



Joe Pollock

July 2014

VOLUME 10, ISSUE 2

Aboriginals and Torres Strait Islanders in Marine Science: empowering tomorrow's Indigenous marine leaders

Aboriginals and Torres Strait Islanders in Marine Science (ATSIMS) is a new program designed to help fill the gap between the potential of Indigenous Australians and the opportunities available to Australia's traditional custodians in marine science and management. By providing engaging, field-based science programming to predominantly Indigenous high school students, ATSIMS aims to bolster the interest, experience, and hands-on skills that students need to initiate and succeed in careers in marine science and management. I am pleased to report that the ATSIMS program has grown immensely over the past year. We have now worked with nearly 100 students from schools spanning a 200km stretch of the North Queensland coast, but ATSIMS has its origins in a much smaller, one-off program I ran in the Torres Strait Islands just over two years ago.

With the support of a \$2,500 Australian Academy of Technological Sciences and Engineering (ATSE) Young Science Ambassador award, I headed to Thursday Island to share my knowledge of coral reefs with a group of local primary school students. I began the program by taking the students to the beach and asking them to photograph interesting marine life and come up with a headline they would use to accompany their favourite photo on the cover of the local newspaper.

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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

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I planned to use this exercise to begin teaching the students about marine plants and animals, but once they started opening up something spectacular happened. I soon realized that I was learning just as much, if not more, from these students as they were learning from me. I was absolutely blown away by their knowledge of the marine world. They shared with me the traditional names and stories of the animals we came across, where they could be found and when they could be hunted.



The Queensland coast is home to over seventy Aboriginal and Torres Strait Islander clan groups with deep connections to the Reef dating back tens of thousands of years. These Indigenous cultures possess a wealth of experience, knowledge and wisdom that should empower them to oversee the research and management of their own traditional Sea Countries and provide meaningful career pathways for Australia's traditional custodians. However, very few Indigenous Australians are currently employed within the organizations charged with researching and managing the Great Barrier Reef. While Aboriginals and Torres Strait Islanders account for nearly 2.5 percent of Australia's population, they constitute just over 1 percent of students entering universities and less than 0.3 percent of staff at Australia's national science agency, CSIRO.



Vinay Udyawer

Having spent nearly a week with such a knowledgeable and passionate group of Indigenous students, I could not understand why there were not more Indigenous Australians working in the realm of marine science and management. When I returned

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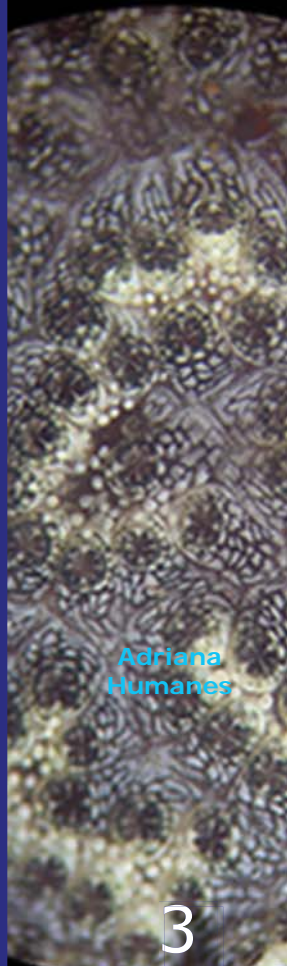
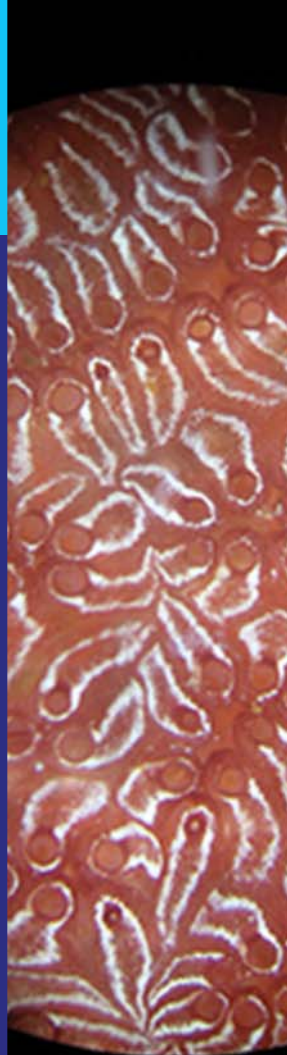
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to Townsville, I planned to continue working with Indigenous students on marine science-focused projects, but struggled to find any projects in this realm. So I set out to build an Indigenous marine science education program designed to inform and enthuse promising Indigenous high school students about careers in marine science and provide these young scholars with the information and contacts needed to succeed at the university level. I pitched this idea to education and science organizations around Townsville and found overwhelming support. With the generous backing of the AIMS@JCU, the Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University and the Australian Institute of Marine Science, as well as an enthusiastic bunch of local marine scientists and Indigenous leaders, ATSIMS was born.



