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JANE S. WATERS

pronouns: she/her or they/them

appointments

Professor of Biology, Providence College, 2023 – present.
Associate Professor of Biology, Providence College, 2018 – 2023.
Assistant Professor of Biology, Providence College, 2014 – 2018.
Visiting Scientist, Field Museum of Natural History, 2013 – 2014.
Postdoctoral Research Associate, Princeton University, 2012 –2014.

education

Ph.D., Biology, Arizona State University, 2012.
A.B., Mathematics, The University of Chicago, 2005.

peer-reviewed publications

Maurizio Porfiri, Pietro De Lellis, Eighdi Aung, Santiago Meneses, Nicole Abaid, Jane S Waters, and Simon Garnier. (2024). Reverse social contagion as a mechanism for regulating mass behaviors in highly integrated social systems. PNAS Nexus 3(7), 1-7. https://doi.org/10.1093/pnasnexus/pgae246

Waters, J. S., Toth, J. M., and Fewell, J. H. (2022). Scaling of ant colony interaction networks. *Frontiers in Ecology and Evolution* 10:993627, 1-11. https://www.frontiersin.org/articles/10.3389/fevo.2022.993627/full

Waters, J. S., Keough, N., Burt, J., Eckel, J. D., Hutchinson, T., Ewanchuk, J., Rock, M., Markert, J. A., Axen, Heather, J., and Gregg, D. (2022). Survey of ants (Hymenoptera, Formicidae) in the city of Providence (Rhode Island, United States) and a new northern-most record for *Brachyponera chinensis* (Emery, 1895). *Check List: The Journal of Biodiversity Data* 18, 1347-1368. https://checklist.pensoft.net/articles.php?id=90866

Ko H., Komiliam K., Waters J. S., Hu, D. L. (2022). Metabolic scaling of fire ants (*Solenopsis invicta*) engaged in collective behaviors. *Biology Open* 11, 1-8. doi:10.1242/bio.059076

Chick, L. D., Waters, J. S., and Diamond, S. (2020). Pedal to the metal: cities power evolutionary divergence by accelerating metabolic rate and locomotor performance ecology. *Evolutionary Applications* 14, 36-52. https://dx.doi.org/10.1111/eva.13083

Lecheta, M., Awde, D., O'Leary, T., Unfried, L., Jacobs, N., Whitlock, M., McCabe, E., Powers, B., Bora, K., Waters, J., Axen, H., Frietze, S., Lockwood, B., Teets, N., Cahan, S. (2020). Integrating GWAS and Transcriptomics to Identify the Molecular Underpinnings of Thermal Stress Responses in *Drosophila melanogaster*. *Frontiers in Genetics* 11, 658. https://dx.doi.org/10.3389/fgene.2020.00658

Hochgraf, J. S., Waters, J. S., and Socha, J. J. (2018). Patterns of Tracheal Compression in the Thorax of the Ground Beetle, *Platynus decentis*. *The Yale Journal of Biology and Medicine* 91, 409-430.

Waters, J. S. and McGlynn, T. P. (2018). Natural history observations and kinematics of strobing in Australian strobe ants, *Opisthopsis haddoni* (Hymenoptera: Formicidae). *Myrmecological News* 27, 7-11.

Varoudis, T., Swenson, A., Kirkton, S. D., and Waters, J. S. (2018). Exploring nest structures of acorn dwelling ants with x-ray microtomography and surface

based 3D visibility graph analysis. *Philosophical Transactions of the Royal Society B* 373: 20170237, 1-10.

Neville, K. E., Bosse, T. L., Klekos, M., Mills, J. F., Weicksel, S. E., Waters, J. S. and Tipping, M. (2018). A novel ex vivo method for measuring whole brain metabolism in model systems. *Journal of Neuroscience Methods* 296, 32–43.

Harrison, J. F., Waters, J. S., Biddulph, T. A., Kovacevic, A., Klok, C. J. and Socha, J. J. (2017). Developmental plasticity and stability in the tracheal networks supplying Drosophila flight muscle in response to rearing oxygen level. *Journal of Insect Physiology* 106, 189-198.

Waters, J. S., Ochs, A., Fewell, J. H. and Harrison, J. F. (2017). Differentiating causality and correlation in allometric scaling: ant colony size drives metabolic hypometry. *Proceedings of the Royal Society B: Biological Sciences* 284, 20162582.

