

Joleah Lamb

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Academic Appointments

Current

2019 – **University of California, Irvine** – Assistant Professor
Department of Ecology and Evolutionary Biology

Previous

2018 – 2019 **University of Queensland** – Civil Engineering Development Fellow
Funded Proposal: *Engineering bio-inspired coastal infrastructure systems to remove pathogens in the ocean*
Mentors: Professor Tom Baldock, Professor Chien Ming Wang

2016 – 2018 **Cornell University & Environmental Defense Fund** – Impact for Innovation Fellow
Funded Proposal: *Sustaining ocean health and human livelihoods in coastal Myanmar*
Mentors: Professor C. Drew Harvell, Dr Douglas Rader

2014 – 2016 **Cornell University & The Nature Conservancy** – NatureNet Science Fellow
Funded Proposal: *Using natural ecosystem filtration services to mitigate marine pathogens and disease*
Mentors: Professor C. Drew Harvell, Dr Heather Tallis, Dr Stephanie Wear

Education

2014 Ph.D. **Australian Institute of Marine Science, James Cook University** – Marine Biology
Thesis Title: *Influence of marine-based industries on coral health and disease*
Chairs: Professor Bette Willis (JCU), Professor Garry Russ (JCU), Dr. Britta Schaffelke (AIMS)
Awards: Dean's Award – Top 10 University Thesis of 2014, Australian Institute of Marine Science Scholar, Outstanding Early Career Alumni Award

2009 M.Sc. Tropical Marine Ecology & Fisheries Biology
Awards: University Medal – Vice Chancellor commendation for highest degree awarded in 2009

2005 B.S. **University of Oregon** – Biology
Awards: Institute of Molecular Biology Dean's Scholar

Publications *including awards and special media attention*

Average journal impact factor (indexed publications) = 9.930

Total citations in past 5 years = 515 | h-index = 11

Indicates co-supervision of student research = ^

Peer-reviewed Journal Articles

Lamb JB, Willis BL, Fiorenza EA[^], Couch CS, Howard R, Rader DN, True JD, Kelly LA[^], Ahmad A, Jompa J, and CD Harvell (2018). Plastic waste associated with disease on coral reefs. *Science* 359, 460-462. [Original Research]

- **Media Reach:** Featured in 827 print and online articles and has received an estimated global reach of 1.07 billion viewers (Australian Science Media Centre)
- **Featured in:** The New York Times, The Guardian, BBC, Newsweek, Time, NPR, Nature, The Atlantic, The Washington Post, The Conversation, The Economist, Scientific American and feature story in New Scientist.
- **Awards and nominations:** Faculty of 1000 (2 nominations)

Lamb JB, van de Water JAJM, Bourne DG, Altier C, Fiorenza EA[^], Abu N[^], Hein MY[^], Jompa J, and CD Harvell (2017). Seagrass ecosystems reduce exposure to bacterial pathogens of humans, fishes and invertebrates. *Science* 355: 731-733. [Original Research]

- **Journal Cover:** Marine Hygiene
- **Media Reach:** 335 million viewers across 328 other media outlets (Australian Science Media Centre)
- **Featured in:** The New York Times, The Guardian, BBC, Nature, NPR, The Atlantic, and National Geographic, New Scientist and The Washington Post
- **Awards & Nominations:** 2017 AAAS Feature Article, Faculty of 1000

Page CA, Field SN, Pollock FJ, **Lamb JB**, Shedrawi G, and SK Wilson (2017). Assessing coral health and disease from digital photographs and *in situ* surveys. ***Environmental Monitoring and Assessment*** 189 (18).

Lamb JB, Wenger AS, Devlin M, Cecarelli D, Williamson DH, and BL Willis (2016). Reserves as tools for mitigating marine disease. ***Philosophical Transactions of the Royal Society: B***. 371 (1689), 20150210. [Invited Research]

- **NASA Feature Article:** The Reef, The Researcher and a Storm

van de Water JAJM, **Lamb JB**, van Oppen MJH, Heron SF, and BL Willis (2016). Measures of innate immunity for three major reef-building coral families are linked with local climatic conditions. ***Ecosphere*** 7 (11), e01505.

