

ANDREW M. KRAMER

Curriculum Vitae

September 2016

Address: Odum School of Ecology
University of Georgia
140 E. Green St.
Athens, GA 30602
(706) 583-5538
email: kramera3@uga.edu
website: <http://kramer.ecology.uga.edu>

EDUCATION

- Ph.D. in Fisheries and Wildlife / Ecology, Evolutionary Biology and Behavior (dual degree), 2007, Michigan State University. Advisor: Orlando Sarnelle
- Bachelor of Science, 2000, Saint Louis University, Honors degree, Biology (summa cum laude)

ACADEMIC APPOINTMENTS

- *Assistant Research Scientist*, Odum School of Ecology, University of Georgia, Aug 2013 – present. Member of the Graduate Faculty.
- *Postdoctoral researcher*, Odum School of Ecology, University of Georgia, Sept. 2009 – April 2013. Mentor: Dr. John Drake
- *Instructor*, Department of Biology, Gainesville State College, Georgia, Summer 2009.
- *Postdoctoral researcher*, Odum School of Ecology, University of Georgia, Oct. 2007-March 2009. Mentor: Dr. John Drake
- *Ph.D. candidate*, Michigan State University, Department of Fisheries and Wildlife, Aug. 2000-Aug. 2007. Advisor: Dr. Orlando Sarnelle

RESEARCH GRANTS

- *National Science Foundation, Macrosystems Biology*, “Multi-scale dynamics of white-nose syndrome in North America”, 2015-2017. **PI: Kramer, A.**, co-PI: Drake, J.M. (\$291,000)
- *Edward and Phyllis Reed Endowment*, “Pheromone specificity between closely and distantly related species in the genus *Hesperodiaptomus*”. 2010. (**Kramer co-PI**, collaborative with Jeannette Yen, Georgia Institute of Technology, \$5900).
- *Valentine/Eastern Sierra Reserve Graduate Student Grant*, University of California Reserve System, 2006 (\$1500)
- *Sigma Xi Grant-in-Aid of Research*, 2006 (\$580)
- *National Science Foundation Graduate Research Fellowship*, 2001-2005 (~\$100,000)
- *Michigan State University Graduate School Research Enhancement Award*, 2005 (\$1000)
- *Research Experience for Undergraduates Supplement* to NSF award "Recovery of ecosystem structure and function following exotic species eradication" (co-authored with PIs Orlando Sarnelle and Roland Knapp), 2002 (\$6000)

PEER-REVIEWED PUBLICATIONS *indicates undergraduate author

- **Kramer, A.M.**, J.T. Pulliam, L.W. Alexander, A.W. Park, P. Rohani and J.M. Drake. 2016. Spatial spread of the West Africa Ebola epidemic. Royal Society: Open Science, 3 160294. doi: 10.1098/rsos.160294
- Lodge, D.M., P.W. Simonin, S.W. Burgiel, R.P. Keller, J.M. Bossenbroek, C.L. Jerde, **A.M. Kramer**, et al. 2016. Invasion science to inform policy and management: risk analysis and bioeconomics of invasive species. In press, Annual Review of Environment and Resources. (*Lead section author*).
- Dallas, T., **A.M. Kramer**, M. Zokan, J.M. Drake. 2016. Ordination obscures the influence of environment on plankton metacommunity structure. In press. Limnology and Oceanography Letters.
- Wittman, M.E., G. Annis, **A.M. Kramer**, L. Mason, C. Riseng, E. Rutherford, W.L. Chadderton, D. Beletsky, J.M. Drake and D.M. Lodge. 2016. Refining species distribution model outputs using landscape-scale habitat data: Forecasting Grass Carp and Hydrilla establishment in the Great Lakes region. In press. Journal of Great Lakes Research.
- **Kramer, A.M.**, J.E. Ward, F.C. Dobbs, M. Pierce, and J.M. Drake. 2016. The contribution of marine aggregate-associated bacteria to the accumulation of pathogenic bacteria in oysters: an agent-based model. In press. Ecology and Evolution
- Kaul, R.B., **A.M. Kramer**, F.C. Dobbs, J.M. Drake. 2016. Experimental demonstration of an Allee effect in microbial populations. Biology Letters. 12: 20160070. doi: 10.1098/rsbl.2016.0070
- Han, B.A., **A.M. Kramer**, and J.M. Drake. 2016. Global patterns of zoonotic disease in mammals. Trends in Parasitology. 32: 565-577. doi: 10.1016/j.pt.2016.04.007. *Cover article, popular press including: CNN, BBC, Washington Post*
- Drury, K.L.S., J.D. Suter*, J.B. Rendall*, **A.M. Kramer** and J.M. Drake. 2015. Immigration can destabilize tri-trophic interactions: implications for conservation of top predators. Theoretical Ecology. 8:285-296. doi: 10.1007/s12080-014-0249-1
- Drake, J.M., R.B. Kaul, L. Alexander, S. O'Regan, **A.M. Kramer**, et al. 2015. Ebola cases and health system demand in Liberia. PLOS Biology, Jan 13: 10.1371/journal.pbio.1002056
- **Kramer, A.M.** and J.M. Drake. 2014. Time to competitive exclusion. Ecosphere, 5:52. <http://dx.doi.org/10.1890/ES14-00054.1>
- Lasley-Rasher, R.S., **A.M. Kramer**, V. Burdett-Coutts, J. Yen. 2014. Prevalence of fertilization limitation in the coastal marine copepods *Temora longicornis* and *Eurytemora herdmani*. PLoS ONE 9(11):e112920. doi: 10.1371/journal.pone.0112920
- **Kramer, A.M.**, M.M. Lyons, F.C. Dobbs, J.M. Drake. 2013. A stochastic model of bacterial colonization and extinction on marine aggregates. Ecology and Evolution, 3: 4300-4309. doi: 10.1002/ece3.789
- Maher, S.P., **A.M. Kramer**, et al. 2012. Non-diffusive spread of White-nose Syndrome regulated by spatial heterogeneity and climate. Nature Communications 3, 1306 doi:10.1038/ncomms2301
- Drake, J.M. and **A.M. Kramer**. 2012. Mechanistic analogy: how microcosms explain nature. Theoretical Ecology 5:433-444 doi: 10.1007/s12080-011-0134-0

