

**CHRISTINA M. (CHRIS) CARUSO**

Department of Integrative Biology

University of Guelph

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**EDUCATION**

Ph.D, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN (Biology, 1999).

Dissertation: *Effect of competition for pollination on the ecology and evolution of a hummingbird-pollinated plant, Ipomopsis aggregata*. Advisor: Dr. Jeffrey Brawn.

B.A., OBERLIN COLLEGE (Biology with High Honors, Phi Beta Kappa, 1993).

Thesis: *Population genetics of Viola macloskeyi*. Advisor: Dr. Roger Laushman.

**Specialized training**

- Bee Course, American Museum of Natural History Southwest Research Station (2002)
- Introduction to Quantitative Genetics and Quantitative Trait Locus Mapping I and II, Institute of Statistical Genetics, North Carolina State University (2000, 2001)
- Tropical Biology, Organization for Tropical Studies (1994)

**ACADEMIC POSITIONS HELD**

**Current**

- Associate Professor, Department of Integrative Biology, University of Guelph (July 2010-)

**Past**

- Visiting Sabbatical Scholar, Department of Ecology, Evolution, and Behavior, University of Minnesota (August 2018-July 2019)
- Short-term Visitor, National Evolutionary Synthesis Center (June-August 2014 and June-August 2013)
- Sabbatical Fellow, National Evolutionary Synthesis Center (September 2011-August 2012)
- Assistant Professor, Department of Integrative Biology (formerly Botany), University of Guelph (January 2003-June 2010)
- Adjunct Assistant Professor, Department of Biological Sciences, Kent State University (July 2008-July 2014)
- American Association of University Women Postdoctoral Fellow, Department of Biology, Duke University (2001-2002)
- NSF-AIRE Postdoctoral Fellow and Lecturer, Departments of Biology and Mathematics, Grinnell College (1999-2001)
- National Science Foundation Graduate Fellow and Teaching Assistant, University of Illinois (1993-1999)

**PUBLICATIONS** (†denotes graduate student, \*denotes undergraduate student, #denotes lab technician)

1. Appiah-Madson, H., E. B. Knox, **C. M. Caruso**, and A. L. Case. Do stochastic evolutionary forces affect the geographic distribution of females in gynodioecious *Lobelia siphilitica*? In review at *American Journal of Botany*.
2. Yakimowski, S., Z. Teitel†, and **C. M. Caruso**. Defense by duplication: The relation between phenotypic glyphosate resistance and EPSPS gene copy number variation in *Amaranthus palmeri*. In revision at *Molecular Ecology*.
3. Benoit, A. D†. and **C. M. Caruso**. A sit-and-wait predator, but not an active-pursuit predator, alters pollinator-mediated selection on floral traits. In press at *Ecology*.
4. Villellas, J., J. Ehrlén, E. E. Crone, A. M. Csergő, M. B. Garcia, A-L. Laine, D. A. Roach, R. Salguero-Gómez, G. M. Wardle, D. Z. Childs, B. D. Elderd, A. Finn, S. Munné-Bosch, B. Bachelot, J. Bódis, A. Bucharova, **C. M. Caruso**, J. A. Catford, M. Coghill, A. Compagnoni, R. P. Duncan, J. M. Dwyer, A. Ferguson, L. H. Fraser, E. Griffoul, R. Groenteman, L. N. Hamre, A. Helm, R. Kelly, L. Laanisto, M. Lonati, Z. Münzbergová, P. Nuche, S. L. Olsen, A. Oprea, M. Pärtel, W. K. Petry, S. Ramula, P. U. Rasmussen, S. R. Enri, A. Roeder, C. Roscher, C. Schultz, O. Skarpaas, A. L. Smith, A. J. M. Tack, J. P. Töpfer, P. A. Vesik, G. E. Vose, E. Wandrag, A. Wingler, and Y. M. Buckley. Local adaptation can be predicted from observational data for reproductive but not vegetative traits in a widespread short-lived plant. In press at *Ecology Letters*.
5. Smith, A. L., T. R. Hodkinson, J. Villellas, J. Catford, A. M. Csergo, S. P. Blomberg, E. Crone, J. Ehrlén, M. B. García, A-L. Laine, D. Roach, R. Salguero-Gómez, G. M. Wardle, D. Z. Childs, B. D. Elderd, A. Finn, S. Munne-Bosch, M. Baudraz, J. Bodis, F. Q. Brearley, A. L. Bucharova, **C. M. Caruso**, R. Duncan, J. M. Dwyer, B. Gooden, R. Groenteman, L. N. Hamre, H. Avelina, R. Kelly, L. Laanisto, M. Lonati, J. L Moore, M. Morales, S. L. Olsen, M. Pärtel, W. Petry, S. Ramula, P. Rasmussen, S. Ravetto, A. Roeder, C. Roscher, M. Saastamoinen, A. J. M. Tack, J. P. Töpfer, G. Vose, E. Wandrag, A. Wingler, and Y. M. Buckley. 2020. Global gene flow releases plants from environmental constraints on genetic diversity. *Proceedings of the National Academy of Sciences* 117: 4218-4227.
6. Panique, H†. and **C. M. Caruso**. 2020. Simulated pollinator declines intensify selection on floral traits that facilitate selfing and outcrossing in *Impatiens capensis*. *American Journal of Botany* 107: 148-154.
7. **Caruso, C. M.**, C. M. Mason, and J. S. Medeiros. 2020. The evolution of functional traits in plants: Is the giant still sleeping? *International Journal of Plant Sciences* 181: 1-8.  
*Introduction to special issue on The Evolution of Functional Traits*
8. **Caruso, C. M.**, H. Maherali, and R. A. Martin. 2020. A meta-analysis of natural selection on plant functional traits. *International Journal of Plant Sciences* 181: 44-55.

