


Dr Caitlin D. Kuempel

Lecturer · Griffith University, Australia
✉ c.kuempel@griffith.edu.au  [cdkuempel](https://orcid.org/cdkuempel)

Education

The University of Queensland, PhD Conservation Science, St. Lucia, QLD, Australia Nov. 2014- Aug. 2018
Northeastern University, M.S. Marine Biology, Nahant, MA Dec. 2013
University of Iowa, B.S. Environmental Bioscience (with honors), B.A. French, Certificate in Sustainability, Honors in coral morphometrics, Iowa City, IA May 2012

Professional Experience

Lecturer, Marine Ecosystem Modelling, Griffith University, Nathan, Australia July 2022-present
Post-doctoral Fellow, ARC Centre of Excellence for Coral Reef Studies, UQ, Brisbane, Australia Feb. 2020-June 2022
Post-doctoral Fellow, NCEAS, Santa Barbara, CA Sept. 2018-Dec. 2019
Conservation Planning Consultant, IUCN and The University of Queensland July-Aug. 2018
Volunteer Researcher: University of Queensland and WWF Indonesia Sept.-Oct. 2016
Research Assistant: Smithsonian Tropical Research Institute, Bocas del Toro, Panama April-Oct. 2014
Conservation Intern: Central Caribbean Marine Institute, Little Cayman, Cayman Islands Jan.-April 2014
Short-Term Fellow: Smithsonian Tropical Research Institute, Bocas del Toro, Panama June-Dec. 2013
Research Assistant: University of Iowa Department of Geoscience, Iowa City, IA May 2009-2010

Service Roles

Academic

- Australian Rivers Institute Early Career Researcher representative (2023- present)
- Griffith Coding Club co-founder and organiser
- World Wildlife Fund Coral Reef Rescue Initiative Monitoring and Data Management Lead (2020-2022)
- Centre for Biodiversity and Conservation Science Management Committee (2021-2022)
- NCEAS Diversity Team representative (2018-2019)
- Reviewer for international publications
- Society for Conservation Biology University of Queensland/Brisbane Chapter (2015-2017)
- PhD seminar series, The University of Queensland, St. Lucia, QLD, Australia (2014-2015)

Community

- RLadies Brisbane Organising Committee (2020-present)
- Software Carpentries instructor
- UNEP MPA Toolbox and Learning Platform (2021)
- STEM engagement activities
 - Brisbane Girls Grammar School Year 9 Geography incursion (2023)
 - Linn-Mar High School Ventures program mentor (2022-present)
 - UQ Twilight Talk Series (2020) -Queensland Catch a Rising Star Program, Queensland National Science Week (2016)
- Reef Life Survey Volunteer (2017)

Professional Membership

Reef Life Survey, Australian Marine Sciences Association, Australian Coral Reef Society, Society for Conservation Biology, International Society for Reef Studies

Grants and Awards

- CBCS Small Grants Scheme (\$4,500 across three successful proposals) (2021)
- University of Queensland Faculty of Science Awards Rising Star - Academic category Finalist (Dec. 2020)
- APEC Science Prize for Innovation, Research and Education Award - shortlisted for Australian nominee (2020)
- University of Queensland Dean's Award for Outstanding HDR Theses (2018)
- ARC Laureate Postgraduate Scholarship (\$119,376 over 4 years) Nov 2014-2018
- Seafood Footprint Displacement Top-up Scholarship (Dr. Carissa Klein, \$5,000) March-June 2018
- 50 Reefs Top-up Scholarship (\$5,000) Sept. 2017
- University of Queensland Career Development Award (\$5,000) May 2017
- Taylor and Francis University of Queensland Library Excellence Award in Research (\$1,000) May 2017
- Smithsonian Tropical Research Institute Short-Term Fellowship (\$2,000) June-Nov. 2013

Peer-Reviewed Publications (h-index 13)

