**Dr. Margaret J. Couvillon**

Assistant Professor, Pollinator Biology & Ecology

Department of Entomology, Virginia Tech, Blacksburg, VA 24061

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**Interests**

Bee Foraging Biology & Pollination Ecology / Behavior of Social Insects / Science Pedagogy

**Education**

2007 Ph.D. in Behavioral Ecology, University of Sheffield, England

2004 M.S. in Neurobiology, Duke University, North Carolina

2000 B.S. in Biology, *summa cum laude*, Loyola University, Louisiana

**Professional Appointments**

2017 – Present Assistant Professor, Department of Entomology, Virginia Tech, Blacksburg, VA

2015 – 2016 Scientific Research Staff, Institute of Social and Preventive Medicine (ISPM), Bern, Switzerland

2015 – 2016 Honey Bee Science Consultant, European Food Safety Authority (EFSA), Parma, Italy

2009 – 2014 Postdoctoral Fellow, University of Sussex, Brighton, England

2009 – 2009 Adjunct Instructor, Department of Biology, Pima Community College, Tucson, Arizona

2007 – 2009 NIH Postdoctoral Research and Teaching Fellow, Center for Insect Science, University of Arizona, Tucson, Arizona

**Awards, prizes, and recognition**

2021 Session Chair, American Bee Research Conference Annual Meeting. Virtual.

2020 Invited Keynote Speaker, Bee College, University of Florida. Gainesville, FL.

2019 Session Chair, American Bee Research Conference Annual Meeting. Phoenix, Arizona.

2019 Invited Keynote Speaker, Roanoke Master Gardeners Association Spring Meeting. Roanoke, VA.

2018 Invited Interview, Science Connects, Biocomplexity Institute, VT.

2018 Invited Keynote Speaker, Eastern Apiculture Society Annual Meeting. Hampton Roads, VA.

2018 Invited Interview, PolliNation Podcast, Oregon State Extension Services. Corvallis, Oregon.

2014 Invited Keynote Speaker, The Art of Pollination Exhibition Opening. Plymouth, England.

2013 Invited Keynote Speaker, Royal Horticultural Society Winter Meeting. London, England.

2012 TED Speaker (Invited), Houses of Parliament. London, England.

2012 Invited Plenary, National Honey Show. Weybridge, England.

2012 Invited Keynote Speaker, Roots n Shoots Spring Community Meeting. London, England.

2009-Present Popular Press Research Profiles, Discover Magazine, Washington Post, New York Times, National Geographic, New Scientist, BBC World Service, AAAS Science Update, Roanoke Times, Scientific American, Roanoke Times, WVTF, and US News & World Reports.

2009-2015 Postdoctoral Fellowship, Nineveh Charitable Trust.

2007-2009 Postdoctoral Fellowship in Research and Teaching, University of Arizona. Tucson, Arizona.

2005 1st Place, Royal Entomological Society Student Essay Competition, £250. London, England.

2003-2006 NSF Graduate Research Fellowship.

2000 Percy J. Roy, S.J. Award for Highest GPA in graduating class in College of Arts and Science, Loyola University New Orleans.

2000 Ruth and Lee Faust Award for Outstanding Biology Graduate, Loyola University New Orleans.

2000 Michelle St. Romaine Award for Outstanding Honors Program Graduate, Loyola University New Orleans.

1998 Claire Boothe Luce Award for Outstanding Female Science Major, Loyola University New Orleans.

1997 CRC Chemistry Award for Outstanding Chemistry Student, Loyola University New Orleans.

1996-2000 Ignatian Scholarship. Full tuition, room, and board, Loyola University New Orleans.

1996 National Merit Finalist.

**Publications**

Bibliometrics: 1831 citations; h-index: 26; i10-index: 40.

