

# FUTURE OF FISHERIES MANAGEMENT IN SCOTLAND: NATIONAL DISCUSSION PAPER

## SCOTTISH ENVIRONMENT LINK

This submission is supported by: Marine Conservation Society, Scottish Wildlife Trust, Whale and Dolphin Conservation, WWF Scotland, National Trust for Scotland and RSPB Scotland

### Introduction

Scottish Environment LINK is the forum for Scotland's voluntary environment organisations, with over 35 member bodies representing a range of environmental interests with the common goal of contributing to a more environmentally sustainable society. LINK welcomes the extensive period of national discussion on the future of fisheries management in Scotland to inform firm proposals for consultation later in 2019.

While Scotland's future relationship with the EU is far from certain, the opportunity must nevertheless be taken to stand back and undertake a wholesale stock take of fisheries and marine resource management to assess whether we are on track to achieve maximum benefits for the environment and in turn Scottish society and economy.

We are in the grip of twin nature and climate crises and meeting international goals to address these requires urgent bold and transformative changes. It is against this backdrop that all governments must reframe fisheries policy. Just as Scotland has recently positioned itself as a beacon in global efforts to tackle climate change it can and should also set an example for other countries to follow on the management of marine resources.

Commercially targeted fish and shellfish *are* biodiversity. The health of their stocks, and the fishing industry that relies upon them, is therefore inextricably linked to the wider health of Scotland's seas, particularly the status of the habitats that support critical life history stages and the species upon which they prey. Furthermore, around 20 species of commercial fish and shellfish are listed as Priority Marine Features (PMFs)<sup>1</sup>, the national status of which must not be significantly impacted by use of the marine environment<sup>2</sup>. The population status of predators higher up the food chain, including seabirds, whales and dolphins, that prey on commercially targeted species are in turn dependent on the health of those fish and shellfish populations. This premise is the basis of the **ecosystem-based approach** and this contribution to the national discussion on the future of fisheries management in Scotland from Scottish Environment LINK's Marine Group.

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<sup>1</sup> <https://www.nature.scot/sites/default/files/2018-05/Priority%20Marine%20Features%20in%20Scotlands%20seas.pdf>

<sup>2</sup> <https://www.gov.scot/publications/scotlands-national-marine-plan/pages/5/>

**1. In Chapter 1 the Scottish Government identified a range of areas around achieving our vision for environmentally conscious and sustainable fishing. Therefore, in relation to these discussion points do you have any views or ideas in regarding the areas identified in Chapter 1?**

*“Two significant pressures are widespread: human activity contributing to climate change and fishing which impacts on the seabed and species.”*

(Scotland’s National Marine Plan, 2014)<sup>3</sup>

*“The protection of our natural environment is such a priority that, just as on climate change, the obligation on all of us is to look afresh at everything that we are doing and make a decision—as we had to make a difficult decision this week—about whether we are living up to our obligations...As we have done on climate change, we need to raise the bar of global leadership and make sure that we are continuing to get much higher over the bar than anybody else.”*

(Nicola Sturgeon MSP in response to the IPBES Global Assessment, Scottish Parliament, 09 April 2019)<sup>4</sup>

Scotland’s Future Fisheries Management Strategy must establish a world-leading system of sustainable fisheries management fit for the challenges of the 21st century, building on the objectives and policies of Scotland’s National Marine Plan, the shared UK High Level Marine Objectives, targets to achieve Good Environmental Status, and demonstrating leadership on the UN Sustainable Development Goals (SDGs), Convention on Biological Diversity, the Paris Agreement and other international obligations to address the twin nature and climate crises. Fishing must also contribute to a transition to a fair healthy and sustainable food system for Scotland as part of the ‘Good Food Nation’ agenda.

Demonstrating a renewed commitment to these existing strategic international and domestic frameworks through action on and under the water is urgently required as **by almost every measure we are exceeding environmental limits in the marine environment.**

Nature is declining globally at rates unprecedented in human history. The recent Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment<sup>5</sup> warns that we are eroding the foundations of our lives worldwide by failing to protect and value nature. It concluded that *“in marine systems, fishing has had the most impact on biodiversity (target species, non-target species and habitats) in the past 50 years alongside other significant drivers”*. The report declared the current response insufficient but signaled that with concerted efforts to bring about *“transformative change”* it is not too late to restore and protect nature. G7 Ministers and others swiftly adopted the Metz Charter on Biodiversity to accelerate and intensify efforts to halt biodiversity loss.<sup>6</sup>

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<sup>3</sup> <https://www.gov.scot/publications/scotlands-national-marine-plan-9781784128555/pages/3/>

<sup>4</sup> [http://www.parliament.scot/parliamentarybusiness/report.aspx?r=12083&mode=html#iob\\_109348](http://www.parliament.scot/parliamentarybusiness/report.aspx?r=12083&mode=html#iob_109348)

<sup>5</sup> [https://www.ipbes.net/sites/default/files/downloads/spm\\_unedited\\_advance\\_for\\_posting\\_htn.pdf](https://www.ipbes.net/sites/default/files/downloads/spm_unedited_advance_for_posting_htn.pdf)

<sup>6</sup> [https://www.ecologique-solidaire.gouv.fr/sites/default/files/2019.05.06\\_EN\\_Biodiversity\\_Charter\\_Final.pdf](https://www.ecologique-solidaire.gouv.fr/sites/default/files/2019.05.06_EN_Biodiversity_Charter_Final.pdf)

At a regional seas scale the OSPAR Intermediate Assessment 2017 indicates that while fisheries management is beginning to have a positive effect on fish communities and in some areas show signs of recovery, largely as a result of implementation of the Common Fisheries Policy, benthic habitats are being affected by bottom fisheries with 86% of the assessed areas in the Greater North Sea and the Celtic Seas showing evidence of physical disturbance, from bottom contacting gears, of the seafloor, of which 58% is 'highly disturbed'.<sup>7</sup>

Scotland is currently on course to fail on 13 of the 20 Global Aichi Targets under the Convention on Biological Diversity, including Target 6 on fisheries.<sup>8</sup>

Good Environmental Status (GES) will not be achieved in UK waters by 2020 for benthic habitats, commercial fish, marine litter, cetaceans and seabirds.<sup>9</sup> The UK Marine Strategy Part One stated that *"in 2012, a consensus of experts concluded that the spatial extent of damage to the seabed from fishing gear was greater than any damage caused by other activities"*.<sup>10</sup>

While on a positive trajectory, Scotland's new national performance indicator on sea fisheries shows that only 54% of fish stocks are fished sustainably.<sup>11</sup>

The role of terrestrial ecosystems in mitigating climate change is firmly recognised in the advice to Scotland from the UK Committee on Climate Change on achieving net-zero greenhouse gas (GHG) emissions by 2045, but the carbon capture potential of the oceans was largely overlooked in the report and must not be underestimated. Rebuilding fish populations and protecting seabed habitats from disturbance, allowing recovery will be key nature-based solutions to meeting Scotland's net-zero target.

