

Catherine Kim

Curriculum Vitae

School of Biological Sciences | The University of Queensland
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EDUCATION

- 2021 Ph.D. **The University of Queensland Australia**
School of Biological Sciences, St. Lucia, Queensland, Australia
Thesis Title: *Drivers of benthic composition, cryptic marine biodiversity, and coral health in Timor-Leste.*
Advisors: Prof. Ove Hoegh-Guldberg, Assoc. Prof. Sophie Dove, Dr. Chris Roelfsema
Awards: XL Catlin Oceans Scholar, Faculty of Science Awards 2020 Finalist
- 2012 B.S. **Cornell University** – Science of Earth Systems (Oceanography concentration)
College of Agriculture and Life Sciences, Ithaca, New York, USA
Advisor: Prof. Chuck Greene
Awards: Cum Laude, Dean's List six semesters, Michael Mitchell Award

EXPERTISE

Discipline Knowledge

Coral Reef Ecology, Fieldwork, and Data Skills

- Working knowledge of impacts from local and global stressors on coral reef ecosystems
- Execution of field work campaigns in remote areas including Timor-Leste, Australia, and Hawai'i
- Experience with coral reef underwater monitoring protocols and working with field teams
- Knowledge of citizen science methods such as Reef Check and Coral Watch
- Implementation and validation of automated image analysis pipelines using machine learning
- Familiarity with remote sensing, GIS, and data visualization
- Experience managing complex datasets and summarizing data in R

Diving Experience and Certifications

- Australian Divers Accreditation Scheme 2815 Scientific Diver, University of Queensland, 2014
- TDI Diver Propulsion Vehicle; PADI Open Water, Advanced, and Rescue, 300+ dives
- Quantitative Underwater Ecological Surveying Techniques, University of Hawai'i Hilo, 2010
- Short Range Operator Certificate of Proficiency marine radio license, Australia, 2015
- Recreational Marine Driver License, Queensland, Australia, 2015

Relevant Skills

Project Management

- Excellent collaboration skills and cross-cultural sensitivity developing relationships with diverse groups
- Desk research skills synthesizing information and writing reports
- Time management skills managing diverse workloads and competing priorities
- Experience leading projects using collaborative tools such as Slack and Google Documents
- Securing and managing more than \$40,000 AUD research funding

Outreach and Training

- Young Science Ambassador for the Wonder of Science program since 2016
- Co-taught three virtual 'R for Reproducible Scientific Analysis' workshops in 2020
- Volunteer peer-counselor for the Empath Assistance and Referral Service (EARS) at Cornell University for three semesters, EARS trainer for three semesters

Software

- R and RStudio, Certified Instructor for The Carpentries
- Git and GitHub
- ArcGIS and qGIS
- Mendeley and Zotero
- Adobe Creative Suite