1. BD Ohlinger, R Schürch, MR Silliman, TN Steele, & **MJ Couvillon**. Dance-communicated distances support nectar foraging as a supply-driven system. Biol Letters (Accepted)
2. TN Steele, R Schürch, BD Ohlinger, & **MJ Couvillon**. Apple orchards feed bees during, but more so after, bloom. Ecosphere (Accepted)
3. MR Silliman, R Schürch, S Malone, SV Taylor, & **MJ Couvillon**. Row corp fields provide mid-summer forage for honey bees. Ecol and Evol 6(12), e8979.
4. BD Ohlinger, R Schürch, s Durzi, PM Kietzman, MR Silliman, & **MJ Couvillon**. Honey bees (Hymenoptera: Apidae) Decrease Foraging But not Recruitment After Neonicotinoid Exposure. J of Insect Sci 22(1)., 1-11.
5. 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, e0228169.
6. Schürch, R., Zwirner, K., Yambrick, B.J.,Pirault, T., Wilson, J.M., & **Couvillon, M.J.** (2019) Dismantling babel: Creation of a universal calibration for honey bee waggle dance decoding. Animal Behavior 150, 139-145.
7. Zürcher, K., Mooser, A., Anderegg, N., Tymejczyk, O., Couvillon, M.J., Nash, D., Egger, M.J. (2017) Outcomes of HIV-positive patients lost to follow-up in African treatment programs. Tropical Medicine & International Health 22, 375-387.
8. Schürch, R., Ratnieks, F.L.W., Samuelson, E.E.W., **Couvillon, M.J.** (2016) Dancing to her own beat: Honey bee foragers communicate via individually calibrated waggle dances. Journal of Experimental Biology 219, 1287-1289.
9. Schürch, R., Couvillon, M.J., Ratnieks, F.L.W. (2015) Determining the foraging potential of oilseed rape to honey bees using aerial surveys and simulations. Journal of Apiculture Research 54, 238-245.
10. **Couvillon, M.J.,** Toufailia, H.A., Butterfield, T.M., Schrell, F., Ratnieks, F.L.W., Schürch, R. (2015) Buzzing bees: Caffeinated forage tricks honey bees into increasing foraging and recruitment behaviors. Current Biology 25, 2815-2818.
11. **Couvillon, M.J.** & Ratnieks, F.L.W. (2015) Environmental consultancy: Dancing bee bioindicators to evaluate landscape “health”. Frontiers in Ecology and Evolution 3, 44.
12. **Couvillon**, **M.J.**, Walter, C.M., Blows, E.M., Czaczkes, T.J., Alton, K., & Ratnieks, F.L.W. (2015) Busy bees and laid-back butterflies: Variation in insect flower-visiting rate across multiple plant species. Psyche 2015, 1-7.
13. Schürch, R., Couvillon, M.J., & Beekman, M. (2015) Ballroom biology: Recent insights into honey bee waggle dance communications. Frontiers in Ecology and Evolution 3, 147.
14. **Couvillon**, M.J., Boniface, T.J., Evripidou, A.M., Owen, C.J., Ratnieks, F.L.W. (2015) Unnatural contexts cause honey bee guards to adopt non-guarding behaviours towards allospecifics and conspecifics. Ethology 121, 410-418.
15. Wario, F., Wild, B., Couvillon, M.J., Rojas, R., Landgraf, T. (2015) Automatic methods for long-term tracking and the detection and decoding of communication dances in honey bees. Frontiers in Ecology and Evolution 3, 103.
16. Beekman, M., Makinson, J.C., Couvillon, M.J., Preece, K., Schaerf, T.M. (2015) Honey bee linguistics – a comparative analysis of the waggle dance among species of *Apis*. Frontiers in Ecology and Evolution 3, 11.
17. Garbuzov, M., Couvillon, M.J., Schürch, R., Ratnieks, F.L.W. (2015) Honey bee dance decoding and pollen-load analysis show limited foraging on spring-flowering oilseed rape, a potential source of neonicotinoid contamination. Agriculture, Ecosystems & Environment 203, 62-68.
18. **Couvillon, M.J.**,Schürch, R., & Ratnieks, F.L.W. (2014) Dancing bees communicate a foraging preference for rural lands in High Level Agri-Environment Schemes. Current Biology 24, 1212-1215.
19. **Couvillon, M.J.**, Riddell Pearce, F.C., Accleton, C., Fensome, K.A., Quah, S.L.K., Taylor, E., & Ratnieks, F.L.W. (2014) Honey bee foraging distance depends on month and forage type. Apidologie 46, 61-70.
20. **Couvillon, M.J.**,Fensome, K.A., Quah, S.L.K., Schürch, R. (2014) Summertime blues: August foraging leaves honey bees empty-handed. Communicative and Integrative Biology 7, 1-2.
21. **Couvillon, M.J.**, Schürch, R. & Ratnieks, F.L.W. (2014) Waggle dance distances as integrative indicators of seasonal foraging challenges. PLoS One 9, e93495.
22. **Couvillon, M.J.**, Segers, F.H.I.D., Cooper-Bowman, R., Truslove, G., Lima, D., Nascimento, F.S. & Ratnieks, F.L.W. (2013) Context affects nestmate recognition errors in honey bees and stingless bees. Journal of Experimental Biology 216, 3055-3061.
23. Schürch, R., Couvillon, M.J., Burns, D., Tasman, K., Waxman, D., & Ratnieks, F.L.W. (2013) Incorporating variability in honey bee waggle dance decoding improves the mapping of communicated resource locations. Journal of Comparative Physiology A 199, 1143-1152.
24. Riddell Pearce, F.C., Couvillon, M.J., & Ratnieks, F.L.W. (2013) Hive relocation does not adversely affect honey bee (Hymenoptera: Apidae) foraging. Psyche 2013, 1-8.
25. Schürch, R. & **Couvillon, M.J.** (2013) Too much noise on the dance floor: Intra- and inter-dance angular error in honey bee waggle dances. Communicative and Integrative Biology 6, 540-543.
26. Wenseleers, T., Bacon, J.P., Couvillon, M.J., Kärcher, M., Nascimento, F.S., Nogueira-Neto, P., Robinson, E.J.H., Tofilski, A., & Ratnieks, F.L.W. (2013) Bourgeois behavior and freeloading in the colonial orb-web spider *Parawixia bistriata* (Araneae, Araneidae). American Naturalist 182, 120-129.
