

Helen F. McCreery

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[google scholar](#)

Total fellowship & grant funding \$ 337,000

Current Affiliations

James S. McDonnell Complex Systems Postdoctoral Fellow	August 2017 - present
Harvard University, Computer Science <i>Postdoctoral advisor: Dr. Radhika Nagpal</i>	October 2018 - present
Michigan State University, Integrative Biology BEACON Center for the Study of Evolution in Action <i>Advisor: Dr. Tom Getty</i>	August 2017 - present

Education

Ph.D	University of Colorado, Boulder Ecology and Evolutionary Biology <i>Ph.D Advisor: Dr. Michael Breed</i>	2011 - 2017
M.Eng	Massachusetts Institute of Technology Environmental Engineering <i>Masters Advisor: Dr. Peter Shanahan</i>	2006 - 2007
BS	Massachusetts Institute of Technology Environmental Engineering Theater Arts	2002 - 2006

Refereed Publications

* Indicates undergraduate author (three total)

** Indicates authors listed in alphabetical order

Hund, A.K., Churchill, A.C.**, Faist, A.M.**, Havrilla, C.A.**, Love Stowell, S.M.**, **McCreery, H.F.****, Ng, J.**, Scordato, E.S.C. (2018). "Transforming mentoring in STEM by training graduate students and postdocs." *Ecology and Evolution*. Available online, DOI: 10.1002/ece3.4527

Sankovitz, M.A.*, Breed, M.D., **McCreery, H.F.** (2018) "Effects of *Formica podzolica* ant colonies on soil moisture, nitrogen, and plant communities near nests." *Ecological Entomology*. Available online, DOI: 10.1111/een.12677

Esterly, E.E., **McCreery, H.F.**, Nagpal, R. (2017). "Models of adaptive navigation, inspired by ant transport in the presence of obstacles." In: *Proceedings of the Artificial Life Conference 2017, IEEE*. DOI: 10.1109/SSCI.2017.8280899. **Outstanding paper honorable mention.**

McCreery, H.F. (2017). “A comparative approach to cooperative transport in ants: individual persistence correlates with group coordination.” *Insectes Sociaux*. 64:535-547.

McCreery, H.F., Dix, Z.*, Breed, M.D., Nagpal, R. (2016). “Collective strategy for obstacle navigation during cooperative transport by ants.” *Journal of Experimental Biology*. 219: 3366-3375.

McCreery, H.F., Correll, N., Breed, M.D., Flaxman, S. (2016). “Consensus or deadlock? Simple behavioral rules and their consequences for coordination in self-organized groups.” *PLoS ONE* 11(9): e0162768.

Breed, M.D., Cook, C.N., **McCreery, H.**, Rodriguez, M. (2015). “Nestmate recognition in eusocial insects: The honeybee as a model system.” In *Social Recognition in Invertebrates*, L. Aquiloni and E. Tricarico, eds, pgs 147-164, Springer.

McCreery, H.F. and Breed, M.D. (2014). “Cooperative transport in ants: a review of proximate mechanisms.” *Insectes Sociaux*. 61: 99-110.

Pizzaro, L.C., **McCreery, H.F.**, Lawson, S.P., Winston, M.E., and O’Donnell, S. (2012). “Sodium-specific foraging by leafcutter ant workers (*Atta cephalotes*, Hymenoptera: Formicidae).” *Ecological Entomology*. Vol. 37: 435-348.

O’Keefe, K.J., Silander, O.K., **McCreery, H.**, Weinreich, D.M., Wright, K.M., Chao, L., Edwards, S.V., Remold, S.K., and Turner, P.E. (2010). “Geographic differences in sexual reassortment in RNA phage.” *Evolution*. Vol. 64: 3010-3023.

Forthcoming Articles

McCreery, H.F., Bilek, J.*, Nagpal, R., Breed, M.D. “Crazy ants overcome trade-offs to excel at cooperative transports across varying contexts.” *In review*.

McCreery, H.F. “Cooperative transport” entry for *Encyclopedia of Social Insects*, IUSI. *In review*.

