



Marine Biological Association written submission supplied for Science and Technology Committee of the Commons Brexit science and innovation Summit inquiry, February 2018.

Written evidence submitted by Dr Matthew Frost, on behalf of the Marine Biological Association.

General comments

1. The Marine Biological Association (MBA) is a Learned Society established in 1884 and incorporated by Royal Charter in 2013. The MBA has about 1400 members (including international members) and runs The Laboratory in Plymouth where approximately 90 scientific staff work. MBA members have been at the forefront of providing scientific information to support marine environment protection, management and education and much of the scientific information that underpins decision-making about environmental protection has come from work undertaken at the Laboratory.
2. The MBA membership is made up mainly of professional marine biologists and as such regularly invites its members to provide input on a range of issues. The MBA therefore provides a 'clear independent voice to government' on behalf of the marine biological community. The following evidence follows this pattern in providing evidence submitted by MBA members on a number of the issues raised by the inquiry.

Questions

The impact of environmental changes and the legal framework protecting ocean biodiversity

- *What forms of pollution are most prevalent in the ocean, and what impact are they having?*

Plastic pollution is one of the most widespread forms of marine pollution, with the reduction of plastic pollution highlighted in the recent Government Office for Science report¹ as an urgent priority. It is good to see the work being undertaken to address this issue but it should not detract from other serious forms of pollution, with, among others, coastal areas being vulnerable to elevated nutrient levels from fertilizer and other land-based pollution and PCBs being a serious issue for cetaceans.

¹ Foresight Future of the Sea. A Report from the government Chief Scientific Advisor. Government Office for Science. 2017

- ***What impact is climate change having on the ocean? What are the effects of ocean acidification now and in the future? How important is meeting the goals set out in the 2015 Paris Agreement on climate change for marine biodiversity?***

The Marine Climate Change Impacts recently examined statements made 10 years ago on climate change impacts in UK waters to see if they were still valid². The report showed that impacts are more complicated than first thought and that Sea Surface Temperature (SST) shows variability (which confuses some as it is not a straightforward year on year increase). The overall trend however is an increase in SST and models still show a warming scenario. Impacts on marine biodiversity are being observed and will continue to require a flexible and adaptive approach to marine protection. The same MCCIP report summarises the evidence as showing the overall effect of ocean acidification on marine ecosystems to be deleterious, despite the possibility that some organisms may benefit. It is also important to note that ocean acidification in UK seas over the last 30 years has been happening at a faster rate than for the wider North Atlantic but that its impacts are contingent on site-specific physical and chemical conditions as well as on species specific responses.

- ***What more should the Government do to hasten progress towards Aichi targets?***

One of the most urgent needs is to meet target 11 concerning establishing protection for 10% of marine and coastal waters. In previous evidence to the committee however we have pointed out that the most urgent need is to move away from simply seeing ‘designation’ as the goal. It is evidence of real protection with clear management measures that facilitate maintenance and/or restoration of marine biodiversity that is required. It is not enough to simply designate areas and then declare the target reached – there needs to be a firm commitment to define what this protection entails.

The government should also use the new strategy for fisheries management post-brexite to underpin progress towards target 6 on sustainable harvesting of fish stocks. It would help therefore for the marine science community to see these proposals as soon as possible to enable comment on whether sustainability is at the heart of any new management system.

- ***What outcomes and protections should the UK Government be pushing for at the forthcoming UN negotiations on the conservation and sustainable use of marine biological diversity in the world’s oceans?***

The UK should support a framework for coordination and collaboration for working in areas beyond national jurisdiction. If this does not result in the development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, then an alternative robust framework will need to be established. Mechanisms for coordinating evidence gathering and provision should also be sought in order to support the development of the legal framework / coordinating body and ongoing decision making.

² MCCIP (2017). Marine Climate Change Impacts: 10 years’ experience of science to policy reporting. (Eds. Frost M, Baxter J, Buckley P, Dye S and Stoker B) Summary Report, MCCIP, Lowestoft, 12pp. doi:10.14465/2017.arc10.000-arc

- *Is the UK's current legal and regulatory framework adequate to protect biodiversity given the growing demands which are likely to be placed on marine resources?*

The legal and regulatory framework is complicated although this is often the case for the marine area. There may be a chance post-brexite to achieve a better coordination of marine environmental protection and those activities that impact marine biodiversity, such as fishing. The legal and regulatory framework is not in itself the answer to achieving sustainable outcomes – monitoring and enforcement is crucial. The temptation is always to tweak or add to the legal framework but there is a need to make better use of what is in place. For example, the Marine and Coastal Access Act 2009 has the provisions required to establish protection for UK marine biodiversity, it is the implementation of these provisions which is crucial. Regulations such as the Marine Strategy Regulations 2010 (which transpose the Marine Strategy Framework Directive) and the Conservation of Habitats and Species Regulations 2017 (habitats regulations transposed and amended/updated) are likely to continue to apply in UK waters but there needs to be a mechanism for enforcement and compliance.

In summary, the focus should therefore be on improving the use and implementation of the current legal and regulatory framework rather than seeking to add more legislation. The only area where there may be a need for a significant rethink is in the area of fisheries which has been largely driven by external policy frameworks and agreements.

A sustainable blue economy

- *How effective are the Marine Stewardship Council's ecolabel and fishery certification scheme at ensuring fisheries are sustainable?*

The MSC's stated Mission is to use its ecolabel and fishery certification scheme to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood and working with those who share the vision of the seafood market being operated on a sustainable basis.