If Scotland is serious about achieving the ambitious time-bound targets and objectives of OSPAR<sup>12</sup>, the Marine Strategy Framework Directive, UN SDGs, climate change emissions reductions, or any of the numerous other binding international and domestic commitments then the Scottish Government must accept that business as usual is no longer a viable option and make the necessary changes at the operational level to deliver ecosystem-based fisheries management in Scotland.

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<sup>7</sup> <https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/>

<sup>8</sup> <https://www.snhpresscentre.com/resources/3lfef-0uagk-5qmqq-3b8t0-41k91>

<sup>9</sup> [https://consult.defra.gov.uk/marine/updated-uk-marine-strategy-part-one/supporting\\_documents/UKmarinestrategypart1consultdocumentfinal.pdf](https://consult.defra.gov.uk/marine/updated-uk-marine-strategy-part-one/supporting_documents/UKmarinestrategypart1consultdocumentfinal.pdf)

<sup>10</sup> [https://consult.defra.gov.uk/marine/updated-uk-marine-strategy-part-one/supporting\\_documents/UKmarinestrategypart1consultdocumentfinal.pdf](https://consult.defra.gov.uk/marine/updated-uk-marine-strategy-part-one/supporting_documents/UKmarinestrategypart1consultdocumentfinal.pdf)

<sup>11</sup> <https://nationalperformance.gov.scot/measuring-progress/national-indicator-performance>

<sup>12</sup> OSPAR's strategic objective with respect to biodiversity and ecosystems is to halt and prevent by 2020 further loss of biodiversity in the OSPAR Maritime Area, to protect and conserve ecosystems and to restore, where practicable, marine areas which have been adversely affected.

We welcome acknowledgement that the Future Fisheries Management Strategy will reflect the need to continue “*improving our marine environmental status*”. In this vein the principles on p3 of the discussion paper must not simply seek to manage “*fisheries in a way that protects biological diversity*” but must also actively contribute to the *recovery* of biological diversity. Further, all aspects of fisheries management must be founded on the four guiding principles on the environment: precaution, polluter pays, rectification at source and preventative action.

An ecosystem-based approach is the foundation of sustainable fisheries management and, based on SNH definitions<sup>13</sup>, should entail:

1. Identifying the natural assets (marine species and habitats) that provide benefits, what these benefits (ecosystem services) are, and who benefits from them.
2. Understand the effects of different fisheries management choices on nature and the benefits it provides.
3. Involve people in decision-making and in getting things done.

### **North Sea Cod – a case study**

A useful case study of where we have failed to manage fisheries effectively is represented in the current situation in the North Sea demersal fishery where advice on a range of stocks is poor but for cod is devastating. The recent ICES advice revealing the significant decline in North Sea cod (recommended 70% reduction in TAC) is a deeply troubling example of the wider trends and confirms that this iconic stock is in a critical state and in need of emergency measures.

While recruitment has been poor this is also in part due to the failure to implement key measures in the fishery – failing to set sustainable catches and then account for them due to the lack of effective monitoring at sea. Instead we are in a situation of overfishing across European waters as a result of poor implementation of the discards ban. The Scottish whitefish demersal fleet is heavily reliant on North Sea cod, receiving roughly 60% of the UK’s share of the TAC for the North Sea, with the UK receiving the largest proportion (about 40%) of the total available quota.

Therefore Scotland, the UK, other Member States and other countries participating in the fishery must act immediately to meet their legal obligations to manage this important fish stock sustainably and prevent irreversible damage to the stock and the associated fisheries which are dependent on their health. Given that Scotland receives the lion’s share of the quota we have called upon the Scottish Government to take a leading role, co-ordinating with the Secretary of State for Environment, Food and Rural Affairs in the UK Government where necessary to implement, enforce and monitor effective recovery measures. It will also be essential to work with those jointly responsible for the management of this stock across the EU and Norway to deliver the key measures needed to bring about the recovery of this important stock. To do otherwise runs the real risk of undermining the future prosperity of the

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<sup>13</sup> <https://www.nature.scot/scotlands-biodiversity/ecosystem-approach/how-apply-ecosystem-approach>

fisheries and communities that rely upon it and inaction now might make fisheries closures inevitable in the future.

In light of the ICES scientific advice, we believe **an emergency plan** with a concrete pathway to recovery must be implemented to include:

- **a mid year review of the 2019 TAC**, including an immediate downwards revision, in order to ease pressure on the stock as soon as possible,
- a 70% reduction in the 2020 TAC in line with scientific advice,
- a **specified timeline** to reduce fishing pressure and recover the stock as quickly as possible,
- demonstrable use of the most **highly selective fishing gear** by the whole North Sea demersal fleet,
- **real time temporary closed areas** to protect large aggregations of cod,
- requirement for quotas to be allocated to vessels based on their ability to **demonstrate compliance**, and
- **the introduction of Remote Electronic Monitoring (REM) with cameras** to enable monitoring to ensure compliance with quota requirements. Government must outline its plan and timetable for the widespread roll-out of this now vital technology.
- **Identification of Offshore Marine Protected Areas (MPAs)** under the Marine and Coastal Access Act 2009 or **Fish Stock Recovery Areas (identified in the CFP Article 8)** to protect important seasonal spawning and nursery grounds for the North Sea cod stock.
- **Existing cod recovery areas must be maintained** at least until MPA management measures are in place for the existing offshore ncMPAs and SACs

All these measures are ones which if implemented would benefit Scottish fisheries more broadly and in doing so bring about better returns for the stocks and fisheries and communities dependent on them.

The case for this approach is further consolidated by the fact that cod are a Priority Marine Feature (PMF) whose national status must not be significantly impacted by use of the marine environment (General Policy 9(b) of National Marine Plan).

#### *Marine litter*

MARPOL (The International Convention for the Prevention of Pollution from Ships) Annex V prohibits the discharge of all types of garbage (plastics, domestic wastes, cooking oil, incinerator ashes, operational wastes and fishing gear) into the sea from ships except in the cases explicitly permitted under the Annex such as food waste, cargo residues and cleaning agents/additives that are not harmful to the marine environment.<sup>14</sup> If MARPOL does not provide sufficient legal redress to penalise any vessel-owner caught discharging any of the listed

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<sup>14</sup><http://www.imo.org/en/OurWork/Environment/PollutionPrevention/Garbage/Documents/Annex%20V%20discharge%20requirements%2007-2013.pdf#search=MARPOL%20ANNEX%20V>

garbage items at sea then we would support a new domestic offence to be established that applies the proscriptions set out in Annex V to all fishing vessels and closes any loopholes. The penalty for committing such an offence should be sufficient to deter anybody from illegally disposing of garbage over the side.

**2. Chapter 2 explores a range of discussion points around future governance, engagement and accountability. With regards the areas discussed what are your opinions of the discussion points raised and any related views on the themes identified in Chapter 2?**

*2.1 Governance & Engagement*

We support the principle that management should be decentralised to the lowest appropriate level provided there remains national oversight and accountability. See, for example, the Convention of Biological Diversity principles on the Ecosystem Approach: “*Decentralised systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge*”.<sup>15</sup> Co-management must deliver inclusive and robust Aarhus-compliant governance, embracing participative management of fisheries on a regional sea-basin ecosystem basis with effective stakeholder engagement.