Harrison, J. F., Klok, C. J. and Waters, J. S. (2014). Critical PO_2 is size-independent in insects: implications for the metabolic theory of ecology. *Current Opinion in Insect Science* 4, 54–59.

Waters, J. S. (2014). Theoretical and empirical perspectives on the scaling of supply and demand in social insect colonies. *Entomologia Experimentalis Et Applicata* 150, 99–112.

Pinter-Wollman, N., Hobson, E., Smith, J., Edelman, A., Shizuka, D., de Silva, S., Waters, J. S., Prager, S., Sasaki, T., Wittemyer, G., Fewell, J., and McDonald, D. (2014). Response to comments on the dynamics of network dynamics. *Behavioral Ecology* 25(2), 260-261.

Pinter-Wollman, N., Hobson, E. A., Smith, J. E., Edelman, A. J., Shizuka, D., de Silva, S., Waters, J. S., Prager, S. D., Sasaki, T., Wittemyer, G., et al. (2013). The dynamics of animal social networks: analytical, conceptual, and theoretical advances. *Behavioral Ecology* 25, 242–255.

Waters, J. S., Lee, W. K., Westneat, M. W., and Socha, J. J. (2013). Dynamics of tracheal compression in the horned passalus beetle. *American Journal of Physiology – Regulatory, Integrative, and Comparative Physiology* 304, R621-R627.

Harrison, J. F., Waters, J. S., Cease, A. J., Vandenbrooks, J. M., Callier, V., Klok, C. J., Shaffer, K. and Socha, J. J. (2013). How locusts breathe. *Physiology* 28, 18–27.

Fewell, J. H., Armbruster, D., Ingraham, J., Petersen, A. and Waters, J. S. (2012). Basketball teams as strategic networks. *PLoS ONE* 7, e47445.

Waters, J. S. and Fewell, J. H. (2012). Information Processing in Social Insect Networks. *PLoS ONE* 7, e40337.

Waters, J. S. and Harrison, J. F. (2012). Insect Metabolic Rates. In *Metabolic Ecology: A Scaling Approach*, R.M. Sibly, J.H. Brown, and A. Kodric-Brown, eds. Wiley-Blackwell, pp. 198-211.

Schilman, P. E., Waters, J. S., Harrison, J. F. and Lighton, J. R. B. (2011). Effects of temperature on responses to anoxia and oxygen reperfusion in *Drosophila melanogaster*. *Journal of Experimental Biology* 214, 1271–1275.

Waters, J. S., Holbrook, C. T., Fewell, J. H. and Harrison, J.F. (2010). Allometric scaling of metabolism, growth, and activity in whole colonies of the seed harvester ant, *Pogonomyrmex californicus*. *The American Naturalist* 176(4), 501-510.

Socha, J. J., Lee, W.-K., Harrison, J. F., Waters, J. S. Fezzaa, K., and Westneat, M. W. (2008). Correlated patterns of tracheal compression and convective gas exchange in a carabid beetle. *The Journal of Experimental Biology* 211, 3409-3420.

Socha, J. J., Westneat, M. W., Harrison, J. F., Waters, J. S. and Lee, W. K. (2007). Real-time phase-contrast x-ray imaging: a new technique for the study of animal form and function. *BMC Biology* 5 (6).

major awards

Emergent Energetic Regulation in Dynamic Biological Networks (Understanding the Rules of Life: Emergent Networks)

- NSF Emerging Frontiers (EF), September 2022 – August 2027
- Total award (five institutions): $2,999,187
- Providence College: $527,310

Collaborative Research: Brain Size, Metabolism and Sociality in Ants

- NSF Integrative Organismal Systems (IOS), June 2020 – May 2023
- Total award (three institutions): $1,459,601.00
- Providence College: $145,852

RII Track-2 FEC: From Genome to Phenome in a Stressful World: Epigenetic Regulatory Mechanisms Mediating Thermal Plasticity in Drosophila

- NSF EPSCoR Research Infrastructure, August 2018 – July 2022
- Total award (three institutions): $4,771,722.00
- Providence College: $632,731.00

grants and fellowships

Shadows of the Past and Visions of the Future: How Colonial Histories and Feminist Philosophy Manifest in the Myrmecologically Inspired Artwork of Complex Insect Societies, Providence College School of Arts & Sciences Collaborative Interdisciplinary Research Award to V. Thomas and J. Waters, 2023.

