**H I L L A R Y A. S M I T H**

**P R O F I L E**

Early career researcher with a focus on coral biology, reef ecology, and adaptation to climate change. Using a mixed-methods approach, I investigate the interactions between reef taxa from the cellular to the ecosystem level. My work uses a range of techniques, including molecular biology and genomics, microbial ecology, physiology, macro-ecology, field- and lab-based experiments to understand the relationships between species. Recent work incorporates significant outreach and engagement through citizen science involvement in reef restoration research. I am a prolific early-career researcher and an emerging scientific illustrator with images published in several high impact journals and books. Full publication details and illustrations available at hillaryasmith.com

**C U R R E N T P O S I T I O N A N D Q U A L I F I C A T I O N S**

2017 – present Senior Research Associate, College of Science and Engineering, James Cook University

2015-2017 Master of Science, Marine Biology and Ecology, James Cook University (GPA 6.57 out of 7)

2013-2014 Post-Baccalaureate Certificate, Ecology, Evolution, Environmental Biology, Columbia University (USA; GPA 3.97 out of 4)

2006-2010 Bachelor of Fine Arts, Washington University in St. Louis (USA; GPA 3.61 out of 4)

**P R E V I O U S R E L E V A N T P O S I T I O N S A N D E X P E R I E N C E**

*Research Assistant, 2016-2018, ARC Centre of Excellence for Coral Reef Studies, James Cook University*

* In a range of part-time positions, provided key research support to leading coral reef scientists including Prof Terry Hughes, Dr James Kerry, Dr Mary Bonin, Dr Peter Cowman, Dr Andrew Baird, Dr Tom Bridge, Dr Gergely Torda
* Tasks varied by position, and included field work, data collection, histology, statistical analysis, molecular laboratory work, photo georeferencing, web design and development, bioinformatics, and manuscript preparation. Research topics included fish gonad development, coral and reef fish phylogenetics, coral adaptation genomics, coral bleaching surveys.

*Environmental Officer, 2017, Department of Environment and Heritage Protection, Queensland Government*

* Compliance officer; performed environmental inspections of high-risk and remote industrial sites across the state to conduct on-site impact assessments, investigate offences, and conduct sampling in accordance with the Environmental Protection Act
* Statistical analysis of environmental data, report writing including ministerial briefings
* Engagement with stakeholders (e.g. mines, farmers, landowners) to manage environmental expectations and provide advice to improve environmental performance

*Marine Biology Intern & Laboratory Technician, The River Project (USA)*

* Coordination of a large citizen scientist network to collect and analyse water quality samples from NYC harbor, including laboratory processing and statistical analysis
* Led education programs on estuarine biology and ecology through hands-on programs using animal traps, a large aquarium, and wetlab on topics such as water chemistry, oyster filtration, fish ID

**P U B L I C A T I O N S** *grey text = in review*

Fulton SE, **Smith HA**, McLeod IMM, Page CA, & Bourne DG (In review). Sea-weeding: manual removal of macroalgae facilitates rapid coral recovers. *Journal of Applied Ecology*, ID# JAPPL-2022-01108

**Smith HA**, Chen CCM, Pollock FJ, Re M, Willis BL, & Bourne DG (In review). Drivers of coral mortality in non-acute disturbance periods. *Marine Ecology Progress Series,* ID# MEPS-2022-09-046.

McLeod IM, Hein MY, Babcock R, Bay L, Bourne DG, Cook N, Doropoulos C, Gibbs M, Harrison PL, Lockie S, van Oppen MJH, Mattocks N, Page CA, Randall CJ, Smith A,**Smith HA**, Suggett DJ, Taylor B, Vella KJ, Wachenfeld D, & Boström-Einarsson L (2022). Coral restoration and adaptation in Australia: the first five years. *PLoS ONE* **17** (11), e0273325.

Arjunwadkar CV, Tebbett SB, Bellwood DR, Bourne DG, **Smith HA** (2022). Algal turf structure and composition vary with particulate loads on coral reefs. *Marine Pollution Bulletin* **181**, 113903.

**Smith HA**, Prenzlau T, Whitman T, Fulton SE, Borghi S, Logan M, Heron SF, Bourne DG (2022). Macroalgal canopies provide corals limited protection from bleaching and impede post-bleaching recovery. *Journal of Experimental Marine Biology and Ecology* **553**, 151762.

