
DR. THOMAS EDWARD ROBERTS

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Academic Qualifications

- 2014-2018: Ph.D in Ecology, conferred 6th December 2018. Australian Research Council Center of Excellence for Coral Reef Studies, James Cook University, Townsville, Australia. Thesis: *Ecological Determinants of Depth Zonation In Reef-Building Corals*. (Advisors: Prof. Andrew Baird, Dr. Tom Bridge, Dr. Julian Caley, Prof. Geoff Jones)
- 2013: Honours in Earth and Environmental Sciences, James Cook University, Townsville, Australia. Thesis: *Effects of depth and reef morphology on coral assemblages on the central Great Barrier Reef*. Awarded 1st Class Honours. (Advisors: Dr. James Moloney, Dr. Tom Bridge)
- 2005 – 2012: Bachelor of Science (BSc). James Cook University, Townsville, Australia.

Publications

(Number of Publications incl. book chapters: 14, H index: 6, i10 index: 5, total citations: 170)

Refereed Research Publications

11. P.F. Cowman, A.M. Quattrini, ...**T.E. Roberts**, ...A.H. Baird (2020). An enhanced target-enrichment bait set for Hexacorallia provides phylogenomic resolution of the staghorn corals (Acroporidae) and close relatives. *bioRxiv*, <https://doi.org/10.1101/2020.02.25.965517>
10. **T.E. Roberts**, S. Keith, C. Rahbek, T.C. Bridge, M.J. Caley, A.H. Baird (2019b). Testing biodiversity theory using species richness of reef- building corals across a depth gradient. *Biology Letters*, 15(10): 20190493. <https://doi.org/10.1098/rsbl.2019.0493>
9. **T.E. Roberts**, T.C. Bridge, M.J. Caley, J.S. Madin, A.H. Baird (2019a). Resolving the depth zonation paradox in reef-building corals. *Ecology*, 100(8): e0276. <https://doi.org/10.1002/ecy.2761>

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8. E.S. Darling, T.R. McClanahan, ... **T.E. Roberts**, ... D. Mouillot (2019). Social-environmental drivers inform strategic management of coral reefs in the Anthropocene. *Nature Ecology and Evolution*, 3(9): p1341-1350.
<https://doi.org/10.1038/s41559-019-0953-8>
 7. A.M. Cooper, C. MacDonald, **T.E. Roberts**, T.C.L. Bridge (2019) Variability in the functional composition of coral reef fish communities on submerged and emergent reefs in the central Great Barrier Reef, Australia. *PLoS ONE*, 14(5): e0216785.
<https://doi.org/10.1007/s00338-015-1261-7>
 6. M. Prazeres, T. Ainsworth, **T.E. Roberts**, J.M. Pandolfi (2017). Symbiosis and microbiome flexibility in calcifying benthic foraminifera of the Great Barrier Reef. *Microbiome*, 5(1): p38.
<https://doi.org/10.1186/s40168-017-0257-7>
 5. M. Prazeres, **T.E. Roberts**, J.M. Pandolfi, W. Leggat (2017). Variation in sensitivity of large benthic Foraminifera to the combined effects of ocean warming and local impacts. *Nature Scientific Reports*, 7, 45227. <https://doi.org/10.1038/srep45227>
 4. **T.E. Roberts**, T.C. Bridge, M.J. Caley, A.H. Baird (2016). The point count transect method for estimates of biodiversity on coral reefs: improving the sampling of rare species. *PLoS ONE*, 11(3): e0152335. <https://doi.org/10.1371/journal.pone.0152335>
 3. M. Prazeres, **T.E. Roberts**, J.M. Pandolfi (2016). Shifts in species abundance of large benthic foraminifera *Amphistegina*: the possible effects of Tropical Cyclone Ita. *Coral Reefs*, 36: p305-309. <https://doi.org/10.1007/s00338-016-1497-x>
 2. J.S. Madin, K.D. Anderson, ... **T.E. Roberts**, ... A.H. Baird (2016). The Coral Trait Database, a curated database of trait information for coral species from the global oceans. *Nature Scientific Data*, 3, 160017. <https://doi.org/10.1038/sdata.2016.17>
 1. **T.E. Roberts**, J.M. Moloney, H.P.A. Sweatman, T.C.L. Bridge (2015). Benthic community composition on submerged reefs in the central Great Barrier Reef. *Coral Reefs*, 34: p569-580. <https://doi.org/10.1007/s00338-015-1261-7>

Letters (not peer-reviewed)