Biological Imaging at Providence College ($19,500), with J. DeGiorgis, from the Southern New England Educational and Charitable Foundation, 2022.

Sponsored Projects and Research Compliance Interdisciplinary Grant, "Topological Data Analysis and Interdisciplinary Network Science" (with Dr. Laura Murray, Department of Mathematics), 2021.

Arts & Sciences Summer Scholars Award, Providence College, 2016.

Grant Improvement Fund, Providence College, 2016.

Walsh Fund Travel Support, Providence College, 2014.

The James S. McDonnell Foundation Postdoctoral Fellowship Award in Complex Systems, 2012-2014.

Graduate and Professional Students Association Travel Grant, 2012.

NSF Doctoral Dissertation Improvement Grant, 2012.

Society for Integrative and Comparative Biology Grant in Aid of Research, 2011.

American Physiological Society Research Travel Award, 2010.

Graduate and Professional Students Association Research Grant, 2010.

National Science Foundation Graduate Research Fellowship, 2008-2011.

Graduate and Professional Students Association Travel Grant, 2009.

Sigma Xi Grant in Aid of Research, 2008.

grants awarded to research students

Testing the dominance of Arrhenius: How social behavior and environmental temperatures interact to regulate the supply and demand of energy in social groups. Walsh Student Research Fellowship awarded to Kaylee Mulligan (’25), 2024.

Aerobic scope and muscle physiology: how do metabolic rates change in response to strength training? Summer Undergraduate Research Grant awarded to Mireille Kingsley (’24), 2023.

Mapping the thermal environment and modeling its impacts on metabolic physiology. Summer Undergraduate Research Grant awarded to Lily Palumbo (’23), 2022.

How social behavior and interactions scale with group size in fruit flies. Summer Undergraduate Research Grant awarded to Leigh Paradis (’23), 2021.

How social behavior and interactions scale with group size in fruit flies. Summer Undergraduate Research Grant awarded to Leigh Paradis (’23), 2021.

The energy we use. Summer Undergraduate Research Grant awarded to Madeleine Bristow (’21), 2020.

Ants of Rhode Island: *Myrmica rubra*. Providence College Veritas Summer Undergraduate Research Grant awarded to Jonathan Eckel (’21), 2018.

Seed-harvesting ant colony effects on soil chemistry and plant growth rates. PC Undergraduate Research Grant awarded to Molly Andrus (’18), 2017.

Acorn ant colony collective respiratory physiology. Walsh Student Research Fellowship awarded to Nicole Korzeniecki (’18), 2016.

Natural history and urban ecology of the ants on campus at Providence College. PC Undergraduate Research Grant awarded to Joey Burt (’17), 2015.

published conference abstracts

Schofield, S., Waters, J. S., Couret, J. (2023). Discontinuous ventilation patterns in nymphal Ixodes scapularis. Integrative and Comparative Biology 63.

Filler, S., Patel, N., Kogut, S., Munteanu, D., Cahan, S., Waters, J. S., Frietze, S. (2023). Comparative analysis of RNA-seq library preparation protocols on thermally-stressed *D. melanogaster*. Integrative and Comparative Biology 63.

Barden, T., Cruz, D., Filler, S., Waters, J. S. (2023). Rapid antennation by *Brachyponera chinensis* needle ants: does it pass the vibe check? Integrative and Comparative Biology 63.

Palumbo, L., Bespalova, I., Axen, H., Waters, J. S. (2023). Biodiversity bootcamps and a vision for a regional network of community engagement. Integrative and Comparative Biology 63.

Tamfu, P., Andries, J., Bespalova, I., Axen, H., Waters, J. S. (2023). Testing hypotheses about metabolic compensation and the ecophysiology of phenotypic plasticity. Integrative and Comparative Biology 63.

Schofield, S., Waters, J. S., and Couret, J. (2023). Discontinuous ventilation patterns in nymphal *Ixodes scapularis*. Integrative and Comparative Biology 63.

Perl, C.D., Coto, Z.N., Waters, J.S., Traniello, J.F.A., Harrison, J.F. (2022). Brain and body metabolic rate of the harvester ant, *Pogonomyrmex barbatus*. Integrative and Comparative Biology 62.

