PROJECT TITLE: Enhancing coral reef restoration

Project Science Theme: Science for Environmental Solutions
Project keywords: coral reefs, restoration, experiments, fieldwork

Lead Institution: University Bristol
Lead Supervisor: Professor Andy Radford, Bristol, Biological Sciences
Co-Supervisor: Dr Sophie Nedelec, University of Exeter, Biosciences
Co-Supervisor: Professor Steve Simpson, University of Bristol, Biological Sciences
Co-Supervisor: Dr Johanna Leonhardt, Soneva Conservation and Sustainability Maldives

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Project description:
Coral reefs are among the most critically endangered ecosystems: more than 50% of living coral has been lost in the last 40 years, with global implications for ecosystem services, biodiversity, coastal erosion and the 1 billion people reliant on them. Reef restoration is therefore critical, but needs to be effective, scalable and cost-efficient. This project will investigate experimentally how best to apply cutting-edge coral spawning, micro-fragmentation and gardening alongside farming damselfish (species who protect their coral territories). Working at the well-established restoration project of Soneva Conservation and Sustainability Maldives (CSM), the student will determine, for example: (a) how success is affected by the positioning of new coral outplantings in relation to existing healthy reef areas; (b) the costs and benefits of farming damselfish to reef growth; and (c) how best to combine the approaches to maximise reef restoration. They will use field manipulations of coral-outplanting and model-damselfish deployment, passive acoustic monitoring to determine nighttime levels of corallivory and herbivory, and photogrammetry and underwater surveys to monitor restoration success. The exact direction of the PhD will be determined with the student, so that it fits their own interests.

Expert training will be provided in experimental design, execution and analysis by Prof. Radford (University of Bristol), marine fieldwork and fish handling by Prof. Simpson (Bristol), passive acoustic monitoring by Dr Nedelec (University of Exeter), and coral reef restoration methods by Dr Johanna Leonhardt (Soneva CSM, CASE partner). Fieldwork will be at Soneva CSM's restoration site in the Maldives, where the student will also contribute to their community-based conservation, youth capacity-building and sustainable livelihood initiatives. Profs Radford and Simpson have worked together for 18 years; Dr Nedelec has worked with them in various capacities since 2010. Prof. Simpson has collaborated with Soneva CSM for 3 years, including their hosting of three postgraduate students.

CASE partner:

Soneva Conservation and Sustainability Maldives (Soneva CSM) will provide all coral outplantings ('plugs') and bio-concrete reef structures for use in field experiments, aquarium space and ex-site raceways for testing of methods, boat access, training in coral restoration approaches and island IT support for field seasons. They will also host the student for an internship focusing on

engagement in their community-based conservation, youth capacity-building and sustainable livelihood initiatives.

Useful recruitment links:

For information relating to the research project please contact the lead Supervisor via: andy.radford@bristol.ac.uk

Bristol NERC GW4+ DTP Prospectus:
https://www.bristol.ac.uk/study/postgraduate/research/great-western-four-doctoral-training-partnership-nerc/

How to apply to the University of Bristol:
http://www.bristol.ac.uk/study/postgraduate/apply/

The application deadline is Thursday 7 January 2027 at 2359 GMT