ATSIMS scholars participate in a four-part month-long program of field-based, hands-on learning led by marine researchers and Traditional Owners. In the first part of the program, ATSIMS scholars are introduced to the public face of marine science at the Museum of Tropical Queensland and ReefHQ. At the Museum we are guided through the typically off-limits Indigenous marine artifacts collection and at ReefHQ our students are granted a unique behind-the-scenes perspective of the world's largest coral reef aquarium and its associated hospital for injured and sick turtles. Our students also met Jim Gaston and his wife Sheryl, Traditional Owners from Bowen who founded a sea turtle tagging and tracking program. Over the past two decades, this monitoring project has provided valuable information on sea turtle populations and disease dynamics, which are used to identify sustainable catch limits for the area.

Next, the ATSIMS scholars visit the Australian Institute of Marine Science where they experience the laboratory side of marine research. Our students interact one-on-one with marine researchers working on a diverse set of projects ranging from how coral cores can provide a window to the past to projecting the impacts of future climate change on reefs using the National



Adriana
Humanes

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Ocean Sea Simulator, which is arguably the most advanced research aquarium facility in the world.



In our third module, which is by far the students' favorite, the scholars have the opportunity to see the reefs they have been learning so much about first-hand during an unforgettable five day field excursion to Orpheus Island Research Station. During this trip, the ATSIMS scholars hone their in-water snorkeling skills and experience life as a researcher on a remote field station. Here, our students worked with Uncle Walter Palm Island, a Munburra elder who grew up on nearby Palm Island. Uncle Walter shared ancient knowledge that had been passed down to him from his ancestors, including how to use seasonal cues, like which plants are in bloom, to know what marine organisms can be safely eaten at different times of year. He also shared his concerns that while younger generations still have the desire and right to collect from the sea, many have lost the stories and wisdom needed to do it in a responsible manner.



Once we have developed the students' interest and skills in marine science, we end our program at James Cook University where the students learn what it will take to pursue careers in marine science. Here, the scholars are exposed to a diverse array of career options and participate in activities designed to help them identify their own personal career aspirations. We also provide detailed information on what it takes to get into and succeed at University, including information on opportunities for financial and emotional support.

Joe Pollock

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While there are still a couple of years before the first cohort of ATSIMS scholars enters University, there are already promising signs pointing towards their potential for future success. Since completing our program, participating schools have reported that nearly 90% of the ATSIMS alumni improved their science marks and that more than 50% moved up an entire letter grade. Additionally, students' self-reported interest in attending University more than doubled over the course of the program. Our alumni are also choosing the courses they need to prepare them for success at the University-level with more than 50% selecting science tracks, including Biology and Chemistry, in their Year 10 and 11 set planning. Just last week, I met several of the 2013 ATSIMS alumni and was amazed by how many were planning to attend pre-University courses over the winter break on campuses all around Australia.

On a personal level, this program has been one of the most rewarding experiences of my entire PhD. The group of students, teachers, marine researchers and Indigenous leaders we have brought together for this program possess a level of enthusiasm and passion I have rarely seen. This is because we share a belief that the strengthened connections we are helping to build between western science and traditional knowledge will benefit not only the students we work with, but also the communities they come from and ultimately the Great Barrier Reef as a whole.



Catalina Aguilar

F. Joseph Pollock | Founding Director

Aboriginals and Torres Strait Islanders in Marine Science

Contact: Joe.Pollock@ATSIMS.com

For more information, visit ATSIMS.com

2014 AIMS@JCU PhD Candidate

Amin Mohamed Esmail

Amin was born and grew up in Egypt where he completed his BSc in Zoology in 2006. Upon completion of his degree, he worked as a teaching assistant at Zoology Department, Faculty of Science, Benha University, Egypt. As he developed a great interest in coral reef research with his supervisor Dr Hany Abdel-Salam, he did a project on coral diseases in the Egyptian Red Sea leading to MSc in Marine Biology in 2011. This project provided baseline information on coral diseases, coral bleaching, and other health issues that affect coral reefs in this region.

