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The Blue Economy

World Seagrass Day

1 March 2024

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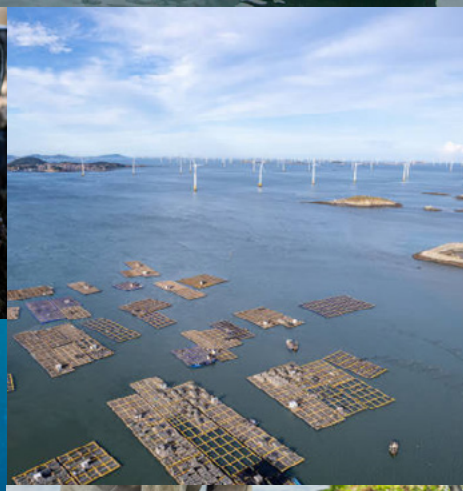
Contents



Introduction

By Rachel O'Connor and Chloe Vernon-Shore

Seagrass is the coral reef of temperate climates, providing a rich habitat for marine life. Seagrasses are often referred to as 'ecosystem engineers' and are central to the biodiversity of our waters. They provide a number of ecosystem services, including water purification, coastal protection and carbon sequestration.

The 25 Year Environment Plan and the Environmental Improvement Plan are driving the roll out of marine net gain (**MNG**) in England. The purpose is to "reverse the loss of marine biodiversity and, where practicable, restore it". Seagrass restoration is central to any policy for improving the marine environment through MNG.

Our waters host a multitude of activities, including fishing, shipping, aquaculture and offshore wind. The seas are becoming increasingly crowded and the demand to provide, food, energy and raw materials are also increasing.

The performance of our oceans is considered central to tackling climate change as well as meeting global food demands. The urgency of transitioning to a sustainable 'blue economy' has been brought sharply into focus.

1 March is World Seagrass Day!

We are marking the day by releasing a series of articles from the Michelmores' team who have been focusing on key developments in the protection and restoration of our marine environment.

As well as explaining how policy is being shaped around MNG, the articles also highlight some of the incredible work that our clients are undertaking in this field.

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Seaweed Farming - An interview with Mollie Gupta at WWF

By Seema Nanua

Seaweed, a marine alga typically found in coastal areas, forms part of the rich biodiversity within the Earth's waters. The plant-like organism is well known to have a number of environmental, ecological and economic benefits for the planet. It should come as no surprise that it is now therefore a key focus area for tackling marine biodiversity loss and climate change mitigation and adaptation globally. In many countries, seaweed farming practices are already commonplace. Given the known potential benefits, seaweed farming has also become increasingly popular in the UK over recent years. This is notwithstanding the complex regulatory framework within which seaweed farming currently sits.

Global environmental charity, WWF, is one of the key organisations actively supporting seaweed farmers in the UK and undertaking vital research in this area. Mollie Gupta, Seaweed Solutions Project Manager at WWF, provides some exclusive insight into the seaweed industry and the work she is involved in.

What is your role at WWF?

I am the Seaweed Solutions Project Manager, which means I coordinate with all partners to ensure delivery of our wider strategy and programme of work. This work seeks to support seaweed farms to deliver environmental benefits in the UK, both from the point of view of seaweed farms having positive impact in the ocean and from the way that seaweed products can be used to support wider food system transformation.

What does the global and UK seaweed farming industry currently look like?

Seaweed aquaculture is already prevalent in many places around the world. The main producer regions include China, Japan, South Korea and Indonesia. Seaweed is often integrated into the cultures of some of these nations and seen as a delicious food ingredient.

In contrast in the UK, it is little known that before the industrial revolution, we actually used seaweed for years in farming, pharmaceuticals and textiles. Most of this seaweed came from wild harvesting. In recent years there's been interest in seaweed farming and we've seen the number of farms grow significantly in the last 10 years; an exciting trend that we hope to see continue.

Why is seaweed farming considered "regenerative"?

Growing seaweed does not require any pesticide, fertiliser, freshwater, or feed. This makes it drastically different to many other forms of food and biomass production, which usually require significant input. In addition, seaweed grows quickly, is diverse in nutrients and uses, and can be combined with other forms of aquaculture such as shellfish cultivation.