1. **T.E. Roberts**, T.C.L. Bridge, M.J. Caley, S. Rowley, F. Sinniger, S. Harii, M. Lesser, M. Slattery, A.H. Baird. (2018) eLetter: The challenges of the deep should not preclude robust ecological analysis. In response to: L.A. Rocha, et al. 2018. *Science*, 361: 281-284.
<https://science.sciencemag.org/content/361/6399/281/tab-e-letters>

Book Chapters

2. K. Longenecker, **T.E. Roberts**, P.L. Colin (2019). Papua New Guinea. In *Mesophotic coral ecosystems of the World*. Springer, Y. Loya, K.A. Puglise, T. Bridge, editors. In Press, ISBN: 978-3-319-92734-3

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1. S. Rowley, **T.E. Roberts**, R.R. Coleman, H.L. Spalding, E. Joseph, M.K.I. Dorricott (2019). Pohnpei, Federated States of Micronesia. In *Mesophotic coral ecosystems of the World*. Springer, Y. Loya, K.A. Puglise, T. Bridge, editors. In Press, ISBN: 978-3-319-92734-3

Conference Presentations

4. **T.E. Roberts**, T.C. Bridge, S.A. Keith, C. Rahbek, M.J. Caley, A.H. Baird. (2017) An Inconvenient Hump: energy limitation does not explain species richness gradients over depth. *European Coral Reef Symposium*, Oxford, England, December 2017.
3. **T.E. Roberts**, T.C. Bridge, S.A. Keith, M.J. Caley, A.H. Baird. (2016) Revisiting depth-diversity gradients in reef-building corals. *International Coral Reef Symposium*, Honolulu, Hawaii, June 2016.
2. **T.E. Roberts** (2015) The point count transect method for estimates of species richness and diversity of reef-building corals. *Australian Coral Reef Society Annual Conference*, Daydream Island, Australia, July 2015.
1. **T.E. Roberts** (2013). What lies beneath: Submerged reef habitats on the GBR. *Australian Coral Reef Society Annual Conference*, Sydney, Australia, August 2013.

Grants and Awards

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| 2018: | Temminck Fellowship, Naturalis Biodiversity Center, Leiden, The Netherlands. (€6,728) |
| 2017: | TropINTERN APR Internship. Collaboration between James Cook University and the Queensland Museum, Townsville, Australia. (€9,359) |
| 2015: | ARC CoE for Coral Reef Studies Graduate Research Scheme grant. James Cook University, Townsville, Australia. (€1,442) |
| 2014-2018: | AIMS@JCU Ph.D Scholarship in Quantitative Marine Science. Collaboration between the Australian Institute of Marine Science (AIMS) and James Cook University (JCU). Townsville, Australia. (€73,074) |
| 2013: | AIMS@JCU Pilot Research Grant. Collaboration between the Australian Institute of Marine Science (AIMS) and James Cook University (JCU). Townsville, Australia. (€642) |
| 2007: | Petroleum Exploration Society of Australia (QLD) Prize, Sedimentary Geology Award |
| 2007: | Faculty of Science, Engineering and Information Technology (James Cook University) Deans List for academic excellence |

Research Experience

- 2019-2021: **Field Technician.** Field support and organisation for Dr. Sally Keith including preparation (permit applications and acquisition) and execution of three annual field expeditions to Christmas Island, The Philippines, and Japan.
- 2019-2020: **Ecological Consultant.** Conducted as part of the ARC Centre of Excellence for Coral Reef Science, commissioned by Parks Australia to survey the highly remote oceanic islands and reefs of the Australian Coral Sea territory. Benthic community surveys and field logistical support.
- 2019: **Field Assistant.** Collaboration with Dr. Martina de Freitas Prazeres and Dr. Tom Bridge to Rarotonga, Cook Islands. Coral collection and benthic foraminifera collection.
- 2019: **Field Assistant.** Collaboration with Dr. Tom Bridge to Palau, Micronesia. Coral collection, deployment of point count transect coral survey method (developed by TER), foraminifera collection, and photogrammetry.
- 2018: **Research Assistant.** Collaboration with Dr. Martina de Freitas Prazeres to Hawaii. Coral collection and large benthic foraminifera collection.
- 2018: **Research Fellow.** Temminck fellowship at the Naturalis Biodiversity Center, Leiden, The Netherlands in collaboration with Dr. Willem Renema and Dr. Bert Hoeksema. Taxonomic identification of newly collected mushroom coral specimens from an expedition to Lord Howe Island (Australia) Fellowship awarded to complete the research, and develop a *Veni* grant proposal.
- 2018: **Research Associate.** Collaboration with Prof. Andrew Baird, ARC Centre of Excellence for Coral Reef Science at James Cook University. Short (2 month) position to assist the completion of manuscripts for publication.
- 2014-2018: **Graduate Student Researcher.** ARC Centre of Excellence for Coral Reef Science at James Cook University, and the Australian Institute of Marine Science. Completion of Ph.D research project investigating the ecological determinants of depth zonation in reef-building corals.
- 2018: **Research Assistant.** Collaboration with Prof. Andrew Baird, Dr. Tom Bridge, Dr. Francesca Benzoni and Dr. Sonia Rowley to record and collect undocumented coral communities off Lord Howe Island, Australia. Coral collection and technical diving support for diving operations conducted in locations never before visited.
- 2017: **Field Expedition Collaborator.** In collaboration with Dr. Sonia Rowley to Pohnpei, Federated States of Micronesia. Exploration and documentation of coral communities over depth. Data collection has produced a published book chapter, and research manuscripts which are currently in preparation.
- 2016: **Visiting Researcher.** Collaboration with Dr. Sally Keith and Prof. Carsten Rahbek at the Center for Macroecology, Evolution, and Climate (CMEC) in

