

## Christina L. Kwapich

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Starting 2020 **Assistant Professor**, University of Massachusetts Lowell  
Department of Biological Sciences

2015 -Present **Postdoctoral Research Fellow**, Arizona State University  
School of Life Sciences, Social Insect Research Group  
Advised by Bert Hölldobler

### Education

2008 -2014 **PhD, Evolution and Ecology**, Department of Biological Science, Florida State University  
Advised by Walter R. Tschinkel

2003 -2007 **BS, Entomology**, Department of Entomology, The Ohio State University  
Advised by Susan C. Jones and Joan Herbers

### Additional Training

2016 Workshop on **Architecture and Collective Behavior**, Tempe, AZ  
2014 Apalachee Beekeepers Association **Beekeeping Course**, Tallahassee, FL  
2012 Sable Systems **Respirometry Course**, Las Vegas, NV  
2009 California Academy of Sciences **Ant Course**, Southwestern Research Station, Portal, AZ

### Funding Sources

2018 Western North American Naturalist (WNAN) Grant in Aid of Research  
2017 ASU Life Sciences Postdoctoral Research Training Initiative Grant, Co-PI Jeffrey Sosa-Calvo  
"Identity and function of black yeasts in the nest architecture of the velvety tree ants (*Liometopum*)"  
2013 National Science Foundation Doctoral Dissertation Improvement Grant (**NSF DDIG**)  
"Stable isotopes reveal the dietary basis of seasonal lifespan plasticity in the Florida harvester ant  
*Pogonomyrmex badius* (IOS-1311473)"  
2010 National Science Foundation Integrated Training in Bio. & Society grad. fellow (**NSF ITBaS**)  
"Bridging the two cultures: History and philosophy of ecology and evolutionary biology"  
2009 FSU Department of Biological Science, Robert B. Short Scholarship in Zoology  
2004 National Science Foundation Research Experience for Undergraduates (**NSF REU**)  
"Natural history of *Leptothorax minutissimus*, a social parasite of the acorn ant, *L. curvispinosus*"  
2003 The Ohio State University Biological Sciences Scholar's Community Grant  
2003 National Buckeye PLUS Merit Scholarship, The Ohio State University

### Academic Honors

2018 Arizona State University Knowledge Mobilization Impact Award, postdoctoral finalist  
"Ant ecology in motion: Connecting local citizens with parallel societies in the soil"  
2014 Inducted, Florida State University Society of Fellows  
2010 FSU Outstanding Teaching Assistant Award nominee  
2010 First Place, Behavioral Ecology Section, Student Paper Competition for the President's Prize,  
National meeting of the Entomological Society of America, San Diego, CA

## Relevant Employment and Consulting Work

2015-19	Postdoctoral Research Fellow, Arizona State University,
2016	Entomological Consultant, Glenstone Museum of Contemporary Art
2011-14	Graduate Student Research Assistant, WRT's NSF IOS-1021632, Florida State University
2010-11	NSF Integrated Training in Biology and Society Graduate Fellow
2010	Entomological Consultant, Whitney Museum of Modern Art
2008-10	Graduate Student Teaching Assistant, Florida State University
2008	Undergraduate Teaching Assistant, The Ohio State University
2005-07	Undergraduate Student Research Assistant in the lab of Susan C. Jones
2004	NSF REU student in the lab of Joan Herbers
2002-03	Laboratory Assistant, Missouri Botanical Gardens Sophia M. Sachs Butterfly House

## Publications

### Manuscripts in Revision

17. Lundgren EJ, Moeller K, **Kwapich CL**, Michael Cline, Mahoney SM (submitted 2018). Apache Cicada nymphs as a dominant food source for desert-dwelling black bears (*Ursus americanus*) along a Sonoran Desert river. *The Southwestern Naturalist*

### Peer Reviewed Publications

16. **Kwapich CL**, Hölldobler B (2019). Destruction of spiderwebs and rescue of ensnared nestmates by a granivorous desert ant. *The American Naturalist* (accepted, in press). Associated Dryad Digital Repository: <https://doi.org/10.5061/dryad.412jp56>

15. Hölldobler B, **Kwapich CL** (2019) Behavior and exocrine glands in the myrmecophilous beetle *Dinarda dentata* (Gravenhorst, 1806) (Coleoptera: Staphylinidae: Aleocharinae). *PLoS ONE* 14(1): e0210524. <https://doi.org/10.1371/journal.pone.0210524>

14. **Kwapich CL**, Valentini G, Hölldobler B, (2018). Non-additive effects of body-size on nest architecture in a polymorphic ant species. *Philosophical Transactions of the Royal Society B*. 373:1753. [doi: 10.1098/rstb.2017.0235](https://doi.org/10.1098/rstb.2017.0235)

