

2017 National Student Mentoring Day

Rydges Hotel, Townsville, Queensland



ARC Centre of Excellence
Coral Reef Studies

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Innovative science for sustainable use of coral reefs

PROGRAMME

Wednesday 19 July, 2017

Time	Speakers	Title
8:30am	Registration	
9:00am	Ms Jennifer Lappin and Dr Alana Grech ARC Centre of Excellence for Coral Reef Studies	Welcome and Introduction
9:15am	Dr Matthew Curnock CSIRO Ms Roxana Caha Port of Townsville Dr Mary Bonin Great Barrier Reef Marine Park Authority Dr Jenni Donelson and Dr Peter Cowman ARC Centre of Excellence for Coral Reef Studies Dr Nicole Webster Australian Institute of Marine Science Dr Laurence McCook South China Sea Institute of Oceanology	Panel Discussion: Pro-tips on how to get a job after graduation
11:00am	Morning Tea	
11:30am	Group networking and one-on-one mentoring with panel members	
1:00pm	Lunch	
2:00pm	Dr Tom Bridge and Mr Ed Roberts Museum of Tropical Queensland, ARC Centre of Excellence for Coral Reef Studies, Tethys Images Dr Ian McLeod Cinematic Science, TropWATER	Principles, tips and techniques for taking photographs underwater How to make a video with your phone*
5:00pm	Refreshments	

*please shoot some video and download Adobe Premiere Clip onto your smartphones in preparation for this workshop.

SPEAKERS

Ms Jenny Lappin – ARC Centre of Excellence for Coral Reef Studies



Jenny is the Chief Operations Officer of the ARC Centre of Excellence for Coral Reef Studies. Jenny has a Bachelor of Commerce degree from the University of Queensland and is a member of CPA Australia. She has over 20 years of senior management experience with responsibilities for strategic planning, finance management, human resources, communications, business process engineering, change management and policy development. Starting work as an accountant in Townsville she progressed her career in Sydney, Melbourne and London before returning to Australia. She started as an academic in the Department of Commerce at James Cook University in 1988, moving to general financial management positions soon after. Following various leadership positions in finance, research, foreign aid projects and as an executive officer at JCU, she moved in October 2005 to the Centre of Excellence to oversee, with the Centre Director, its establishment. She enjoys the diversity and challenges of a rapidly growing and vibrant research Centre of Excellence.

Dr Alana Grech – ARC Centre of Excellence for Coral Reef Studies



Alana is Assistant Director of the ARC Centre of Excellence for Coral Reef Studies. The goal of her research is to inform the management of Australia's natural and cultural environment through spatial information science and conservation planning. Her research covers three themes: spatial predictions of coastal and marine features; cumulative impact and risk assessments in geographic information systems (GIS); and conservation planning and Indigenous Australia. Alana was previously a Senior Lecturer at Macquarie University, and Postdoctoral Research Fellow at the Centre.

Dr Matthew Curnock - CSIRO



Matt is a social-environmental scientist at the CSIRO, based in Townsville. His research focuses on human solutions to environmental problems, from small to large scales. His projects have ranged from monitoring and management of a marine tourism industry (e.g. www.minkewhaleproject.org), to large-scale socio-economic monitoring of the Great Barrier Reef (<http://seltmp.eatlas.org.au/seltmp>), to community engagement in biosecurity management and surveillance (<http://www.abc.net.au/news/rural/2015-10-21/csiro-researches-assess-psychological-impacts-of-panama-tr4/6869740>), and regional scale climate change adaptation for natural resource managers (<https://terranova.org.au/repository/climate-change-issues-and-impacts-in-the-wet-tropics-nrm-cluster-region-1>). Matt recently completed a 15 month secondment within the Great Barrier Reef Marine Park Authority and is currently involved in designing integrated monitoring for human dimensions of the *Reef 2050 Long Term Sustainability Plan*.

Ms Roxana Caha – Port of Townsville



Roxana is an Environmental Advisor at the Port of Townsville, with over 11 years of experience working as an environmental professional on large-scale oil and gas, port, coal mining, desalination and development projects in Australia and the Middle East. She has a proven record of successfully delivering project environmental outcomes through liaising, coordinating and collaborating with scientists, engineers, contractors and government agency personnel. She has a B.Sc. Hons in Zoology from the University of Glasgow, and a M.Sc. in Tropical Coastal Zone Management from Newcastle University. For her Master's thesis, Roxana completed an internship with Coral Reef Conservation Project in Kenya studying the perceptions of key stakeholders about Marine Protected Areas. Roxana is a keen underwater photographer who plans to continue to explore, and try to connect others through her imagery.

