PRESS RELEASE

New marine science review shows significant increase in understanding of ocean function and anthropogenic impacts

Findings support urgent need for heightened high seas governance and conservation

New York, Wednesday 11th July 1901hrs - As States meet at the United Nations for the final round of negotiations towards a possible high seas treaty, a new scientific review of recent ocean research shows more clearly than ever the importance of ocean services, its critical role to humankind and the rate and scale of the changes occurring due to climate change and other human impacts.

Marine scientists from Oxford University's Zoological Department have reviewed and synthesised findings from 271 research papers relevant to the functions of the ocean published since the Rio+20 Earth Summit in 2012, which highlighted the need for legal protection of the high seas. The purpose of the synthesis is to determine how scientific understanding of the role of the ocean has increased, with special focus on zones beyond national jurisdiction, the so-called high seas.

The report gives a compellingly rich overview of the latest knowledge about the ocean and its vast complex web of functions and systems. It also summarises the latest research on anthropogenic impacts from climate change and other human pressures such as industrial fishing and fertiliser pollution, and how they interact.

Some of the most significant findings highlighted in the synthesis include:

- recognition that the ocean is much more **diverse and complex** than even recently assumed, with great variations in species, processes and impacts dependent on location. This means that accurately modelling likely future changes - whether in carbon sequestration capacity, ecosystem integrity or species abundance - will require much greater and more coordinated research;

- mounting evidence that some regions are almost at their **ecological tipping point**. For example in the ocean basin, the Bay of Bengal, where further increases in runoff of agricultural fertilisers or further environmental changes caused by climate change could create a new extreme oxygen depleted zone. The consequences of this would

be **an impact on the global nitrogen cycle and large-scale disturbance of ecosystems in a region with high dependency on fishing** for livelihoods and food security;

- **decades-long deep sea impacts** of experimental mineral extraction, highlight the importance of thoroughly documenting a location prior to exploitation, as well as careful management of the areas mined;

- indications **of increased stress to ocean due to climate change** which points to importance of building resilience through marine protected areas:

    - future phytoplankton abundance may reduce, impacting the whole food web, including fish stocks and sedimentation rates to the deep ocean;

    - increased sea surface temperatures have also resulted in the rise of *Vibrio* bacteria, which has been associated with a global increase in illnesses, such as cholera, gastroenteritis, wound infections and septicaemia.

- Plastic large and small is ubiquitous in the ocean, its full impact is unknown, but ecological impacts have been demonstrated. This is especially important as production and disposal of plastics increase year-on-year.

The report's co-author Dr Lucy Woodall says "*The past five years have seen a step change in technology and methods used by scientists to explore new ocean locations. We are seeing studies increasingly focused on the complexity and interconnected nature of ocean processes and the anthropogenic impacts already occurring. This is good news, but it also reveals how vulnerable many of the ocean's systems are, and how much we still don't know*."

Coordinator of the High Seas Alliance, Peggy Kalas said: "*This review highlights the extraordinary advance in our knowledge of the role of the ocean and also of the rate of change occurring. It makes clearer than ever that human impacts are being felt across the high seas, not just in our EEZs*. *The two overriding take homes from this report are that we urgently need the binding governance structure in place to properly manage the high seas, and that we must apply the precautionary principle to ensure human activities are sustainable*."

Senior international negotiator, Belgium's Ministry of Environment Ms. Sophie Mirgaux said: *"The science is clear, marine reserves are necessary to achieve true ocean resilience against the effects of climate change. The target agreed by the international community for 10% of the ocean to be marine protected areas must not only be quantitative, but also qualitative. We need to be ambitious and create a system that allows for the establishment of large-scale marine reserves. Belgium has initiated an alliance of marine reserves, with a Joint Declaration."*

This week sees the start of the fourth and final session of the Preparatory Committee established by the UN General Assembly Resolution 69/292in 2015 to make recommendations for a legally binding treaty on the conservation and sustainable use of

marine biodiversity in areas beyond national jurisdiction. This process follows a decade of discussions at the UN within the UN Ad hoc open ended working group, and a commitment by governments at Rio+20 in 2012 to take a decision on the development of a new treaty.

This would be the first ever treaty dedicated to the protection and sustainable development of marine life in the high seas (covering almost half the planet).

Co-author Professor Alex Rogers said: "*This review demonstrates that there is more than enough evidence that the high seas are a vital part of whole ocean health and need rigorous protection to ensure that they can continue performing vital ecosystem services of benefit to our planet. The scientific challenge is now to work with more speed, scale and coordination to be able to model the potential changes due to climate change and other human-made influences which will undoubtedly affect us all*."

To see the full report click here.

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Notes: The synthesis, entitled "Function of the High Seas and Anthropogenic Impacts - Science Update 2012 - 2017" was commissioned by the High Seas Alliance, a coalition of NGOs working to secure a binding international treaty governing international waters which comprise almost 60% of the ocean.

For more information and to speak to the authors, please contact Sophie Hulme on + 44 7973 712869