*2.2. Hearing all voices*

A high level of accountability, visibility and transparency in decision making is essential to deliver Aarhus-compliant fisheries management. However, at first glance it appears that there is a contradiction between desiring to engage more and with all interested parties but at the same time have a “*decluttering of the stakeholder landscape*.” We would support wide engagement across civic society, who all stand to benefit from well-managed seas.

*2.3 Local management*

We support proposals for strengthening IFGs, including extending to 12nm which would improve integration with regional marine planning, provided they are adequately resourced and there is improved representation for all stakeholders. The English IFCAs are a valuable model, fulfilling many aims of the co-management agenda, with one study highlighting that 12 stakeholder groups were members of IFCA Committees or Boards compared to only two (mobile and static commercial fishing) for Scotland’s IFGs<sup>16</sup>. A new local inshore fisheries management arrangement could at least be partly funded through cost recovery programmes or mechanisms.

*2.4. Delivering confidence and accountability*

There is an ever-growing demand from consumers for high quality environmentally sustainable seafood of known provenance. As recognised in the discussion paper, in order for stakeholders to have full confidence in the environmental and sustainability standards of the industry, the

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<sup>15</sup> <https://www.cbd.int/ecosystem/principles.shtml>

<sup>16</sup> [https://research-information.bristol.ac.uk/files/104165525/Towards\\_deliberative\\_and\\_pragmatic\\_co\\_management\\_a\\_comparison\\_between\\_inshore\\_fisheries\\_authorities\\_in\\_England\\_and\\_Scotland.pdf](https://research-information.bristol.ac.uk/files/104165525/Towards_deliberative_and_pragmatic_co_management_a_comparison_between_inshore_fisheries_authorities_in_England_and_Scotland.pdf)

entire supply chain must be transparent and accountable. A key component is attitude and behaviour change to ensure a culture of compliance. As evidenced in recent global and national reports, management of our natural environment must be improved. Without meaningful measures being taken to improve management, marine ecosystems in their degraded state will not be able to function effectively and provide the ecosystem services which the fishing industry, coastal communities and wider population depend on.

The ability to ensure compliance is complemented not only by stewardship from industry but also the relevant authorities to monitor and enforce fisheries management measures across the fleet.

Scottish Environment LINK fully supports the commitment of the Scottish Government to deliver fully documented fisheries accounting for all target and non-target fish, shellfish and bycatch species removed from the sea. Taking a comprehensive ecosystem approach should also include accounting for catch of benthic vertebrate and invertebrate epifauna and infauna.

Key to achieving full documentation of catch is the uptake of new and existing technologies such as Remote Electronic Monitoring with CCTV cameras (REM), systems that have integrated Vessel Monitoring Systems (VMS). We welcome the proposed introduction of REM systems to the Scottish pelagic fleet but we believe there is a strong case for all vessels over 10m and, based on criteria to determine high-risk of non-compliance with the discard ban and/or the risk of non-target species by-catch, or for protected species bycatch monitoring, selected under 10m vessels fishing in Scottish waters to be required to have 100% monitoring, either by REM with cameras or observers, or in some cases a combination of both.

Around the world, the use of REM systems has been positively supported by fishermen as a means of demonstrating good management and providing increased data for stock assessments, thus adding to the robustness of quota setting. When given the choice between taking human observers and installing REM, the latter has been the preferred choice given the cost effectiveness of the systems as they represent a fraction of the costs of carrying an observer full time, plus there are questions over how many trained observers would be available to take up the task.

The introduction of REM would allow for transparent governance and enforcement and improved data collection for management, providing greater confidence. Issues such as unlicensed fishing and spatial management (including gear conflict and enforcement of marine protected area (MPA) management measures) could also be addressed.

The use of a reference fleet is one option suggested in the discussion paper but is not one supported by LINK as it comes with many challenges and does not offer an alternative to an effectively implemented REM or observer programme with 100% coverage for all over 10m vessels and the selected "*high risk*" under 10m vessels.

In 2012, Dalskov *et al*<sup>17</sup> analysed the catches of cod landed by grade for vessels before they joined the catch quota scheme (2009) and after they joined the scheme (2011) and installed REM with CCTV. They found that the grade 5 (smallest grade) cod landings for the North Sea vessels was less than 5% of the total landings in 2009, and that this rose to 13% in 2011 for the vessels fitted with REM. However, the vessels that did not have REM installed only had 7% of their landings at grade 5 size in 2011. In the Skagerrak, a similar pattern occurred where vessels installed with REM were landing 27% grade 5 cod compared to 10% for those without REM. Dalskov *et al* (2012) stated that “*it can only be concluded that high-grading takes place if fishing is not fully monitored and documented.*”

Similar differences in the size grades of cod landed by REM and non-REM vessels were noted in the UK by Sandeman *et al*, (2016) during the MMO Catch Quota Trials<sup>18</sup>. Those vessels installed with REM had 30% of their cod landings at Grade 5 size, whereas the non-REM vessels had only 12% Grade 5 cod in their landings. When the Grade 4 cod were also included the percentages rose to 48% Grade 4 and Grade 5 cod in the landings for REM vessels and 25% for non-REM vessels. The conclusion was that this was indicative of high-grading in the non-REM monitored fleet. They also suggested that when considering a reference fleet approach instead of a 100% monitored fleet, the number of vessels chosen for monitoring must provide confidence of a level playing field and ensure that unfair commercial advantage does not arise from not having REM installed.

The vessels without REM will likely continue to discard undersize fish as well as high-grade the less valuable smaller grades of marketable catch and will therefore be able to maximise the returns on their limited quota by ensuring that only the larger more valuable fish are landed against it.

Given that one of the main costs associated with REM is staff costs related to video review, a fairer solution would be to install REM on all vessels within a fishery but reduce the video randomly selected for review. That way vessels will all be operating to the same conditions with equal chance of being chosen to have their catch declarations verified by video.

Without implementation of REM across the bulk of the fleet as suggested, confidence and enforcement cannot be delivered for Scottish seafood products.

A report published by the Nature Conservancy on the barriers to REM<sup>19</sup> highlighted a fishing industry representative as saying, “*You need command and control mechanisms to get (R) EM adopted. You cannot expect that this will happen voluntarily*”. Voluntary adoption or indeed

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<sup>17</sup> From [https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management\\_WWF.pdf](https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf)

<sup>18</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/555095/20](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/555095/20)

<sup>15</sup> [North Sea Cod catch quota trials Final Report-new.pdf](#)

<sup>19</sup> [https://www.nature.org/content/dam/tnc/nature/en/documents/Catalyzing\\_Growth\\_of\\_Electronic\\_Monitoring\\_in\\_Fisheries\\_9-10-2018.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/Catalyzing_Growth_of_Electronic_Monitoring_in_Fisheries_9-10-2018.pdf)

reference fleet approach will not deliver the level playing field required and Marine Scotland needs to accept that the commitment to REM will need to be made by managers and the means by which it will then be implemented can be done in collaboration with stakeholders.

