

# Safeguarding Nearshore Marine Habitats at scale

**Lessons and recommendations from the  
implementation of the Sussex Inshore Fisheries &  
Conservation Authority Nearshore  
Trawling Byelaw (2019)**



This research was carried out by a social science researcher at the Marine Conservation Society (MCS), a UK-based charity that works for a cleaner, better protected, healthier ocean for everyone. It was funded by **The Oak Foundation** who are a grant maker with a focus on social justice and the protection of wildlife and the environment.

## Executive Summary

Coastal seas are among the most biodiverse and heavily used parts of the ocean. Particularly vulnerable to anthropogenic impacts, they warrant special attention to ensure we can safeguard environmental integrity and social well-being derived from the many benefits that flow from healthy and productive nearshore waters. While the number of Marine Protected Areas (MPAs) continues to grow and management of these sites is gradually put in place, MPAs are only a part of the solution. There is growing recognition of the need to think and act at a systemic level. While support for management of damaging impacts at scale grows, broadscale approaches are still not often implemented.

The case of the Sussex Inshore Fisheries Fisheries and Conservation Authority (IFCA) Nearshore Trawling Byelaw 2019 offers a useful learning opportunity, which may point to tools and approaches that could enable ecosystem-based management for the benefit of the environment, local livelihoods and well-being. To better understand the circumstances and processes that made this ground-breaking byelaw possible, we chose to couple a stakeholder centred and narrative approach with an exploration of the documented statutory process to map out the events and activities that led to the byelaw being implemented.

This report presents a summary of the pathway to implementation informed by stakeholder interviews and desk-based research. It explores stakeholder perceptions of the impacts of the byelaw and concludes with a set of insights and recommendations that we hope will resonate with others working to safeguard coastal seas at scale.

There was a long-running, shared awareness of the rich habitat, including an expansive kelp forest, off the coast of West Sussex among various stakeholders as far back as the 1950's. This awareness turned to concern in the 1980's as the effects of stormy weather and changes in fishing practices were thought to be causing damage. Modest management of trawling activity was introduced in the late 1990's and in the 2000's district-wide work began to better understand both the habitat and fishing activity to inform what management would be most likely to ensure the future health and productivity of the Sea Fisheries Committee (predecessor of the Sussex IFCA) district.

At the same time, there was a shift in thinking towards more systemic approaches, starting with the Millennium Ecosystem Assessment and grounded in the UK Environment Policy landscape with the publication of the 25 Year Environment Plan. This conceptual shift was pivotal in shaping the Sussex IFCA Nearshore Trawling Byelaw.

In England, the role of the Inshore Fisheries and Conservation Authorities (IFCAs) lends itself to systemic approaches – they are responsible both for the recovery and protection of vulnerable and depleted seabed habitats and must also ensure that the extraction of fisheries resources is done in a way that can underpin secure livelihoods into the future. The IFCAs governance structure includes a multi-stakeholder Authority, or committee, that co-develops and makes byelaws. This committee includes membership from extractive industries (e.g. fishing), local authorities, civil society, and academia – situating it within a holistic local context. Not siloed behind closed doors, the Authority is connected with the local community.

Building on existing local knowledge, engagement with and concern for the marine environment, the story of the byelaw, and the kelp in particular, caught the local and national imagination. Alongside the established statutory process that was already in motion, a concerted strand of advocacy work emerged, which brought the narrative into the wider public domain and effectively demonstrated support for the byelaw and for marine habitat protection. Making sure that support was recognised by relevant policy and decision-makers.

Having satisfied the stringent quality assurance process the byelaw was confirmed by the Secretary of State in March 2022 and came into force, thus creating one of the largest areas permanently closed to trawling in English waters enforceable by law.

While the environmental impacts of the implementation of the byelaw may take a decade to come into focus, stakeholders were clear that social impacts were already being felt. These impacts are not felt equally across stakeholder groups, and neither are they all positive.

A review of stakeholder experiences of the process and early thoughts on impact provide insights into elements of the process that they feel contributed to its successful implementation, but also stakeholder thoughts on what could be improved if similar approaches were being considered elsewhere. Insights cluster in five groups: first around the critical importance of clear, honest **communication** throughout the process; secondly the importance of **access** to information and participation was key; thirdly – effective **collaboration** was a feature of both the statutory process and advocacy activity, there was shared concern for those who stakeholders who had lost out because of the byelaw suggesting a need to consider **just transition** in marine resource management. And finally, a recognition for the need to think about marine resource management issues in context – seeing the **bigger picture**.

Reflecting on all that we learned during this research, we are making 8 key recommendations for work in support of safeguarding nearshore marine habitats at scale.

1.	<b>Shifting the management approach to an ecosystem-based approach in nearshore waters</b> , including developing a better understanding of local ocean ecosystem services, will facilitate interventions that target areas of high value and/or vulnerability whilst allowing sustainable fishing approaches to continue.
2.	<b>Framing the management interventions</b> to both the fishing industry and the wider public simultaneously, and in a positive way, were important to understanding, engaging, and gaining support for the Byelaw in Sussex.
3.	<b>Utilising a range of evidence to inform management interventions</b> , including biological, social and economic data from historical archives, long-term monitoring and anecdotal evidence alongside contemporary scientific data, provides a credible and accessible evidence base.
4.	<b>Maintaining collaborative relationships with stakeholders that are characterised by trust and respect</b> is key to successful marine management processes. Mutual trust and respect is essential throughout the process and stakeholders should be engaged from the outset to discuss options and facilitate the input of their insight and expertise.
5.	<b>Connecting people with nature is important within marine management processes</b> . The use of film, social media and influential figures are useful and accessible communication techniques for gaining interest, engagement and encouraging participation in marine management.
6.	<b>Information dissemination should be targeted and tailored to meet stakeholder needs and interests</b> . The fishing community needs accessible but detailed information, whereas the local community need a story with a simple premise to capture their imaginations.
7.	<b>Encouraging, facilitating, and supporting stakeholders</b> who are detrimentally impacted by the byelaw implementation. Where possible, the provision of material support for a just transition to lower impact fishing should be considered to ensure equitable conservation outcomes.
8.	<b>Fisheries management measures should be considered and implemented in the context of a suite of management measures</b> that reduce multiple pressures on the marine environment. These should be widely shared, with stakeholder opinions considered throughout the management approach, rationale, and process.

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# 1. Context

The increasing use and exploitation of the marine environment has caused significant changes to marine ecosystems (Lotze, Coll and Dunne, 2011), their function and the services and benefits they provide to people (Barbier, 2020). These changes are perhaps most evident in inshore waters (Elliot, 2014) and global trends show a decline in the quality of coastal regions (Garmendia et al. 2010). While this impacts wider society, it disproportionately affects coastal communities that most closely rely on the coast and sea in a variety of ways (Lau et al., 2019). With 40% of the global human population living within 100km of the coast (Maul&Duedall, 2021), it is considered particularly important for these critical and highly used spaces to be sustainably managed for the benefit of future generations (Toropova et al. 2010).

Recognising the critical importance of maintaining the health and productivity of highly used and populated coastal regions, there is a requirement for marine resource management and policy that is informed by holistic evidence and designed to ensure the resilience of marine social-ecological systems. This means management should safeguard the environment, and in so doing, also safeguard material and non-material benefits for future generations, and only permit exploitation that does not jeopardise those future benefits. (Parsons, 2005). This holistic approach responds to the inextricable interconnection between marine habitat recovery and healthy functioning, productive fisheries, a thriving local economy and a shared sense of well-being.

In England, this social-ecological approach is reflected in the statutory duties of IFCAs. The 10 regional IFCAs were formed under the Marine and Coastal Act (2010) which superseded the Sea Fisheries Committees. The IFCA's are tasked with four statutory duties under section 153 of the Marine and Coastal Act:

1. Seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way
2. Seek to balance the social and economic benefits of exploiting the sea fisheries resources of the district with the need to protect the marine environment from, or promote its recovery from, the effects of such exploitation
3. Take any other steps which in the authority's opinion are necessary or expedient for the purpose of contributing to the sustainable development, and
4. Seek to balance the different needs of persons engaged in the exploitation of sea fisheries resources in the district

In addition, one statutory duty to fulfil under section 154 of the Marine and Coastal Act, 2010

1. IFCA districts must seek to ensure that the conservation objectives of any Marine Conservation Zones in the district are furthered

With these duties in mind, in 2019, the Sussex IFCA developed the Nearshore Trawling Byelaw. This byelaw, and the process that led to its implementation, offers an extremely valuable opportunity to examine what it takes to safeguard nearshore marine habitats and protect the services and benefits they offer to people. The area covered by the byelaw is now one of the largest areas permanently closed to trawling in English waters enforceable by law. Whole ecosystem approaches to marine management are widely supported but rarely implemented in practice (Patrick and Link, 2015) and this reflection could also provide insights into key barriers and enablers to achieving healthy marine habitats at scale.

