

Title: **Scotland's Marine Assessment 2020**

Date: 3 February 2021

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| Purpose: | Discussion |
| How does this link with our corporate priorities of improving biodiversity or delivering nature-based solutions to climate change | Scotland's Marine Assessment 2020 provides the most comprehensive assessment of the state of Scotland's seas to date. It includes assessments on healthy and biologically diverse seas and climate change which relate directly to our corporate priorities. This is in addition to sections on ecosystem services, clean and safe, and productive seas which are equally relevant, providing up-to-date assessments on the ways in which our seas are used. |
| Summary: | This paper provides Board with information on Scotland's Marine Assessment 2020, including the headlines and next steps, and the key messages from the healthy and biologically diverse assessments, with which NatureScot staff were most involved. This is intended to provide background information to support a discussion on SMA2020 at the Board meeting on 3 February 2021. |
| Recommendations: | Board is asked to note the content of this paper and, if possible, explore the <i>Healthy and biologically diverse</i> content of Scotland's Marine Assessment 2020. See http://marine.gov.scot/sma/ There will be a presentation of key points at the meeting to provide further context. |
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| Appendices: | Appendix 1 - Headlines and next steps Appendix 2 - Healthy and biologically diverse key messages |

Purpose

1. This paper has been prepared to provide Board with background information in advance of a presentation and discussion on Scotland's Marine Assessment 2020.

Background

2. Scotland's Marine Assessment 2020 is the third in a series of reports documenting the state of Scotland's seas. The assessment is a statutory requirement under the Marine (Scotland) Act and is intended to underpin the forthcoming review of the National Marine Plan. It is by far the most comprehensive assessment of the state of Scotland's seas to date and comprises 183 separate components (assessments, case studies etc.) with contributions from over 250 individuals including those from NatureScot.
3. SMA2020 follows the structure of Scottish Government's vision of 'clean, healthy, safe, productive, biologically diverse marine and coastal environments, managed to meet the long-term needs of nature and people'. There are sections, as in previous assessments, on 'clean and safe', 'healthy and biologically diverse' and 'productive' seas. Much more prominent in SMA2020 than in previous iterations are assessments around climate change, pressures (related to human activities), and ecosystem services, all equally relevant to NatureScot's work.
4. This assessment represents a continuing evolution in approach, with a move to most content now being available online. This is the first time that there will not be a hard copy of the complete assessment (although individual assessments are available to download). Instead, a summary booklet is being produced (to be published in February 2021) containing the agreed 'headlines and next steps' (see Appendix 1), together with a summary of the key messages and knowledge gaps from the individual assessments (see key messages from 'healthy & biologically diverse' in Appendix 2).
5. The next steps for those working on SMA2020 are to complete the 21 regional assessments and to continue to promote SMA2020 and communicate with others about how we should respond to the results. This quarter in NatureScot we are planning a staff workshop to help determine our next steps, including in relation to any lessons learned. Examples of how we intend to use the results over the next year include: supporting the review of the National Marine Plan; supporting development of the next Scottish Biodiversity Strategy; continuing to develop marine indicators; and informing the further development of our marine monitoring programme.

Recommendations

6. Board is asked to note the contents of this paper and, if possible, to look at some of the content of the *Healthy and biologically diverse* content of SMA2020 before the meeting on 3 February. A presentation at the meeting will summarise key points and provide further context to support the Board discussion.
7. See <http://marine.gov.scot/sma/assessment-theme/healthy-and-biologically-diverse>

Appendix 1 Headlines and next steps

Headlines

Progress is being made in improving the state of Scotland's seas especially in relation to contaminants. Eutrophication is not an issue in Scotland's seas. There are mixed pictures for marine mammals, birds, fish and marine litter and there are signs of change in plankton. There are increasing pressures associated with non-indigenous species, climate change and ocean acidification, while the ability to draw conclusions about benthic habitats and underwater noise is limited by current knowledge.