Cruz, D., Andries, J., Barden, T., Vella, K., Cooper, E., Diltz, J., Olatunji, O., Tamfu, P., Tipping, M., Waters, J.S. (2022). Metabolic rates of needle ants, *Brachyponera chinensis*, from Rhode Island. Integrative and Comparative Biology 62.

Vella, K., Paradis, L., Barden, T., Andries, J., Cooper, E., Cruz, D., Tamfu, P., Waters, J.S. (2022). Metabolic rates and behavior of fruit flies, *Drosophila melanogaster*, individually and in groups. Integrative and Comparative Biology 62.

Coto, Z.N., Muratore, I., Fandozzi, E., Azorsa, F., Waters, J.S., Harrison, J.F., Perl, C., Kamhi, J.F., Muscedere, M., Traniello, J.F.A. (2022). Body Size, Social Complexity and Brain Metabolic Scaling in Ants. Integrative and Comparative Biology 62.

Korzeniecki, N., and Waters, J.S. (2020). Taking the pulse of the city: measuring metabolism and counting ants with students. In symposium: Myrmecology for All: Combining Morphology, Molecules, Ecology, and Behavior to Advance Ant Systematics, Entomological Society of America.

Awde, D.N., Lecheta, M.C., Unfried, L.N., Jacobs, N.A., Powers, B., Bora, K., Waters, J.S., Axen, H.J., Frietze, S.E., Lockwood, B.L., Cahan, S.H., and Teets, N.M. (2020) Genetic mechanisms of basal thermal tolerance in *Drosophila melanogaster.* Integrative and Comparative Biology 60.

Cahan, S.H., Frietze, S. Gerrard, D.L., Bora, K., Kaplan, I., Perez, M. Lockwood, B.L., Teets, N.M., Waters, J.S., Axen, H.J. (2020) Developmental temperature alters brain gene expression in adult *Drosophila melanogaster.* Integrative and Comparative Biology 60.

Ramsaran, S.K. and Waters, J.S. (2020). Heat shock physiology: measuring the metabolic impacts of thermal stress in *Drosophila melanogaster*. Integrative and Comparative Biology 60.

Diamond, S., Chick, L., and Waters, J. S. (2019). Pedal to the metal: cities power evolutionary differentiation in acorn ants by accelerating metabolic rate while diminishing its thermal sensitivity. Evolution, T501.

Swenson, A. S., Kirkton, S. D., and Waters, J. S. (2018). Using X-ray Microtomography to Visualize and Quantify the Nest Architecture of Acorn Ant Colonies. Integrative and Comparative Biology 58.

Waters, J. S. (2017). Insights on the fluid transport, geometric scaling, and living architecture of insect physiological systems revealed by x-ray imaging. Proceedings of the 2nd International Symposium on Image Based Metrology (ISIMet).

Korzeniecki, N. W., Cassidy, D. P., and Waters, J. S. (2017). Metabolic Dynamics: From Individuals to Whole Colonies. Integrative and Comparative Biology 57.

Campbell, A. M., Korzeniecki, N. W., and Waters, J. S. (2017). The Ants of Rhode Island: Species Richness and Spatiotemporal Abundance of Ants Across an Urban College Campus. Integrative and Comparative Biology 57.

Higgins, D. J., Kirkton, S. D., and Waters, J. S. (2017). The Secret Societies Living Within an Acorn: Temnothorax Ant Colonies Visualized with X-ray Microtomography. Integrative and Comparative Biology 57.

Waters, J. S., Toth, J., Harrison, J. F., and Fewell, J. H. (2017). Metabolic Allometry and the Scaling of Interaction Patterns with Ant Colony Size. Integrative and Comparative Biology 57.

Fabiano, J. N., Higgins, D., Ortega, J., Precoio, L., and Waters, J. S. (2017). The pressure is on: modeling, design, and performance of circulatory pumps in physiology. Integrative and Comparative Biology 57.

Waters, J. S., Ochs, A., Toth, J., Fewell, J. H., and Harrison, J. F. (2016). Experimental manipulation demonstrates causality of colony size effects on metabolic rates of ant colonies. The FASEB Journal, 30.

Waters, J. S. (2015). Collective behavior and the respiratory physiology of social insect colonies. The FASEB Journal, 29, LB643.