- **Kramer, A. M.**, O. Sarnelle and J. Yen. 2011. The effect of mating behavior and temperature variation on the critical population density of a freshwater copepod. *Limnology and Oceanography* 56:707-715.
- Drake, J.M. and **A.M. Kramer**. 2011. Allee effects. *Nature Education Knowledge* 2(9):2.
- Yen, J., J. Sehn*, K. Catton, **A. M. Kramer** and O. Sarnelle. 2011. Trail following in 3D by the freshwater copepod *Hesperodiaptomus shoshone*. *Journal of Plankton Research*. 33:907-916.
- Vercken, E., **A.M. Kramer**, P.C. Tobin, J.M. Drake. 2011. Critical patch size generated by Allee effect in gypsy moth, *Lymantria dispar* (L.). *Ecology Letters*. 14:179-186.
- **Kramer, A. M.** and J. M. Drake. 2010. Experimental demonstration of population extinction due to a predator-driven Allee effect. *Journal of Animal Ecology* 79: 633–639.
Featured as an In Focus article with commentary: S.D. Gregory and F. Courchamp. 2010. Safety in numbers: extinction arising from predator-driven Allee effects. Journal of Animal Ecology 79:511-514.
- Griffen, B., D. Spooner, **A. M. Kramer**, A. Santoro, A. Spivak, and N. Kelly. 2010. Moving species redundancy toward a more predictive framework. p. 30-46. In: P.F. Kemp [ed.], *Eco-DAS VIII Symposium Proceedings*. ASLO. doi:10.4319/ecodas.2010.978-0-9845591-1-4.30
- **Kramer, A. M.**, B. Dennis, A.M. Liebhold, and J. M. Drake. 2009. The evidence for Allee effects. *Population Ecology* 51: 341-354.
- **Kramer, A. M.**, O. Sarnelle and R. A. Knapp. 2008. Allee effect limits colonization success of sexually reproducing zooplankton. *Ecology* 89: 2760–2769.
- **Kramer, A. M.** and O. Sarnelle. 2008. Limits to genetic bottlenecks and founder events imposed by the Allee effect. *Oecologia* 157:561-569.
- **Kramer, A. M.** and L. Francis. 2004. Predation resistance and nematocyst scaling for *Metridium senile* and *M. farcimen*. *Biological Bulletin* 207 (2): 130-140.

Papers in review

- **Kramer, A.M.**, G. Annis, M.E. Wittman, W.L. Chadderton, E.S. Rutherford, D.M. Lodge, L. Mason, D. Beletsky, C. Riseng, and J.M. Drake. Suitability of Great Lakes for invasive species based on global species distribution models and local aquatic habitat. In review.
- Berec, L., **A.M. Kramer**, V. Bernhauerova, J.M. Drake. Density-dependent selection on mate-searching traits and evolution of mate-finding Allee effects. In review. *Journal of Animal Ecology*.
- Schmidt, J.P., A.W. Park, **A.M. Kramer**, B.A. Han, L.W. Alexander and J.M. Drake. Spatiotemporal fluctuations and triggers of Ebolavirus spillover. In review.

