation of the scientific consensus.

About the group of authors

The article results from the collaboration of thirty authors including many world leading ocean experts. Over the course of the workshops, long correspondence and paper drafting, they achieved consensus on a common vision of the relationship between humans and the ocean, and the changes in practices that this implies.
The authors cover a wide range of academic fields, from biology and oceanography to social sciences and economics, representing many nationalities and are based in many different countries: Australia, Canada, Cuba, France, Germany, Mexico, Norway, Portugal, Switzerland, United Kingdom, United States and Uruguay.

BLOOM's role

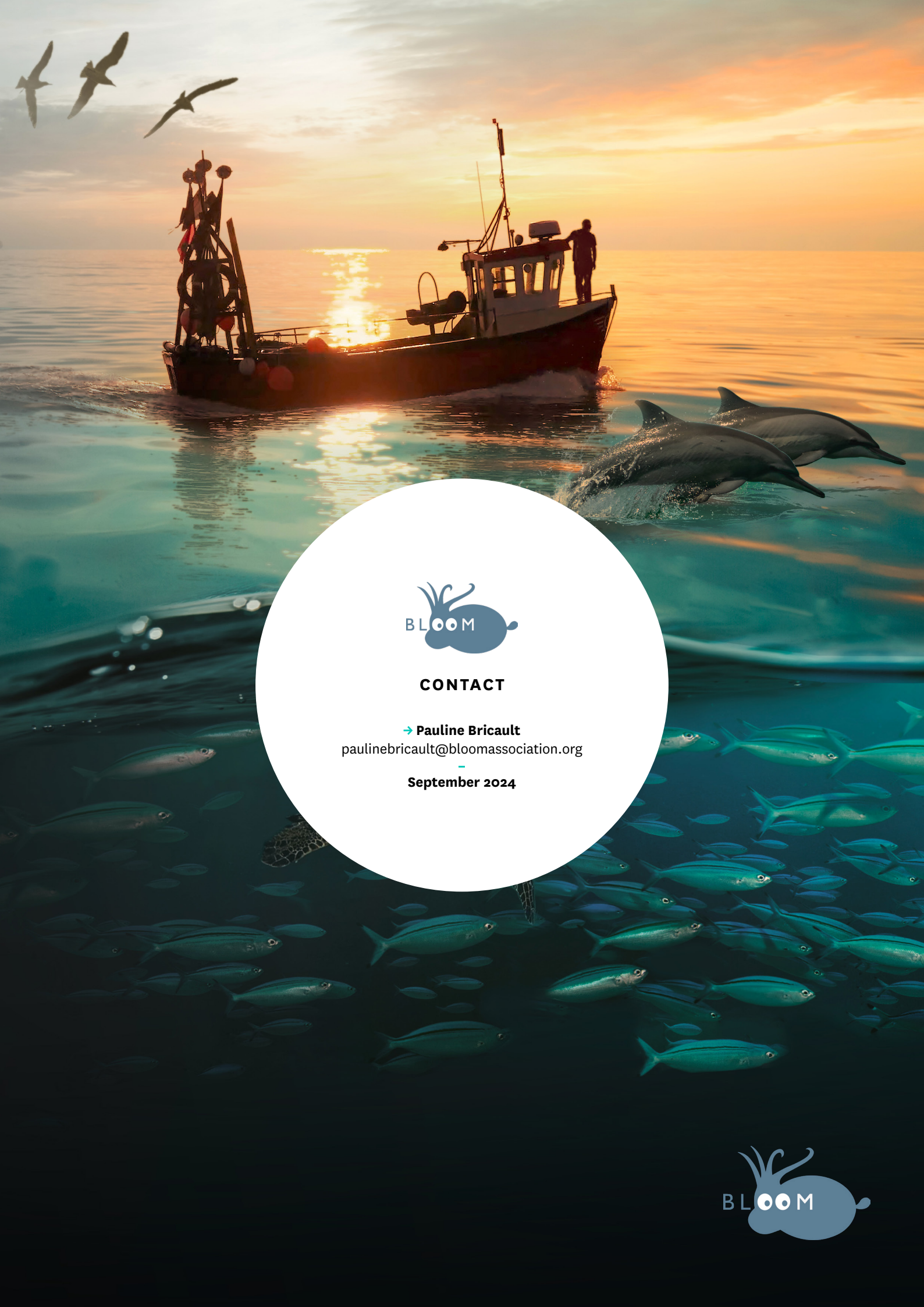
In this work BLOOM played a unifying role by bringing scientists together around the table and coordinating the steering of the study with Professor Callum Roberts' team.

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This scientific effort was funded by the Levine Family Foundation, a British philanthropic organization dedicated to restoring ocean health. Established by Miranda and Ben Levine, the foundation collaborates with scientists, conservationists, lawyers, policymakers and activists to combat the threats facing marine life and ensure a thriving ocean for future generations.

A publication in a prestigious specialist scientific journal

The article was published in open access in the npj Ocean Sustainability journal, a Nature Portfolio's scientific journal specialized in the promotion of Ocean conservation and management solutions.



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