The discussion paper highlights that the use of REM can improve the way in which scientific operations work, leading to benefits for stock management, and more responsible and sustainable fishing which - as emphasised throughout this response - is crucial. LINK agree fully with this and believe that this would be one of the major benefits of management that REM can deliver.

### **3. Chapter 3 explores areas for discussion around access to our waters and the role of Scotland in future fisheries negotiations as part of the UK. Do you have any views or ideas in relation to the discussion points raised in Chapter 3?**

We welcome the assertion that foreign vessels in our waters should meet the same high standards that will apply to Scottish vessels, and that this must be supported by enhanced monitoring and enforcement capacity to ensure compliance.

In order to achieve long term objectives there must be close cooperation between the UK Administrations in relation to international negotiations. There should be meaningful collaboration between, and active participation and co-management by, each administration in arriving at common positions where appropriate.

Fisheries is just one of several policy areas where new quadrilateral agreements/common frameworks are required in the context of leaving the EU. The RSPB and WWF commissioned the Institute for Government to look at this in the context of environment, agriculture and fisheries.<sup>20</sup> It concluded that the four governments needed to urgently review how they work together in light of EU exit, including a revised terms of reference for the Joint Ministerial Council (JMC), that must include a new set of guiding principles for intergovernmental relations, covering transparency, accountability and a commitment to co-operate in a spirit of trust. Further, the report noted that intergovernmental agreements often lack transparency and recommended that the four nations should open the JMC process and offer civil society and industry an opportunity to meaningfully engage. Below the JMC new mechanisms should be established to allow for the settling of technical disputes outside of politically contentious ministerial forums.

It further recommended that JMC sub-committees should be established, including on international trade, and that international examples should be examined to fully understand the options for enhancing Scotland's role in international negotiations.

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<sup>20</sup> <https://www.instituteforgovernment.org.uk/sites/default/files/publications/IFGJ6070-Devotion-After-Brexit-180413-FINAL-WEB.pdf>

**4. Chapter 4 identifies the Scottish Government’s aim to establish fishing opportunities for long term future sustainability and accessibility. Accordingly, in relation to these discussion points do you have any views or ideas to the areas identified in Chapter 4?**

*4.1 Science-based approach to setting quota*

We welcome the commitment to sustainable management using the best available scientific advice. At present in UK waters this is mainly provided by ICES in the form of MSY advice and we are encouraged to see the continued ambition of setting exploitation of all stocks at levels consistent with MSY in line with international objectives. For this to be achieved funding must be directed to the science needed to underpin this advice, in particular supporting comprehensive assessments for all harvested stocks - with a focus on reducing the large number of data deficient stocks - and improving our knowledge of stocks which may be indirectly impacted or at risk from fishing.

For data-limited stocks, a precautionary approach is required to ensure that they are resilient to change and protected in the long-term and as an interim step a suitable MSY proxy should be developed, with the intention of moving towards a full MSY assessment through the collection of more data. The use of this principle would ensure fishing activity is managed within environmental limits and that in addition stocks (and ecosystems) are protected against external factors such as climate change which may affect their viability and distribution. Catch limits should generally be set below the level of fishing mortality associated with MSY ( $F_{msy}$ ) to allow the stock to buffer against not only fishing pressure but also other drivers such as oceanographic variables, climate and trophic dynamics. Stocks being restored to productive and healthy levels are more resilient and can result in subsequent increases in catch limits which in turn can lead to increased profits and more consistent catches over time.

We are, however, greatly concerned with the intention to abandon the time bound nature of MSY targets as currently applied under the CFP and which are also incorporated into SDG14 and Aichi Target 6. Simply setting a “*sensible direction of travel*” would not ensure that these targets, including as required under the National Performance Framework, will be met. There need to be firm outcome-based targets and appropriate ways to measure progress against them. Although the 2020 target to end overfishing is unlikely to be met based on Scientific, Technical and Economic Committee for Fisheries (STECF)<sup>21</sup> analysis, recent progress can be attributed to the adoption of the legally binding target date.

There have been recent discussions around the viability of fishing all stocks in a mixed fishery in line with an MSY approach at the same time, with some arguing that it is impossible. However, it is important to highlight that if  $F_{msy}$  is treated as a limit to sustainable fishing it is scientifically

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<sup>21</sup> [https://stecf.jrc.ec.europa.eu/reports/cfp-monitoring/-/asset\\_publisher/oz5O/document/id/2484866?inheritRedirect=false&redirect=https%3A%2F%2Fstecf.jrc.ec.europa.eu%3A443%2Freports%2Fcfp-monitoring%3Fp\\_p\\_id%3D101\\_INSTANCE\\_oz5O%26p\\_p\\_lifecycle%3D0%26p\\_p\\_state%3Dnormal%26p\\_p\\_mode%3Dview%26p\\_p\\_col\\_id%3Dcolumn-2%26p\\_p\\_col\\_pos%3D1%26p\\_p\\_col\\_count%3D2](https://stecf.jrc.ec.europa.eu/reports/cfp-monitoring/-/asset_publisher/oz5O/document/id/2484866?inheritRedirect=false&redirect=https%3A%2F%2Fstecf.jrc.ec.europa.eu%3A443%2Freports%2Fcfp-monitoring%3Fp_p_id%3D101_INSTANCE_oz5O%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_pos%3D1%26p_p_col_count%3D2)

possible to set fishing limits in a mixed fishery in line with an Fmsy approach. Whilst this may result in economic consequences for the industry which some may view as an unacceptable management option, it is important to make clear that this is an economic choice not an environmental one.

In response to the limitations around mixed fisheries outlined above, the use of fishing mortality ranges for fisheries management has been introduced, which has the potential to allow fishing above levels consistent with an MSY approach. The ranges typically allow for the setting of a TAC at a level 5% above or below the Fmsy limit (we would argue that any level of fishing below Fmsy is within the levels capable of maintaining a sustainable fishery). When applying this approach there are existing safeguards designed to prevent the overfishing of a stock based around maintaining a stock biomass above Blim with 95% probability (this is the stock size below which the stock is in danger of collapse). However, the use of Blim in itself is flawed and has the potential to be detrimental to the recovery of a stock to healthy levels: stock levels between Blim and MSYBtrigger (Value of spawning stock biomass (SSB) that triggers a specific management action) and/or Bpa (Precautionary reference point for SSB) are considered at risk of being outside Safe Biological Limits. To meet the ambitions for sustainable, healthy stocks, fisheries management should always aim to recover and maintain stocks above levels which maintain its long-term reproductive capacity, by keeping the Spawning Stock Biomass (SSB) above the biomass reference points MSYBtrigger and/or Bpa – not Blim.

Setting ranges which purely aim to prevent the stock from falling below Blim is not consistent with long-term recovery and maintenance of a healthy stock. Neither is it consistent with the Scottish Government's aim to establish fishing opportunities for long term future sustainability and accessibility. If, however, ranges are to be used they should be restricted to the maintenance of a stock biomass at levels above MSYBtrigger and/or Bpa and should not be used when the stock biomass is not at an existing healthy level.