Fellowships

Year	Name	Amount
2016	James S McDonnell Complex Systems Postdoctoral Fellowship	\$ 200,000
2016	University of Colorado, Graduate School Dissertation Completion Fellowship	\$ 16,000
2015	University of Colorado, Ecology and Evolutionary Biology Semester Fellowship	\$ 16,000
2015	University of Colorado, Graduate School Summer Fellowship	\$ 6,000
2012	National Science Foundation Graduate STEM Fellowship in K-12 Education	\$ 30,000
Total Fellowship Funding		\$ 268,000

Grants

Year awarded	Name	Amount
2018	NSF BEACON: “Dynamic spatial allocation in cooperative social groups.” Collaborator with Fred Dyer (PI), Darren Incorvaia, and Clifford Bohm	\$ 51,997
2015	University of Colorado Dean’s Graduate Student Research Grant	\$ 9,670
2014	University of Colorado, Ecology and Evolutionary Biology Department Research Grant	\$ 2,500
2014	University of Colorado Beverly Sears Graduate Student Research Grant	\$ 1,000
2013	University of Colorado, Ecology and Evolutionary Biology Research Grant	\$ 1,200
2013	Sigma Xi Grant-in-aid of research	\$ 600
2013	University of Colorado Beverly Sears Graduate Student Research Grant	\$ 1,000
2012	University of Colorado, Ecology and Evolutionary Biology Research Grant	\$ 1,500
Total Grant Funding		\$ 69,467

Awards

Year awarded	Name	Amount
2017	University of Colorado Nominee for CGS/ProQuest Distinguished Dissertation Award in Biological Sciences	NA
2017	Ecology and Evolutionary Biology Award for outstanding Teaching Assistant	\$ 200
2016	Ecology and Evolutionary Biology Award for outstanding Teaching Assistant	NA
2015	Ecology and Evolutionary Biology Award for outstanding Teaching Assistant	\$ 200
2012	Award for outstanding oral presentation in social foraging and decision behavior. IUSSI-NAS Breakout Meeting, Greensboro California	NA

Non-refereed Publications and Press

Breed, M.D. and **McCreery, H.F.** (2014). “Animal behavior: Social recognition in crickets.” *Current Biology*. Vol. 24(23): R1123-R1124.

Press features and blog posts

The New York Times: Gorman, James (2016). “How teamwork brings home the tuna in Lego Land.” Research feature in The New York Times series *Science Take*. Available at: <https://www.nytimes.com/2016/11/15/science/longhorn-crazy-ants.html>.

Scientific American blog: Muth, Felicity (2013). “How do ants coordinate moving huge objects?” Research feature in the blog *Not Bad Science, Scientific American*. Available at: <http://tinyurl.com/z3hvb3w>.

Small Pond Science, guest post: **McCreery, H.F.** (2018) “Learning to be a better mentor and leader.” <https://smallpondscience.com/2018/10/15/learning-to-be-a-better-mentor-and-leader/>

Insectes Sociaux blog: **McCreery, H.F.** (2017). “Do persistent ants work better together?” Research feature in blog, available at: <http://tinyurl.com/ybjah7zt>

Inside JEB: Knight, Kathryn (2016). “Cooperative ants are more than the sum of their parts.” Research feature in *Inside JEB, Journal of Exp. Biology*. 219: 3309-3310

Presentations

Invited Seminars & Symposium Presentations

- 2018** Project Leader: MBI Collective Behavior Workshop, Mathematical Biosciences Institute, Ohio State University. “Exploring group strategy and cohesion during obstacle navigation.”
- Invited symposium presentation: “A comparative approach to cooperative transport: disregarding potentially distracting information can be good.” Symposium on Information Use in Social Insects at the International Union for the Study of Social Insects (IUSSI) 2018 conference.
- 2017** Invited talk: Postdocs in Complexity Conference II. Santa Fe Institute, New Mexico; July 2017. “Collective strategy for a maze-like task.”
- Invited seminar, Physics of Living Systems group at the Massachusetts Institute of Technology.
- 2016** Invited seminar: Jin-Cornell bi-group seminar at JILA (joint physics institute of the University of Colorado and the National Institute of Standards and Technology).

- 2015** Invited symposium talk: “Reaching students through teachers: How to run a science workshop for K-12 teachers.”
SciComm 2015: A symposium on effective science communication. Lincoln, Nebraska; October 2015.
- Invited seminar, Self-Organizing Systems Research Group at Harvard University.
- 2014** Invited seminar, Social Insects Research Group at Arizona State University.

Additional Seminars

- 2017** BEACON Center for the Study of Evolution in Action, Seminar Series. Michigan State University.
- 2016** Smithsonian Tropical Research Institute. Barro Colorado Island, Panama.
- 2014** Multidisciplinary Graduate School STEMinar series, University of Colorado.