27. Toufailia, H.A., Couvillon, M.J., Ratnieks, F.L.W., Grüter, C. (2013) Honey bee waggle dance communication: Signal meaning and signal noise affect dance follower behavior. Behavioral Ecology and Sociobiology 67, 549-556.
28. Contrera, F.A.L., Couvillon, M.J., Nieh, J. (2012) Hymenopteran collective foraging and information transfer about resources. Psyche 2012, 1-2.
29. **Couvillon, M.J.**, Phillipps, H.L.F., Schürch, R. & Ratnieks, F.L.W. (2012) Working against gravity: Horizontal honeybee waggle runs have greater angular scatter than vertical waggle runs. Biology Letters 8, 540-543.
30. **Couvillon, M.J.,** Riddell Pearce, F.C., Harris-Jones, E.L., Kuepfer, A.M., Mackenzie-Smith, S.J., Rozario, L.A., Schürch, R. & Ratnieks, F.L.W. (2012) Intra-dance variation among waggle runs and the design of efficient protocols for honey bee dance decoding. Biology Open 1, 467-472.
31. **Couvillon, M.J.** (2012) The dance legacy of Karl von Frisch. Insectes Sociaux 59, 297-306.
32. **Couvillon, M.J.**, van Zweden, J.S., & Ratnieks, F.L.W. (2012) Model of collective decision-making in nestmate recognition fails to account for individual discriminator responses and non-independent discriminator errors. Behavioral Ecology and Sociobiology 66, 339-341.
33. Contrera, F.A.L., Couvillon, M.J., Nieh, J. (2011) Hymenopteran group foraging and information transfer about resources. Psyche 2011, 1-2.
34. **Couvillon**, **M.J.**, Jandt, J., Bonds, J., Helm, B., & Dornhaus, A. (2011) Percent fat is associated with body size but not task in the bumble bee *Bombus impatiens*. Journal of Comparative Physiology A.197, 1097-1104.
35. **Couvillon, M.J.**, Barton, S.N., Cohen, J.A., Fabricius, O.K., Kärcher, M.H., Cooper, L.S., Silk, M.J., Helanterä, H., & Ratnieks, F.L.W. (2010) Alarm pheromones do not mediate rapid shifts in honey bee guard acceptance threshold. Journal of Chemical Ecology 36, 1306-1308.
36. **Couvillon, M.J.**, Hughes, W.O.H., Perez-Sato, J.A., Martin, S.J., & Ratnieks, F.L.W. (2010) Sexual selection in honey bees: Colony variation and the importance of size in male mating success. Behavioral Ecology 21, 520-525.
37. **Couvillon**, **M.J.**, Jandt, J., Duong, N., & Dornhaus, A. (2010) Ontogeny of worker body size distribution in bumble bee (*Bombus impatiens*) colonies. Ecological Entomology 35, 424-435.
38. **Couvillon, M.J.**, Fitzpatrick, G. & Dornhaus, A. (2010) Ambient air temperature does not predict body size of foragers in bumble bees (*Bombus impatiens*). Psyche 2010, 536430.
39. **Couvillon, M.J.** & Dornhaus, A. (2010) Small worker bumble bees (*Bombus impatiens*) are hardier against starvation than their larger sisters. Insectes Sociaux 57, 193-197.
40. Gronenberg, W. & **Couvillon, M.J.** (2010)Brain Composition and Olfactory Learning in Honey Bees. Neurobiology of Learning and Memory 93, 435-443.
41. **Couvillon, M.J.**, DeGrandi-Hoffman, G., Gronenberg, W. (2010) Africanized honeybees are slower learners than their European counterparts. Naturwissenschaften 97, 153-160.
42. **Couvillon, M.J.**, Roy, G.G.F., & Ratnieks, F.L.W. (2009) Recognition errors by honey bee (*Apis mellifera*) guards demonstrate overlapping cues in conspecific recognition. Journal of Apiculture Research 48, 225-232.
43. **Couvillon, M.J.** & Dornhaus, A. (2009) Location, location, location: Larvae position inside the nest is correlated with adult body size in worker bumble bees (*Bombus impatiens*). Proceedings of the Royal Society B 276, 2411-2418.
44. **Couvillon, M.J.**, Robinson, E.J.H, Atkinson, B., Child, L., Dent, K.R., & Ratnieks, F.L.W. (2008) En Guarde: Rapid changes in honey bee guarding to intense robbing demonstrates individual and colony level responses. Animal Behavior 76, 1653-1658.
45. **Couvillon, M.J.** Ratnieks, F.L.W. (2008) Odour transfer between colonies of the stingless bee Frieseomelitta varia demonstrates that entrance guards use an “undesirable-absent” cue recognition system. Behavioral Ecology and Sociobiology 62, 1099-1105.
46. **Couvillon**, **M.J.**, Wenseleers, T., Imperatriz-Fonseca, V.L., Nogueira-Neto, P., & Ratnieks, F.L.W. (2008) Comparative study in stingless bees (Meliponini) demonstrates that nest entrance size predicts traffic and defensivity. Journal of Evolutionary Biology 21, 194-201.
47. **Couvillon, M.J.**, Caple, J.P., Endsor, S.L., Kärcher, M.H., Russell, T.E., Storey, D.E., & Ratnieks, F.L.W. (2007) Nest-mate recognition template of guard honeybees (*Apis mellifera)* is modified by wax comb transfer. Biology Letters 3, 228-230.
48. Tofilski, A., Couvillon, M.J., Evison, S.E, Robinson, E.H., &   
    Ratnieks, F.L.W. (2008) Pre-emptive defensive self-sacrifice by ant workers. The American Naturalist 172, 239-243.
49. Perez-Sato, J.A., Couvillon, M.J., Hughes, W.O.H., & Ratnieks, F.L.W. (2008) Effects of hive spacing, entrance orientation, and worker activity on nest relocation by honey bee queens. Apidologie 39, 708-713.
50. Perez-Sato, J.A., Hughes, W.O.H., Couvillon, M.J., & Ratnieks, F.L.W. (2007) Improved technique for introducing four-day old virgin queens to mating hives that uses artificial and natural queen cells for introduction. Journal of Apiculture Research 46, 28-33.

