

## **Safeguarding the environment in British Overseas Territories: call for evidence**

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### **Introduction**

The National Oceanography Centre (NOC) is one of the top 6 oceanographic research institutions in the world; NOC has been in existence in its various forms for over 6 decades, has an annual turnover of £60 million, employs a total of 600 staff at its two sites in Southampton and Liverpool, and is one of few research organisations globally that has the equipment and expertise to operate down to 6000 m water depth.

In order to effectively tackle the major societal and environmental challenges in the ocean, the four strategic science and technology priorities of NOC are:

- Oceans, climate and the carbon cycle
- Coastal zone and shelf seas
- Seafloor resources and habitats
- Platform, sensor, model and data systems development

The NOC is part of the Natural Environmental Research Council (NERC), which in turn is part of UK Research and Innovation, a new organisation that brings together the UK's seven Research Councils, Innovate UK and Research England to maximise the contribution of each Council and create the best environment for research and innovation to flourish. The vision is to ensure the UK maintains its world-leading position in research and innovation.

NOC is responding to this Call for Evidence to highlight areas where we can support UK Government and the UK Overseas Territories through provision of science and technology expertise, equipment and advice.

**Please provide evidence to support your response, and where possible refer to i) the territory/ region ii) specific funding streams/ schemes.**

#### **1. What are the biodiversity challenges you are addressing in your region? What is your role in tackling these challenges?**

*A NOC report to Defra in 2012 looked at the extent to which the UK OTs had been mapped with modern multi-beam survey methods, and how much of each OT EEZ was in shallow vs deep water. Overall, looking at the entire 6 million km<sup>2</sup> area of UK OT EEZ, the report concluded that only about 20% of this total area had multi-beam survey coverage, and that the majority of the total UK OT EEZ is at water depths >2000m and often >4000m. This raises obvious issues of how to generate baseline maps and monitor biodiversity in these remote and often deep-water areas.*

NOC has particular expertise in the mapping and monitoring of Marine Protected Areas (MPAs), and is currently supporting Defra and its agencies in surveying UK MPAs, particularly those in deep-water settings. A universal challenge is how to develop cost-effective survey methods for MPAs, and NOC has therefore been supporting Defra and other UK Government Departments in the application of novel marine autonomous systems; these systems have particular utility in remote UK OTs where research vessels and supporting infrastructure may be absent (see Q9 and refs below).

Wynn, R.B., Bett, B.J., Evans, A.J, Griffiths, G., Huvenne, V.A.I., Jones, A.R., Palmer, M.R, Dove, D., Howe, J.A, Boyd, T.J. and MAREMAP partners (2012) Investigating the feasibility of utilizing AUV and Glider technology for mapping and monitoring of the UK MPA network. Final report for Defra project MB0118. National Oceanography Centre, Southampton. 244 pp.

Wynn, R.B. et al. (2013) Autonomous Underwater Vehicles (AUVs): their past, present and future contributions to the advancement of marine geoscience. *Marine Geology*, 352, 451-468 (50th Anniversary Special Issue)

NOC is also addressing issues of ecological connectivity between established MPAs within the UK OTs and their upstream zones of influence. MPAs are established to provide safe havens for marine species – or habitats – that may otherwise be threatened in the wider ocean. However, MPAs are not wholly isolated from impacts elsewhere even if they are established around small islands in remote areas of ocean basins. They are influenced not only by what is happening immediately within them, but also by processes in “upstream areas” that are often hundreds or even thousands of kilometres away. Fundamentally, energetic ocean currents define this “connectivity”. For instance, separate populations of marine species can be connected through larval dispersal by ocean currents, such that overfishing (or some other form of negative ecosystem impact) in a seemingly remote upstream area may drastically affect a MPA. Similarly, marine pollutants, such as plastic or oil, can be transported from neighbouring shelf regions on a time scale of only a few months. Thus, improved understanding of exactly where “upstream” is, what is happening there, and on what time scale it is connected to an MPA is of high importance for the selection of, and subsequent governance of, these key marine areas. The key findings are described in the following publication:

Robinson, J., New, A.L., Popova, E.E., Srokosz, M.A., Yool, A. (2017) Far-field connectivity of the UK's four largest marine protected areas: Four of a kind? *Earth's Future*, 5 (5), 475-494. <https://doi.org/10.1002/2016EF000516>