COURSES TAUGHT

- **Instructor**, ECOL 1000 Ecological Basis of Environmental Issues, University of Georgia (Fall 2016: 15 students)
- **Co-Instructor**, ECOL 4500 Evolutionary Ecology, University of Georgia (Spring 2015: 13 students).
- **Instructor**, BIOL 1101 Biology: the Human Experience, Gainesville State College, Gainesville, GA. (Summer 2009: 2 sections of lecture and laboratory, 20 students each)
- **Co-Instructor**, ECOL 4000/6000 Population and Community Ecology, University of Georgia (Fall 2008: 20 students).

- **Instructor**, ECOL 3500 Ecology, University of Georgia (Summer 2008: 28 students).
- Guest Lecture, FYOS 1001 Big Data, University of Georgia (2016: 15 students).
- Guest Lectures (2), ECOL 8910 Perspectives in Computational Ecology: Species Distribution modeling, (2016: 16 students), MaxEnt, range bagging, model evaluation
- Guest Lecture, ECOL 4000/6000 Population and Community Ecology, University of Georgia (2015: 35 students), predator-prey interactions.
- Guest Lecture, FYOS 1001: The Structure of Scientific Revolutions, University of Georgia (2013: 10 students), led discussion about what scientists do for this freshman odyssey course.
- Guest Lecture, ECOL 8310 Population Ecology, University of Georgia (2011: 25 students), one lecture, one discussion.
- Guest Lecture, ECOL 8310 Population Ecology, University of Georgia (2009: 16 students), one lecture, two discussions, lab exercise.
- Guest Lecture, ECOL 8310 Population Ecology, University of Georgia (2008: 12 students)
- Guest Lecture, FW 443 Restoration Ecology, Michigan State University (2006: 25 students)
- Guest Lecture, FW 109 Conservation of Freshwater Ecosystems, Michigan State University (2002 : 40 students)
- Teaching Assistant, ISP 217L Water and the Environment Laboratory, Michigan State University (2007, 2006, 2005: 80 students each semester)
- Teaching Assistant, MMG 426 Biogeochemistry, Kellogg Biological Station, Michigan State University (2006: 12 students)

MENTORING EXPERIENCE

Advisor for NSF Research Experience for Undergraduates students

- Summer 2016: Yaw Kumi-Ansu
 - Project: Investigating accuracy of climate vs. yearly weather for predicting the spread of white-nose syndrome in the United States
- Summer 2015: Annakate Schatz
 - Project: Model accuracy in forecasting pathogen spread using climatic data
- Summer 2002: Blair Wilson
 - Project: Detecting mating pheromones in *Hesperodiptomus shoshone*

Mentoring undergraduate research:

- Spring 2014: Navdeep Singh: Predicting spatial spread of non-stationary wildlife disease
- Summer 2013 – Summer 2014: Deeran Patel: Predicting spatial spread of non-stationary disease using species distribution models
- Spring 2010-Spring 2012: Tierney O’Sullivan and Theresa Stratmann, experimental and theoretical research on *Daphnia* population dynamics.

Advisor for undergraduates assisting with my Ph.D. research and the High Sierra Experimental Lakes Project

- Summer 2004: Chris Brownfield

- Summer 2003: Greg Goldsmith
- Project: *Dispersal of limnetic zooplankton via streams in Humphreys Basin, Sierra Nevada*

Active in providing statistical and modeling consultation and/or tutoring for several graduate students: Mike Buchalski, Western Michigan University; Trip Armstrong, UC Davis; Tad Dallas, UGA; Reni Kaul, UGA; Jason Lang, UGA; Keri Goodman, UGA; Sarah Heisel, UGA; Rachel Lasley, Georgia Tech, Larisa Pender-Healey, Georgia Tech and others in a more limited role.

