

**FURTHER INFORMATION**

**REF: A1810**

**Senior Research Associate – Further Information – Coral reef fisheries food security following successive climatic shocks (Royal Society Challenge Grant)**

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**The Project**

Lancaster Environment Centre (LEC) is seeking to appoint a Post-Doctoral Research Associate in fisheries/marine science.

The world's fisheries provide vital food security to an estimated 2.6 billion people through provision of protein and a range of critical nutrients that reduce the risk of growth retardation, cognitive deficits and other conditions. Small-scale fisheries land an equivalent number of fish to industrialised fisheries, and reach 90% of people who consume fish. Small scale fisheries associated with coral reefs employ an estimated 6 million fishers, and provide food security for 100's of millions of people.

Coral reefs are formed by foundation species; reef corals form structural complexity that supports a high abundance of other organisms, including fishes important for fisheries. However, reef corals are extremely vulnerable to climate change, with "coral bleaching" resulting in extensive coral mortality. Once coral dies, and the reef structure erodes, the consequences for reef fish can be profound. The 1998 global El Nino event resulted in the loss of ~16% of live coral globally, and in locations such as the Seychelles, over 90% of live coral was lost. While some reefs in Seychelles have not recovered from this mortality, around half regained high coral cover by 2014. In 2016, a second global coral bleaching event occurred, bleaching an estimated 85% of corals in Seychelles.

Despite the high reliance on coral reef fisheries across the 80 tropical nations with coral reefs, there is a poor understanding of how climatic impacts to corals will impact reef fisheries. Previous work has been on relatively short timescales, and has focused mostly on underwater survey data. With successive bleaching events now resulting in greatly altered coral reefs, it is critical to understand the impacts on reef fisheries stocks, landings, and composition. This project will work with time series from underwater surveys (>20 years) and fisheries landings (>30 years) in the Seychelles spanning 2 major coral bleaching events. Specifically, the project will address the following aims:

- 1) How fish availability (underwater surveys) and landings have changed through time.
- 2) How the composition of the catch has changed.
- 3) How differing management and habitat condition have influenced these patterns.

**Further reading:**

- Daw et al. (2011) Environmental Conservation 38: 75-88
- Graham et al. (2007) Conservation Biology 21: 1291-1300
- Graham et al. (2015) Nature 518:94-97
- Grandcourt & Cesar (2003) Fisheries Res 60: 539-550

- MacNeil et al. (2010) Phil Trans Roy Soc B 365: 3753-3763
- Nash et al. (2016) Ecosphere 7: e01362
- Rogers et al. (2014) Current Biology 24: 1000-1005

### **The Department**

Lancaster Environment Centre forms one of the largest and most prestigious groups of interdisciplinary environmental researchers in the world, with over 200 staff and research and teaching that span the Environmental, Biological and Social Sciences. LEC was formally constituted on 1<sup>st</sup> August 2008 through the merger of three successful university departments (Environmental Science, Geography and the non-Medical parts of Biology) and now operates as a fully integrated university department on a single site. It is the largest department in Lancaster University and a key player in the strategic development of the institution and the Faculty of Science and Technology. The co-location of the NERC Centre for Ecology and Hydrology on the Lancaster campus as part of the LEC complex adds critical mass in environmental research capacity enabling staff from both organizations to work closely together in a formal collaboration. LEC currently admits about 240 undergraduate students and 100 postgraduate (MSc/PhD) students each year and teaches across a wide range of degree schemes.

### **The University**

Lancaster is a UK top ten University and is consistently highly placed in all major league tables, in the top 1 percent of the world ranking (QS) and continues to grow its reputation for teaching and research excellence both nationally and internationally. Established in 1964, Lancaster currently has over 12,000 students and has had £450 million invested in the campus over the last ten years. The University boasts an idyllic campus that combines city, coast and countryside all into one. The campus setting conveys a tranquil ambiance whilst offering such a range of facilities it can almost be called a small town in its own right. More recently, Lancaster University has developed a portfolio of teaching partnerships overseas, as part of its global outreach internationalisation strategy.

### **The City and the Region**

The main campus lies 3 miles outside the City of Lancaster and is easily accessible via road, rail and bicycle. The city centre is just 15 minutes away by bus, and was recently ranked one of the top 10 most vibrant cities in the UK thanks to its arts scene and student population. The City of Lancaster also enjoys a long and diverse history dating as far back as 1193, and has a well-maintained iconic city centre and medieval castle. The campus is just 30 miles south of the beautiful Lake District and about the same distance from the Yorkshire Dales. It is very well connected by road and rail, with Manchester (and its international airport) just over an hour distant, while the train journey to London takes just two and a half hours.

### **Further information**

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