13. Gibson AH, **Kwapich CL**, Lang M. (2018) Chapter 1: Concepts of Biological Individuality in the Early Twentieth Century. *Multilevel Selection and the Theory of Evolution: Historical and Conceptual Issues*. **Book Chapter (peer reviewed)**: Edited by Jeler, Ciprian, *Palgrave Pivot Publishing*, XI:1-151, ISBN 978-3-319-78676-6

12. Hölldobler B, **Kwapich CL**, Haight K (2018). Behavior and exocrine glands of the myrmecophilous beetle *Lomechusoides strumosus* (Fabricius, 1775) (Formerly *Lomechusa strumosa*) (Coleoptera: Staphylinidae: Aleocharinae). *PLoS ONE*. 13(7): e0200309.

11. Hölldobler B, **Kwapich CL** (2017) *Amphotis marginata* (Coleoptera: Nitidulidae), a highwayman of the ant *Lasius fuliginosus*. *PLoS ONE* 12(8): e0180847. <https://doi.org/10.1371/journal.pone.0180847>

10. **Kwapich CL**, Gadau J, Hölldobler B (2017). The ecological and genetic basis of annual worker production in the desert seed harvesting ant *Veromessor pergandei*. *Behavioral Ecology and Sociobiology*. 71: 110. <https://doi.org/10.1007/s00265-017-2333-1>

9. Tschinkel WR, **Kwapich CL** (2016). The Florida harvester ant, *Pogonomyrmex badius*, relies on germination to consume large, high value seeds. *PLoS ONE* 11(11): e0166907. <https://doi.org/10.1371/journal.pone.0166907>
8. **Kwapich, CL**, Tschinkel, WR (2016). Limited flexibility and unusual longevity shape forager allocation in the Florida harvester ant (*Pogonomyrmex badius*). **Invited** for special issue on integrative analysis of division of labor, *Behavioral Ecology and Sociobiology*. 70(2): 221-235. <https://doi.org/10.1007/s00265-015-2039-1>
7. Tschinkel WR, Rink WJ, **Kwapich CL** (2015). Sequential subterranean transport of excavated sand and foraged seeds in nests of the harvester ant, *Pogonomyrmex badius*. *PLoS ONE*. 10(10): [doi.org/10.1371/journal.pone.0139922](https://doi.org/10.1371/journal.pone.0139922)
6. Mason KS, **Kwapich CL**, Tschinkel WR (2015). Respiration, worker body size, tempo and activity in whole colonies of ants. *Physiological Entomology*. 40: 149–165. [doi:10.1111/phen.1209](https://doi.org/10.1111/phen.1209)
5. **Kwapich, CL** (2014). Adaptive labor allocation in the Florida harvester ant (*Pogonomyrmex badius*). Doctoral dissertation. Retrieved from Florida State University digital repository, [http://purl.flvc.org/fsu/fd/FSU\\_migr\\_etd-9203](http://purl.flvc.org/fsu/fd/FSU_migr_etd-9203)
4. Gibson AH, **Kwapich CL**, Lang M (2013). The Roots of Multilevel Selection Theory: Concepts of Biological Individuality in the Early Twentieth Century. *History and Philosophy of the Life Sciences*. 35(4): 505-532.
3. Rink WJ, Dunbar JS, Tschinkel WR, **Kwapich CL**, Repp A, Stanon W, Thulman DK (2013). Subterranean transport and deposition of quartz by ants in sandy sites relevant to age overestimation in optical luminescence dating. *Journal of Archaeological Science*. 40(4): 2217-2226. <https://doi.org/10.1016/j.jas.2012.11.006>
2. **Kwapich CL**, Tschinkel WR (2013). Demography, demand, death and the seasonal allocation of labor in the Florida harvester ant (*Pogonomyrmex badius*). *Behavioral Ecology and Sociobiology*. 67(12): 2011 – 2027. <https://doi.org/10.1007/s00265-013-1611-9>
1. Tschinkel WR, Murdock T, King JR, **Kwapich CL** (2012). Ant distribution in relation to ground water in north Florida pine flatwoods. *Journal of Insect Science*. 12(1): 114. [doi:10.1673/031.012.11401](https://doi.org/10.1673/031.012.11401)

### Invited Review

**Online Magazine:** **Kwapich CL** (2018), How to dissect a superorganism: A review of recent advances in sociogenetics. *Myrmecological News Blog*, <https://blog.myrmecologicalnews.org/2018/09/27/how-to-dissect-a-superorganism/>