1. Kuempel, C.D., Frazier, M., Verstaen, J., Rayner, P.E., Blanchard, J.L., Bouwman, L., Cottrell, R.S., Froehlich, H.E., Gephart, J.A., Jacobsen, N.S., McIntyre, P.B., Metian, M., Moran, D., Nash, K.L., Tobben, J., Williams, D.R., Halpern, B.S. (2023). Environmental footprints of farmed chicken and salmon bridge the land and sea. *Current Biology*
2. Halpern, B.S., Frazier, M., Verstaen, J., Rayner, P.E., Clawson, S.G., Blanchard, J.L., Cottrell, R.S., Froehlich, H.E., Gephart, J.A., Jacobsen, N.S., Kuempel, C.D., McIntyre, P.B., Metian, M., Moran, D., Nash, K.L., Tobben, J., Williams, D.R. (2022). The environmental footprint of global food production. *Nature Sustainability*
3. Hicks, C.C. Gephart, J.A., Koehn, J.Z., Nakayama, S., Payne, H., Allison, E.H., Delhabib, D., Cao, L., Cohen, P.J., Fanzo, J., Fluet-Chouinard, E., Gelcich, S., Golden, C.D., Gorospe, K.D., Isaacs, M., Kuempel, C.D., Lee, K.N., MacNeil, M.A., Maire, E., Njuki, J., Rao, N., Sumaila, U.R., Selig, E.R., Thilsted, S.H., Wabnitz, C.C.C., Naylor, R.L. (2022). Rights and representation support justice across aquatic food systems. *Nature Food*
4. Klein, C.J., Kuempel, C.D., Watson, R.A., Teneva, L., Coll, M., Mora, C. (2022). Global fishing between jurisdictions with unequal fisheries management. *Environmental Research Letters*
5. Almaraz, M., Kuempel, C.D., Salter, A., Houlton, B.Z., Halpern, B.S. (accepted). The impact of excessive protein consumption on human wastewater nitrogen loading of US waters. *Frontiers in Ecology and the Environment*
6. Clawson, S.G., Blasco, G., Kuempel, C.D., Froehlich, H.E., Cottrell, R.S., Metian, M., Tobben, J., Williams, D.R., Nash, K.L., Frazier, M., Verstaen, J., Halpern, B.S. (2022). Mapping the spatial distribution of global mariculture production. *Aquaculture*
7. Williams, B.A., Watson, J.E.M., Beyer, H.L., Klein, C.J., Montgomery, J., Runting, R.K., Roberson, L.A., Halpern, B.S., Grantham, H.S., Kuempel, C.D., Frazier, M., Venter, O., Wenger, A. (2021). The global rarity of intact coastal regions. *Conservation Biology*
8. Kuempel, C.D., Simmons, B.A., Davey, M. (2022) Assessing the status of existing and tentative marine natural World Heritage areas reveals opportunities to better achieve World Heritage Convention goals. *Journal of Environmental Management*
9. Kuempel, C.D., Tulloch, V.J.D., Giffin, A.L., Simmons, B.A., Hagger, V., Phua, C. and Hoegh-Guldberg, O. (2021). Identifying management opportunities to combat climate, land and marine threats across less climate exposed coral reefs. *Conservation Biology*
10. Roberson, L., Beyer, H.L., O'Hara, C., Watson, J.E.M., Dunn, Daniel, Klein, C.J., Frazier, M., Kuempel, C.D., Williams, B., Grantham, H., Montgomery, J., Kark, S., Runting, R.K. (2021). Multinational

- coordination required for conservation of at least 90% of marine species. *Global Change Biology*
11. Kuempel, C.D., Chauvenet, A.L.M., Symes, W.S., Possingham, H.P.P. (2021). Predicted protected area downsizing decreases habitat representation across terrestrial ecoregions in the tropics and subtropics. *Conservation Science and Practice*
 12. Suarez-Castro, A.F., Beyer, H.L., Kuempel, C.D., Linke, S., Borelli, P., Hoegh-Guldberg, O. (2021). Global forest restoration opportunities to foster coral reef conservation. *Global Change Biology*
 13. Cottrell, R.S., Metian, M., Froehlich, H.E., Blanchard, J.L., Jacobsen, N.S., McIntyre, P.B., Nash, K.L., Williams, D.R., Bouwman, L., Gephart, J.A., Kuempel, C.D., Moran, D.D., Troell, M., Halpern, B.S. (2021) Time to rethink trophic levels in aquaculture policy. *Reviews in Aquaculture*
 14. Kuempel, C.D., Froehlich, H.E., Halpern, B.S. (2021) An informed though experiment exploring the potential for a paradigm shift in aquatic food production. *Ocean and Coastal Management*
 15. Adams, V.M., Dimitrova, N., Possingham, H.P., Allan, J.R., Kuempel, C.D., Peterson, N., Kaiye, A. Keako, M., Tulloch, V.J.D. (2021) Scheduling incremental actions to build a comprehensive national protected area network for Papua New Guinea. *Conservation Science and Practice*
 16. Chauvenet, A.L.M., Watson, J.E.M., Adams, V.M., Di Marco, M., Venter, O., Davis, K.J., Mapping, B., Klein, C.J., Kuempel, C.D., Possingham, H.P. (2020). To achieve big wins for conservation, prioritise protection of ecoregions closest to meeting targets. *One Earth*
 17. Kuempel, C.D., Frazier, M., Nash, K.L., Sand Jacobsen, N., Williams, D.R., Blanchard, J.L., Cottrell, R.S., McIntyre, P.B., Moran, D., Bouwman, L., Froehlich, H.E., Gephart, J.A., Metian, M., Tobben, J., Halpern, B.S. (2020). Integrating life-cycle and impact assessments to map food's cumulative environmental footprint. *One Earth*
 18. Daigle, R., Metaxas, A., Balbar, A., McGowan, J., Trembl, E., Kuempel, C.D., Possingham, H., Beger, M. (2020). Operationalizing ecological connectivity to identify spatial conservation priorities with Marxan Connect. *Methods in Ecology and Evolution*
 19. Kuempel, C.D., Chauvenet, A.L.M., Possingham, H.P., Adams, V.M. (2020). Evidence-based guidelines for prioritizing investments to meet international conservation objectives. *One Earth*
 20. Halpern, B.S., Blanchard, J.L., Bouwman, L., Cottrell, R.S., Froehlich, H.E., Gephart, J.A., Sand Jacobson, N., Kuempel, C.D., McIntyre, P.B., Metian, M., Moran, D., Nash, K.L., Tobben, J., Williams, D.R. (2019). Opinion: Putting all food on the same table: Achieving sustainable food systems requires full accounting. *Proceedings of the National Academy of Sciences*
 21. Kuempel, C.D., Jones, K.J., Watson J.E.M., Possingham, H.P. (2019). Quantifying biases in placement of marine protected areas relative to abatable biodiversity threats. *Conservation Biology*
 22. Jantke, K., Kuempel, C.D., McGowan, J.M., Chauvenet, A.L.M., Possingham, H.P. (2018). Metrics for evaluating representation target achievement in protected area networks. *Diversity and Distributions*
 23. Jones, K.J., Klein, C.J., Halpern, B.S., Venter, O., Grantham, H., Kuempel, C.D., Shumway, N., Friedlander, A.M., Possingham, H.P., Watson, J.E.M. (2018). The location and protection status of Earth's diminishing marine wilderness. *Current Biology*
 24. Kuempel, C.D. Adams, V.M., Possingham H.P., Bode M. (2018) Bigger or better: the relative benefits of protected area network expansion and enforcement for the conservation of an exploited species. *Conservation Letters*
 25. Campbell, J.E., Altieri, A.H., Johnston, L., Kuempel, C.D., Paperno, R., Paul, V.J., Duffy, J.E. (2018) Herbivore community determines the magnitude and mechanism of nutrient effects on subtropical and tropical seagrass. *Journal of Ecology*
 26. Chauvenet, A.L.M., Kuempel C.D., McGowan J., Beger, M., Possingham, H.P. (2017). Methods for calculating Protection Equality for conservation planning. *PloS one*
 27. Kuempel, C.D. and Altieri A. H. (2017). The emergent role of small-bodied herbivores in pre-empting phase shifts on degraded coral reefs. *Scientific Reports*
 28. Kuempel, C.D., Chauvenet, A.L.M., and Possingham H.P. (2016). Equitable representation of ecoregions is slowly improving despite strategic planning shortfalls. *Conservation Letters*
 29. Nelson, H.R., Kuempel, C.D., and Altieri, A.H. (2016). The resilience of reef invertebrate biodiversity to coral mortality. *Ecosphere*