In evaluating the certifiability of a fishery (i.e. as being sustainably prosecuted), the MSC has established three (interlinked) lines of enquiry that the experts individually contracted by auditable Certification Assessment Bodies (CABs) have to consider carefully:

1. *Sustainability of fish stocks: Are enough fish/shellfish being left in the seas to ensure that fishing is taking place at a level that ensures it can continue indefinitely and that the fish population remains productive and healthy?*
2. *Minimising environmental impact: Are fisheries causing negative impacts on other species (including Endangered, Threatened and Protected ones) and habitats within the ecosystem hosting the fishery, all of which must remain healthy?*
3. *Effective fisheries management: Are fishing operations managed to comply with appropriate national and international legislation and are they able to adapt to changing environmental and social circumstances?*

MBA member experts in this area concur with other experienced and internationally recognized scientists (although not all environmental activists), in believing the MSC principles to be suitably

robust to ensure the overriding requirement of (future) sustainability and rigorously tested against clearly stated criteria. The reasons provided for this conclusion are:

- Most of the individually contracted experts (mainly scientists) evaluating fisheries against the (sustainability) criteria are well-known (often internationally) practitioners who have had to be rigorously trained and tested (every three years) for their ability to interpret to a high standard a fishery's performance and adherence to written MSC specifications.
- Rigorous conflict-of-interest criteria are applied formally to every expert contracted to conduct any aspect of the certification or peer-review process.
- The science and management criteria evaluated for evidence-based outcome are strict and professionally applied.
- The performance indicators (PIs) and scoring guideposts (SGs) evaluated can only be assessed in an evidence-based manner; considered opinion cannot hold sway over the factual evidence that is documented and made public for scrutiny during the MSC process.
- The scoring system employed by experts to adjudge a fishery does not allow for any aspect of performance against criteria to fail (each of the three Principles listed above has to score at least a combined 80), and no PI (the individual considerations within each Principle) can be scored beneath SG60, even if the combined weighted score of a Principle is >80.
- (Achievable) Conditions can and are applied to fisheries and have to be met during the term of a certification if any PI scores 61-79, and these Conditions have to be met with an Action Plan established for the purpose before any certification or recertification is granted.
- Every certification and recertification report is expertly peer-reviewed by another contracted expert who is totally independent of the fishery and of the organisations requesting certification.
- At all stages there is independent auditing against independence and qualification criteria of the audit process by a body from the MSC itself (currently Accreditation Services International, ASI), and they are tough in their evaluation. ASI also audits every CAB robustly on at least an annual basis.
- Public and stakeholder (including NGO) opportunity (written or participatory) for input into or criticism of any aspect of the certification exercise is encouraged and the consideration has to be adequately documented and the outcomes explained against established criteria.
- Certification can be and has been withdrawn, temporarily and permanently, so certification is not permanent (e.g. the lucrative North Atlantic mackerel fishery when two countries made unilateral decisions to fish quota additional to that allocated to them, admittedly as a result of the distribution of the stock changing over time and management decision-making being unable to respond as swiftly).

The above, allied to the fact that more and more fisheries are applying for certification (presumably for economic, mainly marketing) reasons, even though certification is by its very nature expensive, demonstrates that the MSC's certification scheme is underpinning established efforts to ensure future sustainability of global fish and shellfish resources.

- *Does aquaculture cause less harm to marine biodiversity than fishing? Is aquaculture in the UK adequately regulated to protect biodiversity*

Globally, 2014 was the first year in the history that humans ate more fish raised on farms than fish caught in the wild. There is still no consensus on whether this is a good or bad

development with a recent high level debate providing evidence for both views³. There is an urgent need to ensure the best scientific analysis and assessments are available to inform this debate.

- *What could the UK do to promote a sustainable marine economy and achieve sustainable marine and coastal ecosystems management in the Overseas Territories?*

The UK needs to ensure that mechanisms are put in place to ensure the excellent science being carried out across the UK in marine laboratories, institutes and universities is made available for OTs and that UK and UK OT science is well coordinated.

The impact of marine industries, science and innovation, and blue finance

- *How well has Government supported UK marine science and innovation? What more could the Government do to promote a sustainable blue economy?*

The following quote is from the 2007 House of Commons Science and Technology Committee, Investigating the Oceans inquiry report, 2007: *“In 1986 the House of Lords Select Committee on Science and Technology examined marine science and technology in the UK and concluded that it was poorly co-ordinated, fragmented and underfunded. We echo those conclusions today”*. Underfunding for marine research is a perennial problem. Moving forward this could be exacerbated as the MBA found in a survey of its member that over the last decade marine institutes have been increasingly reliant on EU funding with annual EU income for range of marine institutes ranging from 10 to 25% depending on year and institute. Much national funding also comes through the Research Councils with the Natural Environment Research Council (NERC) being a key funder for marine research. The NERC budget however often has the smallest research budget of the science councils (see table below).

TABLE: (pre-UKRI) funding breakdown for science research councils.

Science Council	Funding resource total 2016/17 - 20/21 (m)
Biotechnology & Biological Sciences Research Council (BBSRC)	1406
Engineering & Physical Sciences Research Council (EPSRC)	3176
Medical Research Council (MRC)	2367
Natural Environment Research Council (NERC)	1163
Science and Technology Facilities Council (STFC)	1603

³ Two views on a revolution in aquaculture. Available at: <http://www.mba.ac.uk/two-views-revolution-aquaculture>.

It is also worth noting that the NERC budget is for all environmental science with marine only being a component of this. With UKRI now in place it is vital that UK Government consider serious investment in the UK as a leading centre for marine research and innovation.