The marine economy (2017) is worth £14.66 billion Gross Value Added (GVA) to Scotland of which £9.52 billion GVA is oil and gas extraction and £5.14 billion GVA comes from other marine industries. This supports important marine sectors including, energy, food production, transport/communications, sport, leisure and recreation, as well as bringing significant well-being to individuals.

Many marine industries are of growing importance to the Scottish economy. Marine energy and offshore wind (offshore wind, floating offshore wind, wave energy and tidal stream generation) increased by 142% between 2014 and 2018 and employment in marine tourism by 16% between 2008 and 2017. The GVA trend for aquaculture, 2013 to 2017, increased by 58% from £224 million to £354 million with employment increasing by 20%.

Climate change is the most critical factor affecting Scotland's marine environment. Impacts are already being seen across the Scottish marine ecosystem. For example, mean sea level around the coast is increasing in all marine regions, with the largest changes in the last 30 years observed at Stornoway, Kinlochbervie and Lerwick, increasing the risk of assets being damaged from coastal flooding and coastal erosion. Furthermore, the rise in sea temperature is causing changes in species distributions.

Recent evidence on ocean acidification shows that it has the potential to have an impact on shellfish and other marine invertebrates in Scotland's seas, one of a number of increasing stressors which, in combination, will potentially have significant consequences for the sectors and communities that depend on them.

Pressures associated with bottom-contacting and pelagic fishing continue to be the most geographically widespread, direct pressures across the majority of Scottish Marine Regions and Offshore Marine Regions.

Measures are being implemented in response to recognised concerns. Some, such as fisheries management, have been in place for decades, evolving throughout that period to respond to changes in marine ecosystems. Measures will continue to develop to address current and future challenges, including those highlighted in this assessment.

Marine Protected Areas and measures to tackle marine litter, have developed quite recently and need more time to be fully effective. In addition, further measures are required in response to the loss of biodiversity, impacts associated with climate change and ocean acidification, and to continue to support the aim of sustainable use of Scotland's seas.

There are insufficient data to allow detailed assessment at the scale of the Scottish Marine Regions and Offshore Marine Regions. There are too few ecosystem monitoring sites and understanding cumulative impacts remains a significant challenge.

Delivering clean, healthy, biologically diverse and productive seas will only happen through closer coordination and collaboration, including with coastal communities and international partners.

Next steps

A. Scotland will continue to develop and improve the body of scientific (natural, social and economic) evidence to inform policy decisions relating to the management of human activities having an impact on Scotland's seas: The evidence from SMA2020 and other assessments indicate that the rate of change due to human activities in marine systems is accelerating. These assessments will continue to be available to inform public awareness and government policy.

B. Our marine science community will work to improve our collective understanding of our marine environment: Many initiatives and strategies exist which provide information and direction. Locally and globally, indicators have been developed, and relevant indicators are used in SMA2020. These provide the basis for informing the action required today. However, we recognise that further development and refinement of indicators, especially in the healthy and biologically diverse context, is needed to enhance advice and decision-making.

C. Future work on Scotland's National Marine Plan will take an ecosystem-based approach to the protection of Scotland's seas in the management of human activities: As the environment becomes more unpredictable and unstable, with increasing impacts from climate change, SMA2020 shows that the resilience of ecosystems will change. For example, species that can, will move. Those species dependent on ocean currents for dispersal may be affected. Taking account of such changes, including those that are human induced, when considering, developing and implementing marine management measures will be integral to our statutory review of the National Marine Plan in the coming months.

D. The national dialogue must be diverse and effective: The changes that are occurring are accelerating and will have societal impacts, especially on coastal communities and marine sectors. There is a strong imperative to continue to work hard on communicating the state of Scotland's seas with a range of different audiences, allowing decisions to be reached collaboratively about the measures required to address the impacts of human activities.

E. SMA2020 highlights the challenges across the Scottish marine community to:

(1) Improve the predictions of climate change impacts: Climate change is already resulting in changes in the seas around Scotland, and the pace of change is predicted to increase between now and the next assessment. The most significant changes for Scotland over the next 10 to 20 years still need to be identified and measures will be required to help mitigate and adapt to these changes.

