

**MAY 2025**

VOLUME 21, ISSUE 1

## AIMS@JCU Student Award Winners

Round 1 2025

Congratulations to the successful recipients of our first round of AIMS@JCU awards for 2025:

### Pilot Research Awards:

- Peter Lowley (Assessment of functional diversity in coral and macroalgal communities following macroalgal removal)
- Marine Pablo (Cellular mechanisms for establishment and modulation of Coral Associated Microbial Aggregates (CAMAs) in coral tissues)
- Courtney Burns (Explore the role of diverse knowledge to understand and support elasmobranch conservation for improved management of Sea Country in North Queensland)
- Akari Otsuka (Profiling the influence of starch-enriched diet on the microbial communities of Giant Grouper (*Epinephelus lanceolatus*))
- Sophie Renton (Genomics of vertically inherited coral photosymbionts; utilising long-read genome sequencing technology)

### Science Communication Awards:

- Bambang Hermanto (Australian Coral Reef Society, Townsville)
- Ingo Miller (Oceania Chondrichthyan Society, Sunshine Coast)
- Peter Lowley (Australian Coral Reef Society, Townsville)
- Marine Pablo (Australian Coral Reef Society, Townsville)
- Marko Terzin (FEMS Microbiology 2025, Italy)
- Akari Otsuka (Trope 2025, Brisbane)
- Martina Burgo (Australian Marine Sciences Association, Melbourne)

### Professional Development Awards:

- Bambang Hermanto (eDNA training course, Canberra)
- Merle Schlawinsky (4-6 week research placement, Canada)
- Marine Pablo (First Aid and Diving Course)
- Peter Lowley (Recreational Marine Driving Licence and Short-Range & Operators Certificate of Proficiency)

Look out for their write-ups in future newsletters.

## CONTENTS

2025 AIMS@JCU PhD Scholarship recipient bio	<a href="#">2</a>
Professional Development Award Report	<a href="#">3</a>
2025 AIMS@JCU Post-doc bio	<a href="#">4</a>
New AIMS@JCU Staff Member	<a href="#">5</a>
Student Assistance	<a href="#">6</a>
Research Director Report	<a href="#">8</a>

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

We are reducing our carbon footprint by limiting the number of printed copies available. Please let us know if you need a hard copy of this newsletter

### About the AIMS@JCU Newsletter:

This newsletter is produced regularly 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**

Email: [aims@jcu.edu.au](mailto:aims@jcu.edu.au)

## 2025 AIMS@JCU PhD Scholarship Recipient

Yuanning Zheng

**Project Title:** Advanced Detection and Forecasting of Trichodesmium Blooms in the Great Barrier Reef

**Supervisors:** Dr. Barbara Robson (AIMS), Prof. Mostafa Rahimi Azghadi (JCU) and Dr. David Blondeau-Patissier (CSIRO Environment)



Yuanning Zheng earned her Bachelor's degree in Geographical Science in 2017 and completed her Master of Engineering in Resources and Environment in 2024 at the University of Chinese Academy of Sciences. Her interest in Remote Sensing and GIS led her to explore remote sensing techniques for monitoring the marine environment. During her master's studies, she focused

on marine optics and hydrometeorology, applying machine learning to enhance the accuracy and efficiency of water quality monitoring. Her work resulted in three publications in peer-reviewed journals.

Yuanning is honoured to have been awarded the AIMS@JCU PhD scholarship under the supervision of Dr. Barbara Robson (AIMS), Prof. Mostafa Rahimi Azghadi (JCU), and Dr. David Blondeau-Patissier (CSIRO Environment). Her research focuses on developing a near-real-time prediction model for Trichodesmium blooms. This project aims to enhance remote sensing capabilities for monitoring complex nearshore environments by integrating ocean colour remote sensing data with simulated hydrodynamic and water quality data using machine learning. Additionally, this research will equip ecosystem managers with practical tools to improve decision-making by providing a better understanding of how marine processes, such as Trichodesmium blooms, interact with human-induced factors like nutrient enrichment from land-based sources.

Michelle Heupel

Contact: [yuanning.zheng@my.jcu.edu.au](mailto:yuanning.zheng@my.jcu.edu.au)

# Professional Development Award Report

Nicolas Mafla Viscarra

My Master's thesis project focuses on using opportunistic data collected from oil vessels in the Otway Basin to estimate the density and distribution of marine megafauna. The data was gathered by Marine Mammal Observers using distance sampling. I will apply a density surface model to generate these predictions.

The main challenge with opportunistic data is that, although it provides a cost-efficient way of collecting information on marine fauna, it often comes with inherent biases, since the data is gathered through non-structured surveys. When working with this type of data, it's important to consider the spatio-temporal autocorrelation that may exist, as vessel trips related to oil operations typically cover the same transects multiple times. While there are several techniques to reduce the bias associated with opportunistic data, there is always some level of uncertainty in the resulting estimates. That's why I've been considering the use of eDNA techniques to validate the predictions made by the density surface model.