**Conference Presentations**

1. \*Ohlinger, B.D., Schürch, R., & **Couvillon, M.J.** (2021) Dancing honey bees communicate seasonal fluctuations in forage availability and preference for hay meadows in a mixed-use landscape in Virginia. American Bee Research Conference. Virtual. 7-8 January. (Oral, 2nd Place Student Competition).
2. \*Silliman, M., Schürch, R., Taylor, S., & **Couvillon, M.J.** (2020) Row crops serve as a mid to late summer protein source for honey bees. American Bee Research Conference. Virtual. 7-8 January. (Oral, 2nd Place Student Competition).
3. \*Steele, T.N., Schürch, R., & **Couvillon, M.J.** (2020) Fluctuating Forage: Honey bee hives located in fruit orchard systems experience boom and bust periods across the foraging season. American Bee Research Conference. Virtual. 7-8 January. (Oral).
4. \*Ohlinger, B.D., Schürch, R., & **Couvillon, M.J.** (2020) Waggle dances communicate monthly fluctuations in forage availability in a mixed-use landscape. Entomological Society of America. Virtual. 11-15 November. (Oral).
5. \*Steele, T.N., Schürch, R., & **Couvillon, M.J.** (2020) Feast and Famine? Honey bee foraging in an orchard and fruit crop landscape. Southern Appalachian Honey Bee Research Consortium. Boone, NC. 22 February. (Oral).
6. \*Ohlinger, B.D., Schürch, R., & **Couvillon, M.J.** (2020) Waggle dances communicate honey bee forage availability in a mixed-use landscape in Virginia. American Bee Research Conference. Schaumburg, IL. 9-10 January. (Oral).
7. \*Silliman, M., Schürch, R., Taylor, S., & **Couvillon, M.J.** (2020) Row crop production provides food for foraging honey bees during times of dearth. American Bee Research Conference. Schaumburg, IL. 9-10 January. (Oral).
8. \*Steele, T.N., Schürch, R., & **Couvillon, M.J.** (2020) Honey Bee Foraging in an Orchard Landscape in Northern Virginia. American Bee Research Conference. Schaumburg, IL. 9-10 January. (Oral, 1st Place Student Competition).
9. Reece, J., Couvillon, M. J., Grueter, C., Ratnieks, F.L.W. & Reyes-Aldasoro, C. C. (2020) Automatic Analysis of Bees' Waggle Dance. International Conference on Pattern Recognition (ICPR). 10-15 January. Milan, Italy. (Oral).
10. \*Ohlinger, B.D., Schürch, R., & **Couvillon, M.J.** (2019) Bioindicators for a sustainable future: Honey bees communicate food availability for pollinators. Entomological Society of America – Eastern Branch. Blacksburg, VA. 10-12 March. (Oral).
11. Schürch, R., Wilson, J.M., & **Couvillon, M.J.** (2019) Dismantling Babel: Creation of a universal calibration for honey bee waggle dance decoding. Entomological Society of America – Eastern Branch. Blacksburg, VA. 10-12 March. (Oral).
12. \*Steele, T.N., Schürch, R., & **Couvillon, M.J.** (2019) Honey bee foraging across fruit orchards. Entomological Society of America – Eastern Branch. Blacksburg, VA. 10-12 March. (Oral).
13. \*Ohlinger, B.D., Schürch, R. & **Couvillon, M.J.** (2019) Inconsistent effects of neonicotinoids on honey bee foraging and recruitment. Southern Appalachian Honey Bee Research Consortium. Charlotte, NC. 16 February. (Oral).
14. \*Silliman, M.R., Schürch, R., Taylor, S.V., & **Couvillon, M.J.** (2019) Honey bee foraging across a row crop system. Southern Appalachian Honey Bee Research Consortium. Charlotte, NC. 16 February. (Oral).
15. \*Steele, T.N., Schürch, R & **Couvillon, M.J.** (2019) Honey bee foraging across fruit orchards. Southern Appalachian Honey Bee Research Consortium. Charlotte, NC. 16 February. (Oral).
16. **Couvillon, M.J.** (2019) Bioindicators for a sustainable future: Honey bees communicate food availability for pollinators. American Bee Research Conference, Phoenix, AZ. 10-12 January. (Oral).
17. Schürch, R. & **Couvillon, M.J.** (2019) Dismantling Babel: creation of a universal calibration for honey bee waggle dance decoding. American Bee Research Conference, Phoenix, AZ. 10-12 January. (Oral).
18. \*Ohlinger, B.D., Schürch, R., & **Couvillon, M.J.** (2019) Inconsistent effects of neonicotinoids on honey bee foraging and recruitment. American Bee Research Conference, Phoenix, AZ. 10-12 January. (Oral).
19. \*Steele, T.N., Schürch, R. & **Couvillon, M.J.** (2019) Honey bees communicate foraging preferences in orchards. Honey bee foraging across an orchard system. American Bee Research Conference, Phoenix, AZ. 10-12 January. (Poster).
20. \*Carr-Markell, M.K., Demler, C.M., Couvillon, M.J., Schürch, R., Cormann, 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. 10-12 January. (Oral, 1st Place Student Competition).
21. \*Silliman, M.S., Schürch, R., Taylor, S.V. & **Couvillon, M.J** (2019) Honey bee foraging across a row crop system. Beltwide Cotton Conference, New Orleans, LA. 8-10 January. (Oral, 2nd Place Student Competition).
22. \*Silliman, M.R., Schürch, R., Taylor, S.V. & **Couvillon, M.J.** (2018) Honey bee foraging across a row crop system. Entomological Society of America, Entomological Society of Canada, and Entomological Society of British Columbia Joint Annual Meeting. Vancouver, BC. 11-14 November. (Oral).
23. **Couvillon, M.J.** (2018) Honey bees and their dances communicate foraging preferences across the landscape. American Association of Laboratory Animal Science. Baltimore, MD. 28 October – 1 November. (Oral, Invited)
24. \*Zwirner, K., Schürch, R. & **Couvillon, M.J.** (2018) Dude, where’s my flowers? Calibration for honey bee waggle dance decoding. Southern Appalachian Honey Bee Research Consortium. Wake Forest, NC. 17 February. (Oral).
25. \*Carr-Markell, M., Demler, C., Couvillon, M.J., Schürch, R., Cornman, R.S., Iwanowicz, D. & Spivak, M. (2017) Can restored prairies contribute significantly to the diets of Apis mellifera colonies in the upper Midwest? Entomological Society of America. Denver, CO. 5-8 November. (Oral).
26. **Couvillon, M.J.** (2017) Dancing bees indicate food availability in the landscape. Entomological Society of America - Eastern Branch. Newport, RI. 18-21 March. (Oral, Invited).
27. **Couvillon, M.J.** (2017) Dancing for their supper: the honey bee dance as a novel source of information for conservation. American Bee Research Conference. Galveston, TX. 12-13 January. (Oral).
28. \*Carr-Markell, M., Demler, C., Couvillon, M.J., Schuerch, R., Cornman, R.S., Iwanowicz, D., & Spivak, M. (2017) Can restored prairies contribute significantly to the diets of Apis mellifera colonies in the upper Midwest? American Bee Research Conference. Galveston, TX. 12-13 January. (Oral).
29. **Couvillon, M.J.**, Schürch, R., & Ratnieks, F.L.W. (2013). Honey bees as integrated indicators of seasonal forage availability. Animal Behavior Society Annual Meeting. Boulder, CO. 28 July – 1 August. (Oral).
30. **Couvillon, M.J.** & Ratnieks, F.L.W. (2012). Bee bioindicators of the rural British landscape. International Union for the Study of Social Insects – NW Section Meeting. Regent’s Park, England. 10 December. (Oral).
31. **Couvillon, M.J.** & Ratnieks, F.L.W. (2012). Waggle dances as indicators of seasonal foraging challenges. International Union for the Study of Social Insects European Section Meeting. Tuscany, Italy. 26-30 August. (Oral).
32. **Couvillon, M.J.** & Ratnieks, F.L.W. (2010). Honey bees bioindicate landscape health. International Union for the Study of Social Insects NW Section Meeting. London, England. 10 December. (Oral).
33. **Couvillon, M.J.** & Dornhaus, A. (2010). The hows and whys of worker size variation in bumble bees. International Union for the Study of Social Insects International Meeting. Copenhagen, Denmark. 9-13 August. (Poster).
34. **Couvillon, M.J.** & Dornhaus, A. (2008). Bumble bee worker size variation. International Union for the Study of Social Insects European Section Meeting. La Roche-en-Ardenne, Belgium. 30 August – 4 September. (Oral).
35. **Couvillon, M.J.** & Dornhaus, A. (2008). Smaller worker bumble bees are hardier against starvation. Hexapodium Regional Meeting. Tempe, AZ. 27 September. (Oral).
36. **Couvillon, M.J.** & Ratnieks, F.L.W. (2005). Mechanisms of nestmate recognition in honey bees. International Union for the Study of Social Insects International Meeting, Washington D.C. 30 July – 5 August. (Oral).
37. **Couvillon, M.J.** & Ratnieks, F.L.W. (2005). Guarding and nestmate recognition in honey bees. Third European Congress on Social Insects. St. Petersburg, Russia. 21-26 August. (Oral).
38. **Couvillon, M.J.** & Ratnieks, F.L.W. (2004). Honey bee guards and conspecific acceptance thresholds. International Union for the Study of Social Insects NW Section Meeting. London, England. 8 December. (Oral, 2nd Place Student Competition).