#### *Principles for TAC setting*

It is critical for the health of the marine environment that catch limits are set to maintain or restore stocks above levels capable of producing MSY, as required by Article 61 of the UN Convention on the Law of the Sea (UNCLOS). Scotland must also cooperate and agree shared stock TACs with the EU and other coastal states which ensure that all stocks are restored and maintained above biomass levels capable of delivering MSY in line with Article 63 UNCLOS and Articles 2 and 5 of the UN Straddling Fish Stocks Agreement. We agree that stakeholders' views are heard and considered, however the outcome must always be TAC set in line with scientific advice to ensure stocks are restored or maintained above safe biological limits. We welcome the commitment to drive the highest standards and challenge others to meet them.

#### *4.3 Quota management system & 4.4 Fishing Opportunities after Brexit*

We wholeheartedly agree that "*fish are a public resource*" and therefore welcome the proposal to end quota speculation as this is not in the public's interest. If the intention is to manage fishing opportunities as a national asset, then it follows that opportunities - existing and new - should be allocated according to public interest criteria. This means allocating fishing

opportunities according to transparent and objective environmental, social and economic criteria in a way that incentivises the most sustainable fishing practices, an approach that we welcomed in the revised CFP, Article 17, although in practice historic catch levels have ended up being the basis of quota allocation in most instances. A new and more robust criteria-based approach, giving the greatest weight to environmental factors, would also go some way towards addressing the concerns of fishers, particularly in the small-scale coastal fleet, with historical grievances related to current FQA shares. Such criteria should be identified transparently and via engaging with experts and public consultation.

#### 4.6 *Future catching policy*

We welcome the frank acknowledgment that the landings obligation is not currently being complied with and look forward to action to enforce the law.

Minimising and avoiding unwanted catches is a crucial element of sustainable and ecosystem-based fisheries management. We believe that not enough has been done throughout the EU over the last five years since the landing obligation was enshrined in the reformed CFP to result in behaviour change towards more selective fishing. Discard rates remain at levels similar to those before the landing obligation and while some operators have adopted more sustainable practices, many others continue to operate in a ‘business as usual’ fashion. There is a clear opportunity for quota allocation or ‘uplift’ to be assigned using criteria which favours the vessels that can prove they are fishing in the most sustainable manner with the most selective gears. REM footage could be used to verify and support these decisions.

The European Fisheries Control Agency (EFCA) Scheveningen Control Expert working group drafted a report in 2015 looking into the control and monitoring of the demersal landing obligation.<sup>22</sup> The report completed a risk assessment of non-compliance with the landing obligation by demersal gear segments in the North Sea, but the results can be applied to these gear types in adjacent areas. The risks identified by the EFCA working group include illegal discarding followed by mis-recording of illegally discarded catches. The report concluded that TR1, TR2, TRSK1 and BT2 pose the highest risk, followed by smaller mesh otter and beam trawls and seine nets and advised that the highest risk vessels should be subject to additional monitoring. The discussion paper talks about “*appropriate and proportionate use of REM on mobile vessels*” therefore, as a minimum, REM should be introduced to all TR1 and TR2 vessels operating in Scottish waters.

An example of a thriving fishery working with a landing obligation is the Canadian groundfish fishery, which went through industry-led reform in 2002 following the closure of their fishery. They have made a success of the new fisheries management regime (including a landing obligation) and now every species is under-harvested – including former ‘choke’ species. The key reason for the success of the fishery is accountability. Each vessel must account for everything it catches. E-logbook data is verified through video footage provided by REM systems and at port inspections of landings. The verified data can also be used in science and

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<sup>22</sup> <http://www.nsrac.org/wp-content/uploads/2016/02/Paper-4.1-Report-from-Sch-Control-and-Monitoring-Group-For-Info.pdf>

management studies, because the data provides information on total catch mortality– retained and released. As demonstrated by the Canadian example, 100% at-sea coverage is required to ensure the landing obligation is effective and provides reliable data.

#### 4.7 *Technical and spatial conservation measures*

Commercially targeted fish and shellfish species are biodiversity, an intrinsic component of marine natural heritage. The health of their stocks is therefore inextricably linked to the health of the wider marine ecosystem, particularly the seabed habitats that support critical life history stages such as breeding, spawning, nursery and feeding areas, the species upon which they prey and the species that prey on them. We would therefore support technical and spatial conservation measures that protect and recover critical fish and shellfish habitat, fish stock recovery areas (including use of No-Take Zones) and Vulnerable Marine Ecosystems (VMEs) and that eliminate bycatch.

When considering future catching opportunities, the discussion paper highlights using a science-based approach with regards to setting quota, however this approach must also extend to the application of technical and spatial conservation measures to ensure good environmental status for benthic habitats, seafloor integrity and predators, such as seabirds, whales and dolphins. Managing fishing opportunities strictly in line with spatial and technical controls is critical to maintaining, and indeed improving, ecosystem functioning to ensure sustainable Scottish fishing now and into the future.

The sensitivity of the marine environment and its ability to recover from pressures is not uniform. Spatial and technical conservation measures are therefore essential when considering fisheries management as the impact of different gear types varies depending on the location, intensity and frequency of the pressure. These conservation measures are not only required to protect and, crucially, improve ecosystem health but also to manage the competing priorities of different marine users. Fishing is just one of the human activities that puts pressure on our marine resources and as such it is important that management of fishing activities is not considered in a silo but incorporated into wider marine planning and management. We therefore support management of fishing being integrated with marine planning and subject to Strategic Environmental Assessment and for reformulated IFGs to include broader stakeholder representation.

Some spatial management of fisheries exists in Scottish waters, including a range of permanent and seasonal closures and the Shetland Regulating Order. Further spatial fisheries management measures have been introduced for the protection, and in some cases, recovery of marine biodiversity in nature conservation Marine Protected Areas (MPAs) and marine Special Areas of Conservation (SACs). Nevertheless, additional spatial management measures are needed to protect and enhance habitats and species throughout Scotland's seas. Whether inside or outside of MPAs, fishing and other marine use and development, such as aquaculture and renewables, must not "*significantly impact*" the "*national status*" of Priority Marine Features (PMFs), including habitats that support various life history stages of commercial fish and shellfish species (such as flammox, horse mussel, maerl and seagrass beds) and many

commercially targeted species themselves, including spiny lobster, herring, mackerel and cod. We also note new approaches to MPA management globally, including Canada's new MPA protection standards, which preclude bottom trawling (and oil and gas exploration/exploitation, mining & dumping) from operating inside new MPAs.<sup>23</sup>

Spatial management of mobile gear fisheries is required both to protect vulnerable benthic habitats and critical fish and shellfish habitat from their direct impact and to determine the sustainability of such gears on habitats of intermediate sensitivity. The designation of further Demonstration and Research MPAs provides an opportunity to explore and advance progressive fisheries management approaches, support research of impacts and encourage community engagement. Such an approach is essential if we are to be confident of achieving good environmental status for benthic habitats and seafloor integrity, as explored in detail in a report<sup>24</sup> commissioned by Scottish Environment LINK. Fresh thinking is needed to properly account for and manage the potential damage to non-target species and habitats, and the degree to which they can recover from fishing pressure. For example, Bailey and Hopkins<sup>25</sup> subsequently state "*An approach based on the ability of systems to recover would allow the ecosystem effects of fishing to be considered in the same way as the yields of stocks. In systems such as Marine Stewardship Council certification the scoring systems for stock sustainability and the effects of fishing on ecosystems currently use different methods. We argue that this is not necessary and that a **system which seeks to recognise sustainable fisheries ought to measure whether impacts on non-target species and the environment are sustainable.***" (emphasis added).

