A curious resident of the Pisonia forest at Heron Island Research Station - a Silvereye - E. Perkins

Cover images: Brown Lake reflections - L. Trippett; a close up with seasnake - E. Perkins; an epaulette shark in the shallows at Heron Island - E. Perkins; booby on a channel marker off Heron Island - E. Perkins; a Noddy Tern resting in a Casuarina - M. Purdie.

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ISLAND RESEARCH STATIONS

Heron Island Research Station

Situated on the southern Great Barrier Reef, 80 km offshore from the city of Gladstone, Heron Island Research Station (HIRS) is the oldest and largest marine research station on the Reef. With crystal clear water and near pristine conditions, the Station provides easy and direct access to the marine environment.

Owned and operated by The University of Queensland, HIRS is internationally renowned for coral reef research and student training in marine sciences. Facilities and equipment rarely found in an offshore facility combined with its enviable position on the world's largest reef make HIRS the ideal location for climate change research.

The Station caters to Australian and international researchers and education groups, offering modern wet and dry laboratories, indoor and outdoor aquaria, a large animal holding tank, separate research and teaching laboratories, seminar facilities, a library, computer room and extensive boating and diving facilities. A permanent staff of eleven are available to provide scientific and education services, boating, diving and technical support.

Moreton Bay Research Station

Moreton Bay Research Station (MBRS) is located 40 kilometres east of Brisbane on the Moreton Bay side of North Stradbroke Island, providing direct access to the waters of Moreton Bay and the Pacific Ocean as well as the unique terrestrial environments of the 27,700 hectare sand island.

Lying on the convergence of the eastern Australian sub-tropical and temperate zones, North Stradbroke Island and the surrounding waters support an incredibly diverse range of terrestrial, coastal and marine ecosystems on which to base research and education activities.

Also owned and operated by The University of Queensland, the research station offers accommodation for up to 96 guests in a range of accommodation styles. Modern research laboratories, teaching space and lecture theatres, boating facilities and a fabulous location attract visiting scientists and academics from around the world each year. The permanent staff of five are available to assist with planning your visit and provide scientific and boating support as required.
Once again through 2016 we enjoyed the company of a vast range of researchers and educational groups, many of them familiar faces and a few new ones as well. There were all the regular challenges of running a remote facility with an ever changing population and, as always, a few new challenges to keep us on our toes.

Facility improvement was a big focus this year in terms of equipment, processes and even a new staff position. We appointed an Education Officer, Lauren Bailey, who joined the team in July. Her experience brings immense strength and capacity for expanding the station’s education capabilities, while forging stronger links between educational groups, researchers and the Heron Island community. Follow us on Instagram (@heron_island_research_station) to stay updated as new initiatives are developed and find out how you can get involved.

Making our processes more efficient for clients is always a focus for the station. This year we implemented online inductions to allow clients to complete the induction process prior to arrival. This change means we can provide a greater focus on individual needs upon arrival.

Reviewing the fleet of vessels available to clients has been an ongoing process through 2016. We can now announce that one of the Southwind vessels is to be replaced with a rigid hull inflatable style vessel, specifically for research purposes. We expect delivery and implementation of this new addition early in 2017.

Heron Island has a long history of human impact on the environment. The research station is always looking for new ways to reduce our footprint while maintaining the important research and education activities that occur here. This year we joined UQ Sustainability’s Green Office Program and rolled out some new initiatives. See the News section of the newsletter for further information.

We are always looking to the future, with plans already underway for activities for 2017 and 2018. We look forward to seeing you on Heron again soon to share these exciting new initiatives with you.
2016 has been an exciting year for MBRS, with the addition of new labs, new researchers, and generous philanthropic donations. We have also had the honour of hosting several prestigious teaching and research workshops.

Our long running postgraduate teaching course, the Australian Course for Advanced Neuroscience (ACAN), just celebrated its eleventh anniversary. Founded by Australian Chief Scientist and philanthropist Dr Alan Finkel, the course has recently changed institutes from ANU to UQ's Queensland Brain Institute. The director and course coordinator, Professor Stephen Williams, has worked closely with MBRS and P&F to help us to install our very first PCI and PC2 labs. The addition of these labs has increased our capacity to attract a broader range of researchers and teaching groups.

The first four recipients of the 'MBRS Scholarships in partnership with Sibelco Australia' have been awarded in 2016, covering topics as wide as hydrodynamics of North Stradbroke Island through to the identification of new fish parasites. This scholarship, along with the Honours, PhD and Community Research Scholarships, has given us an influx of twelve new postgraduate researchers.

