

Curriculum Vitae
Morgan Carr-Markell

301 Platt Blvd.
Claremont, CA 91711
Phone: 414-559-9670
Email: mcarrmarkell@g.hmc.edu

Education:

2020: Ph.D. in Entomology

University of Minnesota

Dissertation topic- "Effects of native prairie forbs on the foraging choices and recruitment behavior of honey bees (*Apis mellifera*)"

Advisor: Marla Spivak

2013: Master of Science in Ecology, Evolution, and Conservation Biology

University of Illinois

Master's thesis title- "Comparing reversal-learning abilities, sucrose responsiveness, and foraging experience of scout and non-scout honey bee (*Apis mellifera*) foragers"

Advisor: Gene Robinson

2010: BA in Biological Sciences

Wellesley College

Graduated Phi Beta Kappa, *magna cum laude* with honors

Senior thesis title- "Differences in pheromone production during waggle dances and dance attractiveness among patrines in a honey bee (*Apis mellifera*) colony"

Advisor: Heather Mattila

Minor: Women's and Gender Studies

Research Experience:

- 2020-continuing: Postdoctoral Fellow
Harvey Mudd College, Program in Interdisciplinary Computation
Matina Donaldson-Matasci's Lab
- 2015-2020: Ph.D. Candidate
University of Minnesota
Marla Spivak's Lab
- 2013-2015: Research Technician (Junior Scientist)
University of Minnesota
Marla Spivak's Lab
- 2010-2013: Graduate Student
University of Illinois at Urbana-Champaign
Gene Robinson's Lab
- 2009-2010: Senior Thesis Student
Wellesley College
Heather Mattila's Lab

Curriculum Vitae
Morgan Carr-Markell

Teaching Experience:

- Spring 2021: Co-teaching MCB 118B: Introduction to Computational Biology
15 students, half-semester online course
Lectures, grading, and updating assignments
- Spring 2020: Guest lecture on bee-collected pollen and nutrition
ESPM 3480 Pollinator Conservation
- Fall 2017, 2019: Co-taught ENT 4021: Honey Bees and Insect Societies
Designed/set up labs, designed/lead in-class activities, prepared/gave lectures, 44 students
- Spring 2019: Taught Honey Bees and Insect Societies, Osher Lifelong Learning Institute course
Developed 7 lectures and hands-on labs for 20 adult learners
- Fall 2018: Teaching Assistant for ENT 1005- Insect Biology
A guest lecture on social insects, lead a lab section of 20 students
- Summer 2015-Summer 2019: Mentored undergraduate researchers
12 students
Cora Demler presented research at American Bee Research Conference in Galveston TX in 2017 + co-authored a paper in *PLOS ONE*
- Spring 2017, 2018: Taught beekeeping classes for Honey Bee Ware, Greenville, WI
2 one-day beginning beekeeping courses, 40 students
2 one-day advanced beekeeping course, 47 students
- Spring 2015: Guest lecture on bee-collected pollen
HORT 4850 Pollinator Protection in Managed Landscapes
- Spring 2014: Adjunct Instructor, Anoka Ramsey Community College
BIOL 1103 Environmental Science
2 lecture sections, 1 lab section, 77 students
- Spring 2013: Center for Teaching Excellence Graduate Teacher Certificate
Consultation on taped short lesson, 2 semesters of student feedback, and feedback from 2 in-class observations
Reading group on "What the Best College Teachers Do"
- Fall 2011, Fall 2012-Spring 2013: Teaching Assistantships
IB 204 Genetics-
3 lab sections, 59 students
Presentation, lab activities, grading
IB 302 Evolution-
2 lab sections, 36 students
Presentation, lab activities, discussions, grading
- Summer 2012-Spring 2013: Mentor on an undergraduate senior thesis project
Helped with experimental design, data collection, writing, and presentation of results at an undergraduate symposium

Curriculum Vitae
Morgan Carr-Markell

Publications:

