



Patrick Buerger

October 2015

VOLUME 11, ISSUE 3

CONTENTS

Another successful student seminar day!

A huge thank you to everyone involved in the annual AIMS@JCU seminar day in September.

It was another fantastic display of science communication prowess by post-graduate students who presented their research on the day.

We again covered several genres (seminar talk, speed talk, posters and photographs), and it was great to some of our alumni (Drs Sam Munroe, Leanne Currey and Heidi Luter) chairing sessions as well as one of our alumni, Dr Greg Torda, providing an inspirational keynote address, reflecting on his research training journey so far and proving that there is life after the PhD.

Thanks also to the judges – Peter Doherty, Richard Brinkman, Britta Schaffelke, Richard Davis, Catherine Naum, and Yvette Everingham, Greg Torda, Heidi Luter and Sam Munroe. Your task was very difficult and the effort and diligence you showed was really appreciated.

Congratulations to the following winners of the different categories. Their prizes are amounts of funding which must be spent on future science communication activities.

Continued on page 2

Student seminar day summary	2
Science Communication reports	3
Where are they now?	7
Research Director's report	8

Photographs in this publication were submitted by AIMS@JCU members unless otherwise stated

About the AIMS@JCU Newsletter:

This newsletter is produced quarterly and distributed by email to AIMS@JCU members, AIMS and JCU staff.

If you'd like to be added to our mailing list, or have a query regarding this newsletter, please contact:

Editor: Lauren Gregory
 Phone: (07) 4781 4074
 Email: aims@jcu.edu.au

2015 AIMS@JCU Student Seminar Day

Summary

Presentations:

- 1st place seminar presentation (\$1,500): [Brian Strehlow](#) - Identifying, characterizing and quantifying the effects of simulated dredging on sponges
- 2nd place seminar presentation (\$1,200): [Amin Mohamed](#) - Host transcriptome analysis during onset and establishment of coral-algal symbiosis
- People's choice seminar presentation (\$600): [Adriana Humanes](#) - Eutrophication and climate change compromise the fate of early life history stages of *Acropora tenuis*
- 1st place speed talk (\$1,000): [Kathryn Berry](#) - How coal affects water quality: a coral's perspective
- 2nd place speed talk (\$800): [Geoffrey Collins](#) - Understanding drivers of hypoxia tolerance in a tropical estuarine fish
- People's choice speed talk (\$200): [Kathryn Berry](#) - How coal affects water quality: a coral's perspective
- 1st place poster presentation (\$800): [Cecília Pascelli](#) - Electron microscopy provides insights into the nano scale world of marine sponges
- 2nd place poster presentation (\$600): Gerard Ricardo - Move-over parrotfish: Coral embryos make next-gen mucous cocoons in response to suspended sediment

Photos (\$100 for each winning image):

- Research in action: [Patrick Buerger](#) - 'The highly complex pipe system at the SeaSim facility supports coral recovery and growth'
- Quantitative marine science: [Brian Strehlow](#) - 'Mapping flow around a sponge excurrent pore in three dimensions'
- Photo micrograph / macro: [Kathryn Berry](#) - 'Anemone captured in perfect light'
- Research subject: [Kathryn Berry](#) - 'Reef fish gills after chronic coal exposure'
- People's choice: [Patrick Buerger](#) - 'AIMS@JCU students filming 360 degree video for Bommies Award at Orpheus Island'

Kathryn Berry

For images, posters and more information, please see: <http://aims.jcu.edu.au/our-research-publications/student-seminar-day.aspx>

Science Communication report

Elodie Lédée and Jordan Matley

Elodie: In July 2015, I was fortunate to attend the 3rd International Conference for Fish Telemetry (ICFT) held in Halifax, Canada. The conference presented the latest fish telemetry research undertaken around the world and consisted of six main themes: anthropogenic impacts: from pings to people; visualization, modelling of complex ecosystems, and data management; new frontiers: novel species, locations, and technology; conservation physiology; behavioural ecology, and large-scale movements. I was able to present two projects from my PhD research as a talk and a poster which gave me the opportunity to discuss and further improve my work with experts. My oral presentation concerned the movement patterns of reef predators using a novel approach - network modelling, and was followed by my poster presentation examining environmental drivers responsible for the movement of those reef predators.

The conference gave me an opportunity to network with experts in my field of animal biotelemetry and movement biology from around the world. It was valuable listening to the variety of research outputs that use similar technology in other ecosystems. This helped improve my understanding of the technology but also provided valuable information on how to design and optimise future studies.