Dr Mary Bonin – Great Barrier Reef Marine Park Authority



Mary is a Project Manager at the Great Barrier Reef Marine Park Authority. In this role she works closely with reef scientists, industry leaders and policy-makers to develop and implement the management actions that mitigate crown-of-thorns starfish outbreaks. Prior to transitioning into coral reef management, she spent five years working as an academic in Marine Biology at James Cook University. While at JCU she lectured in Marine Conservation Biology and Sampling and Experimental Design, supervised six post-graduate student projects, and conducted research on larval connectivity and the effects of reef habitat degradation on reef fishes. Mary holds a PhD in Marine Biology from JCU and throughout her postgraduate studies she worked closely with a Marine Conservation NGO in Papua New Guinea to develop skills in applied marine management and stakeholder engagement. Mary has been lucky enough to dive some beautiful reefs around the world and misses diving now that she has moved to a desk job.

Dr Jenni Donelson – ARC Centre of Excellence for Coral Reef Studies



Jenni is currently a Postdoctoral Research Fellow at the ARC Centre of Excellence for Coral Reef Studies located at James Cook University in Townsville. This fellowship is part of a collaborative project with King Abdullah University of Science & Technology, Saudi Arabia. She completed her PhD in 2012 at James Cook University, before undertaking a Chancellor's Postdoctoral Fellow in the School of Life Sciences at the University of Technology Sydney from 2013-2016. Jenni's research focuses on exploring the plastic capacity of reef fish to environmental change. She is particularly interested in how exposure of previous generations influences the phenotype of the current generation, and more broadly how this could impact species responses to future climate change.

Dr Peter Cowman – ARC Centre of Excellence for Coral Reef Studies



Peter is an ARC DECRA Fellow at the ARC Centre of Excellence for Coral Reef Studies. He is a previous recipient of the prestigious Donnelley Postdoctoral Environmental Fellowship (2014-2016) administered by the Yale Institute for Biospheric Studies (YIBS). Peter is a leading authority on the phylogenetic systematics and evolutionary origins of coral reef-associated fishes. His research focuses on reconstructing the evolutionary history of diverse groups of fishes and corals that are associated with tropical reefs habitats and uses those phylogenetic hypotheses to explore macroevolutionary questions on topics ranging from the origins of trophic novelty, processes driving biodiversity patterns, and the ancestral biogeography of reef-associated lineages. In a parallel research theme, he explores the causative relationships between genomic change, processes of diversification and life history traits across the tree of life.

Dr Nicole Webster – Australian Institute of Marine Science



Nicole obtained her PhD in 2001 by researching the microbial ecology of Great Barrier Reef sponges. Her postdoctoral research was undertaken between 2001-05 at the University of Canterbury / Gateway Antarctica where Nicole investigated the utility of microbial symbionts as biomarkers for environmental stress in the Antarctic marine ecosystem and explored the role of microorganisms as inducers for settlement and metamorphosis of coral reef invertebrates. In 2012 Nicole was awarded an ARC Future Fellowship to commence research into 'Revealing the structure, evolution and environmental sensitivity of symbioses in basal metazoa'. This project involves assessing the impact of environmental stress on model invertebrate symbioses and determining the role of bacterial, archaeal and viral symbionts in the ability of reef invertebrates to adapt to a changing climate. Nicole is currently a principal research scientist at the Australian Institute of Marine Science where she undertakes research into how microorganisms contribute to reef ecosystem health. In 2017, Nicole commenced a joint appointment as Principal Research Fellow at the Australian Centre for Ecogenomics at the University of Queensland. In both positions Nicole uses experimental and field based ecological research to explore multiple facets of coral reef microbiology and symbiosis.

Dr Laurence McCook – South China Sea Institute of Oceanology



Laurence McCook works in science-based management and conservation of marine ecosystems, especially coral reefs. He currently holds a “President’s International Visiting Professorial Fellowship” from the Chinese Academy of Sciences, working at the South China Sea Institute of Oceanology (SCSIO) in Guangzhou, China. He is also an Adjunct in the ARC Centre of Excellence for Coral Reef Studies at James Cook University. Laurence has more than 30 years’ experience, including coral reefs in Australia, Indonesia and the “Coral Triangle”, the Pacific and the Caribbean, as well as in temperate ecosystems. He has worked with government, academic research, non-government and industry sectors, and advised international bodies such as the United Nations Environment Programme. Laurence has a Ph.D. from Dalhousie University, in Canada. Laurence worked for the Great Barrier Reef Marine Park Authority from 2003 to 2014, focused on the scientific basis of management, including assessing management effectiveness. Before that, he spent 12 years at the Australian Institute of Marine Science, researching the ecology of coral reef resilience and degradation, the effects of water pollution, climate change and over-fishing. In 2005, Laurence was awarded an international Pew Fellowship in Marine Conservation. Laurence’s work at SCSIO aims to strengthen connections between science and management for China’s threatened coral reefs.