Research into the planning, delivery, and implementation of the byelaw explores the commitment, actors and resources required to realise an ecosystem-based approach at scale. It also highlights the quality of evidence needed to meet the stringent requirements of the governmental quality assurance processes. This understanding could prove helpful when considering ecosystem-based management interventions elsewhere.

## **2. Method**

A mixed methods research design was chosen which placed particular emphasis on understanding stakeholder perceptions and experiences during the preparation for and development of the byelaw and its implementation. This was done purposefully, as examining diverse stakeholder experiences not only develops a more holistic account of a process, but it also ensures that stakeholders feel heard and able share their version of events. It is well documented that sustained stakeholder engagement in marine management processes can be linked to the successful implementation of the associated management interventions (Grafton, 2005; Rodwell et al., 2014).

This research took place between January and August 2022 and set out to piece together a detailed account of the circumstances, events and actions that led to the successful implementation of the Sussex IFCA Nearshore Trawling byelaw in 2021. This was achieved primarily through a series of 42 semi-structured stakeholder interviews. Interviewees were assured of anonymity to enable them to speak freely – they are only identified by sector where that seemed relevant to the narrative.

<b>Stakeholder Group</b>	<b>Interviewees</b>
Commercial Fishing Industry	13
Authority Representatives	12
Marine Businesses	3
Other Sea Users	3
eNGO's	8
Researchers/Academics	2
<b>TOTAL</b>	<b>42</b>

Sampling for these interviews was purposive, rather than random. Stakeholders were selected where they were known to have been engaged in, care about, or be impacted by the byelaw. Interviewees were identified through existing networks and allowance was made for 'snowball' sampling to reach beyond known stakeholders. The goal was to ensure that the voices included were diverse in terms of stakeholder group and geographic location. The interviews were accompanied by a review of key published material related to the byelaw and key, relevant peer-reviewed journal articles.

A decision was taken to take a narrative approach – capturing the story of the byelaw in conversation with stakeholders and communicating it in a readable and accessible format. Once again this increases the chances of participants and other stakeholders to engage with the research output and the ongoing process of marine resource management in Sussex.

To provide some wider context, the Marine Conservation Society designed and administered an online survey. The survey was shared through their social media channels on Instagram, Twitter, and LinkedIn and distributed via e-mail to individuals who registered their interest at a Marine Conservation Society event in Sussex. The researchers utilised their connection with other NGOs and Sussex Wildlife Trust shared the survey through their internal email network. The survey remained live for 9 days from the 8th to the 16th August 2022.'

Reflecting on learning from the research process, this report highlights what we are calling the 'magic ingredients' that emerged as essential to making it possible to safeguard nearshore marine habitat at scale in this case, and which may be useful to practitioners, policymakers, and resource users in other contexts.



### 3. The Story

The following account of how and why the Sussex IFCA Nearshore Trawling byelaw came into being and people's views following implementation are an assimilation of the experiences and views of interviewees alongside information drawn from the published materials that were included in the desk-based review. Where information is taken from published data it is referenced. Otherwise, it is the collective story of the byelaw as told rather than an account which represents any one stakeholder's 'truth'. The story is told here in four concise parts. The first two – The Management Approach and The Byelaw Process give an impression of the context in which the process began and detail the work, undertaken by the Sussex IFCA to evidence, draft and make the byelaw. The third provides a snapshot of the wider engagement with the process which channelled public participation. The final part provides some insights into perceived or anticipated impacts of the byelaw.

#### Part I: The Management Approach

While there had been a local awareness of, interest in and concern for habitats and features of the local marine environment as far back as the 1950's, for many stakeholders interviewed in this sample, this story really began in the mid-eighties. There was a long-standing awareness of the existence of extensive kelp beds in the district – particularly in West Sussex between Selsey and Brighton. But between 1980 and 1990 volunteer dive data from the *Seasearch* project ([www.seasearch.org.uk](http://www.seasearch.org.uk)) documented that there had been a substantial decline in kelp abundance (Williams and Davies, 2020). During this time there was also an increase in severe, stormy weather and changes in fishing patterns were recorded. People remembered a particularly severe storm in 1987 which they believed to have caused substantial damage to kelp habitat. Council reports detail kelp washing ashore causing a public disturbance and some interviewees recalled this incident too. Around the same time there were changes in fishing patterns. People noticed increased use of towed fishing gear (particularly trawl gear) which was targeting seabass and seabream west of Shoreham. The perception that trawling had contributed to kelp deterioration, preventing its recovery and reestablishment in places where it had been widespread was shared by a few interviewees. Research has shown that trawling has widespread impact on benthic habitats (Van Denderen et al., 2015), and removing trawling allows habitats to recover (Hiddink et al., 2017). It is also documented by Bertocci et al., (2015) that giving kelp and other species the potential to recover provides not only habitat for adult fish, but also important ground for juvenile fish, supporting healthier fisheries long term.

In 2016 the Sussex IFCA initiated a review of its existing management of nearshore trawling in the District, considering all available evidence, to decide whether there was a need for further measures. There was already some nearshore trawling management that had been in place for some time in the shape of the Trawling Exclusion byelaw (1998) which prohibited trawling from 58km<sup>2</sup> of the Sussex district between May and October. Over the following four years the IFCA reviewed and collected evidence, explored alternative approaches and concluded that there was a case for new measures to be considered.

The Government's 25 Year Environment Plan was launched in 2018 by the then Prime Minister, Theresa May. It set out the Government's ambition *"that we will be the first generation to leave the environment in a better state than we found it"*. It also set out a very clear imperative for holistic approaches to safeguarding the environment and action to pursue ecosystem-based approaches at all levels. Of direct relevance to this report:

*"We cannot look at fish stocks in isolation. We must also protect the marine environment that is their vital habitat, protecting and improving it by joining forces with local stakeholders to find the most appropriate ways of drawing down the riches of the sea in a sustainable way."*

*"An ecosystem approach to fisheries management will account for, and seek to minimise, impacts on non-commercial species and the marine environment generally, including through technical conservation measures."*

In the context of the ecosystem-based approach in the Environment Plan, and based on best available evidence, the Sussex IFCA set out to design management which would protect nearshore natural capital assets. They proposed that removing trawling pressure from relevant areas of the District would protect essential fish habitats, fish, crustacea and mollusc populations. This would, in turn, improve and sustain benefits to most local commercial and recreational fishers while also ensuring that other sea users and local communities could enjoy and benefit from associated ecosystem services now and into the future. This was a move away from the widely implemented conventional target species approach which focused on biological objectives for maximising sustainable yield (Defra et al., 2019).

## Part 2: The Byelaw Process

The Sussex IFCA nearshore trawling byelaw process was carried out under statutory duties attributed to IFCAs under sections 153 of the Marine and Coastal Act (2010). The whole process was overseen by the IFCA Committee, and all aspects consulted on at both Quarterly Authority Committee meetings and Technical Subcommittee meetings. The way the IFCA is structured creates the opportunity for co-development of management measures with members of a range of key stakeholder groups represented on the Authority. The six main steps in the process are summarised below. A more detailed account of the process is available in Annexe A.

	<b>STEP</b>	<b>When?</b>	<b>What happened?</b>
<b>1</b>	<b>Informal consultation</b>	by JAN 2018 by MAR 2018 by APR 2018  JUNE 2018	Scope agreed Evidence collated Evidence, policy objectives & management options presented to Authority & Technical Subcommittee Informal consultation open
<b>2</b>	<b>Management options phase</b>	BY JUL 2018  JUL 2018  by OCT 2018  JAN 2019	Informal consultation responses collated Draft management options prepared Informal consultation response and draft measures presented to Authority Draft narrowed down to final options and presented to both committees Final options presented to both committees
<b>3</b>	<b>Draft byelaw phase</b>	by MAR 2019  MAR 2019 APR 2019  by JUL 2019	Targeted management options, draft byelaw text and supporting documents prepared All documentation presented to Technical Subcommittee All documentation presented to Authority for deliberation (industry present) Byelaw information including Tranche 3 MCZ data, & bass data reviewed and impact assessment drafted and presented to both committees
<b>4</b>	<b>Making the byelaw</b>	JUL 2019	All documentation presented to Authority and the byelaw is made.
<b>5</b>	<b>Formal consultation</b>	SEP–OCT 2019	Statutory 28-day consultation process. All documentation made available for comment and feedback taken into account.
<b>6</b>	<b>Quality Assurance</b>	JAN 2020– MAR2021	Open dialogue with the MMO Legality checks: MMO Legal Content checks: Defra Sign off: Secretary of State 18 MAR 2021

Whilst there was no guarantee at the start of 2020 that the byelaw would be implemented, the Sussex IFCA were preparing for that possibility. Working with Zoological Society London (ZSL) they carried out towed camera surveys which would be replicated annually. This initial survey would provide a baseline for the current health of the seabed and be used to monitor the impact of the byelaw following its implementation. Sussex IFCA also prepared

information targeted at those vessels most likely to be negatively impacted by implementation of the byelaw.

