

SAIAB Seminar Series 2019

DOUBLE BILL

Prof Antony Knights (Associate Professor of Marine Ecology, Ecology and Evolution Research Group, Plymouth University) and

Dr Louise Firth

(School of Geography, Earth and Environmental Science, Plymouth University)

Date: Friday 6 September 2019

Venue: Lecture Room, SAIAB, Somerset Street

Time: 3.30 – 4.00pm

Prof Antony Knights

Can we link larval developmental mode and behaviour with performance and distribution?

Understanding the link between larval development and their behaviour with dispersal and demographic structure remains a fundamental challenge in population connectivity studies, but is crucial to understanding how marine ecosystems are responding to environmental change.

A combination of empirical and modelling approaches is arguably needed to disentangle potential mechanisms that better describe patterns seen in nature, with further attention on links between multiple life-history stages needed. Here, Prof Knights presents some of their most recent research demonstrating how developmental mode may promote rapid evolution (local adaptation) and resilience to climate change, and suggests new ways to evaluate and predict the role of larval behaviour in species dispersal estimates.

Tony Knights did his PhD on the recruitment dynamics of mussels at University College Cork from 2003-2006. Following postdocs at Coastal Carolina University (USA), and the University of Liverpool (UK), he was awarded an Irish Research Council postdoctoral fellowship at the National University of Galway, before joining the University of Plymouth in 2014 where he is now an Associate Professor of Marine Ecology and runs the undergraduate Marine Biology and Coastal Ecology degree course. Tony's research has two main themes: understanding the role of environmental change on marine species performance and distribution, and developing risk assessment tools to support conservation and protection of marine environments. He is particularly interested in understanding population and community dynamics, with focus on the sustainability and resilience of populations under future environmental conditions, and change in larval supply, recruitment, and anthropogenic pressure.

Time: 4.00 – 4.30pm

Dr Louise Firth

Eco-engineering of the grey: making space for nature along urbanized shorelines

Marine artificial structures such as seawalls and breakwaters are proliferating as a result of burgeoning human populations. With the realisation that most coastal infrastructure cannot be lost or removed, research is required into ways that artificial structures can be built to meet engineering

requirements, whilst also providing relevant ecosystem services - ecological engineering. This approach requires an understanding of the types of assemblages and their functional roles that are desirable and feasible in these novel ecosystems. Dr Firth summarises research she and the wider team on eco-engineering have carried out and outlines guidelines and recommendations to provide multiple ecosystem services while maintaining engineering efficacy. This work demonstrated that simple enhancement methods can be cost-effective measures to manage local biodiversity. Care is required, however, in the wholesale implementation of these recommendations without full consideration of the desired effects and overall management goals.

Louise Firth did her PhD on rocky shore ecology at University College Dublin from 2003-2007. She did a number of postdocs in Hong Kong, Florida, Bangor and Southampton before taking up her first lecturing position at the National University of Ireland Galway. In 2015 Louise joined Plymouth University as a Lecturer in Environmental Science.

Her research encompasses community dynamics and global climate change in both natural and artificial environments. Much of her research focuses on disentangling the impacts of climate change from regional and local scale factors such as extreme weather events and urbanisation. She investigates the role of artificial coastal defence structures and biogenic habitats in habitat provision and in facilitating the spread of both native and non-native species in coastal systems. She has developed novel ecological engineering techniques for habitat enhancement and conservation of biodiversity in the built environment.

ALL WELCOME