

# Margaux Yvonne Sophie Hein

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**Lead consultant at Marine Ecosystem Restoration (MER) Research and Consulting**

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## EDUCATION

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**James Cook University**, Townsville, Queensland, Australia

Doctorate of Marine Biology, PhD

June 2019

Master's of Applied Science (MSc) in Marine Biology with Academic Medal (GPA 6.8/7)

2012-2014

**University of Queensland**, Brisbane, Queensland, Australia

Bachelor of Environmental Sciences (with Honours, class IIA)

2008-2010

**CERAM BACHELORS**, Sophia-Antipolis, France

Bachelor of Environmental Sciences (GPA 3.8/4)

2006-2008

## PUBLICATIONS - ORCID 0000-0001-6951-4075

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- **Hein MY**, Staub F (2021) Mapping the global funding landscape for coral reef restoration. Report for the International Coral Reef Initiative.
- Vardi T, Hoot WC, Levy J, Shaver EC, ..., **Hein MY**, ..., Montoya-Maya PH (2021) Six priorities to advance the science and practice of coral reef restoration worldwide. *Restoration Ecology* 29(8), e13498
- **Hein MY**, Vardi T, Shaver EC, Pioch S, Boström-Einarsson L, Ahmed M, Grimsditch G, McLeod IM (2021) Perspectives on the use of coral reef restoration as a strategy to support and improve reef ecosystem services. *Frontiers in Marine Science* (8):299.
- Ferse, SCA, **Hein MY**, Röfler L (2021) [A survey of current trends and suggested future directions in coral transplantation for reef restoration.](#) *PlosOne* 16 (5), e0249966
- **Hein MY**, McLeod IM, Shaver EC, Vardi T, Pioch S, Boström-Einarsson L, Ahmed M, Grimsditch G (2020) Coral Reef Restoration as a strategy to improve ecosystem services: Policy Brief. United Nations Environment Program, Nairobi, Kenya.
- **Hein MY**, McLeod IM, Shaver EC, Vardi T, Pioch S, Boström-Einarsson L, Ahmed M, Grimsditch G (2020) Coral Reef Restoration as a strategy to improve ecosystem services – guide to coral restoration methods. United Nations Environment Program, Nairobi, Kenya.
- McLeod IM, **Hein MY**, et al. (2020) 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 (36pp.).
- Ceccarelli DM, McLeod IM, Bostrom-Einarsson L, Bryan SE, Chartrand KM, Emslie MJ, Gibbs MT, Rivero, MG, **Hein MY**, Heyward A, Kenyon TM, Lewis BM, Mattocks N, Newlands M, Schläppy ML, Suggett DJ, & Bay LK (2020). Substrate stabilisation and small structures in coral restoration: State of knowledge, and considerations for management and implementation. *PLoS One*, 15, [e0240846].
- Shaver E C, Courtney C A, West J M, Maynard J, **Hein MY**, Wagner C, Philibotte J, MacGowan P, McLeod I, Boström-Einarsson L, Bucchianeri K, Johnston L, Koss J. (2020). A Manager's Guide to Coral Reef Restoration Planning and Design. NOAA Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 36, 128 pp.
- **Hein MY**, Beeden R, Birtles RA, Gardiner NM, LeBerre T, Levy J, Marshall N, Scott CM, Terry L, Willis BL (2020) Coral Restoration Effectiveness: Multiregional Snapshots of the Long-Term Responses of Coral Assemblages to Restoration. *Diversity*. doi:10.3390/d12040153
- **Hein MY**, Beeden R, Birtles RA, Chase TJ, Couture F, Haskin E, Marshall N, Ripple K, Terry L, Willis BL, Willis R, Gardiner NM (2020) "Effects of coral restoration on fish communities: snapshots of long-term, multi-regional responses and implications for practice. *Restoration Ecology*. doi: 10.1111/rec.13177

