AIMS@JCU NEWSLETTER

June 2012

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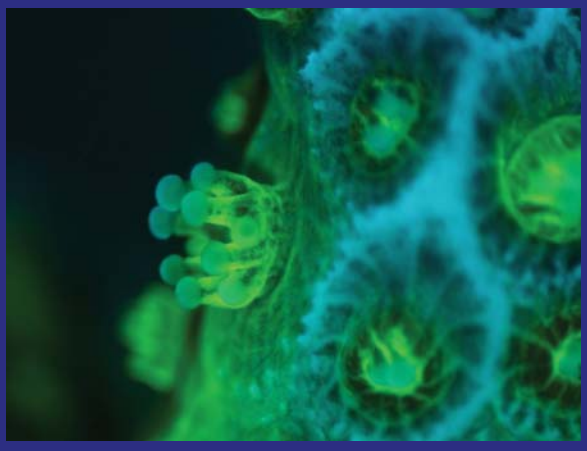
AIMS@JCU Student Seminar Day

26th June 2012

With a packed schedule of talks, this year's Student Seminar Day was a huge success. It was a wonderful day, with a great turn out and extremely high quality oral and poster presentations.

Congratulations to the winners whose prizes are for further science communication: Best oral presentation - JB Raina ($2,000), second place oral presentation - James White ($2,000), best poster - Mario Espinoza ($1,000), second place poster - Melissa Rocker ($1,000). For our photography competition, the winners of $200 per prize were James Tan CH - research in action and artistic research subject ($400 total) and Gergley Torda - macro, artistic seascape, and people's choice ($600 total). Thank you to everyone who made this day such a huge success and please visit: www.visualecho.com.au/client_galleries/2012_seminar_day to view images taken of the event. A more detailed overview will be included in the next newsletter.



Gergely Torda's winning photograph of both the Macro and People's Choice categories

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This newsletter is produced quarterly and distributed by e mail to all AIMS and JCU staff.

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

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2012 AIMS@JCU PhD Candidate

Martino Malerba

At the age of 18 I moved to Townsville, where I undertook my studies in Marine Biology at James Cook University. I started my Ph.D. with an AIMS@JCU scholarship, in 2012 after being awarded with a Bachelor of Science (Honours). My early research led to the design of a new model able to capture the couple dynamics between phytoplankton nitrate and nitrite utilization.

My research interest is community ecology and species interactions. My current research focuses on analyzing the main mechanisms determining species assemblages in microbial aquatic environments. In my studies I combine theoretical contributions from process-based models with empirical observations from field and laboratory settings.

Understanding the principles shaping phytoplankton communities will help us detecting changes in the environment, predicting future assemblages, as well as improve our efficiency in rearing species in aquaculture settings.

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Image left by James Tan CH

2012 AIMS@JCU PhD Candidate

Chiara Pisapia

Chiara is originally from Rome, Italy where she completed both her Undergraduate and Postgraduate degree in Marine Science. She always dreamed about doing research on coral reefs and after working in Indonesia she moved to Townsville in 2009 to start a Master of Applied Science in Marine Biology. In 2012 Chiara started her PhD in the ARC Centre of Excellence for Coral Reef Studies and AIMS@JCU, she is interested in understanding intra-specific variation in the ability of corals to withstand disturbances. Her PhD is entitled: Drivers of colony-level variation in condition and resilience for reef-building corals.

Many studies have documented significant variation in the capacity of corals to withstand and recover from major disturbances, but the underlying basis of this variation is still poorly understood. Her PhD will attempt to account for these differences in susceptibility, based on inherent and experimentally-induced variation in colony condition. Specifically during her PhD Chiara will quantify background rates of partial mortality for coral populations at a hierarchy of spatial scales along the Great Barrier Reef. 2) She will test influence of disturbance history versus other biological and environmental factors on colony condition. 3) She will experimentally induce partial mortality to test both, the role of colony condition in determining capacity for tissue repair, and energetic consequences of tissue repair. 4) She will explicitly test whether colony condition influence “resilience” (resistance and recovery) of corals to thermally-induced bleaching.

Investigating drivers of colony-condition and their energetic consequences for colony resilience, provides a strong framework for predicting resistance, recovery capacity and resilience of reef-building corals.

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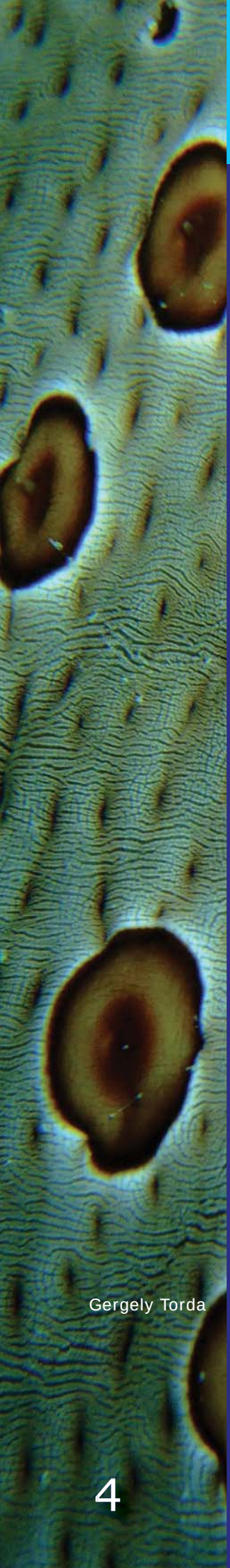
Gergely Torda