Long-term industry partner Dr Geoff Nette from Independent Marine Biochemical Research (IMBCR) has generously donated over $30k of scientific equipment to the station. This equipment, along with his annual gift to the Indigenous Science Scholarship, makes IMBCR one of our longest and most generous supporters.

We hosted teachers from the Australian Science Teachers Association and the Marine Teachers Association of Queensland. In both instances, we incorporated professional development training for the participants, taking them into the field and introducing them to a wide range of scientific field techniques and methodologies.

It is always a joy and a privilege to work with the clients of MBRS and we look forward to welcoming you back in 2017.

KEVIN TOWNSEND
Station Manager,
Moreton Bay Research Station
HIRS RESEARCH HIGHLIGHTS IN 2016

Once again, HIRS saw a diverse group of researchers pass through the Station in 2016 showcasing the breadth of research that can be carried out from the facility.

**Focussing lens on freshwater**

Many visitors might not realise that a precious freshwater lens exists under the island. This year, we welcomed a UQ Civil Engineering research group who are focussing on this vital resource. Keep an eye out for the experiment, investigating the interactions between the freshwater lens, vegetation and atmosphere, marked by solar panels, as you are walking through the *Pisonia* forest.

**The situation is hotting up**

Following a year of intense bleaching across the northern Great Barrier Reef (GBR), bleaching studies are extremely important tool, helping us to predict future events.

Associate Professor Bill Leggat spent some time at the station subjecting corals from Heron to conditions similar to what the northern GBR experienced this year. They are trying to find out how much heat stress corals can endure before they can no longer recover. The work was featured on the ABC program Catalyst.

**Dissolving time**

PhD candidate Laura Stoltenberg from Southern Cross University has been a monthly visitor this year. Laura is conducting a temporal study looking at changes in dissolution of calcium carbonate sediments on coral reefs through time to predict future responses to climate change stressors.

**Lift off for airborne imagery**

The Coral Reef Airborne Laboratory, a NASA field campaign, have been using advanced airborne imaging technology to survey the world's coral reefs, measure their condition and understand this in relation to their environment. The team visited Heron Island to conduct some in-water validation of their data.

**Put another shrimp in the aquaria**

Researchers from the Systematic and Evolution Group of the University of Alberta made themselves at home on HiRS during a long term comparative and experimental studies of shrimp morphology and development. Using the station’s extensive aquaria system they were able to perform rearing/regeneration and growth studies of a range of Heron Island shrimp.

For more information check out the 2016 Publications!
The Station’s location on the second largest sand island, on the doorstep of Moreton Bay, allows visitors to conduct a wide range of both terrestrial and marine activities. With a diverse boat fleet and two four-wheel drives, the Island and Bay are open to explore.

**Heavy metal floods**
Dr Alistair Grinham, from UQ’s School of Civil Engineering, studies the importance of intermittent high magnitude floods in tidally influenced rivers in controlling metal transport to coastal waters. Concentrations of some heavy metals in sediments in central Moreton Bay from the 2011 flood were the highest yet observed in the Bay. This increase was caused by the flushing of metal rich sediments which had accumulated in the Brisbane River during the preceding 10 to 40 years of low flows.

**Secret lives of dugongs**
Seagrass meadows in Moreton and Hervey Bays support significant dugong populations. Daniel Zeh from JCU found that there is substantial dugong movement between these bays, which are separated by open surf coasts. Dugongs are occasionally caught in inshore shark nets set along the surf coasts for the protection of swimmers. Dugongs were tracked using the Moreton Bay Array moving between the Bays, with some travelling very close to the coast. This suggests that dugong entanglements may be reduced if shark nets were placed beyond the meadows.

**Taking the bait**
UQ’s Ian Tibbetts conducted a study looking into the effects of angling pressure on the feeding behaviour and community structure of reef-associated fishes. The team found that in locations with higher angling pressure fish species regularly hooked were more resistant to feed. Smaller, opportunistic feeders with little risk of being hooked won out as they can utilise bait for dietary supplementation. These findings highlight the potentially confounding effects of using bait as a focus for fish assemblage monitoring.