(2) Assess cumulative pressures: While the understanding of the impact of individual pressures (cause and effect) has merit, the reality is that Scotland's seas are subject to multiple pressures, including those arising from a rapidly changing climate. Methods will be developed that enable future scientific advice to take account of multiple pressures and cumulative impacts.

(3) Improve the understanding of natural capital and ecosystem services: The assessment of economic and social value continues to improve. However, in line with the recommendations earlier this year from the Advisory Group on Economic Recovery, we will work collaboratively to embed the concepts of ecosystem services and natural capital in respect of the seas around Scotland. This should be set within the broader context of improved integration of social and natural sciences.

(4) Ensure that account is taken of the bigger marine environmental picture: The movement of pollutants by the currents in the seas and winds in the atmosphere means that the state of the seas around Scotland is not just affected by activities and actions taken in Scotland. A continued involvement and leadership in international initiatives will ensure a joined-up approach across national borders.

(5) Improve the availability of data: The preparation of SMA2020 has involved many experts using the available data. However, some gaps in knowledge exist and not all data are widely available. Enhanced efforts will be made to capture all data relevant to a specific assessment, thereby delivering the most comprehensive evidence-base to guide decision-making, following the 'collect once, use many times' principle, accepting that there will always be gaps in our knowledge.

(6) Undertake sustained monitoring and investigative research to explain apparent change: The natural variability in marine systems is large. This means that we should explore the need for greater capacity within Scotland to establish when and where change is occurring and the cause of the change.

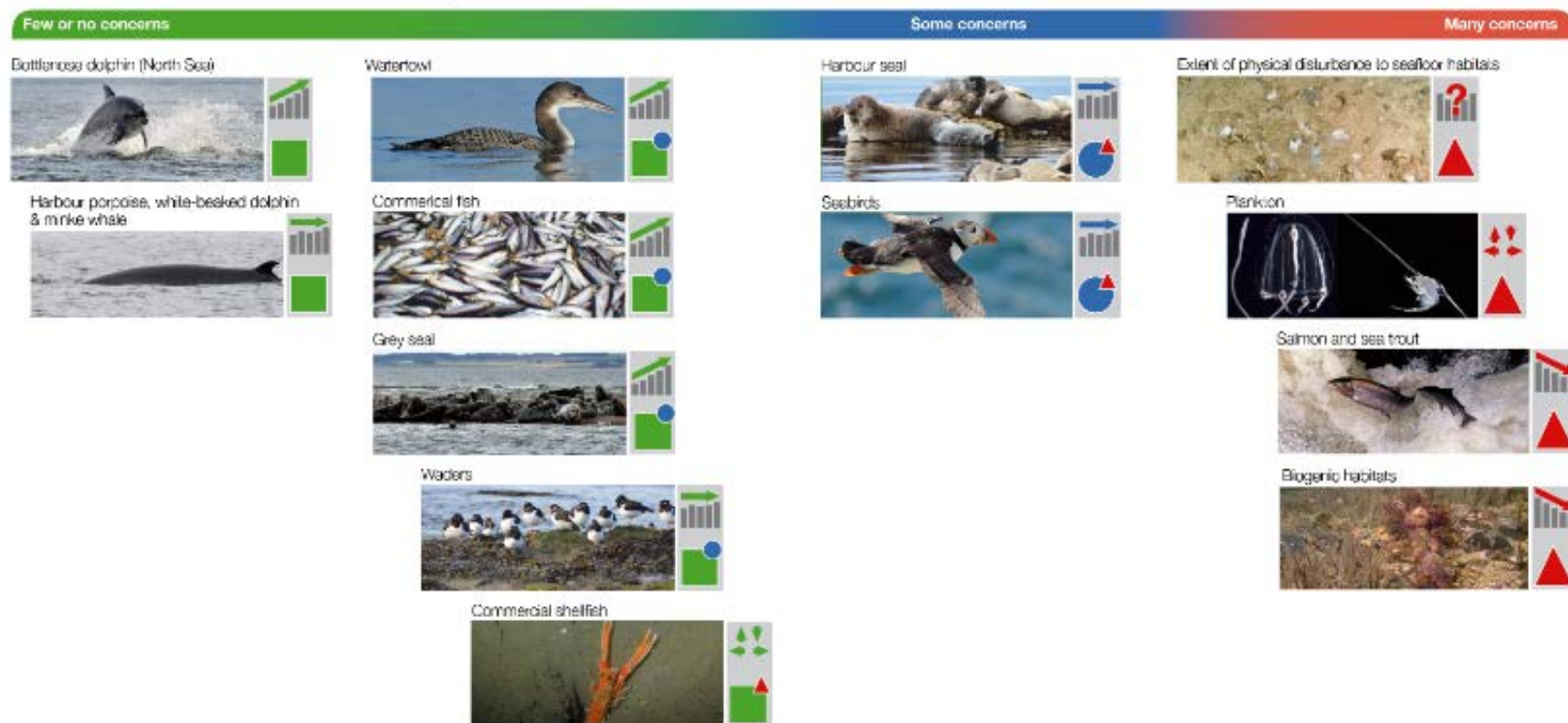
(7) Maximise the benefit of our scientific monitoring: Monitoring programmes relevant to the seas around Scotland will be reviewed to make sure that, collectively, they provide the necessary data at the required scale to support future assessments. Challenges include responding to emerging topics and adopting more cost-effective ways to obtain data using new technologies.