Other Publications

Kuempel, C.D. (2023) Sedimentation sifted out of global pollution priorities. *Science*

Wakwella, A., Wenger, A., Kuempel, C.D., et al. (2022) Managing Watersheds for Coral Reefs and Public Health. A Vibrant Oceans Initiative Whitepaper.

Kuempel C.D., McGowan J., Estradivari, Handaynai C., Daniel D., Possingham H., Ahmadi, G. (2017) Conservation priority gaps in the Sunda Banda Seascape, Indonesia

Select general audience publications (links provided)

1. Kuempel, C.D. (2023) Farmed salmon or chicken? Environmental footprint research can guide eco-conscious consumers. [The Conversation](#)
2. Almaraz, M. and Kuempel, C.D. (2022) The impact of excessive protein consumption on human wastewater nitrogen loading of US waters. [Global Water Forum](#)
3. Kuempel, C.D. and Alyssa Giffin (2021) Resilient reefs, resilient communities: how can we get there? [Catchment to Coast](#)
4. Jones, K., Friedlander, A. Halpern, B., Kuempel, C.D., Klein, C. Grantham, H., Possingham, H., Watson, J., Shumway, N., Venter, O. (2018) New map shows that only 13% of the oceans are still truly wild. [The Conversation](#)
5. Southern Coral Sea [Reef Life Survey blog](#)

Select media interviews and engagement (links provided)

1. Which food is better for the planet? [The Washington Post](#)
2. Food for thought: the carbon footprint of salmon and chicken farming mostly stems from feed. [The Guardian](#)
3. To lower food emissions consider what your dinner ate. [Popular Science](#)
4. Farmed chicken and salmon have a global footprint. [Nature](#)
5. Coming out or not, earthquake aid, and what's the most eco-friendly meat? [Triple J Hack](#)
6. Female scientists encouraging children to embrace science [Courier Mail](#)

Teaching Experience

I currently convene 3804ENV Marine Ecosystem Modelling and 3606ENV Conservation Biology at Griffith University and teach into 3033ESC Environmental Data Analytics.

Supervision

- Maria Christofidis, PhD student (2023-present), Co-primary supervisor: Assessing and planning for climate change impacts to aquaculture to inform resilient and sustainable expansion
- Alana McPherson, Honours student (2023-present), Co-primary supervisor: Evaluating marine protected areas
- Sophie Petrie, Environmental Science Capstone Project (2023-present), primary supervisor. The potential impacts of land-based aquaculture on threatened species in Queensland.
- Emma Arnett, Master's Student (2020-2021), Co-primary supervisor: Quantifying redundant global fisheries trade
- Ella Sinclair, Volunteer (2020): Primary supervisor for conducting literature review of monitoring and evaluation indicators for focal WWF Coral Reef Rescue Initiative countries