Kelly LA[^], Heintz T[^], **Lamb JB**, Ainsworth T, BL Willis (2016). Ecological and histopathological characterization of a novel plaque-like growth anomaly affecting a reef-building coral. ***Frontiers in Marine Science*** 3 (151).

Lamb JB, Williamson DH, Russ GR, and BL Willis (2015). Protected areas mitigate diseases of reef-building corals by reducing damage from fishing. ***Ecology*** 96 (9), 2555–2567.

- **The Guardian:** Great Barrier Reef Corals Four Times Safer in No-Take Fishing Reserves
- **Virginia Chadwick Award for Best Paper of 2015:** ARC Centre of Excellence for Coral Reef Studies

Maynard JA, van Hooidonk R, Eakin CM, Puotinen M, Garren M, Williams GJ, Heron SF, **Lamb JB**, Weil E, Willis BL, and CD Harvell (2015). Climate projections of conditions that increase coral disease susceptibility and pathogen virulence. ***Nature Climate Change*** 5 (7), 688–694.

Lamb JB*, van de Water JAJM*, van Oppen, MJH, Willis BL, and Bourne DG (2015). Comparative immune responses of corals to injury, disease and stressors associated with offshore reef-based tourist platforms. ***Conservation Physiology*** 3 (1), cov032. *shared first authorship

Hein MY[^], **Lamb JB**, Scott C, and BL Willis (2015). Assessing baseline levels of coral health in a newly established marine protected area in a global scuba diving hotspot. ***Marine Environmental Research*** 103, 56–65.

Lamb JB, True JD, Piromvaragorn S, and BL Willis (2014). Scuba diving damage and intensity of tourist activities increases coral disease prevalence. ***Biological Conservation*** 178, 88–96.

- **Awards and nominations:** Faculty of 1000

Pollock FJ, **Lamb JB**, Field SN, Shedrawi G, Bourne DG, and BL Willis (2014). Dredging increases coral disease prevalence on nearby reefs. ***PLoS One***, doi:10.1371/journal.pone. 0102498.

- **National Geographic:** Digging up the Seafloor Makes Coral Reefs Sick

Maynard JA, Anthony KRN, Burgman MA, Harvell CD, Beeden R, Heron S, **Lamb JB**, and BL Willis (2011). Predicting outbreaks of a climate-driven coral disease on the Great Barrier Reef. ***Coral Reefs*** 30 (2), 485–495.

Lamb JB and BL Willis (2011). Using coral disease prevalence to assess the effect of concentrating tourism activities on offshore reefs in a tropical marine park. ***Conservation Biology*** 25 (5), 1044–1052.

Harvell CD and **Lamb JB** (invited submission 2018). The rising tide of infectious disease outbreaks in the ocean.

Darling E et al. (in review). Global drivers of reef corals assemblages inform urgent conservation priorities following the 2016 bleaching event. ***Nature Ecology and Evolution***.

Pollock FJ, **Lamb JB**, van de Water JAJM, Smith HA, Schaffelke B, Willis BL, and D Bourne. (in review). Reduced diversity and stability of coral-associated bacterial communities and suppressed immune function precedes disease onset in corals. ***Microbial Ecology***.

Textbook Chapters

Marine Disease Ecology, Oxford University Press (2019).

Chapter 5. Disease outbreaks threaten marine biodiversity (CD Harvell and JB Lamb)

Chapter 7. The role of disease ecology in conservation and management (L Raymundo, CA Burge, and JB Lamb)

Reviewer & Guest Handling Editor *

Philosophical Transactions of the Royal Society B*, Proceedings of the Royal Society B, Diseases of Aquatic Organisms, Annals of New York Academy of Sciences, Journal of Environmental Management, PLoS One, Proceedings of the National Academy of Science (PNAS), Marine and Freshwater Research, Microbiology Open

Funding Applications *in review* not included in awarded total

I have been awarded **\$1,228,000 in fellowships and grants** to support my research career, which includes \$1,200,000 as a Principal Investigator or Fellow (PI) and \$28,000 as a Collaborator (CI). Amounts listed on the left represent the amount awarded directly to my research, with total funding amount is listed separately.

