

Rebecca M. Clark

Postdoctoral Research Associate
 Department of Entomology
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Expertise: Nutritional physiology, behavioral ecology, social evolution, social insects

Appointments

2011- Postdoctoral Scientist, Texas A&M University: Nutrient regulation and physiological allocation in crickets (Supervisors: Spencer Behmer and Anthony Zera)

Education

Ph.D., Arizona State University, 2011 (Biology; Supervisor: Jennifer H. Fewell).
 B.A., Tufts University, 2003 (Bio-Psychology; summa cum laude with highest thesis honors; Supervisor: Klaus Miczek)

Grants and Awards

2013 NSF REU (supplement to NSF IOS-1121960) "Diet composition and feeding strategies of *Gryllus texensis* crickets," Co-PI: Spencer Behmer; \$3200
 2010-2012 NSF IOS-1011171 "Dissertation Research: Regulation of colony growth in leafcutter ants," Co-PI: Jennifer Fewell (\$13,334)
 2010-2011 NSF IOS-0964277 "Conference Grant: Social Biomimicry: Conference on Insect Societies and Human Design," PI: Jennifer Fewell (\$16,838)
 2009-2010 Arizona State University, Frontiers in Life Sciences Conference Grant: "Social Biomimicry: Insect Societies and Human Design," Co-PI with C.T. Holbrook, D. Moore, R.P. Overson, C.A. Penick, and A.A. Smith (\$29,975)
 2009-2010 Arizona State University, Graduate and Professional Students Association Event Grant, "Social Biomimicry: Insect Societies and Human Design," Co-PI with C.T. Holbrook, D. Moore, R.P. Overson, C.A. Penick, and A.A. Smith (\$2,000)
 2010 First Place, Student Competition, Entomological Society of America Annual Meeting
 2007 Sigma Xi Grants-in-Aid of Research, "Nutritional dynamics of leafcutter ant colonies: Characterizing the relationship between the fungal substrate and fungus growth," (\$400)
 2006 Arizona State University, Graduate and Professional Students Association, "Regulation of leafcutter and colony growth by its mutualist fungus: A stoichiometric approach," (\$2000)

Peer-Reviewed Publications

9. **Clark, R.M.**, and Fewell, J.H.. (in press) Transitioning from unstable to stable growth dynamics during early colony ontogeny in the desert leafcutter ant *Acromyrmex versicolor*. **Behavioral Ecology and Sociobiology**.

8. **Clark, R.M.**, and Fewell, J.H. (in press) Social dynamics drive selection in cooperative associations of ant queens. **Behavioral Ecology**.
7. Overson, R., Gadau, J., **Clark, R.M.**, Pratt, S.C., and Fewell, J.H. (in press). Behavioral transitions with the evolution of cooperative nest founding by harvester ant queens. **Behavioral Ecology and Sociobiology**.
6. **Clark, R.M.**, McConnell*, A., Zera, A.J., and Behmer, S.T. (2013). Nutrient regulation strategies differ between cricket morphs that trade-off dispersal and reproduction. **Functional Ecology**. doi: 10.1111/1365-2435.12103
5. Kang, Y., **Clark, R.**, Makiyama, M., and Fewell, J. (2011). Mathematical modeling on obligate mutualism: Interactions between leaf-cutter ants and their fungus garden. **Journal of Theoretical Biology** 289:116-127.
4. Holbrook, C.T., **Clark, R.M.**, Moore, D., Overson, R.P., Penick, C.A., and A.A. Smith. (2010). Social insects inspire human design. **Biology Letters** 6(4): 431-433.
3. Holbrook, C.T., **Clark, R.**, Jeanson, R., Bertram, S., Kukuk, P., and Fewell, J.H. (2009). Emergence and consequences of division of labor in forced associations of the normally solitary halictine bee *Lasioglossum* (Ctenonomia) NDA-1. **Ethology** 115:301-310.
2. Jeanson, R., **Clark, R.**, Holbrook, C.T., Bertram, S., Fewell, J.H., and Kukuk, P. (2008) Division of labour and socially-induced changes in response thresholds in associations of solitary Halictine bees. **Animal Behavior** 76:593-602.
1. **Clark, R.**, Anderson, K.E., Gadau, J., Fewell, J.H. (2006) Behavioral regulation of genetic caste determination in a *Pogonomyrmex* **population with dependent** lineages. **Ecology** 87(9): 2201-2206.

Other Academic Publications

Clark, R., Fewell, J.H. (2004) Eusociality. In: Beckoff, M., ed. *The Encyclopedia of Animal Behavior*. Greenwood Press: Connecticut. 992-993.