Dr Thomas Bridge and Mr Ed Roberts – Museum of Tropical Queensland, ARC Centre of Excellence for Coral Reef Studies, Tethys Images



Tom and Ed are researchers at the ARC Centre of Excellence for Coral Reef Studies. Tom is also Senior Curator of Corals at the Queensland Museum Network, based at the Museum of Tropical Queensland campus in Townsville. They are avid underwater photographers, and represent two-thirds of the team comprising the underwater photography website Tethys Images (www.tethys-images.com). After accumulating large photographic portfolios independently over many years and recognizing increased demand from scientific, government and conservation organisations, they decided to pool their resources and make their work available to a wider audience. They enjoy seeing their images used to benefit science, education and conservation of the natural environment. Their images have been featured on the covers of prestigious journals including *Nature*, *Ecology Letters*, *Current Biology* and *Proceedings of the Royal Society B*, government reports including the *Australian Government’s National Marine Science Plan 2015-2025*, and in public displays such as the new Cairns Aquarium. Photo credit: Matthew Curnock, Tethys Images.

Dr Ian McLeod – Cinematic Science, TropWATER



Ian is a Senior Research Scientist and Principal Investigator based at TropWATER, James Cook University. His research is focussed on the restoration of coastal habitats, with a particular focus on shellfish reef restoration. Previously, Ian completed a Postdoctoral Fellowship focussed on sustainable sport fishing in Papua New Guinea, and a PhD focussed on the effects of ocean warming on larval coral reef fishes at James Cook University. Ian has worked in the fields of environmental management, scientific research and video production in over 30 countries and on every continent. Ian has a passion for applied research, strong communication and engagement, and working in partnership with Traditional Owners, government and community groups to bring about positive real-world change. He is also a Founding Director of Cinematic Science a media company that uses professional cinematic techniques to tell unique science-based stories. In 2016 Ian was named as a James Cook University Rising Star for his leadership and research achievements as an early career researcher and as an Advance Queensland Digital Champion for his science communication leadership.



About the ARC Centre of Excellence for Coral Reef Studies

The **ARC Centre of Excellence for Coral Reef Studies** undertakes world-best integrated research for sustainable use and management of coral reefs.

The ARC Centre of Excellence for Coral Reef Studies commenced operations in 2014 following the award of \$28 million from the Australian Research Council to fund the Centre for seven years. Headquartered at James Cook University, the ARC Centre partnership includes the Australian Institute of Marine Science (AIMS), the Australian National University (ANU), the Great Barrier Reef Marine Park Authority (GBRMPA), the International Union for Conservation of Nature (IUCN, Switzerland), Centre National de la Recherche Scientifique (CNRS, France), Center for Ocean Solutions, Stanford University (COS, USA), WorldFish (Malaysia), the University of Queensland (UQ), and the University of Western Australia (UWA).

The major objective of the new Centre is to achieve a better understanding of the science, both social and natural, that underpins the dynamic changes currently occurring in coral reefs worldwide. This research is both multifaceted and transdisciplinary. It focuses not only on the responses of coral reef organisms to the rapidly changing local and global environments but also examines the dynamics of reefs through the integration of ecology, evolution, genetics, oceanography and palaeontology. Improving the governance and management of natural systems and enhancing our capacity to sustain both human and natural capital is an overarching goal of our research.

Building human capacity and expertise in coral reef science by supporting and training outstanding students is one of the main goals of the ARC Centre of Excellence for Coral Reef Studies. We provide a strong mentoring environment for our students and early career researchers over and above that provided through any of the four collaborating universities. Over a quarter of our ARC Centre budget is earmarked to support the research costs of these student projects. The Centre actively involves students through a Student Committee which manages an annual allocation of \$40,000 for student mentoring activities, student awards and internodal visits.

As part of its goal to train outstanding coral reef scientists, the ARC Centre of Excellence for Coral Reef Studies offers a range of mentoring activities to all graduate students attending the Australian Coral Reef Society Conference. The program focuses on developing the students' research and communication skills as well as preparing them for careers in marine science. Students are also offered opportunities to discuss and learn from each other as well as from experts in coral reef research and management.