**Smith, HA**, Boström-Einarsson L, Bourne DG (2022). A stratified transect approach captures reef complexity with canopy-forming organisms. *Coral Reefs* **41,** 897-905.

**Smith HA**, Brown DA, Arjunwadkar CV, Fulton SE, Whitman T, Hermanto B, Mastroianni E, Mattocks N, Smith AK, Harrison PL, Boström-Einarsson L, McLeod IM, Bourne DG (2022). Removal of macroalgae from degraded reefs enhances coral recruitment. *Restoration Ecology* **30** (7)*,* e13624.

**Smith HA**, Pollock FJ, Conlan J, Francis D, Wada N, Shore A, Aeby GS, Willis BL, & Bourne DG (2020). Energy depletion and opportunistic microbial colonisation in white syndrome lesions from corals across the Indo-Pacific. *Scientific Reports* **10**, 19990.

O’Brien PA, Shangjin T, Yang C, Frade PR, Andreakis N,**Smith HA**, Miller DJ, Webster NS, Zhang G, & Bourne DG (2020). Diverse coral reef invertebrates exhibit patterns of phylosymbiosis. *ISME J*.

Epstein HE, **Smith HA**, Bay L, Cantin N, Mocellin V, Torda G, & van Oppen MJH (2019). Temporal variation in coral microbiomes does not reflect seasonality. *Frontiers in Microbiology***10**, 1775**.**

**Smith HA**, Moya A, Cantin N, van Oppen MJH, & Torda G (2019). Observations of simultaneous sperm release and larval planulation suggest reproductive assurance in the coral *Pocillopora acuta*. *Frontiers in Marine Science***6**, 362.

Pollock FJ, Lamb JB, van de Water, JAJM, **Smith HA**, Schaffelke B, Willis BL, & Bourne DG (2019).  Reduced diversity and stability of coral-associated bacterial communities and suppressed immune function precedes disease onset in corals. *Royal Society Open Science***6**, 190355.

Brodnicke OB, Bourne DG, Heron SF, Pears R, Stella J, **Smith HA,** & Willis BL (2019). Unravelling the links between heat stress, bleaching, and disease: fate of tabular corals following a combined disease and bleaching event. *Coral Reefs.*

Epstein HE, **Smith HA**, Torda G, & van Oppen MJH (2019).  Microbiome engineering: enhancing climate resilience in corals. *Frontiers in Ecology and the Environment***17**(2), 100-108.

O’Brien, PA, **Smith HA\*,** Fallon S, Fabricius K, Willis BL, Morrow KM, & Bourne DG (2018). Elevated CO2 has little influence on the bacterial communities associated with the pH-tolerant coral, massive *Porites spp. Frontiers in Microbiology*, **9**, 2621. \*co-first author

Ramsby B, Hoogenboom M, **Smith HA**, Whalan S, & Webster N (2018). The bioeroding sponge *Cliona orientalis* will not tolerate future projected ocean warming. *Scientific Reports* **8**, 8302.

**Smith HA**, Epstein H, & Torda G (2017). The molecular basis of differential morphology and bleaching thresholds in two morphs of the coral *Pocillopora acuta. Scientific Reports* **7,** 10066.

**O T H E R P U B L I C A T I O N S**

Bourne DG, **Smith HA**, Page CA (2022). Diseases of Corals. In AF Rowley (Ed.), *Invertebrate Pathology.* Oxford University Press.

**Smith HA**, Bourne DG (2021). Recovery of the Great Barrier Reef, Annual Field Report. Report to Earthwatch Institute Australia (17pp).

McLeod IM, Bourne DG, Ceccarelli DM, Boström-Einarsson L, Cook N, Fulton SE, Hancock B, Harrison PL, Hein M, Le Port A, Paewai-Higgins R, **Smith HA**, Smith A (2021). Best practice coral restoration for the Great Barrier Reef: Synthesis of results. Report to the National Environmental Science Program. Reef and Rainforest Research Centre Limited, Cairns (46 pp).

**Smith HA**, Bourne DG (2020). Recovery of the Great Barrier Reef, Annual Field Report. Report to Earthwatch Institute Australia (14pp).

Bourne DG, **Smith HA** (2019). Recovery of the Great Barrier Reef, Annual Field Report. Report to Earthwatch Institute Australia (18pp).