With help from the AIMS@JCU professional development award, I was able to attend the 2nd Australian and New Zealand Environmental DNA Conference in Wellington, NZ. There were a few talks that I found particularly useful for expanding my understanding in this area. One especially relevant presentation was given by Emma Carroll from the University of Auckland, where she introduced CETSET: a next-generation

DNA barcoding panel for whales, dolphins, and porpoises. This technique amplifies taxonomically informative DNA regions of these marine mammal groups, enabling robust species identification and the potential for estimating abundance and distribution.

Similarly, Thea Larsen from James Cook University presented advancements in using eDNA to detect green turtles in coastal environments. The main results showed that 10  $\mu$ m filters were the most effective for capturing sufficient DNA for qPCR. The authors of this project tested the correlation between eDNA detectability and turtle abundance using an occupancy model. I'm considering applying a similar approach in my thesis, running a model that compares the abundance and distribution estimates from my statistical models with those derived from eDNA data. Ideally, this could help corroborate my findings and increase the reliability of my thesis.

Contact: [nicolas.mafla@my.jcu.edu.au](mailto:nicolas.mafla@my.jcu.edu.au)

Michelle Heupel

## 2025 AIMS@JCU Postdoctoral Research Fellow

Dr Gemma Galbraith

### AIMS@JCU Bette Willis Postdoctoral Research Fellow – Reef Connectivity.

Dr Gemma Galbraith is a marine ecologist and as part of the AIMS@JCU partnership, Gemma will work closely with researchers from AIMS and James Cook University to advance understanding of ecological connectivity in coral reef ecosystems, with a particular focus on how physical oceanography, reef geomorphology and species dispersal interact to shape biodiversity patterns.

Gemma's work draws on over a decade of international experience in coral reef ecology, conducting field studies and coral reef monitoring in Papua New Guinea, the Caribbean, the inshore Great Barrier Reef and completing ship-based research voyages across the offshore GBR and Coral Sea. Her research combines extensive field-based ecological surveys with advanced technologies, high-resolution bathymetry and hydrodynamic instrumentation to investigate ecological linkages across coral reef seascapes. She also has interests in distinct coral reef geomorphologies including seamounts and isolated coral reefs, mesophotic coral ecosystems and biogeography of coral reef organisms.



Gemma's research to date includes high-impact scientific publications on reef fish ecology and technical reports to inform Australian marine park management. Her work was recently recognised by notable awards including a D. Ross Robertson Research Fellowship from the Smithsonian Tropical Research Institute and a 2024 Churchill Fellowship from the Winston Churchill Memorial Trust. Under the AIMS@JCU fellowship, Gemma will focus on quantifying ecological pathways among reef systems in the Great

Barrier Reef and Coral Sea Marine Parks, integrating ecological, genetic, and physical data to better understand complex patterns in reef connectivity and support effective conservation of these critical ecosystems.

Contact: [gemma.galbraith@jcu.edu.au](mailto:gemma.galbraith@jcu.edu.au)

Michelle Heupel

## New AIMS@JCU Staff Member

Rebecca Clancy

Meet Rebecca – Our Newest AIMS@JCU Team Member.

Rebecca is a highly skilled professional with extensive experience in administration, project management, and stakeholder engagement. Holding a Bachelor of Business (Management) from James Cook University (JCU), she brings a strong background in optimising organisational processes, coordinating cross-functional teams, and supporting high-level decision-making.

In her current position at AIMS@JCU, Rebecca plays a vital role in supporting the strategic collaboration between the Australian Institute of Marine Science (AIMS) and JCU. She is responsible for efficiently managing a range of operations, including coordinating AIMS@JCU morning teas, liaising with the Graduate Research School, overseeing student progress reports, managing awards, and assisting with the organisation of events such as writing retreats and seminars. In addition, Rebecca performs a variety of other tasks to support the smooth running of the AIMS@JCU office. She also ensures the AIMS@JCU website and SharePoint site are regularly updated, keeping all stakeholders informed and engaged.



Rebecca will be working closely with Cherie and Lauren, moving between both sites. You can contact her for AIMS@JCU related issues on [admin.aims@jcu.edu.au](mailto:admin.aims@jcu.edu.au)

We are excited to see the continued impact Rebecca will have on our community!

Contact: [admin.aims@jcu.edu.au](mailto:admin.aims@jcu.edu.au)

Michelle Heupel

## Student Assistance

### StatsHelp

Dr Michael Crowe took on the role of StatsHelp Coordinator in October 2024. He has a masters in biostatistics and a PhD on assessing the quality of health research. Besides a broad knowledge of statistical techniques, Michael has skills in researching the validity and reliability of measurement instruments (psychometrics), developing research protocols and data analysis plans, designing questionnaires, and implementing surveys. Michael also has experience outside the university sector in project management, IT consultancy, and customer research.