The byelaw became enforceable when the Secretary of State confirmed the byelaw on the 18th of March 2021. Once the Sussex IFCA had received e-mail confirmation, they immediately distributed IFCA documents to affected stakeholders. They also began sharing information relating to enforcement as well as working with a variety of partners to deliver research which focusses on kelp restoration and habitat enhancement.

### **Part 3: Wider Engagement**

While delivery of the years of work that is required to fulfil the stringent requirements of evidencing, drafting, consulting on, making and implementing the byelaw was and remains the duty of the Sussex IFCA, there was an unusual level of wider interest and engagement in the progress of this byelaw.

During the draft byelaw phase the founder of Big Wave Productions became interested in the proposed introduction of trawling management. They offered to work on a media campaign to generate awareness and support for the byelaw and began talking to the Sussex Wildlife Trust and IFCA biologists about making a film about the kelp in Sussex. The Byelaw was made in July 2019 and in August of that year, Big Wave, with a little help from a couple of external funders, largely self-resourced a film. The film was shared with the Sussex IFCA and Sussex Wildlife Trust and Sir David Attenborough agreed to endorse the byelaw restrictions and provide the narration.

It was however during the formal consultation period in 2019 that wider interest in the kelp and the byelaw gained momentum. Community and environmental organisations in Sussex were particularly engaged and keen to act. While these groups were wholly independent from the byelaw process, their interest played a key role in increasing awareness of and engagement with the process. During this period the *'Help Our Kelp'* group emerged – drawing on energy from Big Wave Productions, the Blue Marine Foundation, and the Sussex Wildlife Trust. They launched a media campaign including the 7-minute, online kelp film narrated by Sir David Attenborough. The film was viewed by many millions across several mainstream and social media platforms. The aim was to engage with the wider public to show support the byelaw. The Sussex Wildlife Trust hosted a *Help our Kelp* page on their website which linked directly to the formal public consultation and directly petitioned the Secretary of State. Other groups began to take an interest and offered their support, including the Countryside Link who offered to speak to government bodies in support of the byelaw. With growing interest, *'Help our Kelp'* began to expand its membership to include more eNGO's, academics and others. They

recognised that different partners had different roles to play and divided work on national and local scale, utilising the experience and strengths of partners. The consultation received over 2,500 responses from the public which was 25 times more responses than the previous seven byelaws introduced in the district.

Responses to the consultation suggested that the commercial fishing industry was divided, with some in support of and some objecting to the byelaw. Trawlers were largely against the management measures whilst fishers using other methods were largely supportive. However, while they were supportive of seabed protection, they had concerns about the management approach and the byelaw process. The public, businesses and other authorities were largely supportive, but some concerns were raised by authority representatives about both the accessibility of the byelaw process and commercial fishers who directly lost out. In addition, the Sussex IFCA and local MPs received letters in support of the byelaw including from businesses, charities, local people, and public bodies.

There was sustained interest in the byelaw during the quality assurance step, with local MPs working closely with government ministers to chase the status of the byelaw. *'Help Our Kelp'* continued to drive public pressure to maintain momentum through public engagement activities. Once the byelaw was confirmed, they began to consider future action and research. Academics, community groups, organisations and charities developed several research proposals to support kelp restoration and wider habitat protection. At the time of writing (October 2022) a range of relevant research is underway in Sussex.

## Part 4: The impacts of the byelaw

At the time of writing (Oct 2022) very little has been documented about the impact of the byelaw from either an environmental or a socio-economic perspective. It is very early days. This will certainly change as social, economic, and ecological research that is now underway starts to deliver insights.

The perceived and anticipated impacts of the byelaw described here are an account of what was shared during the 42 stakeholder interviews conducted in Summer 2022.

The following table provides a summary of the impacts, which are discussed in more detail below.

<b>ENVIRO IMPACTS</b>	<p>It may take a decade to see and understand the environmental impact of the byelaw and it will be different in different areas.</p> <p><b>Anticipated impact</b> A more diverse seabed Plateauing in a 'recovered' state Increased biomass Less fish removed from the system More juvenile fish and good habitat for them Larger stocks for those not trawling (static gear, angling) Changes in fishing behaviour Environmental hazard of smelly kelp onshore</p> <p><b>Current impact</b> Some recovery of kelp and associated species (disputed by some stakeholders) Disproportionate impact on trawlers Lack of differentiation between more and less destructive trawl gears</p> <p><b>Wider views</b> The impact of trawling is not the only pressure on fish stocks or marine habitats Importance of understanding cumulative pressure: climate change, pollution, diversity loss</p>
<b>SOCIAL &amp; ECONOMIC IMPACTS</b>	<p>Social impacts (both positive &amp; negative) are already being felt. Social impacts will not be experienced equally across stakeholder groups.</p> <p><b>Anticipated impacts</b> Shift away from short-term to more holistic, long-term approach and benefits from a Natural Capital Approach Continued disbenefits to some parts of the commercial fishing industry Some fishers stand to gain as a result of reduced competition and increased stocks Reduction in gear conflict Reduction in lost / ghost gear Further squeeze on trawlers in the district leading to displacement Benefits to tourism Increased opportunities for collaborative restoration and research Business opportunities</p> <p><b>Current impacts</b> The ocean is no longer 'out of sight, out of mind' Effective visual communications engages more people with the resource If kelp recovers support will grow Benefits to wider society being considered Community action and increased public interest People engaged with and have been affected by the byelaw in a very emotional way (positive &amp; negative)</p> <p><b>Impacts on commercial fishers</b> Impacts were felt immediately by trawlers The byelaw has resulted in economic losses for some Both high &amp; lower impact trawl gear has been affected Fishers are trying to diversify, but facing a range of challenges</p>

## Environmental Impacts

Interviewees broadly agreed that it was too early to understand the environmental impact of the Sussex IFCA Nearshore Trawling byelaw. One respondent suggested that as one of the UK's largest rewilding projects, it is likely that any changes could be observed across a 10-year period. It is projected that the biggest environmental impact will be seen between Shoreham and Selsey, particularly in terms of habitat recovery.

**Anticipated Impact:** Interviewees felt that removing trawling would stimulate a more diverse seabed along the coast until it reached a 'recovered state' where it will 'plateau'. In a recovered state the area will be much more diverse, but it would also attract more animals as it would provide additional habitat, particularly for juveniles. With the absence of trawlers, more fish will remain in the sea to spawn, increasing their overall population size which will benefit both commercial and recreational fishers. One fisher reported that he was targeting the same species by an alternative fishing method after diversifying, so another anticipated impact may be a change to fishing behaviour. There is some concern among the local community that the kelp returning will wash up on the beach after storms and create a hazard in terms of smell.

**Perceived current impact:** Observations by some interviewees, particularly sea users, suggest that there may be some recovery of kelp and associated species, although this has been disputed by some commercial fishers. Ongoing monitoring and research are needed to corroborate these observations and provide any causation. Fishers using trawl gear largely believe that long-term environmental improvement and subsequent effect on fish stocks were not a sufficient reason to change long running practices, particularly those who use proactively less destructive trawling methods.

**Wider views:** There was a shared sense, across stakeholder groups, that the environmental impact of trawling on both seabed habitat and fish stocks should be considered alongside a myriad of other pressures. Other issues of concern that interviewees should be addressed and monitored included climate change, invasive species, and sewage. Overall, there was a demand for trawling management, but only as part of a suite of wider marine management interventions to ensure a fair and holistic approach to protecting and enhancing fish stocks.

## Social Impacts

It was evident from interviews that social impacts are already being felt. There was a sense among many that, for the most part, marine stakeholder connections had been improved because of the byelaw. However, the implementation of the byelaw was also reported to have had negative impacts on social relations – for example, causing friction between some fishers and the IFCA officers. It was acknowledged that social impacts will not be felt evenly across marine stakeholder groups.

**Anticipated impacts:** Interviewees felt that, through the byelaw process, the local regulator had demonstrated to other local bodies how to translate policy recommendations into practical management interventions utilising best available evidence. The process also demonstrates the appropriate evidence, rationale and process required for utilising a natural capital approach to marine resource management. It provides a potential pathway to overcome short-term economic interests and provide longer-term environmental and social goals. Members of the local community and some sea users suggested that byelaw will have a wide reach, translating a natural capital approach into positive societal outcomes. It has already generated interest from national authorities about deriving management from novel local legislation within pre-existing frameworks.