Gergely Torda

2012 AIMS@JCU PhD Candidate

Daniel Zeh

Daniel holds a Bachelor of Science degree in Mathematics Education from the State University of New York, Oneonta, New York (USA), with Honours in Mathematics. He earned his Master of Science degree in Conservation Biology from Antioch University New England, Keene, New Hampshire (USA), concentrating on the use of GIS (geographic information system) for analysing wildlife populations. Upon graduation, Daniel initiated a two-year habitat use study of a North American freshwater turtle, the wood turtle, for which he won grants for transmitters and VHF tracking equipment. During the project, he advised a postgraduate student in her master's thesis and supervised several postgraduate students as interns. Last year, Daniel volunteered for six months at a marine science camp along the St. Lawrence Estuary in Quebec, Canada, where he introduced adult student/campers to wildlife radio-tracking and GIS use in studying marine mammals. He also contributed many whale ID photos of local marine mammals including blue whales, fin whales, minke whales and belugas to regional catalogues.

Daniel is a first year PhD student at James Cook University where his research focuses on evaluating dugong threats and fine scale habitat use in Moreton Bay, Queensland, under the guidance of Distinguished Professor Helene Marsh (JCU), Dr Mark Hamann (JCU), Dr Alana Grech (JCU) and Dr Michelle Heupel (AIMS). Daniel's thesis will compare the use of acoustic transmitter tracking data with GPS/ARGOS satellite tracking data for dugong research.

Daniel is a registered Queensland teacher and plans to use his teaching status and abilities to bring real research into the classroom. This is the second time Daniel has qualified to teach in Australia - immediately after earning his Bachelor's degree, he taught high school maths in Sydney for 2 ½ years.

Working on a PhD in marine mammal conservation has been a dream Daniel has worked toward for over 15 years following a life-career decision he made with the help of his wife, Diane, who passed away from cancer shortly after. Daniel is thrilled to be at JCU and is thankful to AIMS@JCU for offering him the opportunity to study at JCU as an AIMS@JCU PhD student.

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AIMS@JCU Honours Student Profile

Dennis Heinrich

I grew up in Germany where I finished my first degree in nursing in 2008. I then moved to Australia in 2009 to start my Bachelor of Science at James Cook University in Cairns majoring in Zoology. I moved down to Townsville after my first year to finish my degree choosing a variety of marine oriented subjects. I am currently enrolled in an Honours research project with AIMS@JCU support, supervised by Philip Munday, Colin Simpfendorfer, Jodie Rummer and Michelle Heupel. The project is designed as a laboratory experiment looking at the effects of near future ocean acidification on Epaulette sharks (*Hemiscyllium ocellatum*). I should finish my degree in October and am planning on continuing my studies with a PhD next year.

My project is looking at the physiological and behavioural effects of ocean acidification on epaulette sharks (*H. oceallatum*). Epaulette sharks are commonly found on the reef flats of the GBR where they play an important ecological role as a major predator of benthic invertebrates and small reef fishes. However, little is known about the potential effects of ocean acidification on the physiology and the behaviour of elasmobranchs in general, despite the increase in research effort on marine teleosts in recent years.

Therefore we attempt to investigate the effects of near-future CO_2 projections on the metabolic rate of epaulette sharks, using oxygen consumption rate as a proxy. We will further test for any behavioural effects following long-term exposure to elevated CO_2 levels during prey encounters, as well as compare the hypoxia tolerance of individuals reared under predicted CO_2 conditions with that of current day controls. Whilst the metabolic and behavioural response may give us some insight on the effects of ocean acidification on elasmobranchs in general, the investigation of the hypoxia tolerance is aimed specifically at the epaulette shark, due to its crucial role for the survival on reef flats.

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Gergely Torda

James Tan CH

AIMS@JCU Honours Student Profile

Lauren Davy

I grew up in Canberra and completed a Bachelor of Science at the Australian National University, majoring in Ecology and Evolution. While I was studying as an undergraduate I developed a keen interest in marine ecology, and decided I wanted to pursue this area further. After considering my options around Australia I decided that James Cook University would be the most suitable place to follow this interest. I am currently enrolled as an honours student working with Colin Simpfendorfer (JCU) and Michelle Heupel (AIMS), and have AIMS@JCU support.

My research primarily involves looking at the spatial ecology of two species of stingray, the mangrove whipray (*Himantura granulata*) and the cowtail stingray (*Pastinachus atrus*), using passive acoustic telemetry. This project is based at Orpheus Island, predominantly in the shallow reef flat area of Pioneer bay. These two ray species are known to use various habitats in the reef flat, including mangrove areas. The extent that rays are associated with such habitats and the environmental factors influencing their presence is unknown.