Appendix 2 Healthy and biologically diverse key messages

Scotland's Seas Data and Assessment Group (SSDAG – the steering group for SMA2020) has produced summaries of the different sections that form part of SMA2020. These summaries include key messages and knowledge gaps and will be published as part of the SMA2020 booklet. The agreed key messages for 'Healthy and biologically diverse' are set out below. Please also see summary infographic overleaf.

- The lack of sufficient data makes it difficult to report on trends for some species and habitats across Scotland (e.g. seagrass, biogenic habitats) and at a regional scale (e.g. waterbirds).
- Disturbance to seafloor habitats from bottom-contact towed fishing gear is estimated to affect at least 15% of the seabed in all Scottish Marine Regions (SMRs) and seven of the 10 Offshore Marine Regions (OMRs).
- The UK Marine Strategy 'no loss in extent' target for subtidal biogenic habitats (e.g. blue mussel beds, horse mussel beds, serpulid aggregations, cold water coral and maerl beds) has not been met in certain SMRs.
- The importance in terms of climate change mitigation of a range of marine habitats for carbon sequestration and storage is becoming increasingly evident and there is a need to ensure the adequate protection of this resource.
- There have been significant changes in the plankton community over the last 30 years with potential implications for marine food webs.
- The abundance of some species of offshore cetaceans has remained stable, whilst the abundance of coastal bottlenose dolphins on the east coast has increased and their distribution has expanded.
- The grey seal population has increased and whilst the harbour seal population is largely stable, their number continues to decline in the North Coast and Orkney SMR.
- Since 2011, overall numbers of seabirds have largely been stable but are at a reduced level compared to the baseline values in 1986. Some species show markedly different trends (e.g. decreases in surface-feeding birds).
- Overall, the abundance of Scotland's wintering waterbirds continues to increase although, as for seabirds, different species are exhibiting different trends with some species shifting their distribution in response to environmental change.
- By the end of 2018, Scotland's MPA network comprised 231 sites covering 22% of the Scottish marine environment and progress has been made with the implementation of site-specific management measures.

Overview of status and trends for habitats and species in Scotland's seas



Key to assessment results

- Few or no concerns
- Few or no concerns, but some local concerns
- Few or no concerns, but many local concerns
- Some concerns
- Some concerns, but many local concerns
- Many concerns
- Lack of evidence / robust assessment criteria
- Lack of regional evidence / robust assessment criteria, but or no few concerns for some local areas
- Lack of regional evidence / robust assessment criteria, but some concerns for some local areas
- Lack of regional evidence / robust assessment criteria, but many concerns for some local areas
- No / little change
- Increasing
- No trend discernible
- All trends
- Decreasing