There is a shared understanding that the impact of the byelaw will not be felt evenly across the commercial fishing industry. While some fishers will continue to lose out, others, using different gears and methods could potentially benefit because of increased fish stock and reduced competition. Interviewees said that the removal of trawling could reduce gear conflict with static gear, which would consequently reduce lost, 'ghost gear' on the seabed. One commercial fisher acknowledged that byelaw implementation didn't currently affect them, but suggested that, with additional restrictions, alongside MCZs and the expansion of the windfarms, the amount of area available for trawlers to fish has been reduced in the district. He suggested that this could ultimately displace trawling vessels into new areas causing gear conflict with other fishers.

Some interviewees felt that there could be benefits to tourism as biodiversity increases in the trawling exclusion zone.

Interviewees from the eNGO community felt that the byelaw has been a catalyst for future marine seabed recovery work with formal collaborations providing a remit of research and engagement. One eNGO interviewee acknowledged at times it was challenging to manage external interest in supporting the byelaw. Researchers think that there is scope



for upscaling this type of management, but data must demonstrate the byelaws desired impact for this to happen.

One marine business closely linked to the marine environment was interested in the byelaw as an opportunity for a recovered seabed to sequester carbon and nutrient discharge, and was also interested in the future potential of a kelp market.

**Current impacts:** Interviewees highlighted a few interesting shifts in perceptions about the sea because of the byelaw. Notably, for many interviewees, the ocean has been shifted from *'out of sight out mind'* into direct focus. This could be attributed to the aspirations of kelp recovery being a relatable, visual media message, which has inspired local community interest in the byelaw. Moreover, commercial fishers who didn't support the byelaw suggested they would change their view if there was visual evidence of the kelp beds recovering. People also felt that regulators are now considering the ocean as a resource for local people and meeting targets using the oceans wider benefits such as in the proposals for the Sussex Bay Marine Park. One interviewee reported that MPs are also referencing the byelaw as an example of trawling management in discussions about MPAs.

As a result of the process, local sea users have set up a group aiming to replant kelp and educate local people about their work through Facebook after becoming frustrated by a perceived lack of progress since the byelaw's implementation. Interviewees reported increased interest among people in Sussex in taking part in projects to support kelp recovery. Those that supported the media campaign for the byelaw were continuing their work through films and research.

There was a sense that many interviewees had engaged with and been affected by the byelaw in a very emotional way. People reflected on how they had been affected throughout the process and by the outcome. Most stakeholders expressed positive emotions about the byelaw outcome. Some stakeholders feel conflicting emotions – feeling joy that the byelaw was implemented but sympathy for those who lost out as a result. Most negative emotions were experienced by the trawling community. It was acknowledged by some interviewees that future management should ensure that the right people benefit.

**Current impacts on commercial fishers:** The byelaw was implemented just before the spring, which is when the trawling season starts, so had an immediate impact on some stakeholders. Removing trawling from the exclusion area has already led to a reduction in income for those who previously trawled. Trawling restrictions are applied to all boats, so even those using low impact trawling methods have been affected.

**Impacts on trawlers:** Interviewees indicated that trawlers had adopted different strategies to diversify. One fisher sold their boat and has taken up a different fishing method. Other trawlers reported losing thousands of pounds in income because of impacts on trawling for squid, cuttle fish and plaice. One trawler explained how diversifying to catch cuttlefish has caused a 20% loss in income for some trawlers within the district. Diversifying inshore has been challenging because the available ground is covered in cuttle traps, and outside the IFCA district pressure from European boats means trawlers are not even covering their fuel costs from catches. There is also different terrain around the exclusion zone which requires different trawls which require time and effort to change over.

**Impacts on other commercial fishers:** Among interviewees from other parts of the commercial fishing industry there were mixed opinions about the byelaw and its impact. It was suggested by an eNGO representative that some fishers had returned to the profession because of the byelaw as it gave them hope again.

## 4 Insights

A review of stakeholder experiences of the process and early thoughts on impact provide insights into elements of the process that they feel contributed to its successful implementation, but also stakeholder thoughts on what could be improved if similar approaches were being considered elsewhere. Insights cluster in five groups: communication; access, collaboration, just transition, and the bigger picture.

### Communication is Key

Reflecting on stakeholder accounts of the Sussex IFCA Nearshore Trawling byelaw process highlighted the critical importance of communication. Interviewees talked about the importance of clear communication about the byelaw process and the rationale, approach, and proposed management interventions. This happened in a wide variety of ways – from film and media to one-to-one conversations and opportunities for stakeholders to share their knowledge, concerns, and experiences in person and via digital platforms. Clear and constructive communication was also an important component of the byelaw development through the Authority and Technical subcommittee meetings.

**Difficult conversations:** Interviewees shared that some of the most important communication was not easy. Interviewees talked about difficult conversations, particularly with commercial fishers that did not support the management interventions and/ or would be detrimentally impacted. It was suggested these conversations were possible because of pre-established relationships between Sussex IFCA officers and stakeholders. It was considered essential that the officers had and were able to communicate a sound understanding of the evidence and rationale behind the byelaw which they could share honestly. It was also suggested that these conversations were much better in person. In some cases, effective communication answered key concerns for key stakeholders. Among commercial fishers, some were hesitant initially but conversations about the byelaw's scope and purpose eventually secured their support.

**Communicating support:** It can be the case that dissenting or opposing voices are often loudest, so it was important to also listen for supportive communication. Interviewees involved in the byelaw process talked about how conversations with the local community were helpful to understand the wider perceptions of trawling and the support for management within the Sussex IFCA district. Marine businesses also communicated their support in conversations and by submitting letters of support via the formal consultation. These supportive conversations also took place with other authority bodies who were

aligned on the importance of habitat recovery and increased the sense of support for the byelaw approach and process. There was also support for acting on best available evidence that didn't have to be hard scientific fact.

**Positive framing:** The rationale behind the byelaw of 'seabed recovery' was considered by some as influential in the success of the byelaw implementation. An eNGO representative talked about how communicating about 'environmental recovery' is a positive frame for a conservation issue. There was a sense that the byelaw offered an opportunity to engage with a process that provides hope and change particularly at a local scale.

**Accessible framing:** Interviewees said that the concept of recovery was also easily understood. An ENGO representative suggested that the ability to communicate the rationale behind the byelaw to anyone in a few sentences could be why it was widely understood and captured people's attention. The simple narrative that kelp beds are disappearing and there was an opportunity to stop the decline made sense to people.

**Bringing the Ocean to Life:** It has been noted that there was much greater public engagement than usual with this byelaw process. eNGOs recalled that local people were more engaged early on, with many kelp workshops run by a local charity fully subscribed, perhaps signalling that there is something about this particular habitat that connects with people. One of the biggest challenges with engaging the wider public in marine resource management issues can be that they find it challenging to visualise the undersea environment. Interviewees felt that the highly visual and engaging ways that the local marine environment was brought to life and shared increased the connection local people felt to the Sussex coast and sea. The film made by Big Wave Productions was a highly engaging communication tool, combining captivating imagery and accessible language, used during the byelaw process to inform and connect people with the marine environment in Sussex. A number of people mentioned the impact of Sir David Attenborough as narrator and felt this meant the film generated substantial interest from local people. They felt this translated into a much higher number of public responses to the formal consultation process and sustained interest in future projects. It also led to discussion across national media, generating a lot of national support. Some also felt that this increased public interest motivated Local MPs to discuss progress of the byelaw directly with Defra and the fisheries minister which was also considered influential to the outcome. After the implementation, the byelaw was discussed in parliament during a debate, showing that the political conversation about the impacts of bottom-trawling is increasing, and interviewees felt that the byelaw has been a catalyst of this increased knowledge and interest.

**Wider impacts:** The interviews identified that there is potential for wider and/ or indirect impact from the Sussex IFCA Nearshore Trawling Byelaw (2019). One eNGO representative highlights that the recovery of high value seabed habitat could enhance ecosystem services providing indirect impacts locally in Sussex and further afield.

**The public survey:** In addition to the interviews, an online survey provided further information about marine views and values from 550 local people in Sussex. Most respondents (78%,) felt that marine management was 'very important' in Sussex. Although just under two thirds of respondents (65%) felt that the coast and sea in Sussex is 'very important' in their everyday life.

The survey identified that just over three quarters (76%) of respondents had heard of the Sussex IFCA Nearshore Trawling Byelaw (2019) and this was quite consistent across respondents of different ages. However, all the respondents who rely on the sea for work, including commercial fishers and those that influence management had heard of the byelaw. Respondents showed overwhelming support for the byelaw (88.1%). Whilst some respondents (5.3%) felt that they did not know enough about it to answer. Most respondents (84%) knew that kelp beds were present in the UK. With three quarters (75%) saying that protecting kelp forests was 'very important' to them.