We welcomed the rapid action taken by the Scottish Government to protect Loch Carron. Further flexibility for fisheries authorities to implement responsive regulations when necessary could include seasonal or temporary closures of areas and implementing short-term technical controls such as gear regulations. The discussion paper highlights co-management and devolution of management power to an appropriate level which are important if the Scottish Government wants more responsive fisheries management. Such decisions should be evidence-based and inclusive of stakeholders, for which England's IFCA's provide a good example. The use of local knowledge is invaluable to effective management of marine systems, this is part of including fishers in the process. A more cooperative approach to management that is inclusive of fishers should provide transparency on the decision-making process and clarify expectations of fishers' roles in achieving wider sustainability outcomes.

When an effective ecosystem-based approach to fisheries management is implemented, management considerations go beyond the stocks and ensure that decisions and actions not only prevent negative impacts on ecosystem functioning and productivity, but crucially also actively improve them through establishing fish stock recovery areas, No-Take Zones and other spatial and temporal measures. Such an approach is essential to help safeguard and improve provision of ecosystem services, most urgently to secure a healthier inshore marine area and to

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<sup>23</sup> <http://www.dfo-mpo.gc.ca/oceans/conservation/advisorypanel-comiteconseil/index-eng.html>

<sup>24</sup> [http://www.scotlink.org/wp/files/documents/SEL\\_SeafloorIntegrity\\_Report\\_A4\\_March19-1.pdf](http://www.scotlink.org/wp/files/documents/SEL_SeafloorIntegrity_Report_A4_March19-1.pdf)

<sup>25</sup> <https://www.masts.ac.uk/media/36584/gss1-abstracts.pdf>

help recover declining commercial fish and shellfish stocks, critically North Sea cod. Improved technical and spatial conservation measures combined with better data and the modernisation of the fleet would allow decisions to be made on a real-time basis. This could be possible with REM because 1. the required evidence would be available and; 2. the measures could be enforced.

**5. In Chapter 5 the Scottish Government discusses possible options for access to fishing in distant waters and new entrants. With regards the areas discussed what are your opinions of the discussion points raised and any related views on the themes identified in Chapter 5?**

*5.1 Fishing capacity*

We believe a fundamental review should be undertaken of Scotland's fishing capacity and a full assessment of whether it is compatible with operating within environmental limits. Given the downward trend of many key stocks and a fundamental complaint levelled at the implementation of the landing obligation being that there is not enough quota to go around it may be that there is too much fishing capacity in the water to meet current fishing opportunities.

A thorough stock take is required and action to ensure a sustainable balance between capacity and fishing opportunities is essential.

Access to quota is another area that would benefit from fresh eyes and a review in light of current pressures. In order to achieve maximum environmental and socio-economic benefit, access to fishing opportunities should be determined on the basis of transparent social, economic and environmental criteria in a way that incentivises the most sustainable fishing practices. Serious consideration should be given to the approach taken to fishing licenses by the Faroe Islands where they notified the fleet in 2008 that licenses would be terminated from January 1, 2018 and re-allocated on the basis of new criteria thereafter. Thus, began a decade-long wide-ranging reform process.<sup>26</sup>

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<sup>26</sup> <https://www.fiscot.org/media/1432/hoegni-hoydal.pdf>

**6. Chapter 6 identifies a broad range of themes and points around the future management of the inshore fishing industry. As a stakeholder what are your opinions of the discussion points raised and any related views on the themes identified in Chapter 6?**

Scotland's Marine Atlas, the assessments undertaken as part of the Scottish MPA project and the conclusions of the SEA of IFG management plans that they provided no net benefit to the seabed, paint a compelling picture of this pressure currently being too high, overshooting environmental limits and with limited ambition to address and there is a compelling and longstanding case for reform.

*6.1 Inshore Fisheries Strategy*

Scottish Environment LINK notes Marine Scotland's definition of inshore fisheries. However, since there are vessels that will be operating both within and beyond the 12nm limit, and in some cases will not be Scottish vessels, this definition is too narrow. We would like to see it extended to *all* fishing activity that takes place within 12nm, whether exclusively or otherwise.

Maintaining and building upon the three themes highlighted in the 2015 Inshore Fisheries Strategy is critical when considering modernisation of inshore fisheries management and its integration with other marine users and broader social, economic and environmental challenges. Management of the fishing industry and other marine activities must be in line with the General Policies and sectoral objectives of the National Marine Plan to improve the health of Scotland's marine environment and secure the ecosystem service benefits for all users and wider society.

*6.2 Competing priorities*

Scotland's inshore waters contain a diverse mosaic of marine habitats and wildlife that support the inshore fishing industry. Benthic habitats such as seagrass meadows, maerl beds, flameshell beds, kelp forests and burrowed mud are critical fish and shellfish habitat, providing food, refuge and shelter for juveniles and adults of commercial species such as scallops, herring, cod, haddock and langoustine and provide many other ecosystem services, including carbon sequestration, nutrient cycling and coastal protection. Our seas are becoming even busier, increasing the competition for space and marine resources between different users within and beyond the fishing industry. Precautionary, evidence-based, plan-led spatial management is urgently needed for our vulnerable inshore seas to ensure that the cumulative pressures are regulated such that there is a net improvement of marine ecosystem health and functioning.

Some progress is being made on managing fishing within Scotland's MPA network. The project to improve protection given to PMFs outside the MPA network is another important contribution to recovering marine biodiversity. However, neither are designed to deliver inshore fisheries strategy goals or inshore fisheries reform. We note the proposal to introduce a significant low-impact trial for the purpose of addressing gear conflict. In fact, the benefits of such an approach go much wider. We believe a holistic ecosystem approach should be applied throughout Scotland's inshore waters, so that the multiple benefits, including biodiversity recovery (e.g.

restoring critical fish and shellfish habitat), sustainable commercial fishing, recreational pursuits (such as wildlife tourism, diving, angling and sailing) and numerous other ecosystem services (such as carbon storage, coastal protection and the appreciation of wildlife) can be maximised. We believe that this is best achieved by a presumption against dredging and trawling within a significant area of inshore waters to create a “low impact zone”, encompassing, *inter alia*, MPAs, protecting critical fish and shellfish habitat (e.g. nursery/spawning areas), protecting PMFs, No-Take Zones, areas just for static gear with effort capped and areas just for scallop diving.<sup>27</sup> There may be areas within such a zone suitable for mobile gear determined following environmental impact assessment.