PRESENTATIONS AND WORKSHOPS

Invited:

- Summer Academy, Exploring Environmental Science: Hands on program on aquatic ecology for 11-14 year old students. State Botanical Garden of Georgian June 6, 2016.
- Organizer, Oral Session for the 100th meeting of the Ecological Society of America in Baltimore, MD. Allee effects: theory and applications. Co-organized with Ludek Berec and John Drake.
- Cary Institute of Ecosystem Studies, Millbrook, New York. November 2014.
- Leibniz Institute for Freshwater Ecology and Inland Fisheries (IGB), Berlin, Germany. April 2014.
- Kennesaw State University, Ecology and Evolution seminar series, September 2013.
- Leadership without Limits! Presentation on species interactions and species conservation in aquatic systems. Program is for high school students that are children of migrant farm workers, will be developing community projects on water issues. June 2013.
- Computational Ecology and Epidemiology Study Group, University of Georgia, tutorial on using R to produce high quality figures and graphics. February 2012
- Mammoth Lakes Academy (high school), research and career seminar, August 2011
- University of South Carolina, Biological Sciences seminar, March 2011
- Ohio State University, School of Environment and Natural Resources, February 2011
- Oceans and Human Health, Gordon Research Seminar, June 2010
- Eco-DAS symposium, University of Hawaii-Manoa, October 2008
- Auburn University, Fisheries and Allied Aquaculture seminar, September 2008
- Michigan State University, Fisheries and Wildlife Graduate Student Organization seminar April 2006

Contributed: (* indicates undergraduate author)

- A.M. Kramer, M.E. Wittman, G. Annis, L. Mason, C. Riseng, E. Rutherford, W.L. Chadderton, D. Beletsky, J.M. Drake and D.M. Lodge. Predicting habitat suitability for invasive species in the Great Lakes: Combining species distribution models and high resolution aquatic variables. (poster). Ecological Society of America, Aug 2015, Baltimore.
- Drake, J.M., A.M. Kramer, L. Alexander, J.T. Pulliam, & A.W. Park. Spatial spread of the West Africa Ebola epidemic at two scales. Society for Mathematical Biology Annual Meeting, July 2, 2015. (Invited presentation).
- Maher, S.P., A.M. Kramer, J.T. Pulliam, K.E. Langwig, A.M. Kilpatrick, W.F. Frick and J.M. Drake. Visiting an old friend: using recent data to revise expectations of white-nose syndrome spread. American Society of Mammologists, June 2015, Jacksonville.

- Kramer, A.M., D. Patel*, J.M. Drake. Predicting future spread during an outbreak using species distribution models. Ecological Society of America, Aug 2014, Sacramento.
- Kaul, R.B., A.M. Kramer, F.C. Dobbs, J.M. Drake. Allee effects: scaling down to the microbial level. Ecological Society of America, Aug 2014, Sacramento.
- Kramer, A.M., G. Annis, M. E. Wittmann, W. L. Chadderton, E. Rutherford, L. Mason, J. M. Drake. Predicting potential distribution of invasive species using range bagging: golden mussel and killer shrimp in the Great Lakes. Joint Aquatic Sciences Meeting, May 2014, Portland, OR.
- Kramer, A.M., F. Dobbs, M. Maille Lyons, J.M. Drake. Tiny islands: Colonization and extinction of microbial species on marine aggregates. Ecological Society of America, Aug. 2013, Minneapolis.
- Kramer, A.M., J. E. Ward, M. Pierce, F. Dobbs, J.M. Drake. Understanding the contribution of marine aggregate-associated bacteria to pathogen load in oysters using an agent-based model. Association for the Sciences of Limnology and Oceanography, Feb. 2013, New Orleans.
- Kramer, A.M., J. E. Ward, M. Pierce, F. Dobbs, J.M. Drake. The contribution of marine aggregate-associated bacteria to pathogen load in oysters: an agent-based model. NSF Ecology and Evolution of Infectious Disease PI meeting, 2013, Athens GA (poster)
- Kramer, A.M., J.T. Pulliam, S.P. Maher, and J.M. Drake. Simplifying networks: spread of White-nose syndrome in North America. Ecological Society of America 2012, Portland, OR.
- Maher, S.P., A.M. Kramer, et al. Non-diffusive spread of White-nose Syndrome regulated by spatial heterogeneity and climate. American Society of Mammologists June 2012, Reno, NV.
- Kaul, R.B., A.M. Kramer, F.C. Dobbs, J.M. Drake. Allee effects in experimental microbial systems. American Society for Microbiology 2012, San Francisco, CA. (poster).
- Kramer, A.M. and J.M. Drake. Population variance and extinction of two competitors consuming a common resource. Ecological Society of America 2011, Austin TX.
- Theresa Stratmann*, Tierney O'Sullivan*, Amara Channell*, Andrew Kramer, Marcus Zokan, Andrea Silletti and John Drake. Two paths to extinction: effect of deteriorating environments on extinction time and distribution. Ecological Society of America 2011, Austin TX. (poster)
- Kramer, A.M. and J.M. Drake. Mechanistic model of bacterial persistence on marine aggregates. NSF Ecology and Evolution of Infectious Disease PI meeting, 2011, Madison WI (poster)
- Kramer, A.M., E. Vercken, P. Tobin, J.M. Drake. Allee effects induce critical area for establishment in gypsy moth invasion. Ecological Society of America 2010, Pittsburgh, PA.
- M. Maille Lyons and A. M. Kramer. Microscopic islands: Modeling the theory of island biogeography for aquatic pathogens colonizing marine aggregates. NSF Ecology and Evolution of Infectious Disease PI meeting, 2010, Atlantic City NJ (poster)
- Kramer, A.M. and J.M. Drake. Allee effect due to predator functional response: effects on population growth rate and extinction in an experimental zooplankton system. Ecological Society of America 2008, Milwaukee, WI. (poster)
- Kramer, A.M. and O. Sarnelle. The Allee effect limits the loss of genetic variability during population bottlenecks. Ecological Society of America 2007, San Jose, CA.
- Kramer, A.M. and O. Sarnelle. Allee effect on population growth rate in sexually reproducing zooplankton. American Society of Limnology and Oceanography 2007 Aquatic Sciences meeting, Santa Fe, NM
- Kramer, A.M., Sarnelle, O, and Knapp, R.A. Allee effect limits re-establishment of an alpine