Based on the findings from this sample, it would appear that local people are aware, receptive, and supportive of the Sussex IFCA Nearshore Trawling Byelaw (2019). There is also some understanding of some of the wider socio-ecological impacts that can be achieved from marine management which could explain elevated levels of wider public support for management.

The survey showed that different differences among stakeholder groups. For example, recreational anglers considered marine management more important than commercial fishers. There were divided views among commercial fishers, while the majority thought it was very unimportant (57%), there were also a fairly large group who felt marine management is 'very important' (43%) and no commercial fishers reported feeling neutral on the matter.

## Communication: Areas for action

Some parts of the commercial fishing industry felt that, while they were consulted about the byelaw process, nobody listened to what they had to say. They felt that the consultation was part of the process, but they couldn't see that it had any impact – some said it seemed that the decision had already been made. It was felt that sometimes engaging with the IFCA and answering their questions led to more management being implemented. This was based on experience from other nearshore management processes they had been involved with. It was suggested that engaging with consultation leads to more restrictive management measures. They felt in some parts of the process that they were separated from other stakeholders and were not able to participate in conversations. It was also suggested that meetings often conflicted with fishermen's schedule, so they were hard to attend.

An eNGO representative suggested that since the byelaw implementation, there had been several occasions where they had felt overwhelmed with offers of help or requests for more information resulting from the widespread interest in the byelaw. This demand was attributed to the high profile of the byelaw process in the media. They talked about how e-NGOs want to be able to respond to the demand and be consistent in their approach when responding to local people, businesses, and media. However, they felt there were challenges associated with meeting the increased demand without some sort of central coordination as there are now many projects emerging associated with the implementation of the byelaw, but they are not necessarily working in connection with each other.

Quantifying and visualising the indirect and/ or wider impacts of ecosystem-based management remains challenging, and as a result those impacts may not be fully realised equally within communities. Results from the public survey suggest that communicating these could increase public support for management measures. Looking at the impact of marine management through a social lens, alongside the ecological and economic, will provide a more holistic account of impact.

## Accessibility

The importance of access to information and participation was raised in different contexts among marine stakeholders interviewed.

**Online consultation:** The internet was identified as a useful tool for the byelaw process and implementation. One eNGO created a quick and easy form linked to the formal consultation process. Creating this accessible route to the consultation resulted in an unprecedented number of public responses.

**Social media:** Interviewees felt that social media platforms were an influential tool to make information about the byelaw and the consultation accessible to a wider audience and generate wider support for the byelaw. Social media was used throughout the process, but particularly during the formal consultation process by eNGOs and marine businesses. Local divers have used online platforms since implementation of the byelaw to share updates about the kelp forest recovery and gather interest in a citizen science project hoping to replant kelp along the Sussex coast.

### Access: Areas for action

While online access to the consultation worked for some stakeholders it was reported to have disadvantaged others. There was a feeling, particularly among commercial fishers, that it was difficult to find information on the Sussex IFCA website and that some people couldn't take part in the consultation because they didn't feel confident using computers. It was not clear from interview responses whether an alternative way to take part in the consultation was requested or offered in these instances.

One fisher reflected that while eNGO staff and authorities have it in their paid remit to engage with things like the byelaw process, commercial fishermen have to find time outside their working hours and can't always make meetings to take part in conversations or access via computer to take part in consultations. An interviewee who works with commercial fishers suggested there are approaches which could make consultations more accessible to this stakeholder group.

## Collaboration

Working together was a feature of both the byelaw process and the advocacy and communications work that took place in parallel to the process.

**Co-development of the byelaw:** Interviewees described how the co-management structure of the IFCA placed collaboration at the centre of the byelaw process. Members of the Authority from diverse stakeholder backgrounds participated in regular meetings where they were consulted as the byelaw was developed and amendments were made where necessary to the proposed management. The Sussex IFCA drew on pre-established relationships and connections with marine stakeholders to inform their proposed management interventions. They also drew on a range of knowledges in their evidence gathering – from anecdotal evidence and citizen science data to state-of-the-art imaging.

**Inclusion:** Interviewees involved in the IFCA and the IFCA committee reported working very hard to engage and include a variety of stakeholders from the local community, including fishermen, scientists, and e-NGOs in the byelaw decision process. There was a sense that where stakeholders can be engaged with marine management processes, they find the experience empowering. Engaging with marine stakeholders and facilitating a working relationship with mutual trust was considered highly important for the byelaw implementation. A researcher involved in campaigning to generate support for the byelaw suggests that getting to know stakeholders, producing a public outreach programme to increase understanding of kelp forests, and working with fishers to collaboratively diversify were important.

**Collaboration in communications and advocacy:** Interviewees who had been involved in the *Help Our Kelp* group also expressed the importance of functioning in a collegiate and collaborative way on the advocacy and media campaign. There was strategic delegation of tasks based on skill set to enhance efficiency and impact.

**Collaboration in research:** The collaborative approach to research during the process, and since implementation, by varied marine stakeholders increased the Sussex IFCA's capacity to generate evidence. As the IFCA has limited funding and resources, it is believed that the additional collaborator funding, resources, capacity and expertise were valuable as they provided monitoring and research that may not otherwise have been available to inform management decisions and interventions.



## Collaboration: Areas for action

Some interviewees suggested that the inclusion of a broad range of stakeholders, particularly those that are not aware of marine issues, had minimised the voice of commercial fishers, who were the stakeholder group most likely to be impacted by the proposed management interventions. Some reflections in the interviews suggested that, while people were working together in different groupings, there was a lack of shared understanding and appreciation of the roles that different actors played in the process or in support of the process.

**Credit:** Among marine stakeholders, the successful byelaw implementation was largely attributed to the Sussex IFCA. A researcher suggested that it took bravery to initiate the byelaw process suggesting they are a national trailblazer for trawling management intervention. However, there was also a lot of discussion about how credit should be shared with those who generated the external interest and support for the byelaw. It was apparent those that were involved in the media and advocacy work felt that the credit wasn't evenly distributed. Interviewees felt that large groups of organisations with more resources overshadowed the contribution of smaller groups who contributed within the community.

## Just transition

It was clear from the interviews that there was a shared understanding that there are winners and losers in this process and that there should be honesty and transparency about that. There was recognition that, because of the byelaw, trawlers have had to adapt to new areas for fishing, which can cause conflict with other fishers, or adopt new fishing methods. Interviewees felt that, thus far, there has been no support to mitigate these impacts and no financial compensation. Trawlers within the Sussex fishing community have experienced a loss of income. Responses to the interviews suggested that there are still several issues and questions that stakeholders feel are unresolved and need further deliberation.

**How important is trawling in Sussex?** While some interviewees felt that the byelaw restrictions were too late as there are so few trawlers left in the Sussex IFCA district and most of the damage has already happened, others suggested that excluding trawling completely from nearshore waters is not suitable for the UK as its place in the fishing industry is still significant.

**Where should trawling be allowed?** Interviewees shared the view that trawling restrictions need to be more nuanced. They talked about how impact of trawling is not the same on all seabed habitats and restrictions should be designed to be proportionate to the sensitivity of the habitat where the trawling is taking place. Some sea users felt that trawlers shouldn't lose their livelihoods and should be able to operate further out.

**What sort of trawling should be allowed?** From some of the trawler's perspective it was unclear why, if they are making more sustainable and less impactful choices in the gear they choose to use, they are treated the same as vessels taking part in more destructive forms of trawling. It was also suggested that some trawlers are more sustainable than other types of licensed fishing methods, and they have invested time and resources to certify and prove it. It was suggested that the IFCA should reflect on gear adaptations, and if adaptation could lower the impact of trawlers with the seabed, then fisheries regulations should respond to that.

**The challenge of uncertainty:** It was suggested that there was uncertainty among commercial fishers about diversifying following advice from the authorities or local regulators. One commercial fisher talked about his experience of taking advice and investing in cuttle traps, after which regulation was passed and they could no longer use the traps they had invested in. On the other hand, it was suggested that sometimes management measures didn't match advances in boat diversification.

### Just transition: **Areas for action**

Reflections from the interviews suggest that some stakeholders feel that the impacts of the byelaw are not fully understood and that there are outstanding questions about the management measures.

There is a sense that it is important for the winners and losers in the situation to be transparently acknowledged and that dialogue should be maintained with the stakeholders most impacted and to track the impact of the byelaw over time.

**Holistic management:** Interviewees appreciated knowing that multiple issues were being dealt with in the district, rather than just targeting one fishing method. The Trawling restriction in Sussex were considered in parallel to Netting restrictions, but some commercial fishers were unhappy that the Trawling byelaw appeared to be given more attention and the Netting Byelaw was forgotten. The netting byelaw is in fact still in the quality assurance phase of the byelaw process, awaiting sign off from the secretary of State. An authority representative felt that while it would be preferable to tackle

management measures simultaneously, byelaw processes are time and resource intensive and perhaps the byelaws should have been approached one-by-one due to the amount of work associated with them.