**Grants and other sponsored research**

*Title*: Bioindicators for a sustainable future: dancing honey bees communicate habitats’ ability to feed pollinators.

*Investigator(s)*: M.J. Couvillon (PI), R Schürch, SV Taylor, M O’Rourke (Co-investigators).

*Dates*: 02/01/2018 – 01/31/2023.

*Agency*: Foundation for Food & Agriculture Research (FFAR).

*Percent participation*: 100%

*Total Amount:* $1,229,634.

*Title*: Perfect planting for pollinators: evidence-based recommendations for urban pollinator gardens.

*Investigator*(s): M.J. Couvillon (PI)

*Dates*: 08/01/2019 – 12/01/2021.

*Agency*: Kaeser Compressors, Inc.

*Percent participation*: 100%

*Total Amount*: $120,000.

*Title*: Evidence-Based Teaching and Active Learning

*Investigator(s*): M.J. Couvillon (PI)

*Dates:* 2017

*Agency*: New Faculty Mentoring Grant, Office of Executive Vice President and Provost, VT.

*Percent participation*: 100%

*Total Amount:* $1500

*Title*: How good is the British Countryside for our honey bees?

*Investigator(s):* MJ Couvillon (PI) & FLW Ratnieks (co-PI)

*Dates*: July 2013 – December 2014

*Agency*: Ninevah Charitable Trust (an agricultural charity in the United Kingdom)

*Percent participation:* 100%

*Total Amount:* $75,200

*Title*: Mechanisms of Bumble Bee Size Variation

*Investigator(s):* MJ Couvillon (PI) & A Dornhaus (co-PI)

*Dates*: July 2007 – July 2009

*Agency*: National Institutes of Health Postdoctoral Program, as administered through the Center for Insect Science, University of Arizona, Tucson, Arizona.

*Percent participation:* 100%

*Total Amount:* $72,000

*Title*: Investigations into the Molecular Mechanisms for Social Behavior

*Investigator(s):* MJ Couvillon (PI)

*Dates*: August 2003 – July 2006

*Agency*: National Science Foundation Graduate Research Program

*Percent participation:* 100%

*Total Amount:* $91,849

**Invited keynote lectures**

1. \*Silliman, M.R., Schürch, R., & **Couvillon, M.J.** (2021) Row Crops provide mid-summer forage for honey bees. Nebraska State Beekeepers Association Winter Meeting. (Invited keynote speaker).
2. \*Palmersheim, M. & **Couvillon, M.J.** (2020) Preferred plantings for pollinators: Evidence-based science informs us what is best for your garden. Virginia Tech Turfgrass Research Field Day. Virtual. (Invited speaker).
3. **Couvillon, M.J.** (2020) Dancing for their supper: honey bee waggle dances inform on forage availability. Department of Biomedical Engineering and Mechanics (BEAM), Virginia Tech. (Virtual invited seminar speaker).
4. **Couvillon, M.J.** (2020) Bees as bioindicators for a sustainable future. North Carolina State University, Department of Entomology and Plant Pathology. (Virtual invited seminar speaker).
5. **Couvillon, M.J.** (2020) Honey bees as integrated indicators of forage availability. Department of Biology, University of Virginia. (Virtual invited seminar speaker).
6. **Couvillon, M.J.** (2020) Using honey bees as bioindicators to save pollinators. Bee College, University of Florida. (Invited keynote speaker).
7. **Couvillon, M.J.** (2019) Honey bee waggle dance communication and how to feed hungry bees. Ashland Beekeepers’ Association Meeting. Ashland, VA. (Invited keynote speaker).
8. **Couvillon, M.J.** (2018) Bioindicators for a sustainable future: dancing honey bees communicate a landscape’s ability to feed hungry pollinators. Eastern Apiculture Society Annual Meeting, Hampton Roads, VA. (Invited keynote presentation)
9. **Couvillon, M.J.** (2018) Bioindicators for a sustainable future: dancing honey bees communicate a landscape’s ability to feed hungry pollinators. University of Kentucky, Lexington, KY. (Invited seminar speaker).
10. **Couvillon, M.J.** (2018) Bioindicators for a sustainable future: dancing honey bees communicate a landscape’s ability to feed hungry pollinators. University of North Carolina, Greensboro, NC. (Invited seminar speaker).
11. **Couvillon, M.J** & Ratnieks, F.L.W. (2005) Nestmate recognition uses U-absent signals. University of St. Andrews, St. Andrews, Scotland. (Invited seminar speaker).
12. **Couvillon, M.J.** & Ratnieks, F.L.W. (2006) Mechanisms of guarding and nestmate recognition in honey bees. University of Sheffield, Sheffield, England. (Invited seminar speaker).
13. **Couvillon, M.J.** (2007) Guarding and nestmate recognition in honey bees and stingless bees. University of Arizona, Tucson, Arizona. (Invited seminar speaker).
14. **Couvillon, M.J.** & Ratnieks, F.L.W.(2010) Dancing bees indicate where they eat. Kew Gardens Board of Trustees. Wakehurst, England. (Invited keynote speaker).
15. **Couvillon, M.J.** & Ratnieks, F.L.W.(2010) Decoding waggle dances to know where bees eat. Royal Horticultural Society Annual Meeting. London, England. (Invited keynote speaker).
16. **Couvillon, M.J.** & Ratnieks, F.L.W.(2011) How do we know where bees eat? British Trust for Ornithology. Norwich, England. (Invited seminar speaker).
17. **Couvillon, M.J.** (2011) Honey bee forage, waggle dances, and bee conservation. SE Hants Spring Convention, Hampshire, England. (Invited keynote speaker).
18. **Couvillon, M.J.** & Ratnieks, F.L.W.(2011) The hows and whys of bumble bee size variation. Department of Biology, University of York. York, England. (Invited seminar speaker).
19. **Couvillon, M.J.** & Ratnieks, F.L.W.(2011) The hows and whys of bumble bee size variation. University of Bristol. Bristol, England. (Invited seminar speaker).
20. **Couvillon, M.J.** (2012) Sniffing bees: Cues for nestmate recognition can be transferred. Newbury Beekeepers Association Spring Meeting. Newbury, England. (Invited keynote speaker).
21. **Couvillon, M.J.** (2012) Honey bee societies and dance floor democracy. TED. Houses of Parliament, London, England. (Invited speaker).
22. **Couvillon, M.J.** (2012) Mechanisms of guarding and nestmate recognition in honey bees. National Honey Show. Weybridge, England. (Invited plenary speaker).
23. **Couvillon, M.J.** (2012) How good is the British landscape for bees? Dance decoding to see where bees forage. National Honey Show. Weybridge, England. (Invited keynote speaker).
24. **Couvillon, M.J.** & Ratnieks, F.L.W.(2012) Evaluating the British landscape for bees: Dance decoding to determine when bees forage. Department of Biology, University of Bern. (Invited seminar speaker).
25. **Couvillon, M.J.** & Ratnieks, F.L.W.(2012) How good is the British landscape for bees? Dancing bees demonstrate where they collect food. Department of Life Sciences, University of Sussex. (Invited seminar speaker).
26. **Couvillon, M.J.** (2013) Dancing bees can tell us where and when they eat. Canterbury Beekeeping Association Spring Convention. Canterbury, England. (Invited keynote speaker).
27. **Couvillon, M.J.** (2013) Honey bees can indicate where, when, and upon what they forage by dancing. Department of Biology, Loyola University. (Invited seminar speaker).
28. **Couvillon, M.J.** (2014) Dancing for their supper: The how, where, when, and upon what of honey bee foraging. Agroscope Swiss Bee Research Center, Bern, Switzerland. (Invited seminar speaker).
29. **Couvillon, M.J.** (2014) Honey bees can indicate where, when, and upon what they forage by dancing. Department of Biology, Loyola University. (Invited seminar speaker).
30. **Couvillon, M.J.** (2014) Dancing for their supper: The how, where, when, and upon what of honey bee foraging. Department of Biology, Oxford University. (Invited seminar speaker).