- Chase TJ, Pratchett MS, McWilliam MJ, **Hein MY**, SB Tebbett SB, Hoogenboom MO (2020) Fishes alleviate the impacts of sediments on host corals. *Proceedings of the Royal Society B*-10.1098/rsos.192074
- Boström-Einarsson L, Babcock RC, Bayraktarov E, Ceccarelli D, Cook N, Ferse SCA, Hancock B, Harrison P, **Hein M**, Shaver E, Smith A, Suggett D, Stewart-Sinclair PJ, Vardi T, McLeod IM. (2020). Coral restoration - A systematic review of successes, failures and future directions. *PlosOne*. DOI: 10.1371/journal.pone.0226631
- Boström-Einarsson L, Ceccarelli D, Cook N, **Hein M**, Smith A, McLeod IM. (2020). Data from: Coral restoration - A systematic review of successes, failures and future directions. Dryad Digital Repository. doi:10.5061/dryad.p6r3816
- Boström-Einarsson L, Babcock RC, Bayraktarov E, Ceccarelli D, Cook N, Ferse SCA, Hancock B, Harrison P, **Hein MY**, Shaver E, Smith A, Suggett D, Stewart-Sinclair PJ, Vardi T, McLeod IM. (2020). Coral restoration - A systematic review of successes, failures and future directions. *PlosOne*. DOI: 10.1371/journal.pone.0226631
- McLeod IM, Newlands M, **Hein M**, Boström-Einarsson L, Banaszak A, Grimsditch G, Mohammed A, Mead D, Ponch S, Thornton H, Shaver E, Souter D, Staub F. (2019). Mapping Current and Future Priorities for Coral Restoration and Adaptation Programs: International Coral Reef Initiative Ad Hoc Committee on Reef Restoration 2019 Interim Report. 44 pages. Available at icriforum.org
- **Hein MY**, Birtles A, Willis BL, Gardiner N, Beeden R, Marshall NA (2019) Coral restoration: Socio-ecological perspectives of benefits and limitations. *Biological Conservation* 229:14-25
- Boström-Einarsson L, Ceccarelli D, Babcock RC, Bayraktarov E, Cook N, Harrison P, **Hein M**, Shaver E, Smith A, Stewart-Sinclair P.J, Vardi T, McLeod IM (2018) Coral restoration in a changing world - A global synthesis of methods and techniques - A report for the Reef Restoration and Adaptation Program, Subproject 1a - Review of existing technologies/pilots and new initiatives. 85pp.
- **Hein MY**, Couture F, Scott CM (2018) Ecotourism and coral restoration: case studies from Thailand and the Maldives. In "Coral Reefs: Tourism, Conservation and Management". 1st Edition Edited by Bruce Prideaux and Anja Pabel
- **Hein MY**, Willis BL, Beeden R, Birtles A (2017) The need for broader ecological and socioeconomic tools to evaluate the effectiveness of coral restoration programs: Socioecological effectiveness of coral restoration revisited. *Restoration Ecology* doi: 10.1111/rec.12580
- Lamb JB, Van de Water JAJM, Bourne DG, Altier C, **Hein MY**, Fiorenza EA, Abu N, Jompa J, Harvell DC (2017) Seagrass ecosystem reduce exposure to bacterial pathogens of human, fishes and invertebrates. *Science* 355:731-733
- Pollock FJ, Katz SM, van de Water JAJM, Davies SW, **Hein MY**, Torda G, Matz MV, Beltran VH, Bürger P, Pulli-Sephan E, Abrego D, Bourne DG, Willis BL (2017) Coral larvae for restoration and research: A large-scale method for rearing *Acropora millepora* larvae, inducing settlement, and establishing symbiosis *Peerj*.3732
- Scott CM, Mehrotra R, **Hein MY**, Moerland MS, Hoeksema BW (2017) Population dynamics of corallivores (*Drupella* and *Acanthaster*) on coral reefs of Koh Tao, a diving destination in the Gulf of Thailand. *Raffles Bulletin of Biology* 65:68-79
- **Hein MY**, Lamb JB, Willis BL (2014) Effects of newly implemented marine protected areas on corals health and diversity in Koh Tao, Thailand. *Marine Environmental Research* 103:56-65