Harrison, J.F., Waters, J. S., Holbrook, C. T., and Fewell, J. H. (2014). Scaling of energetics and division of labor in harvester ants. 17th Congress of the International Union for the Study of Social Insects (IUSSI), Cairns, Australia, 13-18 July 2014.

Waters, J. S. (2014). Modeling the collective dynamics of metabolic allometry. Integrative and Comparative Biology 54.

Waters, J. S., and Harrison, J. F. (2013). Metabolic and behavioral variation with colony size and age: a manipulative test of the size-dependence theory of metabolic allometry. Integrative and Comparative Biology 53, e223.

Kovacevic, A., Biddulph, T., Waters, J. S., and Harrison, J. F. (2013). Effects of the larval oxygen environment on the three-dimensional branching structure of insect flight muscle tracheae. Integrative and Comparative Biology 53, e312.

Biddulph, T. A., Kovacevic, S., Waters, J. S., and Harrison, J. F. (2013). Trachea and flight muscle volumes of adult *Drosophila melanogaster* reared in hypoxia, normoxia, and hyperoxia using synchrotron x-ray phase contrast microtomography. Integrative and Comparative Biology 53, e247.

Harrison, J.F., Waters, J. S., Cease, A. C., VandenBrooks, J. M., Callier, V., Klok, C. J., Shaffer, K., and Socha, J. J. (2013). How hoppers breathe. Integrative and Comparative Biology 53, e294.

Miller, L., Waters, J. S., Harrison, J.F., Vandenbrooks, J.M., Yager, D.D., Xiao, X., DeCarlo, F., and Socha, J.J. (2012). The use of SR-μCT for 3D visualization of insect tracheal systems. Integrative and Comparative Biology 52, e295.

Harrison, J.F., Waters, J. S., Heinrich, S.M., and Socha, J.J. (2012). Effects of rearing oxygen level on the anatomy of the adult tracheal system in *Drosophila*. Integrative and Comparative Biology 51 (6).

Waters, J. S., Heinrich, S. M., and Harrison, J. F. (2011). Anatomy of the tracheole system supplying *Drosophila* flight muscle. Integrative and Comparative Biology 51, e264.

Bespalova, I. and J. S. Waters. (2011). Variable success of two colony founding strategies: A case study using the California seed-harvester ant. Integrative and Comparative Biology 51, e165.

Waters, J. S., Fewell, J. H., and Harrison, J. F. (2011). Metabolic and behavioral integration in social insect colonies. Integrative and Comparative Biology 51, e146.

Fewell, J. H. and Waters, J. S. (2010). Social insect networks are not "social networks." Annual meeting of the Animal Behavior Society, Williamsburg, VA.

Waters, J. S. and Harrison, J. F. (2010). Geometric characterization and phenotypic plasticity in tracheal networks supplying insect flight muscle. Integrative and Comparative Biology 50, e186.

Waters, J. S., Holbrook, C. T., Fewell, J. H., and Harrison, J. F. (2009). Allometric scaling of whole colony metabolic rate in *Pogonomyrmex californicus*. Integrative and Comparative Biology 49, e179.

Lee, W. K., Socha, J. J., Westneat, M. W., Harrison, J. F., and Waters, J. S. (2007). Direct visualization of internal respiratory and food transport dynamics in insects. Bulletin of the American Physical Society (52).

Westneat, M. W., Socha, J. J., Waters, J. S., Hale, M. E., and Lee, W-K. (2006). The expiration data is today: Diversity of convective insect respiratory behavior visualized by synchrotron x-ray imaging. Integrative and Comparative Biology 46, e265.

Socha, J. J., Waters, J.S., Westneat, M. W., LaBarbera, M., Cook, S., Fezzaa, K., and Lee, W-K. (2006). The Poise that refreshes: dynamics of internal food transport in a butterfly. Integrative and Comparative Biology 46, e133.

Hale, M. E., Waters, J. S., Lee, W-K, Socha, J. J., Fezzaa, K., and Westneat, M. W. (2006). Drawing inspiration from insect breathing and heaving conventional wisdom: Convective tracheal and air sac mechanisms in *Drosophila* visualized with x-ray imaging. Integrative and Comparative Biology 46, e53.

Waters, J. S. and Socha, J. J. (2005). Mechanics of tracheal compression in the bessbug, *Popilius disjunctus*. Integrative and Comparative Biology 45(6): 1209.