**Editorships**

2014 – Present Associate Editor, journal *Insectes Sociaux*, official journal of International Union for the Study of Social Insects (IUSSI).

2014 – 2015 Co-guest editor, journal *Frontiers in Ecology and Evolution*, special issue “Ballroom Biology: insights into the evolution and mechanisms of the honey bee waggle dance behavior.”

2012 Co-guest editor, journal *Psyche: A Journal of Entomology*, special issue “Hymenopteran Group Foraging and Transfer of Information about Resources, Volume II.”

2011 Co-guest editor, journal *Psyche: A Journal of Entomology*, special issue “Hymenopteran Group Foraging and Transfer of Information about Resources.”

**Exhibitions and displays**

2020 Pollination Station, Hokie BugFest, Virginia Tech, Department of Entomology (Virtual).

2018 Pollination Station, Hokie BugFest, Virginia Tech, Department of Entomology.

2017 Pollination Station, Hokie BugFest, Virginia Tech, Department of Entomology.

2014 Art of Pollination, Plymouth, England.

2011 Honey bee Health and Well Being Exhibit, Lewes Spring Festival, Lewes, England.

2010 What’s the Buzz? University of Sussex Open Day.

**International activities**

2015 - 2018 Honey Bee Science Consultant, European Food Safety Authority (EFSA), Parma, Italy. I served on their advisory board and continued to do some minor advising until 2018.

2014 Science advisor, fiction writer Laline Paul. Resulted in “The Bees: A Novel”, which has been reviewed by NPR, The Washington Post, the Huffington Post, and NYTimes Book Review.

2014 Science advisor, Martha Kearney’s “The Wonder of Bees”, aired on BBC4

2011–Present Columnist (“Foraging Lines”), *The Beekeepers Quarterly*. Since 2011, I have served as a regular, pro-bono columnist for *The Beekeepers Quarterly*, one of the largest, international hobby beekeeping journals published from Europe. The journal acts as a bridge between hobby and commercial beekeepers, scientists, government and non-government organizations. In my column “Foraging Lines”, I profile current honey bee research using non-specialist language.

**Professional service**

2017 – present American Association of Professional Apiculturists, Secretary/Treasurer

2020 Entomological Society of America P-IE Speed Networking Event, acted as established member and met with ECPs at this event during the (virtual) annual meeting.

2019 Reviewer, The Army Research Office, Grant Applications

2008 – Present Journal Subject Reviewer: Current Biology, Animal Behavior, Behavioral Ecology and Sociobiology, Apidologie, Journal of Applied Ecology, Insect Sociaux, Nature Ecol Evol, Molecular Ecology, Ecology and Evolution, Nature Communications, Functional Ecology, American Naturalist, Scientific Reports, PLOS One, Journal of Apiculture Research, Behavioral Ecology, Journal of Experimental Biology

**Outreach and extension publications**

2021 \*Palmersheim, M. & **Couvillon, M.J**. “Preferred Plants for Pollinators: Creating a Pollinator Garden Using Empirical Evidence.” *The Beekeepers Quarterly* 143, 30-31.

2020 Foltz, O.R. & **Couvillon, M.J.** “Bees and a Pandemic: A Tale in two parts. How research and beekeeping in the USA have been affected by Covid-19.” *The Beekeepers Quarterly* 142, 32-33.