I also had the privilege to be invited as a shark expert to a shark trivia night organised by the WWF where I was able to test my knowledge on shark ecology and shark pop-culture alongside other experts from around the world. It was a great experience and also great fun. Additionally, I participated in a VEMCO workshop to improve my knowledge on the tracking technology I used for my research and also learned about upcoming new technology to improve our understanding of animal movement and potentially use in future research.



The conference was located in Halifax, a city full of history from Fort George, built in 1749 for the defence of the Halifax Harbour

Adriana
Humanes

Science Communication report

Elodie Lédée and Jordan Matley

and Dockyard against the French, to the Bluenose ship which was a celebrated Canadian fishing and racing schooner and became an important Canadian symbol in the 1930s. This trip was my first trip to Canada so I sampled a few Canadian specialities such as beaver tails, lobsters and poutine but also craft beers from the local region.

This conference provided a great platform for networking, establishing future collaborations and improving my knowledge on fish telemetry and it was a valuable experience. I appreciate that AIMS@JCU made it possible for me to attend and present my work at an international scientific conference.

Contact: elodie.ledée@my.jcu.edu.au

Jordan: I also had the privilege of attending the 3rd ICFT. This biennial conference attracts researchers from all around the world conducting telemetry research to study fish movements. It was truly a remarkable experience being exposed to such a wide range of research locations (e.g., lakes, rivers, estuaries, reefs, and oceans), and study species (e.g., salmon, eels, rays, sharks, and groupers) from around the world. Despite the variety of research topics, there was a common theme to the conference, which ensured every poster and talk was topical and interesting – tracking fish movements. Many of the researchers use the same technology as we do in Australia, meaning that I was able to gain a new appreciation of how studies can be designed and additional ways to analyse the data. I was very interested in how others optimize receiver layout to increase detection efficiency while minimising costs. With so much in common with other researchers, I had meaningful conversations with the goal of improving my research outputs. I was also able to re-connect with several colleagues and friends I had gained during my M.Sc. in Canada.

We were also fortunate that the conference was located in the beautiful port city of Halifax. Not only were we shown a great time in the city eating lobster, trying the local brew, or dancing a few 'jigs', we also toured a historic army barracks and went whale watching. It was a valuable experience all-around and I am confident that the connections I made will assist improving my skills as a scientist and will aid procuring a post-doc position in the years to come. I am very grateful for the financial assistance provided by AIMS@JCU.

Contact: jordan.matley@my.jcu.edu.au

Samantha
Sherman

Science Communication report

Mario Espinoza

This year I was awarded with the AIMS@JCU travel award to conduct stable isotope analysis at the Great Lakes Institute for Environmental Research (GLIER) in Canada. GLIER is a multidisciplinary institution that is linked to the University of Windsor with faculty, collaborators and students across many disciplines including biology, geology, engineering, marine biology, molecular biology, genetics and ecology. At GLIER, I had the opportunity to analyse tissue samples (e.g., muscle, blood and plasma) from reef-associated sharks and fishes collected during my PhD. Stable isotope analysis is becoming a powerful ecological tool to examine broader dietary changes, trophic position, habitat utilization, and movement of animals.



In my project, stable isotopes were used to examine the trophic ecology and ecological role reef predators in the central Great Barrier Reef. Sharks are presumed to play an important role as top predators in the structure and functioning of marine communities. Some sharks can influence (directly or indirectly) the behaviour, distribution and abundance of other species. However, many shark species have experienced large population declines, which could have significant ecological consequences such as reductions in biodiversity and ecosystem health. Therefore, the results from my work in Canada have important implication for the management and conservation of reef-associated sharks.

I went to GLIER for the first time in 2007 to do an internship with Dr. Aaron Fisk. Since then, we have collaborated in projects in Costa Rica and now Australia. During my time in GLIER, I not only learned more about stable isotopes with other students in the trophic ecology lab, but I also established important collaborations with other researchers. Given that I will be moving back to Costa Rica very soon to start a position at the University of Costa Rica, this experience was really important for future collaborative projects. Without the support from AIMS@JCU I would not have been able to afford the travel cost for attending my visit to GLIER.



Contact: marioespinozamen@gmail.com

Kathryn Berry

Science Communication report

Martino E. Malerba

An estimated 4,500 people travelled to Baltimore from every corner of the world to attend the 100th anniversary of the foundation of the Ecological Society of America. The event was so important that Obama, the president of the United States, gave the first plenary seminar in a recorded message (check it out on the ESA website). The opening ceremony continued with a symposium between the world leaders in the field, explaining and discussing the most important challenges for the next decades. Global warming, food production, biodiversity crisis, and overpopulation were particularly hot topics.



The event took place at the Baltimore convention center, which consists of 3 large 3 level buildings. Despite the large venue, walking inside the convention center was similar to walking in a shopping mall on weekends. Every day was a triumph of science! Everyone happily talking about their interests and their latest findings.