**Values and meaning for the Bay**
A study by Natalie Jones from UQ used interviews to explore people’s values towards Moreton Bay Marine Park and its rivers. Waterways provide people with a range of rich and meaningful experiences: both aesthetic and utilitarian values ranked particularly highly. The study highlights new ways of working with the public to protect and improve waterway environments.

For more information, check out the 2016 Publications!
Lauren Bailey joined the Heron Island Research Station in July this year, filling the newly-created position of Education Officer. Lauren holds degrees in both Science and Education, and prior to joining the Research Station worked as a secondary science teacher in Toowoomba, Queensland. In her role as education officer, she is developing the Station’s education program, communicating with and supporting visiting education groups, collaborating with the Heron Resort and promoting marine science education. Lauren also takes a leading role in the Station’s annual Open Day activities.

07:00 Wake up
08:00 Morning meeting with all staff to plan for the day
09:00 Check in with education groups and provide assistance where needed
09:30 Farewell any departing groups
10:00 Morning Tea
10:30 Guided reef walk with education group
12:00 Lunch
12:30 Work on upcoming education projects
14:30 Lead the Research Station Tour for Heron Resort guests
16:00 Greet and induct guests arriving on the Island via catamaran
17:00 Walk around the Island
18:00 Sunset drinks or watch a movie
**MBRS**

MBRS supports programs that promote research relevant to Moreton Bay, its terrestrial habitats, surrounding waters, social and cultural environments. MBRS offers scholarships to UQ PhD and Honours students.

The Semester I Research Scholarship was awarded to Jessica Nelms, an Honours student from the School of Biological Sciences. Jessica is studying the loss of pipefish and seahorse habitat to *Caulerpa*. The second Research Scholarship was awarded to Fletcher Mingramm, a PhD student from the School of Veterinary Sciences, developing techniques for monitoring reproductive and adrenal hormones in wild humpbacks.

The Semester II Community Research Scholarship was awarded to Sebastian Lopez-Marcano, an Honours student from the School of Biological Sciences for his project investigating mangrove crabs in Moreton Bay. The first Research Scholarship was awarded to Alice Twomey, a PhD student from the School of Chemical Engineering identifying early warning indicators for seagrass decline. The second Research Scholarship was awarded to Hoi Yan Iao, an Honours student from the School of Biological Sciences, investigating the richness of Zoogonids in Moreton Bay fishes.

**HIRS**

The Heron Island Research Scholarship is a merit-based scheme. It promotes early career research programs at HIRS by helping researchers from The University of Queensland either develop new research projects at the Station or expand existing ones.

The Semester I Research Scholarship was awarded to Carmen da Silva, a PhD candidate in the School of Biological Sciences. Carmen is studying the acclimation capacity of intertidal fish in order to anticipate their tolerance to climate change.

The Semester II Research Scholarship was awarded to Emmanuel Maquez-Leggoreta, a PhD student from the School of Biomedical Sciences for his project which aims to understand visual learning and its underlying mechanisms by testing features of fish visual discrimination abilities with behavioral experiments.

These scholarships are available every semester and further details can be found on the Station websites: [www.uq.edu.au/hirs/scholarships](http://www.uq.edu.au/hirs/scholarships) and [www.uq.edu.au/mbrs/scholarships](http://www.uq.edu.au/mbrs/scholarships)
MBRS in partnership with Sibelco

The Moreton Bay Research Station in partnership with Sibelco Scholarship is a merit-based scheme. It promotes early career research programs at MBRS by helping researchers from The University of Queensland either develop new research projects at the Station or expand existing ones.

North Stradbroke Island offers a wealth of opportunity and knowledge acquisition for students of indigenous studies, engineering, humanities, marine science, earth sciences, architecture, anthropology and more.

The scholarships can be used towards research in areas such as indigenous housing, Aboriginal health, oceanography, environmental management, mining engineering and rehabilitation, marine park management, evolution, terrestrial wildlife research, or any other research topic at UQ.

The MBRS in partnership with Sibelco Scholarships were offered for the first time this year.

In semester one, we awarded A.T.M. Jahangir Alam, a PhD candidate in the School of Earth Sciences who is studying perched aquifer dynamics and associated recharge variability on sand barrier islands. The other first semester Scholarship was awarded to Daniel Huston, a PhD student from the School of Biomedical Sciences for his project which aims to collect and describe several new species of Enteridae from the Kyphosidae (a family of fish) of Moreton Bay, and to elucidate the first life-cycle of the parasite family.