- \$708,000 – **(In Review)** Australian Research Council Discovery Grant 2019-21, *Next generation offshore blue water aquaculture*, School of Civil Engineering at The University of Queensland (co-PI)
- \$135,000 – Advance Queensland Small Business Innovation Grant 2018-19, School of Civil Engineering at The University of Queensland and BMT International, *Boosting coral abundance on the Great Barrier Reef* (2018) (co-PI)
- \$342,000 – Development Fellowship, School of Civil Engineering at The University of Queensland, *Engineering bio-inspired coastal infrastructure systems to remove pathogens in the ocean* (2018) (PI)
- \$50,000 – School of Veterinary Medicine and Karen C. Drayer Wildlife Health Center at the University of California Davis, *Natural filtration of pathogens and antibiotic resistant contaminants by marine eelgrass ecosystems* (2018) (co-PI)
- \$8,000 – NASA Applied Science Ecological Forecasting Program, *Forecasting coral disease outbreaks across the tropical Pacific Ocean using satellite-derived data*. Total project amount of \$1.3 million to University of Hawaii (2017) (CI)
- \$100,000 – Impact for Innovation Fellowship, Atkinson Center for a Sustainable Future at Cornell University and the Environmental Defense Fund, *The role of coastal ecosystem health on food security, nutrition and livelihoods in Myanmar* (2016) (co-PI)
- \$250,000 – NatureNet Science Fellowship, Department of Ecology and Evolutionary Biology at Cornell University and The Nature Conservancy, *Using natural ecosystem filtration services to mitigate marine pathogens and disease* (2014) (PI)
- \$10,000 – One Health Award, College of Veterinary Medicine, Population Medicine and Diagnostic Sciences, Cornell University (2015) (PI)
- \$105,000 – Capturing Coral Reef and Related Ecosystem Services, The World Bank and Global Environment Fund. Total project awarded to multiple investigators, Project ID P123933 (2014) (co-PI)
- \$20,000 – National Environment Research Program (NERP) Tropical Ecosystems Hub Grant Project 8.2, Australian Government, *Benthic cover and fish density on fringing reefs of inshore island groups of the Great Barrier Reef*. Total project amount of \$520,000 awarded to James Cook University (2014) (CI)
- \$4,000 – Publication Award, Graduate Research School, James Cook University (2013 and 2014) (PI)
- \$15,000 – Postgraduate Research Award, Australian Institute of Marine Science (2011) (PI)
- \$5,000 – Industry Research Fellowship, Australian Network in Marine Science and Western Australia Department of Parks and Wildlife Service, *Influence of soft-sediment dredging for liquefied petroleum gas exploration on levels of coral disease* (2011) (PI)
- \$150,000 – International Postgraduate Research Scholarship (IPRS) 2011-14, Australian Government & James Cook University (2011) (PI)
- \$43,000 – Dean’s Scholarship, Institute of Molecular Biology, University of Oregon (2001–2005) (PI)

Popular Media *films, interviews and podcasts*

2018	Documentary	Drowning in Plastic, BBC - estimated 4 million viewers during October 2018 premier
2018	Podcast	Coral reef plastic, AAAS
2018	Invited Author	Eleven billion pieces of plastic bring disease threat to coral reefs, <i>The Conversation</i>
2018	Television (Live)	Ocean plastic, ABC News 24
2018	Television	The last straw, ABC News
2017	Documentary	Myanmar’s marine paradise under threat from illegal dynamite fishing, Deutsche Welle
2017	Podcast	Keeping coastal waters healthy with seagrass, AAAS
2017	Interview	Seagrasses vital to coastal health, BBC
2016	Documentary	Protecting biodiversity and health in Myanmar, Deutsche Welle

Invited Articles

Lamb JB (2018). Eleven billion pieces of plastic bring disease threat to coral reefs (English and Indonesian). *The Conversation*.