The main message from the conference was that we are now at a critical point in history. In the past 20 years humans have experienced an unprecedented rise in population, health, and wealth. But decisions will soon have to be made if we want to sustain this growth, and the balance of many ecosystems depends on these decisions. There has never been a time when science was more needed. Understanding how to best manage current assets in light of future requirements can ultimately define how our future will look like.

Many thanks to AIMS@JCU for allowing such an inspiring and revealing experience!!

Contact: martino.malerba@my.jcu.edu.au

Where are they now?

Gergely (Greg) Torda

After finishing my PhD as an AIMS@JCU student in 2013 on genetic connectivity of coral populations, I stayed at James Cook University and worked as research officer and teaching assistant for Prof. Bette Willis. My research during this time mainly focused on the recovery of the reefs of the Palm Islands following TC Yasi, and described interesting shifts in the coral assemblages before and after the cyclone, related to differential susceptibility to storm damage, and differences in the dispersal capacity of various coral taxa.

In June 2015 I took up a 3-yr postdoctoral research fellow position jointly funded by the Centre of Excellence for Coral Reef Studies and the Australian Institute of Marine Science, to look at the genetic and epigenetic bases of transgenerational acclimatization of corals to changes in their environment. Our team, led by Prof. Madeleine van Oppen, will run a sophisticated experiment at the National Sea Simulator at AIMS, in which we expose coral colonies and their offspring to pH and temperature levels that are predicted for the middle and the end of the century. The goal is to explore the capacity of corals to rapidly acclimatize to these conditions within a generation, as well as over multiple generations; and to describe the molecular mechanisms that are involved in the acclimatization process. We will assess the potential for environmentally induced epigenetic marks to be inherited over generations, and explore the contribution of the coral-associated microbial and *Symbiodinium* communities to the phenotypic acclimation of the holobiont. This project is funded by a Paul Allan grant awarded to Prof. van Oppen at the Australian Institute of Marine Science and The University of Melbourne, and Dr. Ruth Gates at the University of Hawai'i.



Contact: gergely.torda@my.jcu.edu.au

Blanche
D'Anastasi

Research Director report

This year, we took the unusual step of running a second round of scholarship applications for projects commencing in 2015. This was because we were not able to allocate the full quota of AIMS@JCU scholarships in the first round, as the Management Committee and Scientific Advisory Committee felt that of the strongly competitive scholarship-eligible applications received in that round, only one met the quantitative marine science criteria currently required for AIMS@JCU scholarships. Through the second round we awarded a further two AIMS@JCU scholarships, although one applicant has since declined to take up the offer. Next month, our newest AIMS@JCU scholarship student, [Bettina Glasl](#), will commence her PhD project supervised by Dr Nicole Webster and Prof Marcus Sheaves, to identify microbial indicators of environmental stress and ecosystem health. A focus of her project will be the development of novel computational workflows for the analyses required, look out for Bettina's profile in a future newsletter. Welcome Bettina!

I am looking forward to seeing the next batch of competitive scholarship applications, for projects commencing in 2016. The deadline for the current round is 31 October. Good luck to all applicants.

It's always a great feeling to support AIMS@JCU students through the award of competitive grants and prizes, and we have been doing a lot of that lately! Congratulations to the following successful awardees of the pilot research awards: [Stacy Bierwagen](#) - Understanding influence of grey reef sharks (*Carcharhinus amblyrhynchos*) in coral reef ecosystems using remote underwater video (RUV) and predictive modeling in the central Great Barrier Reef; [Saliza Awang Bono](#) - Quantification of coal and microplastics in Great Barrier Reef sediments; [Blanche D'Anastasi](#) - Unravelling the evolution and biodiversity of sea snakes; [Paul O'Brien](#) - Phylogeography of Brown Band Disease on the GBR; [Cecilia Pascelli](#) - Taxonomic and functional diversity of viruses in marine sponges; [Nicole Rosser](#) - Baseline abundance of microplastics in ports of central QLD; [Molly Scott](#) - Impact of increasing ocean temperatures on the biology and depth distribution of coral trout (*Plectropomus spp.*)

Congratulations again to all winners of prizes from seminar day – listed on page 2 of this newsletter. It was a great day not just for science communication – but also a welcome opportunity to network and catch up with each other. And don't we look like a happy bunch?!



Date Claimer: Please mark 11 December in your diaries as the date of this year's AIMS@JCU Christmas function. Details to be advised soon.

Libby Evans-Illidge, AIMS@JCU Research Director

Contact: e.evansillidge@aims.gov.au

Kathryn Berry