Seaweed farms are able to reduce local acidification problems, help with eutrophication, and can support biodiversity by turning empty water columns into a 3D forest. For these reasons we consider it to be regenerative for the environment.

As well as helping to regenerate the ocean, seaweed farms can be supportive to local communities by offering jobs, supporting local tourism, and providing connection to the coast.

> *"Seaweed farms are able to reduce acidification problems, help with eutrophication, and can help support biodiversity..."*

Why is WWF particularly interested in seaweed farming?

WWF is particularly interested in regenerative seaweed farming's ability to bioremediate excess nutrients – such as run off from agriculture and pollution from sewage. Such seaweed could then, once harvested, be used as biostimulant and returned to field to help support crops to grow, reducing the need for synthetic fertilisers. This is just one example of how seaweed in the UK could support circularity in our food system and reduction in nutrient inputs, especially as we know nitrogen is a problem in our freshwater systems.

> *"...Seaweed in the UK could support circularity in our food system and reduction in nutrient inputs..."*

There are other innovative uses of seaweed which we are interested in, including seaweed as a possible feed protein in the future. We are working with Oceanium to see if it is possible to extract high quality protein from UK grown seaweed species, which matches other feed proteins like soy and could therefore one day help to displace these. This is an example of how our overseas land footprint and carbon footprint could be reduced by seaweed innovation in years to come.

We believe seaweed products could help to displace carbon intensive products such as fertiliser and feed protein, and therefore lead to overall reductions in the GHG emissions from our food system.

However, we need seaweed farms to reach a degree of appropriate scale to be able to support these ambitions, and hence our programme is looking to support UK seaweed farming.

Tell us a bit about some of the seaweed projects WWF are working on at the moment?

There is the Oceanuim protein project discussed above. We are also looking at how seaweed biostimulant could help us to reduce synthetic fertiliser use in Norfolk - with project partners such as Norfolk Seaweed, UEA, Cefas, Biotechnica and others.

We are supporting a PhD project at Newcastle University looking into blue carbon cycling on seaweed farms.

We are funding biodiversity monitoring work with PEBL; looking at building the evidence base around the impact of seaweed farms on local ecology.

We have a large research project ongoing called the Value of UK Seaweed which will highlight and illustrate the potential benefits of a future UK seaweed farming sector.

We've also recently published social science research with SAMS.

And more!

Are there any developments in the seaweed farming world that you have been particularly excited about recently?

There are many! The first harvest of shellfish and seaweed from an offshore wind farm in Sweden is an exciting development.

> *"...harvest of shellfish and seaweed from an offshore wind farm..."*

The recent Scottish Seaweed Industry Association (**SSIA**) conference was also brilliant and helped to bring the sector together. There are some helpful summary documents on the website which are worth a read.

The recent work published by SAMS which WWF supported and our future Value of UK Seaweed work which I have linked above are also significant.

What advice would you give to someone looking to enter the seaweed farming industry today?

This is an exciting sector with a future full of innovation and discovery. We would really encourage those interested to join the sector to closely consider the skill-set they can offer, and place this towards an area in need of support. That could be anything from hands on skills on sea farms, to marketing and communications support, to research and evidence building.

To find out more about WWF, visit www.wwf.org.uk.

Marine Net Gain - The DEFRA Consultation

By Rachel O'Connor

In 2022, DEFRA launched a consultation on the principles of Marine Net Gain (MNG). The consultation considered MNG as part of an appropriate regime for putting the marine environment into 'recovery' - the sort of language that leaves little doubt about the state of our waters. The consultation proposed that MNG is mandated for certain developments, or infrastructure forming part of development, below the Low Water Mark.

The ambition is to secure *"...the responsible and sustainable growth of marine industries"*, putting biodiversity at its core whilst recognising the wider, additional environmental services. The proposals in the consultation set out that MNG would operate alongside existing planning policy and practice, and provide the tools for offsetting impacts from development that cannot be avoided, minimised or mitigated (the mitigation hierarchy).