Amin has been awarded a PhD scholarship from the Egyptian Ministry of Higher Education and Research in 2012 to conduct research in Ecological Genomics of Coral Reefs. He decided to travel to James Cook University in Townsville to undertake his PhD research. In mid 2012 he joined the Coral Genomics group led by Prof David Miller, which is part of the leading coral reef center, the ARC CoE for coral reef studies.



Amin is working under the supervision of Prof David Miller, Prof Bette Willis (JCU) and Dr David Bourne (AIMS). His project, titled "Distribution and characterization of chromerids and apicomplexans associated with corals of the GBR" provides a fundamental understanding of the role these eukaryotes play in coral health. The work aims to provide the baseline knowledge on the biogeographic distribution of chromerids and apicomplexans in the GBR and their association with different coral hosts. By using next generation sequencing (NGS) technology, the study also will investigate the functional role of *Chromera velia* in corals and its impact on coral fitness through conducting quantitative analysis of the coral gene expression following *C. velia* infection.

Tiffany Sih

2014 AIMS@JCU Student Seminar Day

8th August 2014 at The Pier Restaurant, Townsville

Put this date in your diaries as each year this is a successful and well attended event for students to show case the cutting edge research being conducted. Top oral and poster presentations are awarded funding to support science communication. The event is an important mechanism for students to share research findings with the broader AIMS and JCU scientific communities as well as compete for financial prizes.

We have added a new category this year, speed talks, to further enhance the variety and diversity of what is always a very stimulating and enjoyable day, and also foster the development of a wider array of relevant science communication skills.

All AIMS@JCU student members and all post-graduate students at AIMS (regardless of AIMS site or university of enrolment) have been invited (on a voluntary basis) to participate in the annual AIMS@JCU seminar day and contribute presentations in any of the above formats and compete for the following generous prizes:

Presentation Type	First Prize	Second Prize	People's Choice
Seminar talk	\$1,500	\$1,200	\$600
Speed talk	\$1,000	\$800	
Poster	\$800	\$600	

Photography prizes are \$100 for the winning image of each of the following categories:

- Research in action - must include a human researcher
- Research subject
- Photomicrograph/Macro
- Quantitative marine science (e.g. model outputs)
- People's choice

We will be putting together a program of talks over the next week or so, along with the formal invite to all of our members and other interested parties. Please feel free to pass on the information if you know anyone who would be keen to attend.

RSVP to aims@jcu.edu.au

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

Joe Pollock

Research Director Report

It was nice to catch up with lots of AIMS@JCU students recently, as they attended the biostatistics with R coursework delivered by Murray Logan from AIMS. This course was yet again really well received by all who attended it. Many thanks to Murray for again making time to teach us.

AIMS@JCU will host the next all-staff morning tea at AIMS on 30 July – so those of you who will be at AIMS that day, please come along to help wave our flag.

Congratulations to those who were successful in the last round of travel and pilot funding awards. It was pleasing to see some recipients taking advantage of the awards to visit current and potential collaborators, especially those that might become a future post-doc employer. This support is a part of helping you to be well positioned in the wider science community. We look forward to seeing the reports of activities supported by these awards, in the next newsletter.

All post-graduate researchers commencing with AIMS@JCU in 2014 should by now have started their projects – welcome to you all! A special welcome to the four new AIMS@JCU scholarship recipients – Kathryn Berry, Cheng-Han Tsai, Thomas Roberts and Blake Ramsby. I wish you every success for your studies, and look forward to meeting you soon. I also welcome a new staff member, Ms Melissa McLean, who will work in the office on Mondays and Tuesdays and provide us with admin support.

Don't forget our upcoming annual highlight – the AIMS@JCU seminar day at the Pier Restaurant, 8th August. I look forward to another fantastic, entertaining and informative day. Building on the success of last year – we realised we had to move to a larger venue. See you there!

Libby Evans-Illidge, AIMS@JCU Research Director

Contact: e.evansillidge@aims.gov.au

Vinay Udyawer