The Centre Director is Professor Terry Hughes (JCU), who is also a Laureate Fellow (2012-2017). Professor Ove Hoegh-Guldberg (UQ) and Professor Malcolm McCulloch (UWA) are the Deputy Directors.

The ARC Centre of Excellence focuses on 3 research programs, each one under the stewardship of Program Leaders from James Cook University, the University of Western Australia, the Australian National University and the University of Queensland.

Research Program 1

People and Ecosystems

Program Leaders: Prof. Terry Hughes, JCU, Prof. Bob Pressey, JCU, A/Prof. Tiffany Morrison, JCU

This program expands the scope of contemporary coral reef research, from a predominantly biological focus to a broader understanding of the links between coral reef ecosystems, the goods and services they provide to people, and the wellbeing of human societies.

The key objective is to improve the governance and management of natural systems and to enhance our capacity to sustain both human and natural capital.

Our research examines the economic, social, historical and cultural aspects of resource use and governance, while recognising that there is no simple, single solution to the wicked problem of preserving reefs while promoting development.

This inter-disciplinary program is being conducted on a global scale with study areas spread over 25 countries across the Indo-Pacific and Caribbean.

Research Themes

Social Adaptation, Resilience and Transformation – Examines the resilience and adaptive capacity of coral reef dependent societies across the tropic to inevitable change, particularly climate change and overfishing.

Integrated Land-Sea Planning – A primary goal is developing a new conceptual framework for planning human activities in coastal areas and seascapes, particularly in Australia, the Coral Triangle, Fiji and India.

Fish, Fishers and Fisheries – Aims to develop theory and test new models for understanding the dynamics of coupled ecological and social systems, where one or both components exhibit threshold dynamics.

Research Program 2

Ecosystem Dynamics: Past, Present and Future

Program Leaders: Prof. Sean Connolly, JCU, Prof. John Pandolfi, UQ, Dr Verena Schoepf, UWA

This multi-disciplinary program brings together leading ecologists, evolutionary biologists, geneticists, oceanographers and palaeontologists to examine the multi-scale dynamics of reefs, from population dynamics to macroevolution.

Research Themes

Historical Ecology, Palaeontology and Shifting Baselines – Examines the historical transition from pristine ecosystems to socio-ecological systems of today. It aims to improve knowledge of how the resilience of coastal and marine ecosystems evolves and its response to human impact.

Regime-Shifts and Resilience – Aims to increase knowledge of the dynamics and resilience of ecosystems and to incorporate these findings into coral reef management. Research focuses on quantifying the effects of multiple drivers of change on critical feedbacks that stabilise or destabilise ecosystems, generating threshold dynamics, hysteresis and alternate stable states.

Connectivity and Resilience – Examines aspects of connectivity at local to global scales including the spread of disease, introduction of new species and pests and the social impacts of human connectivity. We also explore the critical role of larval connectivity between meta-populations or meta-communities in promoting resilience and recovery of depleted local populations.

Macroecology, Ecosystem Functions and Biogeography – Quantifies the level of functional diversity and redundancy in coral reef assemblages. In tandem with Program 3 we will model and assess the effect of changes in biodiversity on ecosystem function along biogeographic and latitudinal gradients. We will also focus on how management practices impact on ecosystem dynamics.

Research Program 3

Responding to a changing world

Program Leaders: A/Prof. Mia Hoogenboom, JCU, A/Prof. Maja Adamska, ANU, Prof. Ryan Lowe, UWA

The responses of people, other organisms and biological processes to rapidly changing local and global environments are key issues for the sustainability of coral reefs and the ecosystem services they provide to societies and economies.

This program focuses on new research that will advance the fundamental understanding of the key processes underpinning reef resilience, and will deliver vital information and understanding for Programs 1 and 2.

The results of this research will generate critical new insights into the ecological challenges that coral reef ecosystems face (Program 2) and societies face in a rapidly changing world (Program 1).

Research Themes

Dynamics of Coral Associations in Changing Environments – Explores the capacity of coral reefs to respond to both local and global drivers and stressors.

Integrity of Carbonate Reef Frameworks – Focuses on the key coral reef processes of calcification, decalcification and bioerosion critical to understanding the potential impact of changing global conditions, particularly ocean warming, acidification and declining water quality.

Adapting to a Challenging Future – Explores the mechanisms by which organisms respond to environmental change, and provide new information necessary to construct predictive models of future ecosystems