We recognise that one fishery, for langoustine, operates exclusively on a Priority Marine Feature, burrowed mud, and believe a case can be made for a targeted strategy to ensure General Policy 9 (b) can be met for that feature.

In order for spatial management of the inshore marine environment to be successful collaboration and information sharing is needed across different stakeholder groups including Marine Planning Partnerships to ensure successful integration of fisheries management into Regional Marine Plans.

### 6.3 *Inshore legislation*

We welcome the commitment to update the existing fragmented and outdated inshore fishing legislation through wider fisheries legislation. However, momentum on the urgently needed modernisation of inshore fisheries management must not be lost. There is a longstanding and compelling case for change in the inshore as recognised by the current Inshore Fisheries Strategy.

### 6.4 *Reactive inshore fisheries management*

We support the principle to introduce a new licensing scheme for the inshore, that is responsive to change and ensures fishers abide by existing and new spatial and technical fisheries management and conservation measures.

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<sup>27</sup> See also: Beukers-Stewart BD & Beukers-Stewart JS (2009). Principles for the Management of Inshore Scallop Fisheries around the United Kingdom. Report to Natural England, Scottish Natural Heritage and Countryside Council for Wales. Marine Ecosystem Management Report no. 1, University of York, 58 pp. [[http://eprints.whiterose.ac.uk/105473/1/Beukers Stewart Beukers Stewart 2009 Scallop Fisheries Management.pdf](http://eprints.whiterose.ac.uk/105473/1/Beukers_Stewart_Beukers_Stewart_2009_Scallop_Fisheries_Management.pdf)]

Also: Riddington, Radford & Gibson (2014) Management of the Scottish Inshore Fisheries; Assessing the Options for Change. Technical Report for Marine Scotland [<https://www.gov.scot/publications/management-scottish-inshore-fisheries-assessing-options-change/pages/4/>]

**7. Possible options for the future funding of the fishing industry are identified in Chapter 7 for discussion. What are your views on the discussion points raised and do you have any other ideas with regards future funding options or opportunities going forward?**

The European Maritime and Fisheries Fund (EMFF) provides financial aid for a broad range of fishing related activities including to help fishermen in the transition to sustainable fishing, to support data collection for international requirements and assist with compliance work. As highlighted in the discussion paper the EMFF has been critical to Scotland, therefore regard must be given to its replacement especially in respect to the fishing-related costs that the EMFF contributed to. We welcome and encourage further thought being given to provision of funding being contingent on compliance with legal and regulatory requirements. We note early discussion around a possible “UK prosperity fund” and would reiterate that resource should follow need, noting that Scotland has devolved responsibility for fishing, marine planning and conservation in 61% of UK seas.

We believe that any future funding must be directed strategically to support “a race to the top”. Such incentives to encourage sustainable development and enhancement of Scotland’s marine environment would ensure the health and stability of the maritime industries that depend on sustainable practice. Without sufficient funding and resources, achieving the desired social, economic or environmental outcomes will be challenging.

Fish are a public resource and public funding should be used for public good. As a general principle, public resources should be invested in meeting public needs (e.g. from enabling sustainable fishing and responsible aquaculture activities which reduce the footprint on the wider marine environment to preventing marine pollution). Therefore, the priorities for investment of public money should be for the benefit of public resources by gathering knowledge and finding solutions, implementing effective planning and ensuring that rules are properly applied and complied with.

Innovative methods for funding fisheries management should be sought and as part of this we would like to draw attention to the importance of funding for “*enhanced sustainability and research*” and “*science and innovation*” which are the foundations of effective management. To support this, funding should focus on:

- Data collection with an increased focus on data deficient stocks
- Innovation (co-management (e.g. industry led initiatives), finding solutions to improve selectivity (e.g. gear modifications and technological innovations) and roll-out of successful trials).
- Enforcement and compliance (monitoring and control (e.g. REM, VMS, electronic reporting systems, tracking devices, fisheries observers, at sea and portside enforcement)).
- Ecosystem-based management - ecosystem and habitat restoration and protection, technical and spatial measures (e.g. MPA management and fish stock recovery areas) and mitigation and adaptation to climate change.

- Enabling fishermen to adopt new, more environmentally sustainable technology to reduce GHG emissions (e.g. fuel use varies greatly with target species, gear deployed, fishing area and skipper behaviour). Technology already exists to dramatically reduce both the carbon footprint of vessels and operational costs, ranging from more efficient gear to hybrid engines. In 2015, Norway's first hybrid (diesel-battery powered) vessel demonstrated a fuel cost reduction of up to 40%. Scotland is well placed to be a pioneer in this field.

We also recognise that fishers should contribute towards the increasing costs of management of public resources and would support the development of a cost recovery mechanism to finance sustainable fisheries management.

The discussion paper highlights the issue of Scottish Ministers wanting the power to raise and decide on the spending of a Scottish seafood levy. Rather than continuing the current Seafish model, consideration should be given to a levy to help fund scientific data collection, with a focus on data deficient stocks, environmental monitoring and implementation of protection measures and gear selectivity research and roll-out of successful initiatives.

**8. The Scottish Government understands that access to labour is a considerable concern for the industry. In Chapter 8 we identify a range of discussion points connected to access to labour and working in the fishing industry – what are your views on this area?**  
None

**9. To ensure long term sustainability of the fishing industry the Scottish Government believe it is right for the fishing industry to contribute to costs associated with science, research and development in the future. Chapter 9 consider options for this but what are your view and thoughts on the discussion points raised in this chapter?**

It is essential that fishers contribute towards the increasing costs of management of public resources, acknowledging that fish are a public resource. We support the development of a cost recovery mechanism to help finance sustainable fisheries management. The costs of managing fisheries including scientific research are substantial, covering aspects from enforcement to fisheries science. These fisheries management costs are publicly financed, but the financial benefits accrue largely to those within the fishing industry and supply chain.

The unavoidable conclusion is that cost recovery for fisheries management is necessary and timely. As acknowledged, other countries such as Iceland, the Faroe Islands, Australia and New Zealand have implemented auctions, levies and other measures to pay management costs. Several cost recovery mechanisms are available such as a landings tax, or quota auctions and should be reviewed for their ability not only to raise funds but also to encourage environmental recovery.