Socha, J. J., Fezzaa, K., Lee, W-K., Waters, J. S., and Westneat, M. W. (2004). Tracheal compression patterns involved in gas exchange in the ground beetle, *Platynus decentis*. Integrative and Comparative Biology 44(6): 748.

guest lectures and invited seminars

Data analysis, visualization, and modeling: Top 10 ways to win with R. University of Vermont REU workshop, Summer 2021.

Ants of Providence. Bridgewater State University Biology Seminar, Spring 2020.

The physiological ecology of the ants: metabolic scaling, collective behavior, and natural history. Ecology and Evolutionary Biology, Brown University, Fall 2017.

The physiological ecology of the ants: metabolic scaling, collective behavior, and natural history. Department of Biology, The University of Vermont, Fall 2017.

The Ants of Rhode Island. Rhode Island Natural History Survey, University of Rhode Island, Spring 2017.

Insect respiratory physiology: from tracheal systems to brain metabolism. Traniello Lab, Boston University, Fall 2016.

Cardiovascular system: Blood & Hematology. Physiology (BIO 405), Providence College, Spring 2016.

Interaction networks and the emergence of complexity. Graph Theory (MTH 331), Providence College, Spring 2015.

Emergence of complexity in the respiratory physiology of ant colonies. Social Insects in the Northeast Regions, Boston University, Fall 2015.

Collective behavior in social insect colonies. Animal Behavior (BIO 350), Providence College, Fall 2014.

Social behavior in the ants: power, identity, and resistance. Animal Behavior (56-1420), Columbia College, Spring 2014.

The fire of life: metabolic allometry in social insect colonies. The Field Museum of Natural History, A. Watson Armour III Research Seminar Series, Spring 2014.

The fire of life, metabolic scaling, and the search for universal laws in biology. Sarah Lawrence College Science Seminar Series, Fall 2013.

Complexity in ant colonies: Emergence of energetic scaling, respiratory synchrony, and dynamic living structures. NSF Physics of Living Systems Research Network Symposium, Princeton, NJ, Fall 2013.

Ant colony metabolic networks: insights from respiratory physiology and collective behavior. Harvard University, Concord Field Station Seminar, Fall 2013.

Metabolic and behavioral integration in social insect colonies. The University of Würzburg, Behavioral Physiology & Sociobiology Seminar, Summer 2013.

The metabolic ecology of social insect colonies. Princeton University, Theoretical Ecology Lab Tea, Spring 2013.

Comparative biomechanics: the biology of structure and function. Biologically Inspired Design (DSC 598), Arizona State University, Spring 2012.

media & press

Bioblitz participants search for plants and animals (2022). *https://www.providencejournal.com/picture-gallery/news/2022/06/17/bristol-ri-bioblitz-marathon-science/7653269001/*

A Team from PC is Tracking RI's Ant Population, Rhode Island Monthly (2020). *https://www.rimonthly.com/a-team-from-pc-is-tracking-ris-ant-population/*

College Professor Documenting R.I.'s Ant Biodiversity, Eco RI News (2017). *https://www.ecori.org/natural-resources/2017/5/18/providence-college-professor-documenting-rhode-islands-ant-biodiversity*

Student researchers discover the secrets of ant colony behavior (2017). *https://news.providence.edu/student-researchers-discover-secrets-ant-colony-behavior*

Stranger than fiction: These ants look like the dragons in 'Game of Thrones' (2016). *https://www.csmonitor.com/Science/2016/0727/Stranger-than-fiction-These-ants-look-like-the-dragons-in-Game-of-Thrones*

A view from Providence: Synagogue is a mirror of Jewish history, Providence Journal (2015). *http://www.providencejournal.com/article/20150725/NEWS/150729492*

Scott Turner: Wasps summer under sandy sidewalk, Providence Journal (2015). *http://www.providencejournal.com/article/20150801/OPINION/150809894*

Research featured in BBC's "Insect Dissection: How Insects Work" (2013). *http://www.bbc.co.uk/programmes/p00zst23*

Featured in "Local Research, Global Impact" video produced by ASU (2012). *http://vimeo.com/user1763763/videos*

Compound Eye (Scientific American Blog): "James Waters' iPhone Ants" (2011). *http://blogs.scientificamerican.com/compound-eye/*

Outside JEB: "Ant colonies obey 3/4 power 'law' of metabolic scaling" (2010). *http://jeb.biologists.org/cgi/content/full/214/1/v-a*