Lamb JB, Williamson DH, Russ GR, and BL Willis (2015). Protected areas moderate diseases of reef-building corals. *The Bulletin of the Ecological Society of America* 96 (4), 647-650.

Expert Working Groups

NASA-NOAA Ecological Forecasting of Marine Disease Outbreaks	2017 – Present
NSF – Research Coordination Network, Ecology & Evolution of Infectious Disease	2014 – Present
Action Network for Coral Health & Resilience – University of Hawaii and The Nature Conservancy	2013 – Present
World Bank – Capturing Coral Reef and Related Ecosystem Services	2013 – Present

Graduate and Undergraduate Course Instruction

Instructor of Record	BIOEE3730 Invertebrate Biology	Cornell University	2017
Instructor of Record	BIOEE4920 Ocean Biodiversity	Cornell University	2018, 2017
Guest Lecturer	BIOEE3500 Marine Ecology	Cornell University	2016
Assistant Instructor	MB5350 Current Issues in Coral Reef Ecology	James Cook University	2014
Guest Lecturer	MB5400 Life History of Reef Corals	James Cook University	2010 – 2013
Laboratory Demonstrator	MB5400 Life History of Reef Corals	James Cook University	2010 – 2013
Laboratory Demonstrator	CH337 Organic Chemistry Laboratory	University of Oregon	2004 – 2005

Research Supervision and Student Training

First generation university student = ^a Underrepresented minority = ^b
English as a second language (ESL) = ^c PhD fellowship received following supervision = †

Evan Fiorenza, Bachelor of Science Earth and Environmental Sciences (Hons), Cornell University ^{a,b,†}	2016 – 2018
Nur Abu, Master of Science Candidate, Hasanuddin University, Indonesia ^{a,b,c}	2014 – 2017
Georgina Torras Jorda, Master of Science awarded with Distinction, James Cook University ^{b,c,†}	2014
Margaux Hein, Master of Science awarded with High Distinction, James Cook University ^{b,c,†}	2013
Lisa Kelly, Master of Science awarded with High Distinction University Medal, James Cook University ^{a†}	2011
Tom Heintz, Master of Science awarded with Distinction, James Cook University ^c	2010

Collaborations, Service, and Outreach

International and Domestic Research Network

Australia	Australian Institute of Marine Science, James Cook University, University of New South Wales, The University of Queensland, ARC Centre of Excellence for Coral Reef Studies
Canada	Carleton University, University of Toronto
China	University of Hong Kong, Chinese Academy of Science
Guam	University of Guam
Indonesia	Hasanuddin University, The Nature Conservancy, Indonesian Institute of Science
Monaco	Centre Scientifique de Monaco
Myanmar	Patheingyi University, Mawlamyine University, Myeik University, University of Yangon
Philippines	University of the Philippines, De La Salle University, Palawan State University
Puerto Rico	University of Puerto Rico
Taiwan	Tunghai University
Thailand	Prince of Songkla University
UK	Fauna & Flora International
USA	Stanford University, Cornell University, NOAA, NASA, The Nature Conservancy, University of Hawaii, Environmental Defense Fund, Oregon State University, Wildlife Conservation Society, University of Washington, Pennsylvania State University, University of Maryland, Conservation International

International Capacity Building

I have been involved with training *Myanmar's first team of underwater surveyors* from Patheingyi University, Myeik University and the University of Yangon to conduct surveys of coral reef biodiversity. These newly trained scientists are now leading research programs within their respective countries, undertaking doctoral research and educating government policy-makers about the importance of clean water and coastal health for people.

