

## Curriculum vitae

Miss Julie Anne Hope  
Sediment Ecology Research Group, University of St Andrews  
Scottish Oceans Institute, East Sands  
St Andrews, Fife, KY16 8LU

### Supervisors

Professor David Paterson (Sediment Ecology Research Group, University of St Andrews)  
Dr Rebecca Aspden (Sediment Ecology Research Group, University of St Andrews)  
Dr Jaco Baas (School of Geoscience, Bangor University)

### Academic Background

2<sup>nd</sup> year PhD student – University of St Andrews. Submission date May 2015  
Project Co-ordinator – Scottish Shark Tagging Programme, May 2011-May 2012  
2.1 Bsc Marine Biology – University of Aberdeen, May 2011

### Courses and conferences attended & additional teaching activities

Statistics in R course, at CREEM, January 2013.  
Statistics in R courses; basic statistics, Experimental Design & Analysis of Variance, Regression and Modelling in R, Introduction to Mixed Modelling, 2012/13.  
GIS in Ecology workshop, Glasgow –Dr Colin MacLeod, Author of An Introduction to Using GIS in Marine Biology, June 2013.  
Presentation skills for researchers, Sept 2012.  
Science, media, ethics and communication skills workshop, Presented by Myc Riggulsford, June 2012.  
Tutoring and Demonstrating in science workshop, June 2012.  
Assessment & Academic misconduct (science) workshop, June 2012.  
Poster presentation – International Conference on Fluvial Sedimentology (ICFS), July 2013.  
Poster presentation – Postgraduate conference, University of St Andrews, Jan 2014.  
Demonstrator for the following courses – 2<sup>nd</sup> year skills for biologists, 3<sup>rd</sup> year Statistics in R, 1<sup>st</sup> year molecular biology.

### Funding obtained

Marine Alliance for Science and Technology in Scotland (MASTS) small grant fund. Full award - £500  
University of St Andrews, Centre for Academic, Professional and Organisation Development (CAPOD)  
Research Student Development Fund. Full award - £150

### Funding requested from Gill Harwood Fund

Funding is required to attend the American Society of Limnology and Oceanography (ASLO), Ocean Sciences meeting in Hawaii, 23<sup>rd</sup>-28<sup>th</sup> February 2014. This large international conference will include sessions from both physical and biological sciences relevant my research field. I will present my research to date in the Sediment Delivery, Transport and Deposition in Aquatic Environments session. The conference will provide me with the opportunity to meet and discuss my work with experts in the field of sedimentological research. Title of presentation: The influence of biogenic stabilisation on the stability and transport of cohesive and mixed sediments.

### Additional funding awaiting approval

British Phycological Society – Student Bursary (Full costing provided to request a partial contribution)

## Project

This PhD project is fully funded by NERC, and is tied to the COHBED (Cohesive Bedforms) multidisciplinary project). The long term field campaign being presented at the ASLO conference is providing a long term survey of the relative seasonal and tidal changes in the biological influence on sediment erosion, transport and deposition in an estuarine environment.

## Project Aims and Objectives

My PhD project is tied to the NERC funded COHBED project (COHesive BEDforms), which aim to investigate the influence of biological processes on the behaviour of cohesive and non-cohesive intertidal sediments through field surveys and laboratory experiments. Understanding the physical and biological influences on sediment stability is increasingly important with regards to coastal erosion and management, however many sediment transport models are still based on abiotic factors. It is already well established that microbial assemblages found on the sediment bed and the extracellular polymeric substances (EPS) they secrete can significantly stabilise sediment however a greater understanding of these processes and how the effect sediment dynamics both temporally and spatially is required in order to better predict sediment movement.