**Wider benefits:** Interviewees talked about the potential wider benefits associated with the implementation of the Sussex IFCA Nearshore Trawling byelaw. People felt that the byelaw would recover marine habitats that could support juvenile fish and ultimately improve fish stocks, but also there is an interest shared across a number of stakeholders in the natural capital value of the marine environment and its carbon capture potential. This is seen as a local opportunity to invest in management that could achieve wider environmental targets as well as providing solutions in the face of climate change and other concerns.

**Wider concerns:** Some commercial fishers, whilst understanding that trawling can have a detrimental impact on the seabed, say they would be reluctant to collaborate and engage with further management interventions until other marine management issues were addressed. Sewage and the damage it causes to nearshore habitats was raised as a key concern among commercial fishers. Furthermore, many commercial fishers, marine businesses and authorities are concerned about the impact of sedimentation on lobster and crab populations.

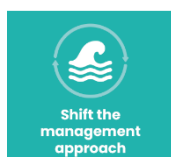
There is also concern among commercial fishers about the knock-on effect that whelk fishing has on other species within the Sussex district. People felt that, while there are many restrictions on the inshore fleets, there is less management outside IFCA districts to solve fisheries management problems. In particular, there was concern about the super trawlers working outside the Sussex district. It was also questioned how kelp recovery should be managed if it becomes a commodity and how to prevent it being exploited.

## Recommendations

The research, and insights it has offered, underpin the following set of recommendations that will underpin future Marine Conservation Society work to engage with communities, regulators, and other stakeholders to help ensure that our extremely valuable nearshore waters have the best chance of being diverse, productive, and safe into the future. They are not listed in order of priority, but rather suggested as a suite of activities and approaches that can work in concert. We hope they will support further work in the Sussex IFCA District and resonate with people in other locations who are working to safeguard coastal seas at scale.

### Safeguarding Nearshore Marine Habitats at scale

Recommendations from the implementation of the Sussex Nearshore Trawling Byelaw



### Recommendation 1:

## Shift the management approach

The holistic, ecosystem-based framing adopted by the Sussex IFCA in this case illustrates that a shift from a feature-based conservation approach, nested within Marine Protected Areas, to an ecosystem wide approach is a powerful one which is central to safeguarding nearshore marine habitats and ecosystem-services at scale. It is critical to recognise the need for high-quality social and ecological evidence to underpin this shift.

Alexander et al., (2018) highlighted how pressures on the marine environment and its resources affect both the environment and society simultaneously, as well as through

their complex interconnecting relationships. Therefore, a holistic management approach is required to provide sustainable solutions to minimise any detrimental impact of marine use.

Ecosystem-based fisheries management has been widely considered as an effective holistic approach to maintaining ecosystem health and sustaining ecosystems benefits (Brodziak and Link, 2002; Howell et al., 2021). However, the uptake of such approaches has been slow across the marine environment, with most examples predominately in North America (Barbeaux, Holsman and Zador, 2020; Marshall et al., 2019).

This slow uptake of the ecosystem-based approach is largely attributed to a lack of interdisciplinary science, which is required to address complex social-ecological marine systems. As a result, there remains little consensus on what strategies or measures are needed to achieve it (Fulton et al., 2014). Fortnam (2019) therefore suggests that understanding how to shift governance systems towards implementing an ecosystem approach is likely to be a critical component for making fisheries sustainable.

In the case of the Sussex IFCA Nearshore Trawling byelaw, the rationale, approach, and process were all developed within an ecosystem-based approach framing. The byelaw aimed to remove trawling pressure to improve the functioning of the entire system, which will provide enhanced health of marine seabed habitats, associated species communities, and thereby benefits to the suite of stakeholders that rely on them. The evidence base incorporated both social and environmental data, and the process utilised the co-management structure of IFCA committees, engaging with a wide range of marine stakeholders. There was some concern raised in the interviews by commercial fishers that this more holistic approach can dilute the needs of the industry. Future management should ensure that commercial fishers are supported, and efforts should continue to ensure processes are accessible to them.

There is growing interest in incorporating the concept of Natural Capital as part of the rationale for management interventions. Natural capital refers to all elements of the natural environment that provide valuable goods and services to society. It therefore implicitly recognises the diverse values of nature and how society and businesses rely on them to function and, while it is an economic framing, it encourages holistic thinking. Fenichel and Abbott (2014) suggest that implementing credible and theoretically grounded techniques for valuing nature is essential, as well as understanding the state of natural capital stocks, human impact on stocks and the role of institutions in shaping that feedback. Natural capital assets from marine ecosystems store economic value and have the potential to generate future economic value if ecosystem functioning is sustained (Hulten, 2006).

High quality habitat mapping and fishing effort data assimilated by Sussex IFCA allowed the Authority to understand the type and extent natural capital assets found along the Sussex coast. The condition of those assets was also assessed alongside the importance of the goods and benefits those habitats provide. This has allowed the Sussex IFCA to select areas along the coast that both have high natural capital value and are vulnerable to pressures, in this case trawling. This in turn supports a holistic approach to marine management as it conserves areas which are high value and vulnerable to trawling but allows for less impactful methods of fishing to continue in that area whilst trawling can continue in less vulnerable areas across the coast.



## **Recommendation 2: Pay Attention to Framing**

The Sussex IFCA Nearshore Trawling byelaw focusses on habitat recovery. This framing proved useful not only because progress towards this aim can be both observed and measured, but it is also a positive framing which suggests widespread potential benefits that resonated with a broad range of stakeholders.

Environmental issues often have negative framing, leaving people disheartened and overwhelmed (Jacobson et al., 2019). Morton (2017) suggests that narratives of hope can lead to environmental action. In this case interviewees concurred, and it was suggested that the concept of recovery allowed people to feel hopeful and support the byelaw process. However, whether hope leads to environment engagement or action can depend on many factors, including personal perspectives of impact (Park, Williams and Zurba, 2020). Several interviewees suggested that a sense of hope was the reason for being invested in the byelaw process. While one interviewee, who had lost out due to management interventions, felt like they were losing hope in fisheries management, another said observable and measurable improvements in the habitat may increase their support.

Jacobson et al., (2019) suggests the framing of messages surrounding the proposed management interventions are critical to promote public support for environmental conservation issues. Positive messaging is particularly impactful when delivering campaigns or management messages through digital media. This was reinforced in the case of Sussex IFCA Nearshore Trawling byelaw as the concept of the 'kelp recovery' was acknowledged as being a key element of capturing local people's imagination and

subsequently catalysing engagement with the byelaw process with people taking actions like writing letters and participating the formal consultation.

Positive framing within the holistic approach taken by the IFCA was influential in shifting from a negative, oppositional, 'blame' framing to a more positive narrative of shared responsibility and solutions for shared benefit. Several commercial fishers felt that they had been solely blamed for the reduction in kelp however, the local authority acknowledged that, while removing trawling pressure would contribute to habitat recovery, there were multiple pressures that may have impacted on the kelp. This more holistic framing of the issues suggests the need for multiple actors to engage and be part of achieving the overall vision of recovery.



### **Recommendation 3: Utilise diverse evidence**

The IFCA considered economic, environmental, and social implications of imposing trawling management as part of the holistic approach taken. To support this, a variety of data types were included in the evidence base for the byelaw. This included anecdotal evidence, citizen science data, historical accounts and stakeholder views derived from research and direct engagement alongside sustained ecological survey data, fisheries observations and data derived from state-of-the-art imaging of the seabed. Diverse data collected by a variety of actors across a variety of disciplines contribute different voices, knowledges, and qualities to the evidence base. This approach to data aligns with the holistic management approach and creates an evidence base which is inclusive, innovative, and robust.

**Data variety:** Incorporating a wide range of data associated with different aspects of marine social-ecological systems are identified as a requirement for ecosystem-based management and other holistic and participatory marine management processes (Murray, G., D'Anna, L. and MacDonald 2016). In the case of Sussex, data variety was evident, supporting the rationale and approach taken for the byelaw as well as being utilised throughout the marine management process. Examples include ecological habitat data, marine species catch data, economic impact analysis and community values. Moreover, this demand for data variety within marine management processes calls for collaboration between actors across multiple disciplines. Interdisciplinary approaches are needed to underpin sustainable marine management planning, steering management objectives (Elliot et al., 2017). However, there are often both conceptual and

structural challenges to incorporating interdisciplinary research into ecosystem-based management. These can include general challenges such as stakeholders from certain disciplines (e.g., natural scientists) dominating the marine space. However local contextual influences such as previous management and institutional histories can also play a significant part (Sievanen, Campbell and Leslie, 2012). Therefore, in Sussex the byelaw provides an example of collaboration across disciplines, implementing an interdisciplinary approach, utilising diverse data can result in successfully implemented local ecosystem based marine management. However, it is suggested that whilst collaboration is important in local contexts the actors who provide data and in which form that data may be needed may differ based on local needs and contexts.