In semester two, we awarded Justin Beckman, a PhD student with the School of Biological Sciences who is studying the foraging ecology of a benthic-feeding, marine stingray. The other second semester Scholarship was awarded to Alice Twomey, an Honours student from the School of Chemical Engineering. Alice's research is focussed on identifying early warning indicators for seagrass decline.

The scholarships are available every semester and further details can be found at: www.uq.edu.au/mbrs/scholarships
Once again the station opened up to the Heron Island community for our third annual Open Day to allow Island visitors a more in-depth look at a functioning research and education facility. Guests were treated to organism displays, researcher posters and presentations and even some fun science bites from our Scientific and Education Officers. The event was well attended by resort guests who enjoyed the opportunity to see some research in action and to learn more about the environment and the research that is helping us understand it.

Rarely does a day go by on Heron Island where someone doesn’t talk about the weather. It dictates our activities and is vital to understanding field data so we felt it was high time we installed a weather station that would collect research-standard data. We now have a weather station collecting data on wind, rain, solar radiation, temperature, humidity and barometric pressure. All data is openly available to researchers and educational groups. A live feed camera is coming soon so you will be able to catch a glimpse of this incredible environment from your desk!

Green was a real focus for the station in 2016. We joined the UQ Sustainability Green Office Program with Kimberly Condon becoming a Green Office Representative. Kimberly has been busy reviewing the station's practices and developing new ideas to increase our sustainability efforts. We have new recycling bins across the facility to help reduce our contribution to landfill. We are also focussing on reducing our power and water consumption and undergoing larger projects to maximise solar production.

Getting your activities underway the moment you hit the ground is always the focus when visiting the station. This year we wanted to further support our clients in maximising their time on the station by providing new online inductions prior to arrival. Researchers and groups alike have been quick to take up the initiative. Find out more by visiting www.uq.edu.au/hirs/inductions
For MBRS, 2016 was a year of community support, outreach and education.

We had the pleasure of hosting the Quandamooka Yooloooburrabee Aboriginal Corporation and Healthy Waterways and Catchments mangrove survey team. The project is part of a Caring for Country grant assisting traditional owners in surveying and caring for the mangroves of Moreton Bay. Kathryn Crouch (Administration Assistant for MBRS) did a six month secondment with QYAC and lead the rangers in many of the monitoring sessions.

Our very own Dr Kathy Townsend has been celebrating National Science Week with all the students and staff from Dunwich State School. This year’s theme was Robots, Droids, and Drones. They talked about what each of these were and how people use them to make their life easier. Every group got to make their own robot. Preps made balancing robots, while years 1 and 2 made gliding robots. The rest of the school used Snap Circuits and Little Bits to make a whole range of automated creations.

The station hosted expedition team members from the Moreton Bay Dolphin Research Project to conduct annual surveys of the Indo-Pacific bottlenose and Australian humpback dolphins. Using photographs of dorsal fins to identify individual dolphins, the team is getting a better picture of the population structure and resident communities within the Bay and the impact from human activities on the dolphins. Dr Elizabeth Hawkins from Dolphin Research Australia, urges members of the public to be a part of the research and report dolphin sightings, as each sighting helps to monitor the dolphin populations. Visit www.dolphinresearchaustralia.com to report your sighting.

Australia’s newest Chief Scientist, Dr Alan Finkel AO, officially opened the prestigious neuroscientist training course held at MBRS. The Australian Course in Advanced Neuroscience (ACAN) is an intensive three-week program that was established by Dr Finkel over 12 years ago. The course trains the best and the brightest early career neuroscientists from across Australia and New Zealand. The course attracts some of the world’s leading neuroscientists, exposing the students to cutting-edge neuroscience research techniques.
Senior high school, undergraduate and postgraduate groups use HIRS facilities as an integral part of their degree programs. World class facilities and immediate access to the reef provide exceptional opportunities for hands-on learning.

“Great accommodation, friendly staff and lovely meals. Thanks for having us!” - Whakatane High School

“We love our stays at Heron Island! Everyone is always very friendly, helpful and welcoming. We will continue to come as often as possible. Thank you for your hard work!” - Greensborough College

“Once again thanks to HIRS this was the 24th year that SJPC has been coming to Heron and it was my 32nd trip there. Over 1000 students have had the experience of a lifetime which will stay in their memories for their life. It happens because of the environment both on land and under the water. Thanks again HIRS...it’s always a pleasure.” - St John Paul College

“Extremely helpful [boating and diving] staff. Prepared to work with us to maximise students time in water.” - Sunshine Beach State High School
The location and facilities of MBRS make the Station popular with secondary and tertiary groups alike. With an extensive diversity of both marine and terrestrial habitats on your doorstep, learning experiences can be tailored to fit your needs.