\*Steele, T.N. & **Couvillon, M.J.** “Puzzling Pollen: Deciphering where honey bees forage using pollen analysis.”, *The Beekeepers Quarterly* 139, 28-29.

2019 \*Silliman, M.R. & **Couvillon, M.J.** “You can lead a bee to nectar: Training honey bees to forage on experimental feeders.” *The Beekeepers Quarterly* 138, 38-39.

\*Ohlinger, B.D. & **Couvillon, M.J.** “Peering through a window into the spirit of the hive: The adventure, utility, and difficulty of observation hive studies.” *The Beekeepers Quarterly* 137, 22-23.

**Couvillon, M.J.** “Socialness as the end all and bee all: Social contact as an appetitive reward in honey bees. *The Beekeepers Quarterly* 136, 44-45.

2018 **Couvillon, M.J.** “When nothing is better than something: Honey bees can understand the concept of zero”, *The* *Beekeepers Quarterly* 134, 26-27.

**Couvillon, M.J.** “Flying further afield: Bumble bees, seasonal food scarcity, and long-distance foraging”, *The Beekeepers Quarterly* 132, 36-37.

**Couvillon, M.J.** “Synergistic pollinators increase fruit set in almond orchards”, *The Beekeepers’ Quarterly* 131, 14-15.

2017 **Couvillon, M.J.** “Stingless bees make soldiers when robbers come a-knocking”, *The Beekeepers Quarterly* 128, 20-21.

**Couvillon, M.J.** “It’s beginning to look a lot like adulthood”, *The Beekeepers Quarterly* 127, 40-41.

2016 **Couvillon, M.J.** “String-pulling and social learning: Bumble bee foragers learn a non-natural task from each other.”, *The* *Beekeepers Quarterly* 126, 18-19.

**Couvillon, M.J.** “The taste of things to come: Bumble bees use taste to discriminate between proffered pollen.” *The Beekeepers Quarterly* 125, 34-35.

**Couvillon, M.J.** “Towards integrated mite control”, *The Beekeepers Quarterly* 123, 50-51.

2015 **Couvillon, M.J.** “Buzzing bees: Does caffeinated nectar create efficient pollinators or enslave an addicted work force?”, *The Beekeepers Quarterly* 122, 43-44.

**Couvillon, M.J.** “System regulation: Honey bee stop signal decreases recruitment and foraging.” *The Beekeepers Quarterly* 121, 28-29.

**Couvillon, M.J.** “Making the most of drone cells: Workers tune their honey storage behavior with the season”, *The Beekeepers Quarterly* 120 14-15.

**Couvillon, M.J.** “Towards integrated mite control.” *The Beekeepers Quarterly* 119, 50-51.

2014 **Couvillon, M.J.** “Hive wisdom: All foragers can be elite, even if not all foragers are.” *The Beekeepers Quarterly* 118, 14-15.

**Couvillon, M.J. “**Dancing bees as environmental consultants give effective, efficient, and important information about the state of the rural landscape.” *The Beekeepers Quarterly* 117, 22-23.

Schürch, R. & **Couvillon, M.J.** “Follow the dance to find landscape’s green hotspots. *The Conversation* (<https://theconversation.com/follow-the-bees-dance-to-find-landscapes-green-hotspots-27004>)

**Couvillon, M.J.** “Summertime and the living ain’t easy: Honey bee dances indicate seasonal challenges in food availability.” *The Beekeepers Quarterly* 116, 20-21.

**Couvillon, M.J. “**Promiscuous queens produce tenacious foragers and happy colonies.” *The Beekeepers Quarterly* 115, 26-27.

2013 **Couvillon, M.J. “**Bees know what is best?” *The Beekeepers Quarterly* 114, 40-41.

**Couvillon, M.J. “**Size matters for male wool-carder bees (*Anthidium* spp.).” *The Beekeepers Quarterly* 113, 18-19.

**Couvillon, M.J. “**Caffeine boosts bee brains too.” *The Beekeepers Quarterly* 112, 22-23.

**Couvillon, M.J. “**Operation sperm: Toxic fluids, sperm competition, and an inter-sex evolutionary arms race.” *The Beekeepers Quarterly* 111, 42-43.

2012 **Couvillon, M.J. “**All in the eye of the bee-holder: Properties of the honey bee visually-driven odometer.” *The Beekeepers Quarterly* 110, 16-17.

**Couvillon, M.J. “**Seasonal importance of the dance language.” *The Beekeepers Quarterly* 109, 33-34.

**Couvillon, M.J. “**New studies investigating the effect of systemic pesticides in bees generates more questions.” *The Beekeepers Quarterly* 108, 41-42.

**Couvillon, M.J. “**A big job for a little bee: A morphologically distinct stingless bee worker provides effective nest defense.” *The Beekeepers Quarterly* 107, 40-41.

2011 **Couvillon, M.J. “**Bookshelf reviews”. Beekeepers Quarterly 106, 49-51.

**Couvillon, M.J. “**All in the genes: The genetic control of the initiation of foraging.” *The Beekeepers Quarterly* 105, 21-23.

**Couvillon, M.J.** & Ratnieks, F.L.W. “How good is the British countryside for honey bees? Decoding waggle dances to determine where bees forage.” *The Beekeepers Quarterly* 103, 29-31.

2008 **Couvillon, M.J. “**Applying the 4 modes of Tinbergen inquiry to bumble bee size variation.” *Bee Craft* 90, 32-33.

2007 **Couvillon, M.J. “**Sniffing out the enemy – Do honey bees rely only on olfaction to distinguish friend from foe?” *Bee Craft* 89, 16-17.

2006 **Couvillon, M.J.** “Doorways to the hive: Stingless bee nest entrance morphology.” *Bee Craft* 88, 25-26.

2005 **Couvillon, M.J.** “Sniffing bees: Dynamic guarding behaviour in honey bee nestmate recognition.” *Antenna* 29, 124-126.