## University Teaching and Mentoring

### Course Instruction and Design

2018	<b>Instructor</b> , American Museum of Natural History, Ants of the Southwest Course, field course on behavior, ecology and taxonomy of ants, Southwestern Research Station, Portal, AZ, USA
2015	<b>Instructor</b> , Nest Casting Workshop. Casting of social insect nest architecture in zinc, aluminum wax and plaster for 30 post-graduate students, Tempe, AZ
2014	Designed one lab on Florida Insects for the Florida Natural History Course, Tallahassee Community College, Instructor: Prof. Alisha Batailles

- 2013 Designed one lab on mark-recapture techniques in wild animal populations for Advanced Ecology, Florida State University, Instructor: Prof. Tom Miller
- 2009 Assisted a new discussion section for an Animal Behavior course, Florida State University, **Outstanding Graduate Student Teaching Award nominee**, Prof. Emily DuVal

### University Teaching Assistantships (TA)

- 2009-10 **Animal Behavior**, Florida State University
- 2009 **Insect Biology**, Florida State University
- 2008-09 **Experimental Biology**, Florida State University
- 2008 **Biology 101 Introductory Biology for non-majors**, The Ohio State University

### University Guest Lectures

- 2008-18 **Biomimicry Innovation Space**, School of Design, Arizona State University
- Urban Entomology, Department of Entomology**, The Ohio State University  
(Co-taught with Prof. Susan C. Jones)
- ASU BioDesign Graduate Seminar**, School of Life Sciences, Arizona State University
- Advanced Ecology**, Department of Biological Science, Florida State University
- Animal Behavior**, Department of Biological Science, Florida State University
- Insect Biology**, Department of Biological Science, Florida State University
- Environmental Science**, Department of Earth, Ocean and Atmospheric Science, Florida State University
- Social Insect Biology**, Osher Life Long Learning Institute, Florida State University

### Undergraduate projects advised or co-advised

D. Taylor (2012), B. Gosfield (2014), N. Ramirez (2014), C. d'Orgeix (2017), Y. DeChavez (2017-18)

### Graduate Student Committees

1. A. Johnson, MS thesis (anticipated 2020). *Microsatellites reveal mating frequency in South American Pogonomyrmex harvester ants*, Major Professor: Jürgen Gadau

## Service

### Public Outreach

- 2018 **Guest educator**, Ants and Grasshoppers, New Vistas Center for Education (K-12)
- 2016 **Science Panelist**, Phoenix ComiCon, *Adventures and Disasters in Science!*
- 2016 **Public lecturer**, Society for Conservation Biology, *Ant colonies as ecosystems*
- 2013 **Exhibit Co-organizer**, Scientific Illustration Exhibit: *Dirty Secrets, hidden systems of the soil*
- 2013-2014 **Webmaster**, Friends of the Apalachicola National Forest
- 2012-2013 **Public lecturer**, Waterworks Tallahassee Science Salon, *Self-organized societies in the soil*
- 2013 **Public lecturer**, McClay High School, Florida natural history course
- 2012 **Public lecturer**, E.O. Wilson Biophilia Center, *FL Harvester ants: The hunter-gatherers*
- 2010 -2014 **Guest Educator**, B. L. Perry Jr. Branch Library, children's science camp, (K-12)
- 2009 -2014 **Judge**, Capital Regional Science and Engineering Fair (Grades 6 -12)
- 2007 **Science Olympiad coach**, Entomology section (Grades 6-8)

### Scholarly Service

- 2018 **Panelist**, ASU School of Life Sciences graduate student retreat
- 2017-20 **Elected as Awards Committee Member**, International Union for the Study of Social Insects
- 2016 **Entomologist**, Madrean Discovery Expedition, sponsored by GreaterGood.org,

- Cananea Copper Mine, Sierra Elenita, Sonora, Mexico
- 2015-2016 **Presenter**, Arizona State University Night of the Open Door, Social Insects of Arizona
- 2015 **Nest casting workshop** (zinc, aluminum, wax casting demo for 30+ grad students), Tempe, AZ
- 2015 **Meeting Co-organizer**, ASU/Würzburg Social Insect Research Conference (45 posters & talks)
- 2014-15 **Symposium moderator**, Behavior and Ecology, Entomological Society of America meeting
- 2012 **Mentor**, Florida State University Young Scholars High School Program
- 2010 – 14 **Mentor**, Undergraduate Women in Math Science and Engineering Program (WIMSE)
- 2003 -2005 **Insectary volunteer**, Ohio State University, under the direction of George Keeney
- 2014-present **Advisor/co-advisor**, undergraduate and graduate student research projects (listed above)