ASU News: "Social evolution regulates the fire of life" (2010). *http://asunews.asu.edu/20100825_energyants*

Myrmecos.net: "More support for the superorganism concept" (2010). *http://myrmecos.net/2010/08/27/more-support-for-the-superorganism-concept/*

American Physiological Society: "Ant colonies shed light on metabolism" (2010). *http://www.the-aps.org/press/releases/10/25.htm*

Life Lines: "Ant colonies & metabolic scaling, Parts I & II (2010). *http://scienceblogs.com/lifelines/2010/12/ant_colonies_metabolic_scaling.php*

scientific photography

Two photographs on exhibit at the New York Hall of Science (NYSCI), 2017.
Three photographs selected for Art of Science exhibit, Princeton University, 2014.
Photograph of *Temnothorax rugatulus* colony featured in TED talk, 2017.
Pogonomyrmex californicus photo featured on the cover of *Geology*, 2014.
Temnothorax photograph published in *Nature* 500(7461): p. 125, 2013.
American Microscopical Society Photomicrography contest, 3rd place, 2013.
Temnothorax rugatulus photos for *Current Biology*, 2012.
Drosophila photomontage cover for *The Royal Society*, 2010.
Insectes magazine article on recent developments in *Drosophila* research, 2010.
Drosophila illustration in the *Encyclopedia of Behavioral Neuroscience,* 2009.
Drosophila photo for *Neurotoxicology and Teratology* 32(1): p. 75, 2009.
Brochure for the *Max Planck Institute for Biophysical Chemistry*, 2009.
Pheidole micrograph for *School of Life Sciences Magazine* (4)1: p.30, 2008.

open-access software and data repository

Larsen, M. L., Simonis, J. L., and Waters, J. S. (2020). waterslab/mavenR v1.0 (v1.0). Zenodo. https://doi.org/10.5281/zenodo.3861869.

Waters, J. S. (2013). Horned Passalus Tracheal Compression (first leg). figshare. http://dx.doi.org/10.6084/m9.figshare.693019

Waters, J. S. (2013). Collapse and reinflation of a main thoracic tracheal tube. figshare. http://dx.doi.org/10.6084/m9.figshare.693020

Waters, J. S. (2013). Horned Passalus Tracheal Compression (prothorax). figshare. http://dx.doi.org/10.6084/m9.figshare.693018

Waters J. S., Holbrook C. T., Fewell J. H., Harrison J. F. (2010) Data from: Allometric scaling of metabolism, growth, and activity in whole colonies of the seed harvester ant, *Pogonomyrmex californicus*. Dryad Digital Repository. doi:10.5061/dryad.1594

honors

Finalist for the Joseph R. Accinno Teaching Award at Providence College, Spring 2023.
Finalist for the Joseph R. Accinno Teaching Award at Providence College, Spring 2021.
Award for Best Presentation, Second Prize, 2nd International Symposium on Image Based Metrology (ISIMet), 2017.
George C. Eickwort Student Research Award Honorary Mention, 2012.
First Place Presentation, Arizona Imaging and Microanalysis Society, 2007.
Nominated for GPSA Teaching Excellence Award, 2006.
Sigma Xi Science Prize, The University of Chicago, 2005.
President's Award, Chicago Area Undergraduate Research Symposium, 2005.
University of Chicago Merit Scholarship, 2001.

college committee appointments

Faculty Status Committee (Faculty Senate), 2018 – present.
Intellectual Property Committee, 2017 – present.
Strategic Web Governance Committee, 2017 – 2021.
Jewish-Catholic Theological Exchange Committee, 2016 – 2021.
College Archives and Special Collections Committee, 2015 – 2018.

department service

Biology department representative in the Faculty Senate, 2018 – present.
Department of Biology, Organismal anatomy faculty search committee, 2022.
Department of Biology, Neuroscience faculty search committee, 2021.
Major/minor fair department representative, 2021.
Department secretary, 2019 – 2020.
Managing department social media account (*@friarbiology*), 2016 – 2020.
Editing department website, 2015 – 2021.
Biology major and Neuroscience certificate student advising, 2014 – present.
Meeting with trustee John Killian, advocating for department priorities, 2017.
Meeting with Art & Science Group for assessment feedback, 2016.
Biology fill-in representative for department chairs meeting, 2015.
Meeting with trustee Peter Benzie, 2015.
Major/minor fair department representative, 2014.