RESEARCH EXPERIENCE

- 2014 - 2021 **PhD Candidate**, School of Biological Sciences, University of Queensland, St. Lucia, Australia
- Contributed to six XL Catlin Seaview Survey fieldwork campaigns utilizing a standard operating procedure to collect kilometer-scale phototransects, analyzed over 20,000 photos
 - Led independent coral reef surveys in Timor-Leste including training research assistants, overseeing daily field operations, and presenting findings to the Timor-Leste Ministry of Agriculture and Fisheries (MAF) and non-governmental agencies
 - Organized logistical operations for fieldwork including scientific diving for coral bleaching surveys, seawater collection for nutrient analyses, and deployment of temperature loggers
 - Developed and maintained collaborations with Conservation International Timor-Leste, National Oceanic and Atmospheric Administration's Pacific Islands Fisheries Science Center (PIFSC), and MAF
- 2019 **Elodie Sandford Explorer**, Scientific Exploration Society, Motcombe, UK
- Investigated *tara bandu*, traditional law, as a means of marine conservation in Timor-Leste
 - Planned and executed coral health surveys at four sites
- 2016 **Smithsonian Fellow**, National Museum of Natural History, Washington, DC, USA
- DNA barcoded 285 brachyuran crab samples collected via Autonomous Reef Monitoring Structures (ARMS) by PIFSC in Timor-Leste at the Laboratories of Analytical Biology
 - Tracked samples through sequencing pipeline using the Field Information Management System and Lab Information Management System
- 2013 **Puakō Coral Health Monitoring**, Puakō, Hawai'i
- Conducted coral health surveys at ten sites in Puakō, Hawai'i via snorkel
 - Sampled coastal waters and anchialine pools for *Enterococcus* bacteria and set up a $\delta^{15}\text{N}$ algal bioassay using *Ulva fasciata*
 - Worked with the Puakō community during the research process and disseminated findings to inform community activity surrounding wastewater treatment plans
- 2012 - 2013 **Seagrass Wasting Disease**, Friday Harbor Laboratories, Washington
- Assisted with the site selection and seagrass surveys for the field component of the Ecology of Infectious Marine Disease summer course and conducted seagrass health surveys and preserved blades for histology
 - Quantified the presence of *Labyrinthula sp.* in histological sections
- 2011 **Young Scientist Intern**, Pacific Islands Fisheries Science Center, National Oceanic and Atmospheric Administration, Honolulu, Hawai'i
- Trained in PIFSC's benthic image analysis classification scheme
 - Analyzed about 2,000 benthic photographs from a subset of ten years of archived tow surveys from Rose Atoll in the Coral Reef Ecosystem Division using Coral Point Count
 - Processed 12 preserved marine invertebrate samples from ARMS projects from Rose Atoll in American Samoa and three live ARMS from O'ahu
- 2008 **Ctenophore and Zooplankton Abundance**, Thomas Jefferson High School for Science and Technology Alexandria, Virginia
- Worked with the Smithsonian Environmental Research Center's Student Training in Aquatic Research program for a high school research project
 - Conducted plankton tows in the Rhode River quantifying zooplankton and *Mnemiopsis leidyi* and *Beroe ovata* ctenophores

PUBLICATIONS

- Nolan MKB, **Kim CJS**, Hoegh-Guldberg O, Beger M (*in review*) The benefits of heterogeneity in spatial planning within coral reef environments. *Biological Conservation* D-20-00446
- Kim CJS**, Roelfsema C, Dove S, Hoegh-Guldberg O (*in press*) The condition of coral reefs in Timor-Leste before and after the 2016-2017 marine heatwave. *Oceans* 1001163.
- Rodriguez-Ramirez A, González-Rivero M, Beijbom O, Bailhache C, Bongaerts P, Brown K, Bryant DEP, Dalton P, Dove S, Ganase A, Kennedy EV, **Kim CJS**, et al. (2020) A contemporary baseline record of the world's coral reefs. *Sci Data*. 7: 355. doi: 10.1038/s41597-020-00698-6
- Kennedy EV, Vercelloni J, Neal B, Ambariyanto, Bryant D, Ganase A, Gartell P, Brown K, **Kim CJS**, et al. (2020) Coral Reef Community Changes in Karimunjawa... *J Mar Sci Eng*. 8(760): 27. doi:10.3390/jmse8100760.
- González-Rivero M, Beijbom O, Rodriguez-Ramirez A, Bryant DEP, Ganase A, Gonzalez-Marrero, Herrera-Reveles A, Kennedy EV, **Kim CJS**, et al. (2020) Monitoring of Coral Reefs Using Artificial Intelligence: A Feasible and Cost-Effective Approach. *Rem Sens*. 12(3): 489. doi: 10.3390/rs12030489
- Yoshioka RM, **Kim CJS**, Tracy AM, Most R, Harvell CD (2016) Linking sewage pollution and water quality to spatial patterns of *Porites* ... *Mar Polluti Bull*. 104: 313-321. doi: 10.1016/j.marpolbul.2016.01.002
- Groner ML, Burge CA, **Kim CJS**, et al. (2016) Plant characteristics associated with widespread variation in eelgrass wasting disease. *Dis Aquat Org*. 118: 159-168. doi: 10.3354/dao02962
- Groner ML, Burge CA, Couch CS, **Kim CJS**, Siegmund GF, Singhal S, Smoot SC, Harvell CD, Wyllie-Echeverria S, Jarrell A, Gaydos JK (2014) Host demography influences the prevalence and severity of seagrass wasting disease. *Dis Aquat Org*. 108: 165-175. doi: 10.3354/dao02709
- Burge CA, **Kim CJS**, Lyles JM, Harvell CD (2013) Special Issue Oceans and Humans Health: The Ecology of Marine Opportunists. *Microb Ecol*. 65(4): 869-79. doi:10.1007/s00248-013-0190-7

