Kenichi W. Okamoto, Ph.D.

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Education

Ph.D. **Biology**, University of California, Los Angeles. **June 2011.**
Dissertation: The interplay between constraints and selection in phenotypic evolution.
Advisor: Dr. Priyanga Amarasekare

A.B. **Statistics**, University of Chicago. **March 2003.**
Departmental and General Honors
Honor's Thesis: On the statistical analysis of stochastic models of extinction.

Employment

Postdoctoral Researcher, Institute for Biospheric Studies, Yale University. January 2015 - .

Postdoctoral Researcher, Department of Entomology, North Carolina State University. June 2011 - December 2014.

Grants and Fellowships

Recommended for funding. National Science Foundation (NSF). Territoriality and reproductive interference between species. Gregory F. Grether (PI) and Kenichi W. Okamoto (Senior Personnel). ($325,000)

NSF. Postdoctoral Research Fellowship in Biology Competitive Area #2 Intersections of Biology and Mathematical and Physical Sciences. 2011. ($189,000; declined offer)

Doctoral Dissertation Improvement Grant (NSF Grant # 0808605). Mechanisms causing harvest induced evolutionary change. 2008-2011. ($11,500)

Systems and Integrative Biology Training Grant (National Institutes of Health). Department of Biomathematics, UCLA. 2008-2009. ($22,000)

International Institute for Applied Systems Analysis (Laxenberg, Austria). Young Scientist Summer Program. Department of Evolution and Ecology. 2008. ($8,000)

University of California Chair's Fellowship (Los Angeles, CA). Department of Ecology and Evolutionary Biology. 2006-2011.

Peer-Reviewed Publications

1. **Okamoto, K. W.**, F. Gould and A. L. Lloyd. 2016. Integrating transgenic vector manipulation with clinical interventions to manage vector-borne diseases. *PLoS Computational Biology* 12:e1004695.

2. B. R. Wasik, A. R. Muñoz-Rojas, **K. W. Okamoto**, K. Miller-Jensen and P. E. Turner. 2016. Generalized selection to overcome innate immunity selects for host breadth in an RNA virus. *Evolution* 70: 270-281.

3. **Okamoto, K. W.**, R. B. Langerhans, R. Rashid* and P. Amarasekare. 2015. Microevolutionary patterns in the common caiman predict macroevolutionary trends across extant crocodilians. *Biological Journal of the Linnean Society.* 116:834-846.
*Undergraduate co-author.

4. **Okamoto, K. W.** 2015. The dynamics of strangling among forest trees. *Journal of Theoretical Biology* 384:95-104.

5. Drury, J.P., **K. W. Okamoto**, C. N. Anderson and G. F. Grether. 2015. Reproductive interference explains persistence of aggression between species. *Proceedings of the Royal Society of London B: Biological Sciences* 282:20142256

6. M. A. Robert, **K. W. Okamoto**, F. Gould, and A. L. Lloyd. 2014. Anti-pathogen genes and the replacement of disease-vectoring mosquito populations: a model-based evaluation. *Evolutionary Applications* 7:1238-1251.

7. **Okamoto, K. W.**, P. Amarasekare and I. T. D. Petty. 2014. Modelling oncolytic virotherapy: Is complete tumor-tropism too much of a good thing? *Journal of Theoretical Biology* 358: 166-178.

8. **Okamoto, K. W.**, M. A. Robert, F. Gould and A. L. Lloyd. 2014. Feasible introgression of an anti-pathogen transgene into an urban mosquito population without using gene-drive. *PLoS Neglected Tropical Diseases* 8: e2827.

9. **Okamoto, K. W.**, M. A. Robert, A. L. Lloyd and F. Gould. 2013. A reduce and replace strategy for suppressing mosquito-borne diseases: Insights from a stochastic, spatial model. *PLoS ONE* 8: e81860.

10. Robert, M. A., **K. Okamoto**, F. Gould and A. L. Lloyd. 2013. A reduce and replace strategy for suppressing mosquito-borne diseases: Insights from a deterministic model. *PLoS ONE* 8: e73233.

11. **Okamoto, K. W.** and G. F. Grether. 2013. The evolution of species recognition in competitive and mating contexts: the relative efficacy of alternative mechanisms of character displacement. *Ecology Letters* 16: 670-678.

12. Grether, G. F., C. N. Anderson, J. P. Drury, A. N. G. Kirschel, N. Losin, **K. Okamoto**, and K. S. Peiman. 2013. The evolutionary consequences of interspecific aggression. *Annals of the New York Academy of Sciences* 1289: 48-68.

13. Legros, M., C. Xu, **K. Okamoto**, T. W. Scott, A. C. Morrison, A. L. Lloyd and F. Gould. 2012. Assessing the feasibility of controlling *Aedes aegypti* with transgenic methods: A model-based evaluation. *PLoS ONE* 7: e52235

14. **Okamoto, K. W.** and P. Amarasekare. 2012. The biological control of disease vectors. *Journal of Theoretical Biology* 309: 47-57. Featured on Malaria Nexus, Sept. 2012.