**Community presentations**

1. Wilson J.M., Couvillon M.J., Schürch R., Gross A. (2020) Extension and Teaching in the Bee Group @ VT. Shenandoah Valley Beekeepers Association. Weyers Cave, VA. (Invited speaker).
2. \*Palmersheim M. & **Couvillon M.J.** (2020) Perfect planting for pollinators: Evidence-based recommendations for pollinator gardens. (Invited presentation to Kaeser Air Compressors, Inc.)
3. Pollination Station (2020, Online), Hokie Bug Fest
4. **Couvillon, M.J.** (2020) Bees as bioindicators of sustainable lands. Virginia State Beekeepers Association. Virtual. (Invited speaker).
5. \*Ohlinger, B.D. & **Couvillon, M.J.** (2019) Waggle dances communicate honey bee forage availability in representative landscapes. Mountain Empire Beekeepers Association, Wytheville, VA. (Invited speaker).
6. **Couvillon, M.J.** (2019) Hungry bees and how we can help. AARP Blacksburg Chapter. (Invited speaker).
7. **Couvillon, M.J.** (2019) What dancing bees can tell us about their food availability. Roanoke Master Gardeners’ Association Spring Meeting. (Invited speaker).
8. \*Steele, T.N., Schürch, R., & **M.J. Couvillon** (2019) Apples, orchards, and academia. The Beekeepers at VT Meeting. Blacksburg, VA. (Invited speaker).
9. Pollination Station (2018), Hokie BugFest, Blacksburg, VA.
10. Pollination Station (2017), Hokie BugFest, Blacksburg, VA.
11. **Couvillon, M.J.** (2018) Honey bee bioindicators for a sustainable future. New River Valley Beekeepers Association meeting. (Invited speaker).
12. **Couvillon, M.J.** (2014) Dancing bees for a sustainable future. The Art of Pollination Opening Exhibit. Plymouth, England. (Invited keynote speaker).
13. **Couvillon, M.J.** (2013) Dancing bees can tell us where and when they eat. Devon Beekeeping Association Spring Convention. Devon, England. (Invited speaker).
14. **Couvillon, M.**J. (2011) “The secret language of the honey bee.” Hungerford Arts Festival. Hungerford, England. (Invited speaker).
15. **Couvillon, M.J.** (2010) Bumble bee size variation. Worthing Beekeeping Association. Worthing, England. (Invited speaker).

**Professional memberships**

2001 – 2007 Member, Society for Neuroscience

2004 – Present Member, International Union for the Study of Social Insects (IUSSI)

2017 – Present Member, Entomological Society of America

2017 – Present Member, American Association of Professional Apiculturists

2017-Present Officer, American Association of Professional Apiculturists (Secretary/Treasurer)

**Media profile**

1. Radio IQ, WVTF, Virginia’s Public Radio (2020).

<https://www.wvtf.org/post/food-security-look-pollinators#stream/0>

1. VPM News, NPR (2019).

<https://ideastations.org/radio/news/virginia-tech-researchers-develop-codec-decipher-language-honeybees>

1. PolliNation Podcast, Oregon State Extension (2018)

https://blogs.oregonstate.edu/pollinationpodcast/2018/06/25/drs-couvillon-and-schurch/

1. Discover Magazine (2016)

<http://blogs.discovermagazine.com/inkfish/2016/05/13/the-dance-language-of-honeybees-is->sloppy/#.VzmSMeTtO09

1. Washington Post (2015)

<https://www.washingtonpost.com/news/speaking-of-science/wp/2015/10/15/bees-love-caffeine-too-and-tricky-flowers-take-advantage/>

1. New York Times

<http://www.nytimes.com/video/science/100000003982583/bees-catch-caffeine->buzz.html?playlistId=100000002331748&region=video-grid&version=video-grid-thumbnail&contentCollection=ScienceTake&contentPlacement=0&module=recent-videos&action=click&pgType=Multimedia&eventName=video-grid-click

1. National Geographic

<http://phenomena.nationalgeographic.com/2015/10/15/how-plants-manipulate-bees-with-caffeine/>

1. Nature Highlights

www.nature.com/nature/journal/v526/n7574/full/526478d.html

1. New Scientist

<https://www.newscientist.com/article/dn28349-plants-spike-nectar-with-caffeine-and-give-bees-a-buzz/>

1. The Naked Scientist

http://www.thenakedscientists.com/HTML/interviews/interview/1001503/

1. BBC Worldwide Service

<http://www.bbc.com/news/science-environment-34553695>

<http://www.bbc.com/news/science-environment-34532636>

1. Discovery

http://news.discovery.com/animals/insects/caffeinated-bees-whats-all-the-buzz-about-151016.htm

1. AAAS Science Update

http://www.scienceupdate.com/2015/10/buzz/

1. Nature Highlights (2014)

http://www.nature.com/nature/journal/v509/n7502/full/509537b.html

1. Discovery

http://news.discovery.com/animals/insects/eavesdropping-on-bees-reveals-state-of-the-environment-140522.htm

1. Scientific American

<http://www.scientificamerican.com/article/if-you-re-looking-for-a-healthy-environment-follow-the-dancing-bee/>

1. National Geographic

<http://news.nationalgeographic.com/news/2014/05/140522-honeybee-dance-habitat-forage-agriculture-health/>

1. BBC Radio Scotland

<http://www.bbc.co.uk/programmes/b0439j6h>

1. BBC Radio Sussex / Surrey

http://www.bbc.co.uk/programmes/p01ys9mv

1. The Guardian

<http://www.theguardian.com/environment/2014/apr/03/honeybees-fly-further-in-summer-to->find-food-study-shows

1. BBC Nature (2012)

<http://www.bbc.co.uk/nature/17727811>

1. LiveScience (2012)

http://www.livescience.com/19742-honeybee-waggle-dance-gravity.html

1. BBC Radio Four Spirit of the Beehive (2011)

<http://spiritofthebeehive.blogspot.com/>

1. The Sunday Times of London (2010)

http://www.timesonline.co.uk/tol/news/science/eureka/article7112755.ece

1. BBC Radio Saving Species (2010)

<http://www.bbc.co.uk/programmes/b00v71v3>

1. US News & World Report (2009)

<http://www.usnews.com/science/articles/2009/11/18/killer-bees-arent-terribly-smart.html>

1. BBC News (2009)

http://news.bbc.co.uk/1/shared/spl/hi/pop\_ups/08/sci\_nat\_enl\_1258624751/html/1.stm

1. Science News (2009)

<http://www.sciencenews.org/view/generic/id/49697/title/Killer_bees_arent>