This long term survey of both physical and biological factors will contribute to better understanding of the relative influences of each, seasonally and tidally. This may lead to the inclusion of biological parameters in future sediment transport models, which in turn may be used to design and implement effective coastal management plans

As this is a interdisciplinary project, the dissemination of the work being carried out to a large international audience will strengthen not only the applicants skills in science communication and providing essential career progression and development, but it will be beneficial to the wider scientific community by communicating the effects of biology on sedimentary systems and the importance of including this information in predictive models and studies. It is anticipated that ideas and collaborations for future projects may develop as a result of the networking opportunities at the conference with ASLO facilitating networking opportunities to students through a mentoring service. This should maximise the applicant's interaction, and discussions, with scientists in similar fields of interest.

The long term field campaign in the Eden estuary, Scotland is investigating the relative influence of biological and physical factors on sediment erosion, transport and deposition across all seasons and under different tidal conditions. Sediment samples are collected using the contact core method to flash freeze surface sediments in situ, allowing the biological characteristics of the sediment, including microbial biomass (Chlorophyll a) and EPS (carbohydrate concentration) to be related to sediment stability measurements (using the portable Cohesive Strength Meter) and several other biological and physical factors. It is this data, processed to date, that will be presented at the Ocean Sciences meeting.

## Budget

| Item  | cost                          |
|---|-------------------------------|
| 1. Conference registration fee  | £218.35                       |
| 2. Accommodation<br>Shared accomm in 2 bedroom self-catering apartment.   | £250 per week                 |
| 3. Subsistence (only if not included in Registration or Accommodation costs)<br>3 meals per day x 7 days. Self catering | £20 per day x 8 days<br>=£200 |
| 4. Travel<br>Flights Edinburgh to Honolulu, incl overnight stopover at airport hotel                                    | £815                          |
| Total Cost  | £1483.35                      |

To date £650 has been secured from MASTS and the university CAPOD grants and I am requesting the remaining balance of £833.35 from the Gill Harwood fund. However I will continue to apply to other sources of funding should there be a shortfall.



29.01.14

Dear Dr Jackson,

I am e-mailing to confirm that Julie Hope is currently a PhD student at the University of St Andrews. Julie is coming to the end of her second year of study here and as such this conference would provide her with the opportunity to present her research and data to date in the Sediment Delivery, Transport and Deposition in the Aquatic Environments session. The conference will provide her with the opportunity to network and discuss her work with experts in the field of sedimentology, as well as those in biological fields, providing an excellent opportunity to get interdisciplinary input. The conference will also assist her professional development and improve her dissemination skills. Julie has applied for funding from University bursaries and other society grants, however given the nature of the conference the costs are high. As such she is looking for further funds to make up the shortfall.

Yours sincerely,

A handwritten signature in black ink that reads "R. Aspden".

Dr Rebecca Aspden

From: David Paterson <dpl@st-andrews.ac.uk>  
Sent: 04 February 2014 15:10  
To: Jackson, Christopher A - L  
Cc: Rebecca Aspden  
Subject: Julie Hope

Dear BSRG Chair,

Apologies that this is slightly late due to my travel commitments.

I confirm that Ms Julie Hope is a PH.D student registered in St Andrews. Her work is interdisciplinary and innovative and I very much support her application to you. She is working hard to bridge the gap between sedimentology and biology and has spent time working with leaders in both fields and learning the specialised language and approaches from both disciplines. She now has experience of the use of large flume systems as well as field deployment of geotechnical and current measuring systems, while also the microbiological and biochemical techniques for examining the influence of microbiota on sediment dynamics. She would gain very much from this opportunity and, given her enthusiasm, I am sure she would make new contacts and develop her experience as well as adding to the experience of others. She is an excellent example of an early career scientist with great potential. Some financial support would be very beneficial since funds to support this type of activity are limited here but Julie has shown great commitment in seeking matching resources and support. I hope that the committee may decide to provide some further help.

Best

David Paterson

MASTS Annual Science Meeting 27-29th August 2013 at Heriot Watt  
University Conference Centre

Professor David M. Paterson  
Executive Director of MASTS  
The Marine Alliance for Science and Technology for Scotland

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