## CONFERENCE & RESEARCH TALKS

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- **Hein MY**. Mapping the global funding landscape for coral reef restoration. Presentation at ICRI General Meeting. December 2021
- **Hein MY**. Coral reef restoration on the eve of the UN Decade on Ecosystem Restoration. Keynote address for ICRI UN Decade Launch event. June 2021
- **Hein MY**. Introduction to coral reef restoration and socio-ecological perspectives on restoration success. Guest lectures for GEV4320 in the Department of Geography and the Environment at Villanova University. April 2021
- **Hein MY**. Socio-ecological perspectives of coral reef restoration : Lessons learned and way forward. Invited Seminar Presentation for the Centre for Global Discovery and Conservation Science at Arizona State University. March 2021

- **Hein MY**, McLeod IM, Grimsditch G. Coral Reef Restoration as a strategy to improve ecosystem services – guide to coral restoration methods. Presentation at the Monaco Ocean Week. March 2021
- **Hein MY**, McLeod IM, Grimsditch G. Coral Reef Restoration as a strategy to improve ecosystem services – guide to coral restoration methods. Presentation at ICRI General Meeting. February 2021
- **Hein MY**, McLeod IM, Grimsditch G. Coral Reef Restoration as a strategy to improve ecosystem services – guide to coral restoration methods. Webinar for the Reef Resilience Network. January 2021
- **Hein MY**, et al. Coral restoration effectiveness : Socio-ecological perspectives from around the globe. Reef Futures, Key Largo. December 2018
- **Hein MY**, et al. Investigating long-term responses of coral assemblages to coral restoration: case studies form around the world. Great Barrier Reef Restoration Symposium. July 2018
- **Hein MY**, et al. Investigating long-term responses of coral assemblages to coral restoration: case studies form around the world. Australian Marine Science Association (AMSA) conference: “*Canyons to Coast*” July 2018
- **Hein MY**, et al. Characterizing coral restoration effectiveness: A review of current limitations and challenges at socio-ecological scales. JCU Postgraduate Conference. Townsville. September 2016
- **Hein MY**, et al. Characterizing coral restoration effectiveness: A review of current limitations and challenges at socio-ecological scales. 13<sup>th</sup> ICRS conference. Honolulu, Hawaii. June 2016

## WORK EXPERIENCE

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### **MER Research and Consulting**, Monaco

2020-Present

Lead consultant for *Marine Ecosystem Restoration Research and Consulting* focusing on social and ecological aspects of the restoration of marine and coastal ecosystems. Through our partnerships with expert organizations around the world, our work aims are to: INFORM scientific research for the restoration of marine and coastal ecosystems; SYNTHESISE latest research to assist the development of management and policy guidelines; ASSIST managers and practitioners in the design, implementation, and monitoring their restoration projects.

#### **Missions:**

- **United Nations Environment Programme** (January 2020 to April 2021) as a coral restoration specialist to develop best-practices for coral reef restoration
- **International Coral Reef Initiative** (December 2020- November 2021) as coral restoration specialist to review innovations, and develop a report on the funding landscape for coral reef restoration
- **The Reef Resilience Network** (December 2020-current) to update online lessons and content on reef resilience, and coral reef restoration
- **The Global Fund for Coral Reefs** (September 2021- current) to assist with the development of the Fund’s Monitoring and Evaluation Strategy
- **CSIRO** (January 2022-current) to report on monitoring strategies for coral reef restoration projects on the Great Barrier Reef in Australia

### **TropWATER, James Cook University**, Townsville, Queensland, Australia

2019-2020

Postdoctoral Research Assistant and communications officer for TropWATER (the Centre for Tropical Water and Aquatic Ecosystem Research). Research duties include developing and implementing social surveys with practitioners in Australia and globally to investigate coral restoration best-practices and their application for the Great Barrier Reef. Other duties include fieldwork and scientific diving as well as database management and scientific writing. Communication duties include managing the centre website and communicate news stories about the centre’s work.

### **James Cook University**, Townsville, Queensland, Australia

2012-2019

Research worker and teaching assistant within the School of Marine and Tropical Biology, James Cook University, Townsville, Australia.