The Aims of the Consultation

The consultation recorded that MNG will:

1. *"secure positive outcomes for the environment by contributing to halting and reversing the longer-term trend of biodiversity decline through restoration and creation of healthy and high-quality marine and coastal habitats, and protection of species"*

2. *"deliver lasting improvements, contributing to ocean recovery, supporting efforts in climate change mitigation, resilience and adaptation"*

3. *"enable responsible and sustainable growth of marine industries and development activities, recognising their essential contribution to meeting the UK government's climate change commitments, whilst ensuring the protection of our marine environment"*

4. *"define strategic objectives and goals, increasing the potential for relatively small interventions to make a more significant collective contribution to improvements in the overall status of the marine environment".*

MNG Principles

The consultation put forward 9 Principles for MNG. It is intended that those principles will inform an assessment framework, adopting a mandatory "nature first approach" that will be proportionate and appropriate to the scale and type of development. It is worth highlighting several of these principles.

Principle 1 - "Marine net gain will measure impacts on habitats and species."

A focus on species as well as habitats reflects that the marine environment is highly dynamic and the species highly mobile.

Principle 2 - "Marine net gain will seek to incorporate environmental benefits underpinned by biodiversity".

Recognising that biodiversity enhancement and habitat restoration can also deliver additional benefits or ecosystem services, e.g. water purification, coastal protection and carbon sequestration.

Principle 5 - "Marine net gain requirements will be proportionate and appropriate to the scale and type of development"

The consultation highlights the challenges of delivering a fully comprehensive framework and the delay that this will have on establishing a MNG regime. To tackle this (initially, at least) a contribution-based approach is proposed which would *"operate like a levy on marine development"* and be used to fund priority environmental enhancements or restoration projects.

Principle 8 - "Marine net gain will incentivise the delivery of strategic interventions in addition to meaningful site-based interventions."

DEFRA anticipates that a directory of designated strategic interventions informed by the MNG principles will be established. The consultation set out that interventions could also incorporate non-statutory opportunities and referred to the Environment Agency's Restoring Seagrass Meadows, Salt March and Oyster Reef (ReMeMaRe) project.

The Consultation Responses

Following a Freedom of Information Request, in January 2024, the full responses to the consultation were made public. There was broad agreement with the introduction of MNG and the principles proposed. A few themes from the responses included:

- concerns around increasing levels of uncertainty and an increased regulatory burden without addressing the main threats facing the marine environment
- the practical challenges of assessing and monitoring species as well as habitats
- concerns regarding how to develop a robust and appropriate metric to quantify residual impacts of marine development
- calls for a simplistic approach to deliver marine restoration, recovery and enhancement whilst avoiding additional layers of complexity
- questions over whether developments which deliver low carbon energy should have their wider climate change benefits assessed as part of an "environmental net gain" approach
- the need to address onshore pollution which significantly impacts and undermines marine restoration efforts and in particular, intensive agricultural
- the need to recognise marine activities that have significant and long-lasting impacts on the marine environment but which are likely to fall outside of the scope of MNG, including fisheries and shipping
- the need to consider a wider environmental net gain approach and in particular the impact on the British Energy Security Strategy to deliver 50GW of offshore wind by 2050.

The Future Fisheries Alliance (WWF, RSPB and the Marine Conservation Society) advocated for MNG to be integrated into a "holistic vision for our seas". The Alliance points out that the fishing industry is a key beneficiary of MNG and stated in their response:

> *"Continuing to consider fisheries and aquaculture in a silo, removed from other marine industries and separated further by its lack of inclusion in a potential marine net gain system prevents its integration in a strategic vision for our seas, which considers all impacts, and ultimately limits Government's ability to consider joint solutions to remove pressures on the marine environment."*

The Government's Plans for MNG

As a result of the consultation, the UK Government has confirmed that it will (amongst other things):

1. include impacts on both habitats and species within the MNG assessment framework
2. recognise wider environmental benefits when assessing MNG interventions but only where they are underpinned by biodiversity enhancement
3. explore a selection of options for a contributions based approach alongside work to explore the applicability of biodiversity metrics to the marine environment
4. work with stakeholders to develop a process for assessing MNG and a basis for contribution, taking into account the level of impact
5. not include fisheries within the scope of MNG requirements.

Next for MNG

The Government has confirmed that it will now commission the evidence needed to take the proposals forward. Stakeholders will be invited to contribute to the policy development.

Going forward, a robust assessment framework is to be developed adopting a contributions-based approach and a "suitable simple metric" to assess impacts and interventions to the marine environment.