Key Research Collaborations

The World Bank, Cornell University, and The University of Queensland, Sulawesi (Indonesia), May 2014 – Present
[Currently evaluate natural capital and ecosystem services to coastal communities and other stakeholders for the management of natural assets for sustainable development under the Capturing Coral Reef and Related Ecosystem Services scheme (Global Environment Fund Project ID P123933)] See www.cres.net

Australian Research Council (ARC) Centre of Excellence for Coral Reef Studies, Townsville (Australia), 2011 – 2015
[Assessed the effects of management zonation on inshore reefs of the Great Barrier Reef Marine Park and determining whether previously established no-take marine reserves contribute to biodiversity, fisher sustainability, and the mitigation of coral diseases]

Prince of Songkla University – Koh Tao (Thailand), 2011- 2014
[Investigated and managing the effects of concentrating coastal-based marine recreation and tourist activities on coral health and disease]

Great Barrier Reef Marine Park Authority – Queensland (Australia), 2011
[Conducted surveys and analysed data in order to validate and assess climate-driven white syndrome prediction models affecting reef corals in the Great Barrier Reef Marine Park]

Research and Professional Industry Experience

Employment History

Expert Consultant, 2014 – 2015

Fauna and Flora International – Yangon (Myanmar) and Cambridge (UK)

[Assess the influence of destructive fishing practices on coral disease and its influence on reef structural complexity]

Research Officer HEWL03, 2009 – 2014

College of Science and Engineering, James Cook University – Townsville (Australia)

[Ran long-term annual coral disease surveys along the Great Barrier Reef and managing queries and analyses of extensive coral disease database systems in order to develop models to determine environmental and biological drivers of disease]

Industry Research Fellow, 2011 – 2012

Western Australia Department of Parks & Wildlife – Barrow and Montebello Islands (Australia)

[Funded Research Proposal: Influence of soft sediment dredging for liquefied petroleum gas exploration on levels of coral disease along satellite-derived water quality gradients]

Research Associate, 2008 – 2009

Department of Fish and Wildlife Conservation, Virginia Polytechnic and State University – Virginia (USA)

[Quantitatively assessed fish stock assessments caused by ageing error and its effect when applied to a statistical catch-at-age model]

Field Biologist, 2007 – 2008

University of British Columbia, Foundation for Marine Conservation – Cebu (Philippines)

[Quantified the effects of spatial and temporal management schemes on coral reef ecosystems using surveys of 17 major tropical families of fish and mapped benthic habitats using underwater digital images]

Clinical Research Coordinator, 2005 – 2006

Oregon Center for Clinical Investigations – Oregon (USA)

[Planned, conducted, and tracked clinical research studies in compliance with the US Food and Drug Administration]

Research Assistant, 2004 – 2005

Institute of Neuroscience and Molecular Biology, University of Oregon – Oregon (USA)

[Assisted in the investigation of *Drosophila* central nervous system development for cancer research to determine how stem cell-like neural precursors establish cell polarity]

Field Qualifications

Scleractinian coral, fish and invertebrate field surveys in the Asia-Pacific and Australia (2006 - present)

- Surveys of over 600,000 coral colonies, 71 genera at approximately 250 sites

1500+ scientific dives with 1321 working hours underwater as AS2299 Occupational Diver in Australia (2006 - present)

- Divemaster, Professional Association of Dive Instructors (certified 2001)
- Scientific Diver Register, Australian Institute of Marine Science (certified 2009)
- Enriched Air Nitrox, International Association of Nitrox and Technical Divers IANTD (expected 2019)

Emergency First Responder & Emergency Oxygen Provider, Diver's Alert Network (annually, 2007-2018)

Queensland Boat License (2006 - present)

VHF Marine Radio Operator, Australian Communications and Media Authority (certified 2010)

Australian Volunteer Coast Guard Rescue Crew Member

References

Professor Drew Harvell	Department of Ecology and Evolutionary Biology, Cornell University	cdh5@cornell.edu
Professor Bette Willis	ARC Centre of Excellence for Coral Reef Studies, James Cook University	bette.willis@jcu.edu.au
Professor Tom Baldock	School of Civil Engineering, The University of Queensland	t.baldock@uq.edu.au
Dr. Heather Tallis	Lead Scientist and Global Managing Director, The Nature Conservancy	htallis@tnc.org
Dr. Douglas Rader	Chief Oceans Scientist, Environmental Defense Fund	drader@edf.org