- Assist with coral health monitoring, and coral spawning research (e.g. rearing of larvae from t0 spawning night in controlled aquaria, settlement tiles)
- Conduct fieldwork and lab duties (e.g. trip planning, UW surveys (coral ID, and coral health assessment, coral collection), coral tissue blasting, water quality sampling)

- Tutor for MB3210/5350/5400/5300 and BZ1001 (Life history of reef corals/ Sampling and experimental design/Introduction to biological processes- Assist the classes in both field and laboratory tutorials)
- Guest lecture for MB2080 (Marine Invertebrate Biology): “Coral diversity on the Great Barrier Reef”

## OTHER WORK EXPERIENCE

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**James Cook University**, Townsville, Queensland, Australia 2012-2014  
 Water quality sampling, coral health and disease monitoring, and reef rehabilitation consulting, and coral spawning research with Dr Joleah Lamb and Prof. Bette Willis’ laboratory on the Great Barrier Reef, Australia, and in South Sulawesi, Indonesia  
 Coral juvenile density surveys, coral fertility assessments, coral recruitment tiles deployment and analyses as part of the ARC COE National Coral Bleaching Taskforce led by Prof. Terry Hughes

**New Heaven Reef Conservation Program**, Koh Tao, Thailand 2012  
 Conduct coral reef research and monitoring, building and maintenance of artificial reef structure and coral nurseries, coral transplantation; assist with spawning experiments, maintenance of giant clam and sea turtle nurseries, work with the “Save Koh Tao” group for land and underwater clean-ups, mooring lines maintenance and installation

**Prince Albert II Foundation**, Monaco 2011  
 Assist the Scientific Director in the analysis of the projects supported by the Foundation.

## AWARDS AND GRANTS

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- James Cook University Postgraduate Research Scholarship (AUD22,000/year) 2015-2018
- Bourse Doctorante, Monaco, Direction de L’Education Nationale (EUR3000/year) 2015-2018
- TropWATER Student Travel Grant (AUD500) 2018
- CSE (JCU) Competitive Research Training Grant for HDR Student (AUD3000) 2018
- Bourse Exceptionnelle du Prince Albert II de Monaco (EUR20,000) 2015

## RELEVANT SKILLS

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- Language proficient: French (native), English (fluent)
- Licenses: Driving license (QLD and Monaco), Boat license (QLD), Marine Radio License (QLD- MROVCP)
- Technical qualifications: First AID, CPR and O2 administration
- Diving qualifications: SSI #63100. Divemaster (SSI) and Scientific diver specialty (SSI) (over 500 logged dives).
- Computer programs: R, NVivo, ADOBE Illustrator and Photoshop

## CURRENT COLLABORATIONS

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**United Nations Environment Programme**, Nairobi, Kenya  
 Contracted as consultant to develop best-practice guidelines for coral restoration, as appropriate for the maintenance of ecosystem services, including for coastal defence and restoration of fish nursery areas.

**International Coral Reef Initiative**, Global  
 Member of the Ad-hoc committee on Reef Restoration. Contracted as a consultant to provide expertise on various projects related to coral reef restoration including judging a Uplink contest for The World Economic Forum, and preparing a report to map the funding landscape for coral reef restoration

**Reef Resilience Network, USA**  
 Contracted as a consultant to update the online courses on reef resilience and reef restoration, as well as assisting with translations of webinars as part of the Resilient Reef Initiative

**Coral Reef Consortium, Global**

Active member of the monitoring and managers group

**National Environmental Science Program (NESP) Marine Hub**, Townsville, Queensland Australia

Co-investigator on the project “Best-practice coral restoration for the Great Barrier Reef” led by Dr. Ian McLeod. <https://www.gbrcoralrestoration.org>

**Reefy (Netherlands)**, Advisory board member for an engineering start-up focused on developing nature-based hybrid reef structures. <http://www.reefy.nl>

**Liebniz Centre for Tropical Marine Research**, Bremen, Germany

Co-investigator on the project “Current trends and future directions in coral transplantation for reef restoration” led by Dr. Sebastian Ferse