**Long term monitoring:** Sukhotin and Berger (2013) identify that long-term monitoring remains one the best ways to acquire knowledge about the complex processes occurring within the marine space. Zhang et al., (2020) suggest that historical data can also be a valued source to support management providing information that overcomes uncertainties within environmental models that seek to demonstrate long term effects of anthropogenic disturbances. In Sussex, a combination of historical accounts, long term ecological and fisheries surveys alongside contemporary survey data all contributed to a habitat baseline from which targets for recovery can be developed. This sustained research also provides insights into changes in habitat quality and fishing activity over time, which allows trends to be observed and potential causal factors to be identified.

**Data collection:** It is suggested the way in which data is collected also plays an important part in the successful implementation of ecosystem-based management. An authority representative interviewed suggested that 'evidence' can often be seen in a very narrow frame that relies on trained researchers gathering 'facts' about the world. Whilst this type of data is essential and valuable, it might not always be feasible to gather it. They suggested that, with appropriate caution, evidence gathered by alternative methods can be utilised to support management intervention.

Citizen science data and anecdotal stories were included in the evidence for the Sussex IFCA Nearshore Trawling byelaw and there is support for inclusion of this sort of data in the literature. For example, Dickinson et al., (2010) suggest that data from citizen science projects can be utilised particularly effectively at the local scale and research by Hoeken (2001) showed that anecdotal evidence can be more convincing than statistical data as it is often more vivid and easier to imagine for some stakeholders because it is easier for them to understand and engage with than data from scientific monitoring and reporting.





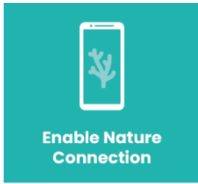
## Recommendation 4:

### **Maintain strong stakeholder relationships**

The Sussex IFCA recognises that stakeholder engagement should begin as early as possible in processes like this, engaging both where strong stakeholder relationships exist as well as working to form and improve relationships where they don't. A commitment to working on a foundation of engagement, trust and respect paired with the co-management structure of the IFCA meant that they were able to work collaboratively and meaningfully with stakeholders to shape the byelaw. There was space for sharing views, knowledge and data. Alterations and amendments were made to the proposed restrictions based on this deliberation.

In Sussex, interviewees from some parts of the commercial fishing industry felt they were not fully engaged in the process. They felt this could have been improved by having more support from the IFCA through more informal relationships where advice could be asked, separate to enforcement interactions. Marine resource management is a dynamic and ongoing process, and as a result there is always work to do.

Trust and respect are more easily maintained than rebuilt and there is evidence that an investment in establishing and maintaining strong stakeholder relationships has multiple benefits. Msomphora (2015) suggests that there is a positive relationship between perceptions of stakeholder participation and satisfaction with fisheries management. There is also positive feedback for future participation – those who are more satisfied with the management process tend to be more positive towards participating in fisheries management. Positive relationships also strengthen opportunities for future co-working and co-development of knowledge. Hartley and Robertson (2008) suggest that collaborative research between fishers and scientists is increasing where there is increased trust between these groups. In some cases, this is enabling fishers to contribute, experience and expertise into the frameworks needed for fisheries management. In Sussex, marine businesses (beyond commercial fishers) shared an interest in capturing and sharing data about the local environment, particularly if their business relies on the health of marine ecosystems (e.g. divers, water companies).



## Recommendation 5: Enable Nature Connection

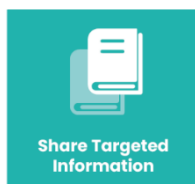
There was unprecedented wider public interest in the Sussex IFCA Nearshore trawling Byelaw as it progressed through the statutory process. This led to heightened profile and a sense of public support for the measure as well as generating more engagement in the formal consultation than usual – suggesting that engagement with the process was more inclusive and accessible for some. A key part of this engagement was the production of a clear and compelling film which made the undersea landscape visible and which interviewees felt enabled people to connect with marine habitat. With more holistic and inclusive thinking about the diverse potential benefits that flow from healthy and productive nearshore waters, it is important to recognise that people value and relate to the resource in different ways. Social media platforms were also used successfully to engage new audiences. Communication tools that make the undersea visible and enable connection can diversify the stakeholders that engage with resource management and are motivated to share their views and should be considered as part of a suite of engagement methods to democratise participation.

An interdisciplinary review in 2014 concluded that the Western '*disconnect from nature*' is central to the convergent social-ecological crises (Zylstra et.al. 2014). The narrative of 'reconnection' as a prerequisite for living in harmony with nature, good stewardship and reversing damage is gaining momentum (Bennet et al. 2018; Mackay & Schmitt, 2019). This is applied both to people in wider society and direct users of natural resources. Studies have shown that nature connection and pro-environmental practices among agriculturalists, for example, have led to increased subjective wellbeing.

Howell (2014) suggests that film could be an avenue to increase levels of concern about environmental issues, improve motivation to act and illicit a sense of urgency about action, although they acknowledge this feeling often does not persist over time. Vasiliki et al., (2013) acknowledge that among other information and communication technologies, social media has made a significant contribution to stakeholder engagement enabling information production and sharing. Merrifield et al., (2013) suggests that social media has the potential be a cost effective, time and effort efficient participatory tool due to its ability to instantaneously transfer information. Folke et al., (2005) suggest that the use of social media can make management processes more efficient by sharing and linking information from a variety of social media users. Of course, it is also critical to highlight that these channels and types of communication do not engage all audiences. Interviewees recognised that people who don't have access to the internet or don't feel

comfortable using computers are disadvantaged by digital engagement platforms and emotive nature connection themes may not resonate with some who live a deeply nature-connected life. It is important that alternative and more traditional ways to share information should be utilised simultaneously.

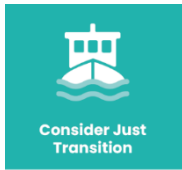
Some of those interviewed in the Sussex case also felt that Influential figures like passionate local community members, strong leaders and respected public figures also contributed to widening public engagement with the byelaw process. Several people noted that having Sir David Attenborough narrate the film about the kelp beds along the Sussex coast was very powerful. Fahy (2015) suggests that the emergence of celebrity scientists has allowed the public to understand complex scientific issues. Whilst literature is limited in this area, there are studies looking the way well-known people can influence the public's thoughts and understanding on certain issues. The case of Arran No Take Zone demonstrates the efficacy of an effective individual (non-scientist), running a local campaign (Stewart et al, 2020).



## **Recommendation 6: Share Targeted Information**

In the case of the Sussex IFCA Nearshore Trawling byelaw, it was evident that different audiences require, engage with, and respond to different information. For example, interviewees from the fishing community expressed a need for detailed, accessible information about management that was 'digestible' in short spaces of time. This reflected their interests and motivations, but that they are time-poor given the demanding nature of their work. On the other hand, the local community and wider public engaged with and responded to a story that has a simple premise that captured their imagination and encouraged them to be more engaged with decisions about their local marine environment.

Within fisheries management, there appears to be limited literature about the dissemination of information to stakeholders. Cowx and Gerdeaux (2004) suggest that there is often insufficient information disseminated to stakeholders during management processes, particularly sharing information about intended impacts over time and management outcomes. This is an area for future exploration and effort.



## **Recommendation 7: Consider Just Transition**

If use of nearshore waters requires change to safeguard habitats and the value and benefit that flows from them in the future, then it is important that the livelihood implications of that change are part of the conversation. While mechanisms for material compensation for fishers who must adapt, or who wish to switch to more sustainable practices are not currently in place, other funding opportunities exist to support fishers to switch to more sustainable practices. Where fishers stand to lose income based on spatial restrictions, project partners should consider and explore available funding opportunities with fishers, and successes promoted and replicated to achieve a just transition.

In the case of the Sussex IFCA Nearshore Trawling byelaw, interviewees across stakeholder groups acknowledged that the trawling restrictions had detrimentally impacted those who trawled within the Sussex IFCA district. Although, it was argued there was potential that long term non-trawl areas may benefit fish stocks outside of the restricted area. It was reported that parts of the commercial fishing industry have had to try and adapt to the trawling restrictions. Whereas information was disseminated to explain the restrictions, interviewees felt that there was no support available to carry out necessary diversification and no compensation to cover the costs of this diversification. Recognising that there is a clear link between human activity and marine habitat degradation, a transition to a future where the environment can recover, and flourish will necessitate changes in human behaviour. Sometimes these adaptations are beyond the means of the people involved and lives and livelihoods can be jeopardised. Whilst the overall economic impact may be limited, it is very important to be transparent about the significant impacts that have been experienced by a small group of fishers. In addition to economic impact, interview responses referred to the impacts on their social and mental wellbeing. These impacts were particularly hard felt by those who consider fishing a way of life and have been an integral part of the coastal culture.

