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PhD 2010 to 2013

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Influence of reef and coastal-based industries on coral health and disease

Joleah completed a B.Sc. in Neurobiology at the University of Oregon in 2005. During her undergraduate study she assisted in the investigation of *Drosophila* central nervous system development for cancer research. Her interest in disease research led her to the Oregon Center for Clinical Investigations, where she coordinated clinical pharmaceutical studies for the treatment of neurological diseases and disorders.

After learning that disease was recognised as a major factor in the accelerating degradation of coral reefs, Joleah relocated to Australia and completed a MAppSc in Tropical Marine Ecology and Fisheries Biology at JCU in 2009. Joleah is now working as a postdoctoral research associate with Professor C. Drew Harvell at Cornell University in New York.

Due to the growing demand for tourism, fishing, food production, port development and natural resource exploration, many industries are focusing on the world's remaining natural marine areas for expansion, frequently overlapping with locations of coral reefs.

The recent global emergence of coral disease outbreaks and subsequent mortality is recurrently linked with human activities, however almost nothing is known about the impacts of reef and coastal-based industries on coral health and disease. Joleah's research identifies factors associated with industries near reefs that influence coral health and evaluates management tools for mitigating their impacts. She found:

- Coral diseases were 15 times more prevalent at reefs with offshore tourism platforms than at nearby reefs without platforms in the Great Barrier Reef Marine Park.
- Coral disease was increased 3-fold at high use sites compared to low use sites around the island of Koh Tao in Thailand.
- There was a 3-fold reduction in pooled coral disease prevalence on no take inshore reefs around the Whitsunday Islands.
- Reefs exposed to the highest number of days under the sediment plume (296 to 347 days) had 2-fold higher levels of disease relative to reefs with little or no plume exposure (0 to 9 days), following one of the largest dredging projects in Australia, near Montebello and Barrow Islands, WA.
- Corals entangled in derelict fishing line were more susceptible to disease compared to non-entangled corals.



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Publications

Lamb, J.B. & Willis, B.L., 2011. Using coral disease prevalence to assess the effects of concentrating tourism activities on offshore reefs in a tropical marine park. *Conservation biology : the journal of the Society for Conservation Biology*, 25(5), pp.1044–52. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/21848962>.

Maynard, J. a. et al., 2010. Predicting outbreaks of a climate-driven coral disease in the Great Barrier Reef. *Coral Reefs*, 30(2), pp.485–495. Available at: <http://link.springer.com/10.1007/s00338-010-0708-0>