StatsHelp ([statshelp@jcu.edu.au](mailto:statshelp@jcu.edu.au)) aims to boost researchers' quantitative methods and statistical analysis. We currently give priority to JCU higher degree by research (HDR) candidates from any discipline, their advisors, and staff undertaking research.

StatsHelp can help you with

- Refining your research questions, aims, and hypotheses
- Designing your research approach
- Calculating appropriate sample sizes
- Choosing stringent data collection methods (including experiment and observation plans, questionnaire design, and data management)
- Analysing your data and applying statistical methods
- Presenting your results.

The StatsHelp team strongly encourages you to contact them at the beginning of your research project, well before gathering any data, so that potential problems can be rectified before they become costly mistakes.

Contact: [statshelp@jcu.edu.au](mailto:statshelp@jcu.edu.au)

The 2025 AIMS@JCU R-Course with Murray Logan has been booked in for weeks commencing 7th July and 21st July. More details to follow.

Contact: [aims@jcu.edu.au](mailto:aims@jcu.edu.au)

# Student Assistance

## HDR Hub

AIMS@JCU HDR students are lucky to be invited to utilise the HDR Hub, located in the Townsville Bebegu Yumba campus on the ground floor of Building 41. This dedicated space is designed to enhance your research journey.

Amenities include:

- 32 partitioned desks for focused work
- Collaboration pods and tables
- Shared conference space
- Small meeting and breakout rooms
- Accessible kitchen facilities

You will need to do an induction prior to gaining access to the area, so make sure you contact Jordan Fell in advance and be respectful of what JCU have provided.



Michelle Heupel

Contact: [jordan.fell@jcu.edu.au](mailto:jordan.fell@jcu.edu.au)

# Research Director Report

At AIMS@JCU, we strive for excellence and innovation in all our endeavours - this is why we prioritise celebration of our members, and we have much to celebrate and reflect on since our last newsletter.

## Celebrations

**20 Year Celebration:** AIMS@JCU has been going strong for 20 years! We are excited to announce a two-day 20-year celebration, scheduled for September 25th-26th, 2025. This milestone event will feature a series of seminars, workshops and an evening event, to be held at AIMS and JCU venues, to commemorate our achievements and envision the future of our research community. Keep an eye out for the 'save the date' notice and calls for participation. We can't wait to celebrate with you!

**JCU Graduation:** We are proud to introduce our latest cohort of AIMS@JCU graduates: Dr Rachel Neil, Dr Eric Fischer and Martina Lonati (MPhil). Graduating in absentia were Dr xxx, xxx. Their achievements are a testament to their dedication and commitment to research excellence. We wish them all the best in their future endeavours.

## Members

**2025 AIMS@JCU PhD Scholarship Recipients:** We are thrilled to announce the recipients of the 2025 AIMS@JCU scholarships: Rayhan Dudayev, Yuanning Zheng, Greta Zampa, and Matilde Drake. Please join me in welcoming them to our community and look out for their bios in this and future newsletters.

**2025 AIMS@JCU Postdoctoral Research Fellows:** We are equally thrilled to welcome three new AIMS@JCU staff: Dr. Tomas Leon Cortes, Dr. Magena Marzonie and Dr. Gemma Galbraith, who along with Dr. Sarah Lawless and Dr. Alzayat Saleh, will deliver on the key research themes of: Coastal Dynamics, Reef Connectivity, Reef Responses to Environmental Change, Ocean Governance, and Technology Development, respectively. If you have an interest in collaborating with them or just want to learn more about their field of research, please reach out to them directly, or drop us an email and we can link you.

**Vale Empro Andrew Krockenberger:** I would like to personally acknowledge Andrew's contribution to AIMS@JCU over the years. As Deputy Vice Chancellor Research and Dean of Research, he played a pivotal role in fostering relations between the two institutions and establishing programs to promote student development and participation in fieldwork.

## Upcoming Events

**AIMS@JCU Morning Tea Seminar Series:** In 2025 we have expanded our regular bimonthly morning tea series to include seminars – the intention to cultivate a collaborative space to share knowledge and build the AIMS and JCU network. Dr. Magena Marzonie presented at JCU on her journey from HDR to ECR, with over 40 people in attendance, including prospective HDR students. Dr. Alzayat Saleh presented at AIMS, with over 20 people in attendance, and generated significant interest in AI applications in underwater image clarification and monitoring. If you wish to participate as a speaker please send through a title and short bio.

**Writing Retreat:** It is our pleasure to again be hosting a writing retreat on Magnetic Island 26-29th May 2025. As well as the opportunity to learn skills and implement writing techniques, this year's program will also include presentations by Dr. Liz Tynan, Dr. Magena Marzonie, Dr. Tomás León Cortés and Dr. Gemma Galbraith. I encourage all participants to take advantage of this opportunity to advance their research projects.

If you have highlights, achievements or people that you would like to celebrate, please get in touch – we would love to promote these.

Cherie Motti, AIMS@JCU Research Director

Contact: [c.motti@aims.gov.au](mailto:c.motti@aims.gov.au)

Michelle Heupel