Popular Science Articles

Clark, R.M. 2009. Ant Farm. Ask a Biologist http://askabiologist.asu.edu/explore/ant_farm

Clark, R.M. 2009. Collecting Ants. Ask a Biologist <http://askabiologist.asu.edu/explore/collecting-ants>

Clark, R.M. 2009. Cool Ant Experiments. Ask a Biologist <http://askabiologist.asu.edu/ant-experiments>

Clark, R.M. and C.T. Holbrook. 2010. Ant Farm: Ask-a-Biologist activity for the classroom and home. Ask a Biologist http://askabiologist.asu.edu/sites/default/files/resources/activities/ant_farm/ant_farm_activity_packet.pdf

Holbrook, C.T. and R.M. Clark. 2009. Secrets of a superorganism. Ask a Biologist <http://askabiologist.asu.edu/content/secrets-superorganism>

Invited Presentations

Clark, R. (2013) Nutrition in insects: A tale of two paradigms. Department of Entomology Seminar, Texas A&M University.

Clark, R. (2012) Using R for Behavioral Analysis. School of Life Sciences, Arizona State University.

Clark, R., and Fewell, J.H. (2007) The sociality paradox: Social organization in Pogonomyrmex queen associations. HexaPodium, Center for Insect Science, Arizona State University and University of Arizona

Research Mentoring

Undergraduate honors theses

Kimberly Shaffer, ASU, 2005-2010, "Identification of an exudate produced by fungal gardens of the desert leafcutter ant *Acromyrmex versicolor*," (co-mentored with Jennifer Fewell); Master's of Business, ASU

Jennifer Hale, ASU, 2007-2009, "Division of labor as a function of *A. versicolor* worker size," (co-mentored with Jennifer Fewell); Master's in Biology, The Ohio State University

Leah Drake, ASU, 2007-2009, "Division of labor scales with colony size in desert leafcutter ants," (co-mentored with Jennifer Fewell); Master's in Teaching, University of San Francisco

Eric Ovalle, ASU, 2004-2005, "The division of labor in small social groups of the seed harvester ant *Pogonomyrmex barbatus*." (co-mentored with Jennifer Fewell)

Other undergraduate researchers (co-mentored with supervisors)

Kerstin Alander, TAMU, 2012-present, "Diet composition and feeding strategies of *Gryllus texensis* crickets," <http://summerofcrickets.wordpress.com/>

Lewis Sherer, TAMU, 2013-present

Emily Franco, TAMU, 2012

Daeho Pak, ASU, 2010-2011

Matthew Barnard, ASU, 2011

Sarah Drayer, ASU, 2009-2010

Rini Parekh, ASU, 2009

Aaron Bynum, 2008, Currently earning a degree in dentistry

Carmenlita Chief, ASU, 2005-2006, Currently earning a Master's of Public Health at the University of Arizona

Antonio Benavidez, ASU, 2005-2006, Master's of Public Policy, Harvard Kennedy School of Government

Teaching

Teaching assistant, Arizona State University

- BIO 340: General Genetics (Summer 2010, Spring 2011). Led recitation sessions to aid students in problem-solving skill development; tutored students on fundamental genetic concepts; graded assignments
- BIO 187: General Biology I (Fall 2006-2007, 2008-2010, Spring 2010). Developed and taught hands-on, inquiry-based lab curriculum emphasizing scientific literacy skills and the study of ecology, evolution, behavior and genetics; wrote and graded assignments
- BIO 187H: Honors Lab Instructor, General Biology I. (Fall 2008). Developed additional laboratory activities to challenge gifted students to broaden critical thinking and communication skills
- BIO 201: Human Anatomy and Physiology (Fall 2004-2005, Spring 2005-2006, Summer 2009). Taught histology, musculoskeletal anatomy and neuroanatomy using hands-on materials.
- BIO 100: Introductory Biology for Non-Majors (Fall 2003, Spring 2004). Used an inquiry-based approach to teach the fundamentals of the scientific method.

Drop-in Tutor in Writing, Biology, Psychology, and Statistics for undergraduate Native American students. American Indian Institute, Arizona State University
(Fall 2005, Spring 2006, Summer 2006)

Writing Fellow. Writing, Thinking, and Speaking Center, Tufts University

(Fall 2000 - Spring 2003) Tutored between twelve and twenty students taking writing-intensive, discipline-specific courses in how to effectively write and revise writing for disciplines including history, biology, psychology, and engineering.

Professional and University Service

Peer Review: *Functional Ecology*, the *Journal of Insect Physiology*, *Ecological Entomology*, *Behavioral Ecology and Sociobiology*, *Insectes Sociaux*

Grant Review: Graduate and Professional Students Association, Arizona State University, 2005

Graduate Student Representative:

North American Section to the International Committee, International Union for the Study of Social Insects (IUSI), 2010

Research and Training Initiatives Committee, School of Life Sciences, 2005-2008

Animal Behavior Student Rep, School of Life Sciences, Arizona State University, 2004-2006

Web Administrator

Graduate Student Blackboard Site. Created and managed a site for over 200 graduate students in the School of Life Sciences, 2008-2009

Social Insect Research Group, Arizona State University, 2006-2009

Professional Affiliations

Society for Integrative and Comparative Biology (SICB)

International Union for the Study of Social Insects, North American Section (NAS-IUSI)

Entomological Society of America (EntSoc)
Association for Women in Science (AWIS)
Phi Beta Kappa National Honors Society