“We all had a great day, the staff were friendly, knowledgeable and supportive of students’ needs. Geography are extremely happy with your program and the ability to accommodate for such a small group.” - Meridan State College

“Thank you and all your team including Pablo, Carl and of course the catering group (Colin from 4Simplicity) for assisting to making our St Benedict’s Camp so successful. The staff and students loved the camp. They enjoyed the activities and they all commented on the great standard of accommodation and food.” - St. Benedict’s College

“Thank you for having me as a guest at MBRS. I was able to focus and write a very important part of my thesis on wastewater treatment. I greatly appreciate your hospitality, friendliness and support.” - Julia Mueller, Dow Centre for Sustainable Engineering Innovation, University of Queensland

An ACAN student with microscope in the custom-made laboratory space - L. Trippett

Sandy intertidal exploring in Moreton Bay - L. Trippett

Open air exam preparation is better than studying in a library - OMC

Boating on the Bay to visit Peel Island - L. Trippett

Sunset brings out new animals to discover in the intertidal - L. Trippett

Hands-on learning opportunities create fun educational experiences - O. Meyncke

Always a chance to see new organisms in the Station’s wet lab - K. Townsend
SUPPORTERS IN 2016

ISLAND RESEARCH

Situated on a coral cay in the Great Barrier Reef and on one of Australia’s largest sand islands are the Heron Island Research Station and the Moreton Bay Research Station. Both facilities are situated in the heart of Australia’s most biodiverse environments and are completely dedicated to research and education of Australia’s coastal and marine environments. These facilities attract national and international visitation from high schools to Universities alike and play a crucial role in advancing cutting edge research and promoting the importance of Australia’s wonderful coastal and marine habitats. By supporting the Research Stations with cash or in-kind donations, your gift will contribute to ground-breaking research, advancing global education and creating a sustainable future.

Find out more!
Find out how you can get involved in supporting our Island Research Stations by visiting [www.uq.edu.au/giving/donations/fund/UQ_Island_Research](http://www.uq.edu.au/giving/donations/fund/UQ_Island_Research)

FRIENDS OF THE STATION

Supporters who give $500 or more (tax-deductible) can become a Friend of the Station.

As a Friend of the Station, some of the benefits you will receive include a supporter t-shirt, a personalised tour of the Station of your choice, your name on a plaque on the Station as well as your name printed in the newsletter which you will receive a copy of each year.

CURRENT SUPPORTERS

Artist Georgina Hooper and clothing designer at Dogstar, Massayo Yasuki, created an innovative collaboration to support Heron Island Research Station through their art. Georgina donated the proceeds of the sale of her artist’s proof of the piece ‘Undaunted’ and Massayo matched Georgina’s donation. We look forward to an ongoing relationship with Georgina and Massayo.

Sibelco Australia Ltd, a mineral and metal extraction company on North Stradbroke Island, continues to provide financial support for MBRS Open Day, the Mad Science Club and the new ‘MBRS in partnership with Sibelco Scholarship’.

A copy of the annual Island Research Newsletter and Research Station merchandise - just some of the benefits to becoming a Friend of the Station - L. Hurrey
The Central Boating and Diving Facility was commissioned in 2005 as a central service for marine fieldwork. Providing research vessels, specialised scuba equipment and highly qualified personnel; boating and diving facilities at the Faculty of Science provide unmatched support for research and education.

The Central Boating and Diving Facility continues to offer the ADAS Part 1 Restricted (Scientific) Dive Course (80927ACT) which continues to be popular with students across The University of Queensland.

UQ was the first university to offer a nationally accredited scientific diving course and remains the only Group of Eight Universities to provide this level of training in-house. The intense three week dive course gives participants the necessary knowledge and skills to safely perform scientific diving tasks in a range of environments. Safety is a course priority, and we ensure that students master basic skills with scuba equipment before advancing with work and environmental challenges.

Email central.boating.diving@uq.edu.au to find out how we can assist you with your boating and diving needs today!

BOATING & DIVING NEWS 2016

Performing an in-water rescue in the pool - M. Phillips

Recent ADAS graduate ready for quarry activities - C. Hetherington
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