Marine Net Gain - The Commercial Opportunity

We have touched upon the environmental advantages of promoting marine nature recovery throughout this publication. Sometimes, rightly or wrongly, it takes the identification of economic opportunities to really see the acceleration of an emerging sector.

In this article, we consider the commercial opportunities of marine net gain and highlight three innovative businesses that we are working with that are advancing marine nature recovery and building growth businesses while doing so.

The government released its response to the public consultation on the principles of Marine Net Gain (**MNG**) last year (the **Response**).

Net gain is the concept of leaving the environment in a measurably better state than prior to any development. We have seen an explosion of activity following the mandatory requirement on all land developers in England to deliver a 10% Biodiversity Net Gain (**BNG**) when building new housing, industrial or commercial development. The new mandatory BNG applies to developments on land and intertidal locations, down to the mean low water mark.

MNG will complement the mandatory BNG regime and, pursuant to the Response, apply to any development that takes place below the mean low water mark. Assuming the structure of the BNG regime is followed (and the Response does refer to strong support by respondents of a mandatory requirement for MNG), marine development will only be permitted if the developer brings about or secures an improvement in the marine environment.

Marine development includes, for example, fisheries, port and harbour development, sewage and waste transportation and offshore wind farms. All involve significant infrastructure and will frequently result in significant damage to the marine environment.

If mandatory MNG is adopted in line with the Response, there will be a statutory duty on all those in industries that undertake marine development, such as the marine fishery, marine engineering, marine transportation and marine energy sectors, to improve the marine environment either in and around their development or elsewhere.

So how does this create commercial opportunities?

We are seeing a burgeoning market develop for BNG units where on-site BNG is unavailable (i.e. the mandatory requirement to achieve a minimum 10% BNG cannot be achieved within the red-line boundary of a development site) and developers need to meet their BNG commitment by 'buying-in' BNG from a third party.

The same arrangement is easily plausible with MNG, with biologically rich and diverse marine environments being established in the best ecological places for them (which may be outside of the red-line boundary of a marine development) and the value in that marine biology bank being sold to developers that need to achieve MNG.

One of our clients who is exploring a collaborative approach to MNG is ARC Marine.

ARC Marine has developed a plastic free, carbon-neutral technology that it utilises in a line of specifically developed products, including reef cubes®, Marine Matts and Intertidal reef cubes®, allowing a variety of marine industries to leave a lasting positive impact on the environment where they would not have otherwise done so.

ARC Marine's flagship products are designed to support and protect life on the sea floor. Manufactured entirely from marine-friendly materials, ARC Marine is offering a form of scientifically backed construction that is kind to the environment and enhances biodiversity.

Another client of ours in the blue sector is growing a network of scalable, offshore regenerative ocean farms or, as they like to call them, "**algapelagos**".

Co-Founded in 2021 by three times world record holder, Olly Hicks, Algapelago secured the largest licence for kelp cultivation in the UK. Based in North Devon, the first Algapelago regenerative ocean farm (**ROF**) is positioned for optimal growing conditions and minimal spatial conflict. As well as growing kelp and shellfish, a key focus for the Algapelago pilot farm (and all future farms) is to convert the seaweed biomass grown into ready products, such as feed additives for livestock and crop bio-stimulants.

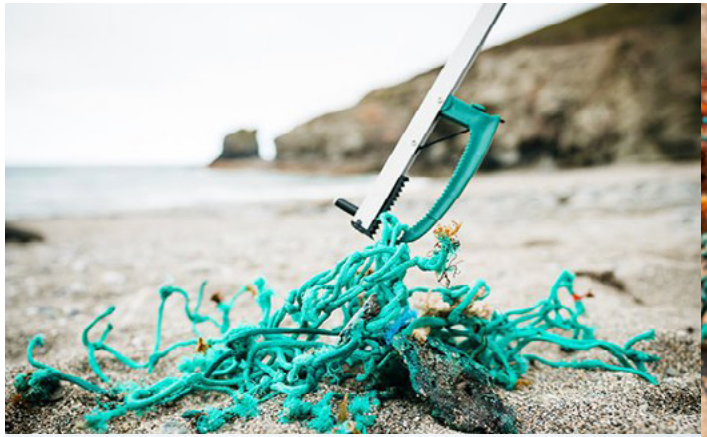
Our Q&A with Mollie Gupta of WWF (on pages 5 and 6 of this publication) highlights some of the benefits of seaweed farming, both in terms of the positive impact that it has in the ocean and in the way that seaweed products can be used to support increasingly in demand food systems.