OTHER PUBLICATIONS

- Kim CJS (*in press*) Coral Reef Management and *Tara Bandu* on Ataúro Island: an ecologist's perspective. *Timor-Leste: the Island and the World Conference Proceedings*.
- Kim CJS (2020) *Tara Bandu in Timor-Leste*. Report for the Scientific Exploration Society, Motcombe, UK.
- Kim CJS (2016) *Coral Health and Disease in Timor-Leste*. Report prepared for the Global Change Institute, The University of Queensland, St. Lucia, QLD, Australia.
- Kim CJS, Yoshioka RM, Harvell CD (2013) *Linking sewage pollution and water quality to spatial patterns of Porites growth anomalies in Puakō, Hawai'i*. Report for the Puakō Community Association, Puakō, Hawai'i, USA.

PRESENTATIONS AND INVITED TALKS

- Kim CJS (2020) Coral Reef Management and *Tara Bandu* on Ataúro Island: an ecologist's perspective. Talk. Timor-Leste: the Island and the World Conference, Virtual Dili, Timor-Leste.
- Kim CJS (2019) Drivers of benthic composition, cryptic marine biodiversity, and coral health in Timor-Leste. Guest Lecture. Universidade Nasionál Timór Lorosa'e, Dili, Timor-Leste.
- Kim CJS (2019) Drivers of benthic composition, cryptic marine biodiversity, and coral health in Timor-Leste. Invited Talk. Ministry of Agriculture and Fisheries, Dili, Timor-Leste.
- Kim CJS, Dove S, Hoegh-Guldberg O, Meyer C (2017). Biodiversity of Coral Reef Cryptofauna in Relation to Coral Reef Habitat. PEP talk. Australian Marine Science Association Conference, Darwin, Australia.
- Kim CJS, Roelfsema C, Dove S, Hoegh-Guldberg O (2016). Prevalence of Disease in Dili, Timor-Leste and Potential Drivers. Poster. International Coral Reef Symposium, Honolulu, Hawai'i, USA.
- Kim CJS (2015) Benthic composition, marine biodiversity, and coral health along the northern coast of Timor-Leste. Invited Talk. Ministry of Agriculture and Fisheries, Dili, Timor-Leste.
- Kim CJS, Neal B, Misa P, Timmers M, Vargas-Angel B, Roelfsema C, Dove S, Hoegh-Guldberg O (2015). Benthic Composition and Marine Biodiversity of Coral Reefs along the Northern Coast of Timor-Leste. Presentation. Australian Coral Reef Society Conference, Daydream Island, Australia.
- Kim CJS, Yoshioka RM, Harvell CD (2014). Coral Health and Water Quality in Puakō, Hawai'i. Poster. Ocean Sciences Meeting, Honolulu, Hawai'i, USA

GRANTS

- 2020 Laura Bassi Editing Partial Scholarship, \$700 AUD
- 2019 Science Exploration Society Elodie Sandford Explorer Award £6,800 GBP
- 2017 Estate of Winifred Violet Scott Grant, \$26,300 AUD
- 2016 Australian Research Council Centre of Excellence for Coral Reef Studies International Coral Reef Symposium Student Travel Award, \$1,000 AUD
- 2015 Society of Conservation Biology Marine Section Small Grants, \$700 USD
- 2015 University of Queensland Graduate Student International Travel Award, \$3,500 AUD
- 2015 ARC Centre of Excellence for Coral Reef Studies Symposium Student Travel Award, \$900 AUD
- 2015 Australian Coral Reef Society Conference Student Travel Award, \$200 AUD
- 2014 XL Catlin Seaview Survey Ocean Graduate Scholarship, 2014-2018, \$100,000 AUD
- 2011 Dextra Undergraduate Research Endowment Fund, Cornell University \$1,500 USD
- 2011 Michael Mitchell Memorial Fund, Cornell University \$3,000 USD

AWARDS

- 2020 Faculty of Science Awards Finalist, The University of Queensland
- 2018 Life Science Young Achiever Award Finalist, Women in Technology
- 2017 Best PEP talk Fisheries and Research and Development Council award, Australian Marine Science Association Conference in Darwin
- 2014 BioMed Central Ecology Image Competition
Winner of the Conservation Ecology and Biodiversity Research Section for
“Healthy coral reef ecosystems are becoming a rarity”