- Carr-Markell, M.K.**, and Spivak, M. (2021) External validation of the new calibration for mapping honey bee waggle dances. *Animal Behaviour*. DOI: 10.1016/j.anbehav.2020.12.006
- Carr-Markell, M.K.**, Demler, C.M.*, Couvillon, M.J., Schürch, R., Spivak, M. (2020) Do honey bee (*Apis mellifera*) foragers recruit their nestmates to native forbs in reconstructed prairie habitats? *PLOS ONE* 15(2): e0228169. DOI: 10.1371/journal.pone.0228169
*Undergraduate student that I mentored
- Corby-Harris, V., Bowsher, J., **Carr-markell, M.K.**, Carroll, M., Centrella, M. et al. (2018) Emerging themes from the ESA symposium entitled "Pollinator Nutrition: Lessons from Bees at Individual to Landscape Levels." *Bee World*. DOI: 10.1080/0005772X.2018.1535951
- Southey, B.R., Zhu, P., **Carr-Markell, M.K.**, Liang, Z.S., Zayed, A., Li, R., Robinson, G.E., Rodriguez-Zas, S.L. (2016) Characterization of genomic variants associated with scout and recruit behavioral castes in honey bees using whole-genome sequencing. *PLOS ONE* 11(1): e0146430. DOI: 10.1371/journal.pone.0146430
- Richards, J., **Carr-Markell, M.K.**, Hefetz, A., Grozinger, C.M., and Mattila, H.R. (2015) Queen-produced volatiles change dynamically during reproductive swarming and are associated with changes in honey bee (*Apis mellifera*) worker behavior. *Apidologie*. 46(6): 679-690. DOI: 10.1007/s13592-015-0358-x
- Carr-Markell, M.K.** and Robinson, G.E. (2014) Comparing reversal-learning abilities, sucrose responsiveness, and foraging experience between scout and non-scout honey bee (*Apis mellifera*) foragers. *Journal of Insect Behavior*. 27(6): 736-752. DOI:10.1007/s10905-014-9465-1
- Heath, K.D., Bagley, E., Berkey, A.J.M., Birlenbach, D.M., **Carr-Markell, M.K.** et al. (2014) Amplify the signal: graduate training in broader impacts of scientific research. *BioScience*. 6(6): 517-523. DOI: 10.1093/biosci/biu051
- Carr-Markell, M.K.**, McDonald, K.M., and Mattila, H.R. (2013) Intracolony genetic diversity increases chemical signaling by waggle-dancing honey bees, *Apis mellifera*. *Insectes Sociaux*. 60(4): 485-496. DOI: 10.1007/s00040-013-0315-5

Presentations:

Scientific meetings-

- Carr-Markell, M.K.**, Spivak, M. "Does floral density matter to honey bee foragers when deciding whether to dance?" Entomological Society of America 2019 Conference, St. Louis, MO.
- Carr-Markell, M.K.**, Demler, C.M., Couvillon, M.J., Schürch, R., Spivak, M. "Do honey bees (*Apis mellifera* L.) perceive flowers in restored prairies as profitable food sources?" Poster presented at Animal Behavior Society/International Ethological Conference 2019, Chicago, IL.
- Carr-Markell, M.K.**, Demler, C.M., Couvillon, M.J., Schürch, Spivak, M. "Do *Apis mellifera* (honey bee) colonies recruit to native forbs in restored prairies?" Entomological Society of America 2018 Conference, Vancouver, Canada.

Morgan Carr-Markell

Carr-Markell, M.K., Demler, C.M., Couvillon, M.J., Schürch, R., Cornman, R.S., Iwanowicz, D.D., Spivak, M. "Can restored prairies contribute significantly to the diets of *Apis mellifera* (honey bee) colonies in the Upper Midwest?" Entomological Society of America 2017 Conference, Denver, CO.

Carr-Markell, M.K., Demler, C.M., Cornman S.R., Iwanowicz, D.D., Spivak, M. September, 2016. "Do honey bees (*Apis mellifera* L.) near reconstructed prairies collect significant amounts of food from native prairie flowers?" International Congress of Entomology, Orlando, FL.

*Runner up, student paper competition

Carr-Markell, M.K., Spivak, M. November, 2015. "Using pollen identification to determine which native prairie species honey bees (*Apis mellifera* L.) use as major sources of food." Entomological Society of America 2015 Conference, Minneapolis, MN.

Carr-Markell, M.K., Robinson, G. November, 2013. "A comparison of reversal-learning abilities and sucrose response thresholds between scout and recruit honey bee (*Apis mellifera*) foragers." Poster presented at the Entomological Society of America 2013 Conference, Austin, TX.

Carr-Markell, M.K., McDonald, K., Mattila, H.R. Spring, 2010. "Differences in waggle-dance pheromone production among patriline in a honey bee, *Apis mellifera*, colony and effects on dance-following behavior." Presented at the Northeast Undergraduate Research and Development Symposium, University of New England.

*Best talk, student presentation competition

Beekeeping association meetings-

Carr-Markell, M.K., Demler, C.M., Couvillon, M.J., Schürch, R., Cornman, R.S., Iwanowicz, D.D., Spivak, M. 2019. "When would a honey bee advertise flowers in a restored prairie and why does it matter?" American Bee Research Conference, Phoenix, AZ.

*Award for best talk in section in student paper presentation competition

Carr-Markell, M.K., Demler, C.M., Kinder, B., Couvillon, M.J., Schürch, R., Spivak, M. January, 2018. "Do honey bees recruit to native flowers in restored prairies?" Presented at the American Bee Research Conference, Reno, NV.