Copenhagen, Denmark. Analysis of coral richness data, lab presentations, and development of ecological theory.

- 2016-2020: **Photographer.** ARC Centre of Excellence for Coral Reef Science at James Cook University. Photographic and video production for research into the mass bleaching of 2016 – 2017. Aerial photography, and media production for imagery and video carried in global news media. This included the cover image for the 16/03/2017 edition of *Nature*.
- 2013: **Graduate Student Researcher.** School of Earth and Environmental Sciences, James Cook University. Independent research conducted for honours degree. Field operations investigating benthic communities on submerged coral reefs in the central GBR. Visual surveys to 30m depth, over 10 previously unexplored reefs. Resulting data extracted and analysed through multi-dimensional statistics to determine community composition and distribution in response to spatial and environmental factors. Results published in *Coral Reefs* (Roberts et al. 2015).
- 2011: **Research Assistant.** Collaboration with Dr. Pim Bongaerts, Dr. Tom Bridge and Dr. Tracey Ainsworth to record and collect coral species from communities in the Far Northern region of the Great Barrier Reef, Australia. Coral collection and technical diving support for diving operations.
- 2010: **Research Assistant.** Collaboration with Dr. Pim Bongaerts, Dr. Tom Bridge, Dr. Davey Kline, and Dr. Rob Beaman to record and collect undocumented coral communities in the Coral Sea reefs off the east coast of Australia. Coral collection and technical diving support for diving operations.

Skills

- Strong knowledge of the R environment for the analysis of ecological data, including modelling of species distributions and diversity gradients (see Roberts et al. 2019a, and Roberts et al. 2019b), species interactions (manuscript in prep), community composition (e.g. Roberts et al. 2015), and evolutionary history (e.g. Cowman et al. 2020)
- Extremely strong knowledge of field sampling methods and techniques, with a particular interest in the statistical ramifications of data artefacts (see Roberts et al. 2016).
- Photographer, with work published in international news media and publications.
- Extensive experience in field operations and logistics, specifically in coral reef habitats, including professional level SCUBA qualification, ~2,500 dives, and a perfect safety record.
- Very highly developed taxonomic skills for scleractinian corals, with active contribution and involvement in ongoing taxonomic advances.

Teaching

- 2019: **Guest Lecturer.** Cranbrook School, Sydney Australia. *Ocean Warming, Coral Bleaching, and the Great Barrier Reef.*
- 2018-Present: **Ph.D Supervisor.** ARC Centre of Excellence for Coral Reef Science at James Cook University. Co-supervision of student alongside Prof. Andrew Baird and Dr. Tom Bridge. Student (Augustine Crosby) is pursuing research avenues directly following from my Ph.D research into coral depth distributions.
- 2017: **Underwater and Research Photography Workshop.** ARC Centre of Excellence for Coral Reef Science annual conference, Townsville, Australia. Workshop covering the practical aspects of underwater photography and videography, with a specific focus on scientific researchers.
- 2013: **Teaching Assistant.** *Introduction to Geographic Information Systems (GIS).* James Cook University. Supervision and conduction of practical assignments.
- 2008-Present: **SCUBA Instructor.** Full time employment in industry in 2008 and 2009. Conducting theoretical and practical training of beginner to professional level SCUBA qualifications. This includes management of individuals in potentially highly dangerous situations, with a strong requirement to manage people in a constructive manner.

Professional Referees

- **Prof. Andrew Baird.**
Professorial Research Fellow (ARC CoE for Coral Reef Studies, JCU)
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- **Dr. Tom Bridge.**
Senior Curator – Corals (Queensland Museum) and Senior Research Fellow (ARC CoE for Coral Reef Studies, JCU)
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