Conference Contributions

- 2018** American Society of Naturalists Stand Alone Meeting
International Union for the Study of Social Insects Meeting
International Society for Behavioral Ecology Meeting
- 2017** Entomological Society of America National Meeting
IEEE Annual Symposium on Artificial Life (poster & presentation)
- 2016** American Society of Naturalists Stand Alone Meeting
- 2015** Entomological Society of America National Meeting
Guild of Rocky Mountain Ecologists and Evolutionary Biologists Meeting
- 2014** Entomological Society of America National Meeting
Biological Distributed Algorithms Workshop at Distributed Computing (poster)
- 2013** Animal Behavior Society Meeting
- 2012** International Union for the Study of Social Insects – North American Section
Breakout Meeting, **won outstanding oral presentation**

Teaching

- 2017** **Leadership and Mentoring in Science**, Graduate Instructor
Graduate and postdoctoral seminar, University of Colorado
Co-taught this course with a postdoctoral associate

- 2016** **Animal Behavior**, Graduate Instructor & Lecturer
100-student upper division undergraduate course, University of Colorado
Co-taught this course with a professor and three graduate and nine undergraduate teaching assistants; responsible for half the lectures and half of the management and administration of this lecture and lab course
- Ants of the Southwest**, Instructor
Undergraduate and graduate specialty field course, Southwestern Research Station, Arizona
Co-led this field course as part of a 3-person teaching team
- 2015** **Curriculum development**
Guest Lecturer
Developed and taught a week-long teachable unit, including learning goals and assessments, for 32-student upper division course on parasitism
Part of a graduate seminar on data-driven education practices
- Animal Behavior**, Graduate Teaching Assistant
Upper division undergraduate course, University of Colorado
Taught one lab section and managed lab administration
- Genetics: Molecular to Population**, Graduate Teaching Assistant
Lower division undergraduate course, University of Colorado
Taught three recitation sections
- Science Writing**, Graduate Leader
Graduate seminar, University of Colorado
Co-led seminar as part of a 3-person teaching team
- 2014** **Curriculum development**
Developed new labs for Animal Behavior, University of Colorado
- Animal Behavior**, Graduate Teaching Assistant
Upper division undergraduate course, University of Colorado
Taught two lab sections
- General Biology Labs II**, Graduate Teaching Assistant
Lower division undergraduate course, University of Colorado
Taught three lab sections
- 2013** **Animal Behavior**, Graduate Teaching Assistant
Upper division undergraduate course, University of Colorado
Taught two lab sections
- 2012-2013** **Graduate NSF STEM Fellow**, Centennial Middle School
Science Club Leader, Life Sciences Teaching Assistant

- 2012** **General Biology Labs II**, Graduate Teaching Assistant
Lower division undergraduate course, University of Colorado
Taught two lab sections
- 2011** **General Biology Labs I**, Graduate Teaching Assistant
Lower division undergraduate course, University of Colorado
Taught two lab sections

Service and Outreach

- Reviewer** *Nature Scientific Reports, PLOS Computational Biology, Insectes Sociaux, Journal of Insect Behavior, Behavioral Ecology and Sociobiology*
- 2018** Biology on Tap: Popular science seminar in Lansing, Michigan. “We wish we were ants”
- 2017** Participated in Diversity Group, to promote diversity and inclusion at the University of Colorado and in STEM
- 2012 – 2016** Chair of the Graduate Student Science Outreach Committee
Organized annual workshop at the University of Colorado for K-12 teachers on teaching contentious science topics, including evolution and climate change. This workshop is attended annually by dozens of teachers from across Colorado.
- 2013 – 2016** Led the following reading groups or seminars at the University of Colorado: Quantitative Think Tank, Graduate Writing Coop, Animal Behavior Reading Group, Modeling Group
- 2014 – 2016** Helped organize and volunteered for annual University of Colorado Darwin Day celebrations
- 2016** Presented at teaching workshop for K-12 science teachers: “Brood parasites and ‘slave-making’ ants: a teachable unit for evolutionary arms races”
- 2015** Moth Mania: outreach event at the University of Colorado Natural History Museum

Science Discovery: developed and led ant behavior projects for middle and high school students
- 2013 – 2015** Helped develop and organize annual Evolution Family Day at the University of Colorado Museum of Natural History
- 2012 – 2014** Helped write “Evolution Connection” boxes: curricula for large undergraduate general biology labs at the University of Colorado
- 2014** Presented to students at Temple Grandin middle and high school: “Ant behavior”

Designed outreach poster for public visitors to the Biosphere 2 facility in Oracle, AZ: “Obstacle navigation during cooperative transport in ants.”

2013 Local Organizing Committee for Animal Behavior Society 2013 Conference

Society affiliations Entomological Society of America, American Society of Naturalists, International Union for the Study of Social Insects, International Society for Behavioral Ecology, Animal Behavior Society, Institute of Electrical and Electronics Engineers