*Award for best talk in section in student paper presentation competition

Carr-Markell, M.K., Demler, C.M., Cornman, R.S., Iwanowicz, D.D., Spivak, M. January, 2017. "Do honey bees (*Apis mellifera* L.) near reconstructed prairies collect significant amounts of food from native prairie flowers?" Presented at the American Bee Research Conference, Galveston, TX.

Demler, C.M.*, **Carr-Markell, M.K.**, Kinder, B., Couvillon, M.J., Schürch, R., Spivak, M. January, 2017. "Determining relative attractiveness of reconstructed native prairies to honey bee foragers" Presented at the American Bee Research Conference, Galveston, TX.

*Presenter is an undergraduate researcher that I mentored

Carr-Markell, M.K., Spivak, M. October, 2016. "Honey bees and native prairies." Presented at the Minnesota Hobby Beekeepers Association Meeting, St. Paul, MN.

Carr-Markell, M.K., Spivak, M. August, 2016. "Honey bees and native prairies." Presented at the Polk-Burnett Beekeepers' Meeting, Balsam Lake, WI.

Carr-Markell, M.K., Spivak, M. July, 2016. "Honey bees and native prairies." Presented at the Minnesota Honey Producers Association Meeting, Bloomington, MN.

Morgan Carr-Markell

Carr-Markell, M.K., Spivak, M. July, 2015. "Honey bees and native prairies." Presented at the Minnesota Honey Producers Association Meeting, Alexandria, MN.

Carr-Markell, M.K., Spivak, M. July, 2014. "Native prairie pollen project." Presented at the Minnesota Honey Producers Association Meeting, St. Cloud, MN.

Invited seminar-

Carr-Markell, M.K. February 7, 2020. "If you plant it, will they come? Using waggle dances and pollen ID to evaluate potential food sources for honey bees." Social Insect Research Group. Arizona State University.

Grants and Fellowships:

- 2019-2020: Doctoral Dissertation Fellowship, University of Minnesota (\$25,000)
- 2016-2019: PAm-Costco Scholarship for Honey Bee Health (\$150,000)
- 2015-2016: Excellence in Entomology Fellowship, University of Minnesota, Department of Entomology (\$34,753)
- 2012, 2013: PEEC Summer Research Grant (\$1000)
- 2012: PEEC Research Assistantship, Program in Ecology, Evolutionary Biology, and Conservation, University of Illinois

Awards and Certificates:

- 2019: Diversity and Equity Certificate, University of Minnesota
- 2018, 2019: Best in section, American Bee Research Conference, Student Presentation Competition
- 2016: Runner-up, International Congress of Entomology, Student Paper Competition
- 2013: List of Teachers Ranked as Excellent by their Students, University of Illinois
- 2013: Graduate Teaching Certificate, University of Illinois
- 2011: NSF GRFP Honorable Mention
- 2010: Fiske Prize in Biology, Wellesley College
- 2010: Best Talk, Northeast Undergraduate Research and Development Symposium

Outreach Experience:

- 2015-2020: Volunteer Instructor
 - Science fair project on identifying pollens in single-source honeys
 - FFA convention workshop on supporting bees and other pollinators
 - Waggle dance station for annual Pollinator Party
 - Girl Scout Bugs Badge activities
 - Market Science Pollinator Days
 - State 4-H Convention
 - 45+ classroom visits, camp visits, educational tables at fairs/festivals, etc.

Curriculum Vitae

Morgan Carr-Markell

- 2014-2019: Volunteer at Bee Squad outreach events and Bee Lab classes
- 2013: Volunteer at Pollinatorium Discovery Center
- 2012: Volunteer Instructor
Orpheum Children's Science Museum- "Be a Hero for the Bees" activity
Bees and Beekeeping Short Course, UIUC
- 2012: Outreach article: Giving honey bee colonies the tools for success. Smile Politely Online Magazine. <http://www.smilepolitely.com/culture/science_politely_giving_honey_bee_colonies_the_tools_for_success/>

Service:

- 2018-2019: Entomology Department, University of Minnesota
Member, Diversity and Inclusion Committee
 - 2015-2020: Frenatae- Entomology Graduate Students' Association
Outreach Coordinator
Treasurer
Honey Sale Representative
 - Manuscripts reviewed for: *PeerJ*, *Frontiers in Ecology and Evolution*, *Animal Behaviour*, and *Ecology and Evolution*
 - 2015: Co-organized a symposium at the Entomological Society of America conference, "Pollen Analysis in Bee Research: Sharing Discoveries, Methods, and Resources"
 - 2012: Secretary, Women in Science, UIUC
 - 2012-2013: Ecolunch Coordinator, Students in Ecology and Evolutionary Biology
 - 2012-2013: Program in Ecology, Evolution, and Conservation Biology
Audio-Visual Assistant
Seminar Committee Member
-