### Journal Peer Reviews

*The American Naturalist, Functional Ecology, Scientific Reports, Annals of the Entomological Society of America, Insectes Sociaux, Behavioral Ecology and Sociobiology, Evolution and Ecology, BMC Evolution, Israel Journal of Entomology, The Journal of Economic Entomology, Ecological Entomology, PALAIOS, Revista Brasileira de Entomologia*

### Professional Memberships

The Entomological Society of America, International Union for the Study of Social Insects, Animal Behavior Society

## Professional Presentations

- Christina Kwapich** (2018), The Ecological Consequences of Social Organization in Insects. Department of Biological Sciences, University of Massachusetts Lowell, USA
- Christina Kwapich** (2018), The Behavior of Ant Societies. School of Science, University of Waikato, Hamilton, New Zealand
- Christina Kwapich** (2018), From polymorphism to landscape level-patterns of desert soil bioturbation, **Invited** for women in ecology and natural resources seminar series. School of Natural Resources and Environment, University of Arizona, Tucson, USA
- Christina Kwapich**, Garbiele Valentini, Bert Hölldobler (2018). The non-additive effects of body size on nest architecture in a polymorphic ant, *Veromessor pergandei*, **Invited** for symposium on social insect ecophysiology across scales, IUSSI International congress, Guarujá, Brazil.
- Christina Kwapich**, Robert Johnson, Bert Hölldobler (2018). Ant colonies as islands: How host species traits alter size and life history in generalist ant crickets (Orthoptera: Myrmecophilidae) **Invited** for symposium on causes and consequences of ant body size, IUSSI International congress, Guarujá, Brazil.
- Christina Kwapich**, Linking worker phenotypes to nest architecture, rescue behavior and social parasite load in ant societies. **Invited** by Department of Entomology, The Ohio State University
- Christina Kwapich**, Bert Hölldobler (2017). Destruction of spider webs and rescue of ensnared nestmates by foragers of the desert seed harvesting ant *Veromessor pergandei*. Entomological Society of America Meeting, Denver, CO
- Christina Kwapich**, Jürgen Gadau, Bert Hölldobler (2016). Ecological and genetic basis of annual worker production in *Veromessor pergandei*. International Congress of Entomology, Orlando, FL
- Christina Kwapich**, Walter Tschinkel, Jack Rink (2016). Sequential caching of sand and seeds in nests of the Florida harvester ant. International of Congress of Entomology, Orlando, FL
- Christina Kwapich** and Bert Hölldobler (2015). Behavioral interactions of the harvester ant *Veromessor pergandei* & three nest-associated spiders. Entomological Soc. of America Meeting,

Minneapolis, MN

- Christina Kwapich** (2015). Aging in a seed harvesting ant: Demography, diet, infection and the annual cycle. Complex Biological Systems that Link Disease, Parasites, and Nutrient Ecology, Conference on Complex Systems, Tempe, AZ (**invited**)
- Christina Kwapich** (2015). A life table approach to modeling annual worker production in the FL harvester ant. Entomological Society of America Meeting, Portland, OR
- Christina Kwapich** (2014). Neighbor removal increases forager longevity, slows progression through temporal castes (*P. badius*). Integrated analyses of division of labor, world congress IUSSI, Cairns, Australia (**invited**)
- Christina Kwapich** (2014). Development, death, density, demand division of labor in a seed harvesting ant. Social Insect Research Group. Arizona State University, School of Life Sciences, Tempe, AZ (**invited**)
- Christina Kwapich**, Walter Tschinkel (2013). Meddling neighbors induce an untimely end for foragers of the Florida harvester ant, *Pogonomyrmex badius*. Entomological Society of America Meeting, Austin, TX
- Christina Kwapich** (2013). How to assemble a *Pogonomyrmex badius* colony from the bottom up, cookie shovel and wire required. Natural History as Insight and Inspiration Symposium, Tallahassee, FL
- Christina Kwapich**, Walter R. Tschinkel (2012). The Influence of Demand, Demography and Death on Labor Economics in the Florida Harvester Ant (*Pogonomyrmex badius*). International Union for the Study of Social Insects NAS meeting, Greensboro, NC.
- Christina Kwapich**, Walter R. Tschinkel (2011). Seasonal worker demography shapes colony-level labor allocation in the Florida harvester ant (*Pogonomyrmex badius*). Symposium: Insect Demography, emerging concepts and applications. Entomological Society of America Meeting, Reno, NV (**invited**)
- Christina Kwapich**, Walter R. Tschinkel (2010). Annual patterns of forager allocation in the FL harvester ant (*Pogonomyrmex badius*). Entomological Society of America Meeting, Student Competition, San Diego, CA (**awarded first prize for best student talk**)
- Christina Kwapich**, Walter Tschinkel (2009). The organization and allocation of foragers in the Florida harvester ant (*Pogonomyrmex badius*). Entomological Society of America Meeting, Indianapolis, IN
- Christina Kwapich**, Susan C. Jones (2006). Termite (Isoptera) Caste differentiation in response to spatial separation from the reproductive female. Denman Undergraduate Research Forum, Columbus, OH
- Christina Kwapich**, Susan C. Jones, Nicola T. Gallagher (2006). Spatial dynamics of neotenics of *Reticulitermes flavipes* (Isoptera: Rhinotermitidae): male preference and ideal females. Entomological Society of America Meeting, Indianapolis, IN
- Joan M. Herbers, **Christina Kwapich** (2004). Dysfunctional families in the insect world. Coalition for National Science Funding, Washington DC