Interviewees suggested that there is a precedent from this from the energy sector and that compensation considerations currently associated with marine renewable projects could also be considered for fisheries management restrictions that reduce the fishing grounds for commercial fishermen. Reilly, O' Hagan and Dalton (2016) agree that a formal structure for compensation schemes for fishermen who lose out would be beneficial, as

such schemes meant fishermen were much more likely to be supportive of the management interventions.



## **Recommendation 8:** **Work in Context**

To generate a culture of understanding and shared responsibility, it is important that regulators clearly communicate how proposed management interventions fit into the wider management landscape to demonstrate actions towards the recovery target are being taken at a variety of scales and to address a range of contributing factors. (e.g. fisheries management, licenced dredge material disposal at sea, sewage pollution management, development restrictions).

When it comes to fisheries regulations, even if regulator capacity allows development of one management intervention at a time, making a longer-term, holistic plan, that maps how each measure contributes to achieving management objectives, could help stakeholders see measures in context and avoid fishers feeling singled out by individual management measures.

## **Conclusion**

In light of the learnings from this research, the Marine Conservation Society (MCS) sees value in amplifying the learning from this case study. A key reflection is that innovative marine management measures like the Sussex IFCA Nearshore Trawling Byelaw, which are grounded in an ecosystem-based approach, are eminently possible and broadly welcomed within existing management policies and frameworks. A holistic approach which promotes and enables meaningful stakeholder collaboration coupled with a diverse and robust evidence base allows local regulators to fulfil their dual duties of sustainable fisheries management and environmental protection.

By exploring both the statutory process and communications, media and advocacy activity surrounding development and implementation of the Sussex IFCA Nearshore Trawling Byelaw we have been able to develop a more holistic understanding of what happened and how key stakeholders experienced the process. Taking the time to do this deeper dive has enabled us at the Marine Conservation Society to form a more holistic understanding of some of these 'magic ingredients' in this story, which will add insight,

authenticity and impact to our programme of work on safeguarding our rich and valuable nearshore waters.

The research has identified several ways in which the MCS could positively work alongside regulators, policy, and decision-makers in support of future efforts to shift to this more holistic approach to habitat restoration at scale.

The charity is committed to fairness, equity, and inclusion in its approaches. Over the past decade, through processes such as the Community Voice Method (Cummings et al. 2022) and Engagement projects like 'Agents of Change' MCS has acted as a trusted facilitator in bringing stakeholders, often with competing priorities or opposing views, together in search of mutually acceptable solutions which aim to secure both ocean conservation and the wellbeing of those who depend on it. The charity is able access partnerships and funding not available to regulators to support social and environmental research and thereby contribute to the robust and holistic evidence base needed to inform and support decision-making.

As experienced ocean communicators with experience in framing communication to resonate with diverse audiences, MCS can provide additional capacity to tailor and disseminate information to varied audiences in formats and language best suited to them. The charity has significant reach and can amplify stories of success to contribute to changing the narrative to one of positive collaboration, shared benefit, fairness, and recovery.

The insights and recommendations from this work are already informing our strategic planning and programme design. We hope that the learning will resonate with others working on similar issues.

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## ANNEXE A

### Detailed Byelaw process

1.	<p><b>Informal consultation phase:</b> In <b>December 2017</b>, the Sussex IFCA prepared the scope for the informal consultation to the technical subcommittee and then again to the Quarterly committee in <b>January 2018</b>.</p>
1.1	<p><b>Collating the evidence:</b> Between <b>January</b> and <b>March 2018</b> evidence to support management intervention was collated alongside relevant policy objectives and proposed management. Sussex IFCA aimed produce an evidence base that considers the following five elements: (1) the importance of the nearshore area, (2) the impact of trawlers on the nearshore area, (3) the type and extent of natural capital assets, (4) their current condition, and (5) risks as well as the impacts, costs and benefits of the management proposed. Evidence came from long term monitoring, anecdotal and objective evidence including high resolution habitat mapping.</p>
	<p>In <b>March 2018</b> the collated evidence, relevant policy objectives, and proposed management options were presented to the technical subcommittee and to the quarterly authority meeting in <b>April 2018</b>. In <b>June 2018</b> Sussex IFCA began the informal consultation, presenting several management options and the ecosystem approach. The informal consultation information was provided to stakeholders in web-based promotion, an online survey, a hard copy questionnaire, seven public drop-in sessions, targeted emails, and mailing.</p>
2.	<p><b>Management options phase:</b> Sussex IFCA produced a series of potential management options for trawling management intervention based on best available evidence. In <b>July 2018</b> the analysis of the informal consultation was presented alongside the draft management options to the Quarterly Authority Committee. In <b>October 2018</b> the draft management options were narrowed down to final management options and presented to the technical subcommittee alongside a summary of the consultation responses. These documents were then shared with the Quarterly Authority Committee for discussion. The final management options were presented to both the technical subcommittee and quarterly authority committee in <b>January 2019</b> alongside a review of the approach, habitat evidence, fishery evidence, essential fish habitats, environmental impact of trawling evidence, comprehensive supporting legislation, charts, rationale for intervention and policy objectives.</p>
3.	<p><b>Draft byelaw phase:</b> In <b>March 2019</b> the targeted management options, draft byelaw text and supporting documents were presented to the technical subcommittee. In <b>April 2019</b> those documents were also presented to the Quarterly Authority Committee with commercial industry present. This included the discussion on removing light otter gear from the definition. In <b>June 2019</b> a quarterly authority meeting was called with commercial</p>

	<p>industry present. In this meeting they checked over the byelaw information including relevant Tranche 3 MCZ data, which is included in the byelaw exclusion area and the draft impact assessment. Selsey Bill and the Hounds MCZ lies entirely within the trawling exclusion area. In <b>July 2019</b> the technical committee checked the byelaw information including relevant Tranche 3 MCZ data, which is included in the byelaw exclusion area, bass data and the draft impact assessment.</p>
4.	<p><b>Making the byelaw:</b> In <b>July 2019</b> another Quarterly Authority Meeting is held where the byelaw text and draft Impact Assessment are presented, including policy summary, charts, key concepts summary, kelp information, and trawling fleet summary. During this meeting the byelaw was <b>MADE</b>.</p>
5.	<p><b>Formal consultation:</b> The byelaw went through a statutory 28-day consultation process as required by DEFRA's byelaw making guidance to IFCA's. This took place between the <b>12th September of 2019</b> and <b>10th of October 2019</b>. Documentation including the draft byelaw and explanatory documents that helped explain the byelaw were presented to stakeholders. This documentation was shared on the IFCA website, by post when requested and at drop-in sessions. In total, 89 stakeholders (predominately commercial fishers) attended the drop-in sessions during the formal consultation. Based on feedback from the final consultation, final changes were suggested to the committee and agreed or otherwise.</p>
6.	<p><b>Quality Assurance and confirmation:</b> At the start of <b>2020</b>, the byelaw entered its quality assurance phase whereby the byelaw and associated documents are subject to enhanced quality checks through a four-step process. As the MMO and a number of associated Defra bodies have seats on the Sussex IFCA committee there was already awareness of nearshore trawling byelaw, the rationale behind it and the process that had been undertaken. The quality assurance process in the MMO and subsequent confirmation process within Defra lasted from <b>January 2020</b> to <b>March 2021</b>.</p>
6.1.	<p><b>Notification of intent to make the Byelaw</b> In accordance with Defra Guidance it was first sent to the Marine Management Organisation (MMO) and Defra, providing them with an early opportunity to advise about the proposed byelaw and associated documentation. This occurs not less than two weeks prior to the byelaw being made (July 2019).</p> <p>Following the statutory consultation, the Sussex IFCA considered all responses and the need for any amendments to byelaw. These examinations, reports, and recommendations were considered at both technical and principal committee meetings. The final amended version to the byelaw was formally approved by a recorded vote in January 2020 at an Authority quarterly meeting.</p>
6.2.	<p><b>MMO legality checks:</b> The approved byelaw, impact assessment and accompanying documentation was then sent to the MMO Byelaw Team in the MMO. MMO lawyers</p>

	checked phrasing, byelaw structure and other legal requirements, in dialogue with senior Sussex IFCA officers
6.3.	<b>Defra content and legality checks:</b> Once the MMO had completed its examination of the Byelaw it was passed by them to the Department for Environment and Rural Affairs (Defra) whereby the evidence base, subsequent management interventions are scrutinised in respect to the IFCA's duties and alignment with Defra policy and lawyers again consider the Byelaw wording line by line.
6.4.	<b>Sign off/Confirmation:</b> The Secretary of State signed off the byelaw on the 18th of March 2021. Sussex IFCA were emailed by Defra to inform them that the byelaw was immediately enforceable.