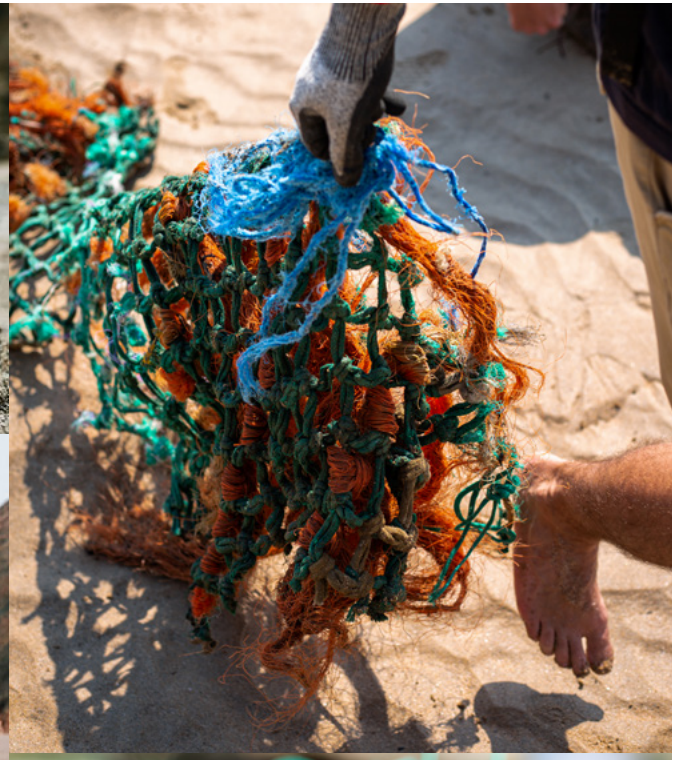
Finally, **Waterhaul** is improving the marine environment by recovering 'ghost gear' from the coastline and recycling it into designer eyewear. Ghost gear (lost or discarded fishing gear at sea) is abundant, strong and durable (it can last for up to 500 years in the ocean) and costly for fisherman to dispose of.

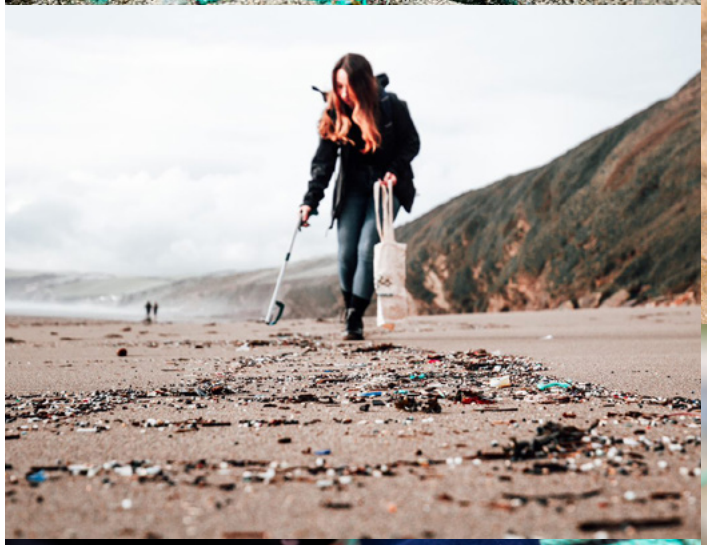
These qualities have an incredibly detrimental impact on the environment, frequently resulting in ghost fishing where marine life gets trapped and entangled and attracts more species, but make it an excellent recycled, raw resource.

