

# **PhD Position on Underwater Sound and Chemical Pollution Research in Different Temperature Contexts**

<b>Primary Institution</b>	<b>Edinburgh Napier University</b>
<b>Department</b>	<b>School of Applied Sciences</b>
<b>Job Status</b>	<b>Full Time PhD Studentship</b>
<b>Contract Type</b>	<b>Fixed Term 3.5 years</b>

**Applications are invited from those who wish to pursue a PhD on:**

## **Effects of Combined Aquatic Noise and Chemical Pollution on Early Stage Marine Invertebrates in Different Temperature Contexts**

**Project Description** Marine animals must cope with numerous anthropogenic stressors in today's oceans. These stressors do not act in isolation but can combine additively, synergistically, potentiationaly or antagonistically. It is therefore important to study multi-stressor effects, mirrored by a recent opinion poll involving 2179 scientists where the combined impacts of multiple stressors were scored as the single most important topic for marine governance and decision-making. The aim of the proposed PhD project is to quantify the responses of selected marine invertebrates to a hitherto unstudied stressor combination: Noise and chemical pollution, under different temperature contexts. Invertebrates, ubiquitous in the marine environment, perform many ecological roles and are key to an understanding of ecosystemic effects of environmental stressors. While their responses to different toxins have been studied for a wide range of species, the responses of most species to noise is poorly understood. Levels of introduced anthropogenic underwater sound have increased 10- to 100 fold over the last century and man-made noise is now recognized as a significant aquatic pollutant. This PhD project will generate novel data on an environmental stressor combination untested before, and be informative for environmental risk assessments and the development of mitigation strategies. Short-term and longer-term effects of sound exposures will be addressed and different life history stages of marine invertebrates investigated, including the vulnerable early stages (embryos, larvae). Response parameters will involve behaviour, growth, development duration, metabolism and biochemistry. This multidisciplinary study will be conducted in the AquaLab at the School of Applied Sciences at Edinburgh Napier University, at St Abbs Marine Station on the Scottish East coast and at the Centre for Marine Biodiversity & Biotechnology at Heriot-Watt University. The project could also involve a fieldwork component.

**The multidisciplinary supervisory team** consists of Dr Karen Diele (Primary, Edinburgh Napier University), Dr Mark Hartl (Heriot-Watt University) and Dr Rob Briers (Edinburgh Napier University). The student will also join the team at St Abbs Marine Station ([www.marination.co.uk](http://www.marination.co.uk)). All partners are members of MASTS, the Marine Alliance for Science and Technology for Scotland ([www.masts.ac.uk](http://www.masts.ac.uk)). The successful candidate will benefit from PhD training programmes at both Universities and also register in the MASTS Graduate School, which provides additional education and training to ensure that PhD students gain the full complement of skills required to achieve the best in their future careers.

**Funding Note and Eligibility** The studentship is fully funded with 50% support from Edinburgh Napier/Heriot-Watt Universities and 50% from MASTS. The stipend is £14,533 p.a., subject to inflationary increase, and tuition fees are fully covered for UK and EU students. Non-UK/EU residents are also eligible, providing they cover the difference between the home/EU and overseas tuition fees. Candidates whose first language is not English must meet Edinburgh Napier University's English language requirements (<http://www.napier.ac.uk/research-and-innovation/research-degrees/application-process>).

**The ideal candidate will have /will be**

- a strong academic record with an MSc degree (or international equivalent) in a relevant field such as marine or freshwater biology, fisheries biology, environmental biology, or ecology. A first or upper second class undergraduate Honours degree will also be considered
- a profound interest in aquatic biology and enthusiasm for researching a topic relevant to conservation and environmental change mitigation
- experience with aquarium set-ups and animal cultivation methods
- at least a basic knowledge of the biochemistry underlying animal physiology. Relevant laboratory experience in toxicology would be desirable but not critical
- a good background in experimental design and multivariate data analysis skills
- scientifically curious, creative, conscientious and have excellent English communication and scientific writing skills
- highly organised and self-motivated, and also enjoys to work as part of a team
- a full driving license enabling to drive in the UK

**Start Date: 1<sup>st</sup> of January 2018**

**Application Deadline: Sunday 10<sup>th</sup> September 2017**

**Interviews are expected to take place on Wednesday 27<sup>th</sup> September 2017**

Edinburgh Napier University is committed to supporting equality in the workplace and encourages diversity. We currently hold a bronze Athena SWAN institutional award.

**Contact:** For informal enquiries about the PhD project, please contact **Dr Karen Diele** [k.diele@napier.ac.uk](mailto:k.diele@napier.ac.uk), **Dr Mark Hartl** [m.hartl@hw.ac.uk](mailto:m.hartl@hw.ac.uk) or **Dr Rob Briers** [r.briers@napier.ac.uk](mailto:r.briers@napier.ac.uk)

**To apply**, please email your CV and your completed application form (RD1 form):

<http://www.napier.ac.uk/~media/documents/research-documents/application-form-rd1.ashx?la=en>

to **Jill Napier** at [j.napier@napier.ac.uk](mailto:j.napier@napier.ac.uk) by midnight on the closing date.

