

PhD opportunities in the Molecular Ecology Group in Durham, UK (see <https://www.dur.ac.uk/biosciences/> for information about the department

and University)

### Projects:

#### 1) Evolution of habitat specialisation in the Arctic char

The evolution of multiple divergent phenotypes in postglacial lakes has occurred repeatedly and independently in many fish taxa including salmonids (e.g.

*Salmo*, *Oncorhynchus*

, &

*Salvelinus*

species), the three-spined stickleback (

*Gasterosteus aculeatus*

), and smelt (

*Osmerus*

species). In this study next generation sequencing methodologies will be applied to understanding the evolution of char (

*Salvelinus alpinus*

) ecotypes in British lakes, comparing multiple sympatric morphs in separate lake systems.

#### 2) The relative contribution of genetic drift and natural selection on

#### founder populations of deer

Population bottlenecks and founder events are an important part of evolutionary process, generating stochastic variation among populations and potentially changing evolutionary trajectories. Natural selection is a weak force compared to genetic drift when population size is very small, yet strong selection could overcome this. In this study founder populations of reindeer (

*Rangifer tarandus*

) on South Georgia and roe deer (*Capreolus capreolus*) in the UK will be investigated using

next generation sequencing methodologies to better understand the relative importance of drift and selection following founder events.

#### 3) Role of habitat boundaries in the evolution of population genetic

#### structure in marine systems

A long-standing objective in evolutionary biology is understanding the mechanisms and drivers that determine the patterns and rate of differentiation, and eventual speciation among populations. Connectivity (the realized potential for gene flow among populations) is key, but there are various interacting factors that determine the spatial and temporal pattern of movement. In this study the student will take advantage of a well-studied system where there is suspected to be an important interaction between prey choice and gene flow for the bottlenose dolphin (

*Tursiops truncatus*

). While based in Durham, this project will be co-supervised by Oscar Gaggiotti in St. Andrews

and Per Berggren in Newcastle. For further information please contact Rus Hoelzel ([a.r.hoelzel@dur.ac.uk](mailto:a.r.hoelzel@dur.ac.uk)

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**The application deadline is 9 Jan 2015 for projects 1&2, and 2 Feb 2015**

**for project 3.**

To apply please identify the project you are interested in, send a cover letter explaining why you are a good fit to that project, include your c.v. and university transcripts, and have at least 2 letters of recommendation sent. Project 2 is open to all nationalities, but projects 1&3 are for UK nationals only. "HOELZEL A.R." <

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