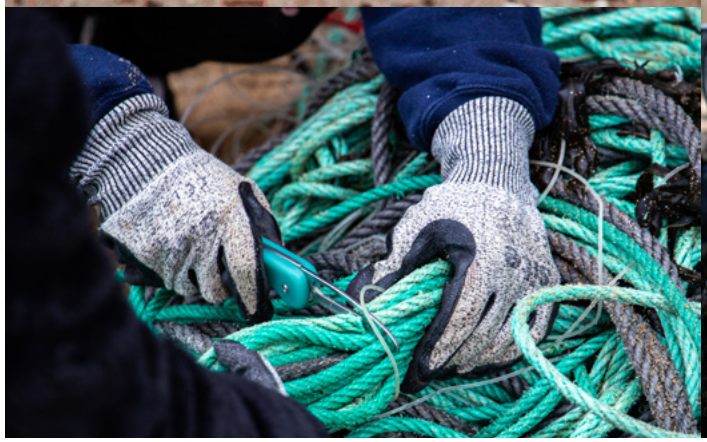
By creating a circular economy pathway for fishing gear, Waterhaul are able to give this 'waste' new value, incentivising recycling instead of disposal at sea.

If you have a growth business in the Blue Sector, we would be keen to hear from you.









Regulating the marine environment in England and Wales: How do we currently protect our marine habitats?

By Katharine Everett Nunns and Will Dyer

In Great Britain, the potentially harmful effects of activities in the marine environment are controlled by a complex system of marine management, primarily governed by the Marine and Coastal Access Act 2009 (**MCAA**). This article provides a brief introduction to MCAA, and considers how the current regime has operated to protect the marine environment.

MCAA introduced a single framework for marine management and licensing. At that time, the policy emphasised the need to sustainably manage, enhance and use the natural environment for the benefit of current and future generations.[1] This was effected in MCAA by imposing an objective on the regulator to contribute to the achievement of sustainable development (**General Objective**).[2]

How do we currently protect the marine environment?

The regulators of the GB marine environment (**Regulators**) further the General Objective primarily through marine licensing and conservation zoning, and the management of marine fisheries.

Marine Licensing

Unless an exemption applies, anyone undertaking an activity listed in MCAA must have a licence from the licensing authority.[3]

The list of licensable activities captures most activities in the marine environment, including any that involve removing or depositing objects; constructing, altering or improving works (in or over the sea, or on or under the seabed); scuttling and dredging, among others.

When determining an application for a marine licence, the licensing authority must have regard to the need:

- to protect the environment
- to protect human health
- to prevent interference with legitimate uses of the sea (e.g. navigation, fishing).

The authority may also consider any other matters that it thinks relevant, provided always that it functions in accordance with the General Objective.

*Marine Conservation Zones (**MCZ**s)*

MCAA allows the Regulators to designate zones to conserve or protect species of marine flora and fauna, marine habitats, and other significant features of the seabed.

Where a public authority's functions may affect an MCZ, that authority must act in the manner that best furthers or (if this is impossible) least hinders the MCZ's conservation objectives.

To help further these objectives, and to protect MCZs generally, the Marine Management Organisation (**MMO**) may make byelaws to control activities not currently regulated (licensed) in the inshore region.[4]

This supports a key MCAA objective of building a network of marine protected areas (**MPA**) that contributes to the conservation or improvement of the marine environment.[5]

*Marine Management Organisation (**MMO**)*

MCAA established the MMO, the primary Regulator of marine activities in the seas around England and Wales. The MMO exercises many functions on behalf of the UK Government. In so doing, it must reach a balance between environmental, social and economic considerations.

Management of Fisheries

The MMO may, for example, make byelaws relating to the offshore exploitation of sea fisheries resources (animals or plants) in England and Wales for the purpose of conserving marine flora and fauna or marine habitats. The Regulators have greater powers in this respect in relation to certain MPAs.

MCCA also established inshore fisheries and conservation districts/authorities (**IFCA**s) to manage the exploitation of sea fisheries with a direction to 'seek' to ensure that this is carried out in a sustainable way.

Historically, GB's fishing fleets and stocks were managed under the EU Common Fisheries Policy which aimed to ensure the long-term viability of fish stocks and promote sustainable fishing practices. The Fisheries Act 2020 now provides the framework for GB fisheries management.

1. Defra, "A Sea Change: A Marine Bill White Paper" (Defra, 2007) p 2.
2. Strictly, the General Objective applies to the regulator in England. However, the equivalent organisation in Wales has a similar objective. For simplicity, we refer to both objectives as "the General Objective" here.
3. The Marine Management Organisation, in England; or Natural Resources Wales (**NRW**), in Wales.
4. The Welsh Ministers have an equivalent power to make "conservation orders" in Wales.
5. This is to fulfil the UK's requirement to designate ecologically coherent and representative networks of Marine Protected Areas under the Marine Strategy Framework Directive (2008).