copepod: multi-lake stocking experiment. American Society of Limnology and Oceanography 2005 Summer meeting, Santiago de Compostela, Spain

Workshops:

- Great Lakes Mississippi Rivers Interbasin Study – Brandon Road: expert elicitation on effect of management scenarios on invasive scud – *Apocorophium lacustre*. (Invited). December 2015.
- Marine Biosecurity Workshop: Research frontiers from integrative marine biosecurity analyses. Environment Institute, University of Adelaide, Australia. (Invited).
- NIMBioS Investigative Workshop: Individual-based Ecology of Microbes. National Institute for Mathematical and Biological Synthesis, University of Tennessee, June 2011.

SCHOLARSHIPS, HONORS AND AWARDS

- Ecological Dissertations in the Aquatic Sciences participant (Eco-DAS VIII, formerly DIALOG) (2008)
- Michigan State University Dissertation Completion Fellowship, 2007
- Michigan State University Ecology, Evolutionary Biology and Behavior Fellowship, 2006
- Michigan State University Distinguished Fellowship, 2000 and 2004
- Fisheries and Wildlife Department Graduate Student Organization travel grant, 2005 and 2007
- Ecology, Evolutionary Biology and Behavior program travel grant, 2005 and 2007
- Saint Louis University, Outstanding Senior in Department of Biology, 2000

PROFESSIONAL AND LEADERSHIP ACTIVITIES

- **Journal special issues:** Journal of Animal Ecology, Special Feature on Allee effects, 2016
- **Journal reviews:** Ecology (4), Ecology Letters (3), Oikos (4), Proceedings of the Royal Society B (1), American Naturalist (1), Limnology and Oceanography (1), Ecological Applications (2), Evolution (1), Journal of Animal Ecology (4), Nature Communications (1), Biology Letters (1), Ecosphere (2), Oecologia (1), Ecology and Evolution (1), Genetics (2), Conservation Biology (1), Bulletin of Mathematical Biology (1), Biological Invasions (1), Diversity and Distributions (1), Methods in Ecology and Evolution (1), Ecography (2), Ecological Modelling (1), Journal of Applied Ecology (1), Behavioral Ecology (1), Ecological Entomology (1), Behaviour (1), Behavioral Ecology and Sociobiology (1), Restoration Ecology (1), PLoS ONE (4), Population Ecology (2), Environments, Systems and Decisions (1), American Midland Naturalist (1), Transactions American Fisheries Society (1), Journal of Mammology (1).
- **Proposal reviews:** NSF (4), Oregon Sea Grant.
- **Contributing expert:** Great Lakes Mississippi Rivers Interbasin Study – Brandon Road: expert elicitation on effect of management scenarios on invasive scud – *Apocorophium lacustre*. December 2015.
- **Curriculum reviews:** SEPUP/Science Education for Public Understanding Program, Lawrence Hall of Science, UC Berkeley
- **Presentation judge,** Odum School of Ecology Graduate Student Symposium, 2010, 2011, 2013-2016. Georgia Science and Engineering Fair: 2015, 2016.

- **Professional Societies:** Ecological Society of America, American Society of Limnology and Oceanography
- **Graduate representative,** Fisheries and Wildlife Department Graduate Committee, Fall 2004-Spring 2006
- **Responsible Conduct of Research:**
 - 6 part seminar series on research ethics, completed in 2005 (Michigan State University)
 - CITI online research ethics module, 2010, 2015 (University of Georgia)