15. **Okamoto, K. W.**, R. Whitlock, P. Magnan, and U. Dieckmann. 2009. Mitigating fisheries-induced evolution in lacustrine brook charr (*Salvelinus fontinalis*) in southern Quebec, Canada. *Evolutionary Applications* 2: 415-437.

16. Grether, G. F., N. Losin, C. N. Anderson, and **K. Okamoto**. 2009. The role of interspecific interference competition in character displacement and the evolution of competitor recognition. *Biological Reviews* 84:617-635.

Teaching and Mentoring

Introduction to R for Life Scientists — Spring 2012

Teaching Assistant:

- Ecology, Evolution and Biodiversity — Winter 2007
- Mathematical Ecology — Spring 2007
- Molecular Evolution — Spring 2008

North Carolina State University Scholarship of Teaching and Learning (SoTL) Summer Institute Grant (Summer 2013) $1000

List of undergraduate students mentored (9 students total) available upon request.

List of masters students mentored (2 students total) available upon request.

Freelance and pro bono graduate school admissions consulting — 2009 - Present

Professional Service

Reviewer for *American Naturalist*, *Conference Proceedings of the American Institute of Physics*, *Ecology Letters*, *Evolutionary Applications*, *Journal of Animal Ecology*, *Journal of Theoretical Biology*, *Parasites and Vectors*, *Pest Management Science*, *PLoS Neglected Tropical Diseases*, *PLoS ONE*

Invited Talks

Okamoto, K. W., M. Legros, K. Magori, C. Xu, A. L. Lloyd and F. Gould. Mechanistic modelling of *Aedes aegypti*. RAPIDD Workshop on Mosquitoes, Maps and Models, UC Davis, 2014. Davis, CA.

Okamoto, K. W.. The limits and necessity of prediction in ecology. Department of Biology, Bryn Mawr College, 2013. Bryn Mawr, PA.

Okamoto, K. W., M. A. Robert, A. L. Lloyd and F. Gould. Modeling mosquito population dynamics: from the containers to a city. NIMBioS Investigative Workshop: Modeling Dengue, 2012. Knoxville, TN.

Campus Talks

Okamoto, K. W., M. A. Robert, A. L. Lloyd and F. Gould. Comparing strategies for transgenic approaches to reduce dengue transmission. School of Veterinary Medicine, NC State University, 2014. Raleigh, NC.

Okamoto, K. W.. Forward time population genetics simulations on commodity graphics processing units. Department of Biomathematics, NC State University, 2013. Raleigh, NC.

Conference Presentations

E. Griffiths, M. Legros, **K. Okamoto**, A. Perkins, T. W. Scott, F. Gould, A. L. Lloyd. Extending a detailed *Aedes aegypti* model to simulate single and combined dengue control in Iquitos, Peru. American Society of Tropical Medicine and Hygiene, 63rd Annual Meeting, 2014. New Orleans, LA.

Morrison, A. C., H. Astete, B. Reiner, E. Requena, C. Del Aguila, R. Pinedo, G. Vasquez, H. Jaba, E. Chalco, H. Rodriguez-Ferruci, **K. Okamoto**, A. Lloyd, S.T. Stoddard, T.W. Scott, F. Stell, F. Gould. Ultra-low volume indoor emergency spray applications in the city of Iquitos, Peru: value added from evaluation, operational quality control, and added fumigation cycles. International Dengue Conference, 2013. Bangkok, Thailand.

Okamoto, K. W., M. A. Robert, A. L. Lloyd and F. Gould. Modeling a reduce and replace strategy in the field. Vector-based Control of Transmission: Discovery Research 2011 Annual Network Meeting. Irvine, CA.

Okamoto, K. W. and P. Amarasekare. The transmission-virulence trade-off preserves tumor cell specificity in oncolytic measles viruses. Ecological Society of America 2010. Pittsburgh, PA.

Okamoto, K. W. and P. Amarasekare. How ecological interactions determine the evolution of life-history syndromes. Ecological Society of America 2009. Albuquerque, NM.

Okamoto, K. W. and P. Amarasekare. How do evolving dispersal strategies and spatial configuration affect local adaptation? Evolution 2009. Moscow, ID.

Baxter, I., R. Williams, J.J. Emerson, **K. Okamoto**, D. Salt, and J. Borevitz. 2007. Deletion and duplication detection in *Arabidopsis* using tiling arrays. Botany and Plant Biology Conference 2007. Chicago, IL.

Okamoto, K.W. and P. Amarasekare. A prolegomena to the study of harvest-induced adaptive change in crocodilians. 3rd Annual Meeting of the Latin American/Caribbean Section of the IUCN Crocodilian Specialist Group 2005. Santa Fe, Argentina. Delivered in Spanish.

Language Skills

English (native), Japanese (native), Spanish (advanced)