Government should work with the range of fisheries stakeholders to determine the best way forward to implement a cost recovery programme. At the very least the fuel tax exemption for fishing vessels should be phased out, a measure that would foster lower carbon emissions and

would provide an incentive for innovation in fishing behaviour, developing new gear technology, and/or switching between fishing types.<sup>28</sup>

**10. Finally, thinking about ensuring the long-term sustainability of the Scottish fishing industry for future generations do you have any other ideas or proposals that you would like to be considered that are not covered elsewhere in the discussion paper?**

**Forage fish** - The lesser sandeel (*Ammodytes marinus*) is a key prey species for maintaining the productivity and population status of many seabird species including terns, kittiwakes, and puffins. Sandeels are also consumed in large numbers by harbour porpoise, other sea mammals, and piscivorous fish such as cod, whiting and mackerel. As such, the sandeel plays a pivotal role in the foodweb between primary productivity (plankton) and top predators. However, diminishing abundance of sandeels, in combination with other pressures in the marine environment, has driven a major decline in Scotland's breeding seabird populations. Scientific evidence is mounting that sea warming is responsible for reduced sandeel recruitment in the North Sea<sup>29</sup>, that this is a key factor in the decline of seabird populations, and critically that commercial sandeel fishing can aggravate this.<sup>30</sup>

To address this impact, in 2000 the EU created a closed area of 20,000km<sup>2</sup> extending offshore from the coast of NE Scotland to Northumberland, a 'box' which still keeps the Danish sandeel fishing fleet at bay from the foraging ranges of sensitive seabird colonies. Although the industrial sandeel fishery continues elsewhere in the North Sea, principally on the Dogger Bank but also on the open banks in Scottish waters outside of the sandeel box.

The MCCIP adaptation report card on sandeels<sup>31</sup> highlights the sensitivity of surface-feeding seabirds to availability of sandeel and observes that "*The state of sandeel stocks in the fished areas of the North Sea is currently estimated using an age-based analytical assessment model that is tuned using research vessel indices. From these assessments ICES advises on a total allowable catch (TAC) by stock that would allow sufficient numbers to survive to spawn, which is termed an escapement strategy. As these stocks are assessed annually, it is possible to avoid fishing on a poor incoming year-class. However, the ICES advice does not explicitly consider the food requirements of predators in estimating a TAC and fisheries may locally deplete sandeel aggregations within these stock areas.*"

The final sentence of this quoted text means that, whereas the ICES assessment model estimates the quantity of sandeels consumed by seabirds and other natural predators to assess natural mortality (M), it does not involve any assessment of the ecological needs of dependent predators. Seabirds need a much larger biomass of sandeels in the sea than the amount they actually consume so they require a certain threshold density to permit viable foraging. In effect,

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<sup>28</sup> <https://neweconomics.org/uploads/files/Management-costs.pdf>

<sup>29</sup> <http://www.int-res.com/articles/meps2002/238/m238p199.pdf>

<sup>30</sup> <http://www.mccip.org.uk/impacts-report-cards/full-report-cards/2006/healthy-and-biologically-diverse-marineecosystem/seabirds/ceh-evidence/>

<sup>31</sup> <http://www.mccip.org.uk/media/1818/mccip-sandeels-and-their-availability-as-prey.pdf>

the food requirements of top predators as opposed to their food consumption are not used in setting sandeel catch limits because the multi-species assessment only looks at implications for the sandeel stock itself and as such is not precautionary in relation to the declining status of sandeel dependent marine bird predators. We consider that as a minimum this deficiency in the ICES assessment model needs to be addressed with the aim of informing the way in which catch limits for sandeels (and other forage fish, notably sprat - *Sprattus sprattus*) are set.

In failing to cater adequately for the needs of seabirds and other marine wildlife (effectively not providing sufficient sandeel 'set-aside' for them), the management of the fishery across the North Sea therefore falls short of meeting the objective of an ecosystem-based approach.

Apart from a very modest quota (c. 5000 tonnes) for scientific monitoring within the "sandeel box", there is to our knowledge no Scottish commercial interest in the sandeel fishery, no sandeel trawlers, and no bespoke processing facilities for sandeel. In addition, many fishermen are known to be opposed to fishing for sandeels as a key prey for whitefish and pelagic species.

A full precautionary closure of sandeel (and sprat) fishing in Scottish waters is worthy of serious consideration. Scotland could justify and champion this option as an exemplar of an ecosystem-based approach. Furness *et al.* (2013) state that "*of all the management options presented in this report, closure of selected fisheries is the option which appears to offer the greatest benefit, to the greatest number of seabird species*" and that "*Closure of all sandeel and sprat fisheries in UK waters would bring the UK into the same management position as exists in the [Western seaboard of the] USA, where fishing small pelagic fish such as sandeels that are keystone species for marine food webs (including large predatory fish of high commercial value) is prohibited.*"<sup>32</sup>

**Bycatch of Endangered, Threatened & Protected Species** - Measures to monitor and prevent entanglement of protected species, including cetaceans, seabirds and sharks, in static and mobile fishing gear must be fit for purpose and transparently put us on a track towards zero bycatch, as specified in Article 3 of the Technical Measures Regulation, and under ASCOBANS (Agreement on the Conservation of Small Cetaceans in the Baltic, North East Atlantic, Irish and North Seas). Urgent focus is required for those fisheries where high levels of bycatch occur.

For example, regarding cetaceans, an interim report presented to the International Whaling Commission Scientific Committee meeting in Nairobi in May 2019 revealed a much higher rate of entanglement in static creel gear in Scottish waters than had previously been documented (MacLellan *et al.*, 2019). A firm commitment to put measures in place to understand levels of entanglement and to ensure entanglement reduction are required.

A WWF commissioned review of UK harbour porpoise bycatch<sup>33</sup> identified changes in fisheries practises that are required to prevent porpoise deaths in gillnets deployed in UK waters, and identified north west of Shetland as one of three UK areas of high porpoise bycatch risk. The

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<sup>32</sup> [http://randd.defra.gov.uk/Document.aspx?Document=13483\\_MB0138MacArthurGreenFinalReport.pdf](http://randd.defra.gov.uk/Document.aspx?Document=13483_MB0138MacArthurGreenFinalReport.pdf)

<sup>33</sup> [https://www.wwf.org.uk/sites/default/files/2019-04/Review\\_of\\_harbour\\_porpoise\\_in\\_UK\\_waters\\_2019.pdf](https://www.wwf.org.uk/sites/default/files/2019-04/Review_of_harbour_porpoise_in_UK_waters_2019.pdf)

report emphasised the existing poor level of data and proposed improved monitoring and changes to fisheries.

Harbour porpoises are one of only four marine mammal species for which bycatch rates are available in UK waters. There are many cetacean species that are bycaught but monitoring data are too poor to determine bycatch rates. Monitoring rates will need to vary depending on the level of cetacean bycatch, but a minimum requirement should be 5-10% of the fleet. This might be made up of dedicated observers, electronic monitoring or a combination of both. REM should be modified especially to observe protected species, as required, for example to detect marine mammals that may fall out of the gear and into the water when it is being hauled, and so does not land on the deck. Dedicated observations should be a requirement, not voluntary, as they currently are.

An adaptive and transparent approach to protected species bycatch monitoring, mitigation and associated research is recommended, so that measures can be regularly reviewed and tailored to suit.

Currently protected species bycatch rates in UK waters are only calculated based on the operations of the UK fleet. Bycatch measures should be a requirement of the Scottish fleet and any other nation fishing in Scottish waters, so that there is a level playing field, and to ensure accuracy and confidence in protected species bycatch rates.