MEDIA & OUTREACH

- 2016 - **Young Science Ambassador**, Wonder of Science Program, The University of Queensland
 - Created and led virtual coral bleaching activity for student conferences
 - Australia Science Week 2020 Panelist for Cairns School of Distance Education
 - Speaker in 2020 Coolumboola Virtual STEM Camp for girls
 - Airlie Beach 2019 school visits and public talk partnered with the Flying Scientist Program
 - Visited schools, supported them on their science projects, judged conferences
- 2016, 2019 **Volunteer**, National Ocean Science Bowl
 - Moderator at the Chesapeake Bay Bowl regional competition in 2016 and 2019
 - Moderator at the national competition in 2019
- 2018 **Guest Speaker**, Pennsylvania State University Science-U
 - Presented during a genetics-focused summer camp session for middle school students
- 2017 **Science Team**, UniDive Club, Brisbane, Australia
 - Served on the science committee for the Flinders Reef Ecological Assessment
 - Utilized Reef Check Australia and Coral Watch methods at Flinders Reef
- 2015 **Create Change Video Campaign**, University of Queensland
 - Featured for a 2-minute video promoting UQ and the XL Catlin Seaview Survey:
https://youtu.be/vvaTLQ_8uMY
- 2014 - 2016 **Contributor**, XL Catlin Seaview Survey blog
 - Wrote and provided imagery for the project the blog during field expeditions:
 - Surveying Green Island – May 2016
 - Wrapping up in Timor-Leste – December 2015
 - Return to Timor-Leste to Assess Coral Health – November 2015
- 2014 **Outreach**, XL Catlin Education Programme Coral Live! Skype Classroom
 - Presented on coral reef ecosystems personalized to middle and high school-aged students' questions in the United Kingdom via Skype

TEACHING EXPERIENCE

- 2020 **Academic Advisor**, Placements, University of Queensland, St. Lucia, Australia
Advised upper-level undergraduates and master's Environmental Management students during 12-week Industry Placements during the semester. Provided feedback for students' project proposals, posters, and final reports. Graded student assignments.
- 2019 **Academic Advisor**, Placements, University of Queensland, St. Lucia, Australia
Advised four students during the Industry Placements for Environmental Management majors.
- 2018 **Tutor**, Oceanography, University of Queensland, St. Lucia, Australia
Tutor, Sustainable Consumption and Production, University of Queensland, St. Lucia, Australia
Academic Advisor, Placements, University of Queensland, St. Lucia, Australia
Advised two students during Industry Placements for Environmental Management majors.
- 2013 **Internship Coordinator**, Hawai'i Sustainability Semester, Kamuela, Hawai'i, USA
Coordinated three student interns with The Nature Conservancy.
- 2011–2012 **Trainer**, Empathy Assistance & Referral Service, Cornell University, Ithaca, New York, USA
Three semesters of Beginning and Intensive levels of listening, communication, and counseling training.
- 2011 **Teaching Assistant**, Marine Invertebrates Seminar, Cornell University, Ithaca, New York, USA

PROFESSIONAL AFFILIATIONS

International Coral Reef Society 2020
Australian Coral Reef Society 2020
RLadies Brisbane Chapter, Co-organizer 2020–Present
Women in Technology, Life Sciences Committee 2016–2018
Centre of Excellence in Coral Reef Studies Student Committee 2015–2017

REFERENCES

Dr. Ove Hoegh-Guldberg

Professor, School of Biological Sciences, The University of Queensland
Level 7, Gehrmann Lab (60), St. Lucia, QLD 4072 Australia
oveh@uq.edu.au, +617 334 67417
PhD supervisor assisting with question formulation and writing up of research for three thesis chapters and publications

Dr. Molly Timmers

Marine Ecosystems Project Manager
National Oceanic and Atmospheric Administration, Pacific Islands Fisheries Science Center
1845 Wasp Blvd. Bldg. 176, Honolulu, HI 96818 USA
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Supervisor for NOAA internship and collaborator for assessing Timor-Leste reef cryptofaunal community.

Trudiann Dale

Bushfire Recovery Program Manager
trudid2@yahoo.com.au
Former Country Director of Conservation International Timor-Leste from 2014 to 2020 and key contact for conducting research in Timor-Leste.