college service

Sigma Xi Faculty Advisor, 2022 – present.
Department of Health Sciences faculty search committee, 2022.
Faculty Status committee chair, 2021 – 2022.
Neuroscience Certificate Program advising and member, 2014 – present.
Academic advising for undeclared students, 2016 – 2018.
Providence College Learning Circles participant, 2015 – 2016.
PC Alumni Reunion Weekend presentation on The World of The Ants, 2017.
A Day in Friartown: Coffee with Professors, 2015.
Freshman Common Reading Program discussion leader, 2014.

discipline service

Maintaining a public worldwide map of social insect research labs, 2013 - present.
External evaluator for tenure and promotion review, 2022.
Marsden Fund (New Zealand), proposal review, 2022.
SICB PUI working group, 2021 – present.
Proposal review, NSF CAREER, 2020.
External evaluator for tenure and promotion review, 2020.
Organized a regional networking meeting for ant researchers in Rhode Island, 2017.
Division of Invertebrate Zoology (SICB) presentation judge, 2014, 2017, 2022.
Social Insects in the Northeast Regions meeting organizer, 2012-2015.
Journal peer-review (see below), 2010 – present.

community service and outreach

Board member, The Rhode Island Natural History Survey, 2021 – 2023.
Founding board member, The Rhode Island Jewish Museum, 2017 – 2021.
Board member, The Rhode Island Jewish Historical Association, 2017 – 2019.
Serve Rhode Island snow-shoveling volunteer, 2014 – 2016.
Ant day, Charlotte Dunning Elementary School, Marlborough, MA, 2016.
The University of Chicago Alumni Schools Committee, Rhode Island, 2014-2015.
The University of Chicago Alumni Schools Committee, Central New Jersey, 2013.
Organizing graduate student workshop on programming in R, 2013.
Writing for Ask a Biologist website, http://askabiologist.asu.edu/, 2012.
Bug Theater: Return of the Hexapods, Cave Creek Regional Park, 2012.
Summer "Bug Theater" event at Estrella Mountain Regional Park, 2010.
Physiology exhibit at Social Insect Science Expo at Desert Botanical Garden, 2010.
Mentoring workshop on preparing graduate fellowship applications, 2009.

Leading interdisciplinary Comparative Biomechanics reading group, 2009.
Webmaster for A.S.U. Graduates in Earth, Life, and Social Sciences, 2009.
Reviewing grant proposals for Graduate and Professional Students Association, 2008.
Presenting a web-publishing workshop for Women in Science and Engineering, 2007.
Organized the annual meeting of the Chicago Area Undergraduate Research Symposium, 2006.

membership in scientific societies

American Physiological Society
American Society of Naturalists
Arizona Imaging and Microanalysis Society
Cambridge Entomological Club
International Union for the Study of Social Insects
Rhode Island Natural History Survey
Sigma Xi
Society for Integrative and Comparative Biology

journals served as manuscript reviewer

Acta Oecologica
The American Naturalist
Animal Behavior
Behavioral Ecology and Sociobiology
Biology Letters
Canadian Entomologist
Current Opinion in Insect Science
Current Zoology
Integrative and Comparative Biology
Ecological Entomology
Entomologia Experimentalis et Applicata
Evolution
Evolutionary Ecology
Evolution Letters
Functional Ecology
Insectes
Insectes Sociaux
Integrative and Comparative Biology
Journal of Animal Ecology
Journal of Experimental Biology
Journal of Insect Physiology
Journal of Visualized Experiments
Myrmecological News
Nature Communications
Physiological Entomology
PLoS One
PLoS Computational Biology
Proceedings of the National Academy of Science USA
Proceedings of the Royal Society B: Biological Sciences
Revista Brasileira de Entomologia
Royal Society Open Science
Scientific Reports

book peer review

Princeton University Press, 2022.
Wiley-Blackwell, 2012.
Oxford University Press, 2012.

research profiles

Google Scholar
http://scholar.google.com/citations?user=hKSvttMAAAAJ
Impact Story
https://profiles.impactstory.org/u/0000-0001-7077-9441
ORCID
http://orcid.org/0000-0001-7077-9441
ResearchGate
https://www.researchgate.net/profile/James_Waters4

citation metrics

Citations: 1,543
h-index: 17