The purpose of this study is to investigate habitat use by stingrays, and define patterns of movement and residency around Orpheus Island. I will look at how stingrays use intertidal habitats such as mangroves, by determining the extent that each species is associated with mangrove areas and exploring the benefits gained by ray species from using this habitat. I am also interested in the movement of rays in relation to various environmental parameters such as temperature, salinity, tidal stage, and time of day.

The results of this research will provide important knowledge to increase our awareness of ray movements and presence. It will be crucial in understanding the importance of intertidal habitats for the two study species, and defining the ecological role of rays in the coastal ecosystem.

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Where are they now?

Alex Vail

I've have been lucky enough to spend most of my life on coral reefs, growing up on the Lizard Island Research Station. I completed my undergraduate and Honours at JCU, with the latter examining the effect of predator stimuli on the settlement choices made by coral reef fishes. I was supervised by Mark McCormick and my research was funded by the ARC, JCU, and AIMS@JCU.

After leaving JCU I took a year out from study, and with Tane Sinclair-Taylor and Joshua Stewart organised and undertook the Australian Geographic sponsored "Togean Expedition", a 200km dugout canoe paddle that aimed to raise awareness about overfishing on coral reefs. I also used this time to apply for scholarships to undertake my PhD overseas, and was awarded a Gates Cambridge Scholarship to study at Cambridge.

My PhD is supervised by Andrea Manica at Cambridge and Redouan Bshary at the University of Neuchatel, Switzerland, and examines the communicative and cooperative hunting interaction between coral trout and moray eels. The cooperation between these species relies on their complementary hunting tactics, with trout possessing speed to capture prey in the open, and morays a sinuous body that allows them to access prey hidden in reef crevices. Trout use communicative gestures to coordinate their hunts with morays, and both species increase their prey capture rate as a result of their relationship.

My main focus is to use this little-known interaction to examine the level of behavioural complexity that fish are capable of. Currently I am writing up results that demonstrate trout use a form of communication currently thought to be restricted to some of the most intelligent animals, ravens and apes. I have also used experiments to show that trout possess a partner choice-ability currently known only for humans and our closest relative, the chimpanzee. I plan to use my findings to stimulate a more positive public attitude towards fish with the aim of garnering support for a more sustainable use of marine resources.

Alex Vail in aquaria (by Tania Lamb)

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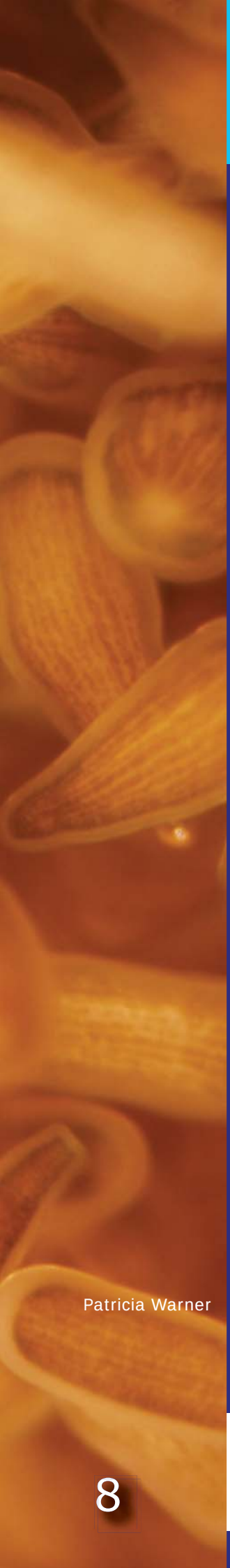
Elizabeth Abbey



Patricia Warner

Research Director Report

I thoroughly enjoyed the AIMS@JCU seminar day on 26 June, both meeting up with many of you and learning about your work. I would again like to congratulate and thank everyone who contributed to the success of the day. I am passionate about science communication, and believe it is almost as important as doing world class research in the first place. Our seminar day was a fantastic showcase of both, and I feel very privileged to be associated with you all. More reports and photographs from the day will be included in the next newsletter.

Our group participation in the ICRS conference is the next great showcase of AIMS@JCU and I look forward to seeing many of you there. For those that are coming to ICRS, please respond promptly to any last-minute emails from Lauren, and please do let us know if anything changes from your end. Final details for travel and accommodation should be circulated by the time this newsletter is available, so please contact the office or myself if there are any concerns or questions.

Besides making the most of the science communication and learning opportunities of this conference, don't forget to take advantage of the incredible international networking available to you at this event. It can be daunting to be at such a massive conference, with so many concurrent sessions and 2000+++ delegates. However - somewhere amongst the crowds will be your future collaborators, employers, and peers; as well as old and new friends. To help facilitate your networking, we have decided to host a modest function – a pizza night – on Wednesday 11 July – at Bellavista which is at the Pier. It is apparently a really pleasant and central venue with a view over the water. We will provide pizza and a basic drinks selection, but we are relying on all of you to be the hosts. We want you to invite your peers, colleagues, and especially your potential future post-doc employers and collaborators – anyone you might target in your networking. It will be a fun night.

Until next time,

Libby Evans-Illidge
Research Director

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