**S C I E N T I F I C I L L U S T R A T I O N**

*Building upon my undergraduate fine arts training, I maintain a keen interest in using illustration for science communication. In addition to the published works detailed below, my illustrations have been critical parts of funding proposals, conference presentations, and student reports.*

Peer-reviewed articles 11 published illustrations. Journals include *Nature Climate Change, Nature Microbiology, Trends in Microbiology, One Earth, mBio*

Books *Active Coral Reef Restoration: Techniques for a Changing Planet* (2021)

Other A Decision Framework for Interventions to Increase the Persistence and Resilience of Coral Reefs (The National Academies Press, 2019)

**T E A C H I N G A N D A D V I S O R Y E X P E R I E N C E**

Research Advisor MSc minor project, Megan Williams, completed 2022, High Distinction. *Early*

*community succession on algal dominated coral reefs.*

MPhil thesis, Stella Fulton, 2020-2022. *Best practices for effective coral reef restoration through macroalgae removal.*

MSc minor project, Tara Prenzlau, completed 2020, Distinction. *Effects of macroalgal canopies on coral bleaching susceptibility.*

MSc minor project, Dylan Brown, completed 2020, Distinction. *Removal of macroalgae promotes coral recruitment on degraded inshore reefs of the GBR.*

MSc minor project, Chaitanya Arjunwadkar, completed 2020, Distinction. *Increasing sediment loads alter turf density and composition.*

MSc minor project, Bambang Hermanto, completed 2020, Distinction. *Optimising methods for assessing benthic community composition using artificial intelligence and machine learning.*

Honours thesis, Elissa Mastroianni, completed 2019, First Class. *Macroalgal removal on inshore reefs of the Great Barrier Reef.*

Tutor MB5400 *Life History and Evolution of Reef Corals;* 2019-present, James Cook Uni.

MB2080 *Invertebrate Biology*; 2019-present, James Cook Uni.

**C O M P E T I T I V E R E S E A R C H F U N D I N G A N D A W A R D S**

2023 Reef HQ Volunteer Association Grant ($4500 AUD)

2023 Women Diver Hall of Fame, Susan L. Williams Memorial Fellowship in Coral Rehabilitation ($2500 USD)

2022 UNSW Postgraduate Research Forum, Best Marine Science talk ($250 AUD), runner up for Ecosystem Science talk

2022 Australian Marine Sciences Association, NSW Branch Student Travel Award ($785 AUD)

2021 British Ecological Society, Small Research Grant (£5,000 GBP)

2021-2028 Australian Government Research Training Program Scholarship ($40,000 AUD per annum)

2020 Earthwatch Institute, contract research funding top-up ($11,000 AUD)

2019 National Geographic Society, Early Career Grant ($10,000 USD)

2018 Great Barrier Reef Marine Park Authority, Reef Guardian Research Grant ($2,500 AUD)

2018 AIMS@JCU Seminar Day, Best Scientific Illustration Award ($100 AUD)

2017 AIMS@JCU Pilot Research Award ($1,000 AUD)

2017 AIMS@JCU Science Communication Award ($1,500 AUD)

2017 Academic Medal, James Cook University

2015 American Australian Association, Sir Keith Murdoch Fellow ($40,000 USD)

2014 Columbia University Post-Baccalaureate Research Grant ($1,000 USD)

2010 Eliot Scholar Award, Washington University in St. Louis

**S C I E N C E C O M M U N I C A T I O N**

TV & Radio ABC News (National), WIN News (North Queensland), Seven News (Townsville) NINE News (Townsville), ABC Radio (National). Combined audience estimated at >1.7 million people.

Social media Featured scientist on National Geographic Society (@InsideNatGeo), May and October 2021

Conferences 2022 – Australian Marine Sciences Association, Cairns (15-min talk, poster)

**V O L U N T A R Y P R O F E S S I O N A L S E R V I C E**

Peer Reviewer *Scientific Reports, Science of the Total Environment, Microorganisms, PeerJ, Journal of Marine Science and Engineering*

American Australian Association Education Scholarships, 2017 – present

**P R O F E S S I O N A L M E M B E R S H I P**

Australian Coral Reef Society, The British Ecological Society, Ecological Society of Australia,

International Coral Reef Society, Society for Ecological Restoration, Australian Marine Sciences Association