Has the existing regime been effective?

Marine Licensing

Though the Regulators may include any relevant matters in their consideration of marine licence applications, the prescribed decision-making criteria (see above) is protective and preventative.

The Regulators are encouraged by the General Objective to promote a positive change in the marine environment, but the language of marine licensing instead promotes decisions that maintain the status quo. The focus of policy remains on marine recovery and habitat enhancement, and there is some question on how that can be achieved under the current licensing regime.

Marine Conservation Zones

Some of the criticisms of how MCZs operate include:

a) Protecting features of conservation interest will not restore biodiversity

MCZs are intended to maintain or restore specific features (habitats or species) to 'favourable' condition, within defined areas. In this, MCZs are broadly successful; but there is evidence that feature-based conservation is not supporting the recovery of marine biodiversity.[6]

A long-term study of conservation measures at Lyme Bay found that adopting broad-scale habitat measures across the whole site resulted in a significant increase in biodiversity; exceeding the objectives for the individual features of conservation interest.

The 'whole-site' approach is notably more aligned with EU Directives (from which the UK's MPA policy derives) which recommend measures that improve an area's "ecological integrity" – the coherence of its structure, habitats and species, as a whole.

b) MMO byelaws fail to promote positive change

As with the narrow focus of MCZ conservation objectives, the limited scope of the MMO's byelaws regime undermines the wider goals of sustainable development. The MMO may make byelaws to *further the conservation objectives of MCZs or to*

manage the exploitation of sea fisheries resources. In either case, the purpose of any byelaw made under this power is limited to the conservation or protection of specific marine features.

Given that MCAA's model byelaws exclusively restrict or prohibit potentially harmful activities, it is unsurprising that there were only 10 MMO byelaws in force last year; all related to restricting the use of bottom-towed fishing gear.[7]

There is a question mark over how the regime can promote activities beneficial to the marine environment, and ensure that it is not instead inhibiting them.

Management of Fisheries

A major criticism of the regime for protecting the GB marine environment is the failure to recognise that marine conservation and fisheries management are interdependent.

The ability of fish stocks to replenish themselves is dependent on marine habitats providing nurseries for juvenile fish. However, certain fishing activities are linked to the destruction of those very habitats. A report produced by Oceana in 2023, "Taking Stock, The state of UK Fish populations 2023", stated that *"...destructive bottom trawling is allowed in 90% of UK offshore marine 'protected' areas [...] making a mockery of the concept of ocean conservation"*.[8]

Further, the Oceana report claims that 5 out of 10 of the UK's most important fish stocks are being overfished or are in a critical state. If that is the case, then the levels of fishing activity in the UK are not supported by the existing marine habitats despite a long-term policy to promote sustainable fisheries.

A thriving fishing industry is considered essential in providing nutritious, local produce and must be supported with thriving marine habitats.

How can MCAA be used most effectively to improve marine environments?

MCAA provides a comprehensive framework for the protection of our marine habitats, as well as providing the authority and the tools for the Regulators to give effect to the General Objective. To date, however, it has been deployed restrictively, protecting specific features without contributing to the restoration or enhancement of marine habitats. Meeting the wider aims set out under MCCA, i.e. sustainable development, requires more than maintaining the status quo.

Since 2018, the UK Government has consulted on how to incorporate a requirement for "Marine Net Gain" (**MNG**). MNG refers to the principle that new marine developments[9] should leave the environment in a measurably better state than before development. For MNG to deliver on restoring marine habitats and increasing biodiversity, a holistic management approach to all marine activity must be adopted, harmonising the competing demands on our waters.

6. Siân E. Rees, et al. "Emerging themes to support ambitious UK marine biodiversity conservation" Marine Policy, Vol 117, 2020.
7. MMO Guidance: Understand MMO marine conservation byelaws (Jan 2023).
8. Oceana, "Taking Stock: The State of UK Fish Populations 2023" (Sept 2023), p 3.
9. In this case, development activities in English waters below the mean low water mark.