## Media

### Coverage of research by popular press

1. Seckel S (Jul 2018), "Building a better ant castle" *ASU Now*, <https://asunow.asu.edu/20180725-discoveries-building-better-castle-asu-ant-study> (coverage of *Phil. Trans. B.*, 2018),
2. Bates M (Sept 2017), "Highwayman beetles rob ants of the food in their stomachs" *New Scientist*, <https://www.newscientist.com/article/2146057-highwaymen-beetles-rob-ants-of-the-food-in-their-stomachs/> (coverage of *PLoS ONE*, 2017)
3. Seckel S (Aug 2017), "The dangerous game of the highwayman beetle" *ASU Now*,

[https://asunow.asu.edu/20170818-discoveries-asu-researchers-beetles-deceives-ants?utm\\_campaign=SFMC\\_Now+8-21-17\\_ASU+Now&utm\\_medium=email](https://asunow.asu.edu/20170818-discoveries-asu-researchers-beetles-deceives-ants?utm_campaign=SFMC_Now+8-21-17_ASU+Now&utm_medium=email) (coverage of *PLoS ONE*, 2017)

4. Frost N (Aug 2017), “The Beetle That Goes Undercover to Steal From Foraging Ants: The high-risk, high-return antics of the parasitic highwayman beetle” *Atlas Obscura*, <http://www.atlasobscura.com/articles/highwayman-beetle-ant-colonies-attack-parasite> (coverage of *PLoS ONE*, 2017)
5. Seckel S (Jul 2017), “Digging into the harsh world of ants” *ASU Now*, [https://asunow.asu.edu/20170720-discoveries-asu-researcher-ants-brutal-life?utm\\_campaign=SFMC\\_Now+7-21-17\\_ASU+Now&utm\\_medium=email](https://asunow.asu.edu/20170720-discoveries-asu-researcher-ants-brutal-life?utm_campaign=SFMC_Now+7-21-17_ASU+Now&utm_medium=email) (coverage of *Behavioral Ecology and Sociobiology*, 2017)
6. Simičević V (2016), “Harvester ants farm by planting seeds to eat once they germinate” *New Scientist*, <https://www.newscientist.com/article/2117953-harvester-ants-farm-by-planting-seeds-to-eat-once-they-germinate/> (coverage of *PLoS ONE*, 2016)
7. “A walk in the woods with Ed Wilson” *FSU Research in Review*, [http://rinr.fsu.edu/issues/2009summer/cover01\\_d.asp](http://rinr.fsu.edu/issues/2009summer/cover01_d.asp) (coverage of *Journal of Insect Science*, 2012)

#### Appearances and Contributions

- Kwapich, Christina (2016). Dr. Hongmei Li-Byarlay’s *Nature Nurture Podcast*, Episode 5, <https://www.listennotes.com/nature-and-nurture/episodes/7939569/episode-5-iussi-special-edition-wasps-ants-and-termites/>
- Smith, Adrian (2015). *Ant Course Presents: Mark-Recapture Technique*, filmed at the Southwestern Research Station, featuring Christina Kwapich and Walter Tschinkel
- *Secrets of the Longleaf Pine Forest* documentary, PBS 2015, appearance in *P. badius* featurette
- *Hidden systems of the soil exposed*, featured artist in **scientific illustration** exhibit, Tallahassee Museum, 2013
- *Dirty Secrets: hidden systems of the soil exposed*, featured artist in **scientific illustration** exhibit, Renditions Art Gallery, 2013
- Friends of the Apalachicola National Forest, website designer/ web master
- *Deadly 60 BBC*, Season 3, Episode 19, Florida, appearance in ant featurette
- *Wake up St. Louis*, NBC channel 5, St. Louis, presenter for the Missouri Botanical Garden, Butterfly House