2. **What are your sources of funding? What is the impact of current funds on biodiversity and conservation on the ground in the OTs? Please provide information on specific funding streams / schemes and the outcomes they have achieved.**
3. **What are the main barriers to tackling the challenges you face? If lack of funding is a barrier, please describe the objectives you would deliver with additional funding and how these relate to UK and OT government biodiversity priorities.**

4. **What do you think of the current allocation of funds between the OTs and the UK, and between strategic priorities? Can you think of ways to improve the effectiveness/efficiency of this allocation and its impact on the ground?**
5. **Do you have views on how any funds you have accessed are run and administered? How could they be better organised?**
6. **How have you collaborated with other organisations, both public and private, to ensure spending delivers outcomes? Is there more that could be done to improve collaboration?**
7. **How are your funded projects monitored and evaluated to ensure they deliver value for money?**
8. **Does any particular fund deliver better value for money, in comparison to others? How/ why?**
9. **Do you have any ideas of innovative methods to improve biodiversity and conservation in your region? Do you have any experience of use of innovative methods?**

*NOC is a world leader in marine autonomous systems (MAS) development and operations, with over two decades experience operating in some of the most challenging and remote environments on Earth, e.g. deep-ocean and under-ice. NOC continues to benefit from £30M of UK Government capital investment in its MAS fleet in the current decade, and now operates over 40 different submarine and surface vehicles, controlled by a sophisticated C2 system, and armed with a wide variety of innovative environmental sensors.*

*MAS can be used with and without a supporting research vessel to map and monitor seafloor habitats and species, including within and around MPAs. Novel platforms such as unmanned surface vehicles can now be shore-launched and used for seabed mapping, water column characterisation, and even above-water real-time imaging for biodiversity and security / compliance monitoring. For example, the Commonwealth Marine Economies (CME) Programme has funded the development and deployment of the Containerised Autonomous Marine Environmental Laboratory (CAMEL) – a fully containerised facility that can be shipped to any port and deployed from a quayside, beach or vessel, which houses surface and submarine autonomous systems that can be used to map and monitor their own marine environments. During years three and four of the CME Programme, the CAMEL facility will undertake its first deployments in Belize and Dominica, where it will be used to support NOC research into the impacts of land-use changes on marine environments and habitat mapping to support marine spatial planning.*

10. **Are there other environmental or climate change programmes in country that also contribute to biodiversity outcomes, including those funded from the budget?**

**11. Have you identified any forms of government funding that could encourage financial investment from other sources (e.g. leveraging for match funding, private investment and academic research funding)?**

*The CME Programme model, which supports a consortium comprising the NOC, the UK Hydrographic Office (UKHO) and the Centre for Environment, Fisheries and Aquaculture Studies (Cefas) has proven to be an effective mechanism to leverage expertise and resources across UK Government Departments (BEIS, MoD, Defra, administered by FCO). NOC would welcome the opportunity to engage in any future programme of this nature focused on UK OTs, and can contribute specific equipment and expertise as outlined in Q1 and Q9.*

*However, lessons learnt from the CME Programme and others such as Conflict, Security and Stability Fund (CSSF) funding of seafloor surveying and even UK funding of long term sustained observations demonstrate that long term programmatic funding would be preferable in many instances to short term project based funding, currently provided by Darwin+ and other sources such as the EU. Such funding could be managed centrally, as with CME, or provided directly to the OTs as this would empower them to identify and support local needs. A key benefit of programmatic funding is that it would enable the fostering of key partnerships that could be maintained over longer periods, providing stability of access to UK expertise that will deliver the collaborative partnerships to enable marine scientific research and sustained observations required to monitor change. It would also enable the provision of UK expertise to deliver the training and capacity development needs in areas of particular importance to individual OTs in order that they are able to manage the marine estates under their jurisdiction.*

*Added benefits of long term programmatic funding is that there is a clear intent by the state/Territory with regards to responsible environmental management. This is in and of itself a 'marker' to other innovative finance mechanism with an interest in the Blue Economy as a growth opportunity. An understanding of ocean equity i.e. ecosystem services, cannot be delivered in piecemeal. Asset Managers need an understanding of the marine environment so that their investments, or the companies they invest in, are done so in a socially responsible way. Likewise insurance companies are increasingly looking at ocean information to mitigate the impact on society caused by natural disasters, whether they be impacts on infrastructure caused by sea-level rise or more severe storm surges or the impact of harmful algal blooms on fisheries sectors. It is also recognised that healing the ocean is important to the human health sector.*

**12. How have biodiversity and biodiversity funding supported wider benefits in your region, such as sustainable economic development?**

In case of query, please contact:  
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