*Contribution for special issue on The Evolution of Functional Traits*

9. Adhikari, B., **C. M. Caruso**, and A. L. Case. 2019. Beyond balancing selection: frequent mitochondrial recombination contributes to high female frequencies in gynodioecious *Lobelia siphilitica*. *New Phytologist* 224: 1381-1393.  
*Contribution for special issue on The Ecology, Evolution, and Genetics of Plant Reproductive Systems*
10. McDonald, S\*, and **C. M. Caruso**. 2019. Simulated nectar robbing does not affect pollinator-mediated selection on floral traits of *Impatiens capensis*. *International Journal of Plant Sciences* 180: 922-927.
11. **Caruso, C. M.**, K. E. Eisen<sup>#</sup>, R. A. Martin, and N. Sletvold. 2019. A meta-analysis of the agents of selection on floral traits. *Evolution* 73: 4-14.
12. Siepielski, A., M. B. Morrissey, M. Buoro, S. M. Carlson, **C. M. Caruso**, S. M. Clegg, T. Coulson, J. Di Battista, K. M. Gotanda, C. D. Francis, J. Hereford, J. G. Kingsolver, K. E. Augustine, L. E. B. Kruuk, R. A. Martin, B. C. Sheldon, N. Sletvold, E. I. Svensson, M. J. Wade, and A. D. C. MacColl. 2018. Response to Comment on “Precipitation drives global variation in natural selection”. *Science* 359: eann5760.
13. **Caruso, C. M.**, R. A. Martin, N. Sletvold, M. B. Morrissey, M. J. Wade, K. E. Augustine, S. M. Carlson, A. D. C. MacColl, A. M. Siepielski, and J. G. Kingsolver. 2017. What are the environmental determinants of phenotypic selection? A meta-analysis of experimental studies. *The American Naturalist* 190: 363-376.
14. Bailey, M. F., A. L. Case, and **C. M. Caruso**. 2017. Physiological effects of temperature do not explain prevalence of females in populations of gynodioecious *Lobelia siphilitica* growing in warmer climates. *American Journal of Botany* 104: 411-418.
15. Siepielski, A., M. B. Morrissey, M. Buoro, S. M. Carlson, **C. M. Caruso**, S. M. Clegg, T. Coulson, J. Di Battista, K. M. Gotanda, C. D. Francis, J. Hereford, J. G. Kingsolver, K. E. Augustine, L. E. B. Kruuk, R. A. Martin, B. C. Sheldon, N. Sletvold, E. I. Svensson, M. J. Wade, and A. D. C. MacColl. 2017. Precipitation drives global variation in natural selection. *Science* 355: 959-962.  
*Recommended, Faculty of 1000*
16. Eisen, K.<sup>#</sup>, A. L. Case, and **C. M. Caruso**. 2017. Variation in pollen dispensing schedules of *Lobelia siphilitica*. *International Journal of Plant Sciences* 178: 79-84.  
*Featured Cover Article*
17. Rivkin, L. R.\* , A. L. Case, and **C. M. Caruso**. 2016. Why is gynodioecy a rare but widely distributed sexual system? Lessons from the Lamiaceae. *New Phytologist* 211: 688-696.
18. **Caruso, C. M.**, K. Eisen<sup>#</sup>, and A. L. Case. 2016. An angiosperm-wide analysis of the correlates of gynodioecy. *International Journal of Plant Sciences* 177: 115-121.

*Featured Cover Article*

19. **Caruso, C. M.** and A. L. Parachnowitsch. 2016. Do plants eavesdrop on floral scent signals? *Trends in Plant Science* 21: 9-15.  
*Featured Cover Article*
20. Rivkin, L. R.\* , A. L. Case, and **C. M. Caruso**. 2015. Frequency-dependent fitness in gynodioecious *Lobelia siphilitica*. *Evolution* 69: 1232-1243.
21. **Caruso, C. M.**, A. M. Benschoter<sup>#</sup>, N. V. Gale\*, E. K. Seifert<sup>#</sup>, E. R. Mills\*, and A. L. Case. 2015. Effects of crossing distance on fitness of the native wildflower *Lobelia siphilitica*: implications for ecological restoration. *Journal of the Torrey Botanical Society* 142: 140-151.
22. Wassink, E.† and **C. M. Caruso**. 2013. Effect of co-flowering *Mimulus ringens* on phenotypic selection on floral traits of gynodioecious *Lobelia siphilitica*. *Botany* 91: 745-751.
23. Germain, R. G.\* , **C. M. Caruso**, and H. Maherali. 2013. Mechanisms and consequences of drought-induced parental effects in an invasive annual grass. *International Journal of Plant Sciences* 174: 886-895.
24. **Caruso, C. M.** and A. L. Case. 2013. Testing models of sex ratio evolution in a gynodioecious plant: female frequency covaries with the cost of male fertility restoration. *Evolution* 67: 561-566.
25. **Caruso, C. M.**, A. L. Case, and M. F. Bailey. 2012. The evolutionary ecology of cytonuclear interactions in angiosperms. *Trends in Plant Science* 17: 638-643.
26. **Caruso, C. M.** 2012. Sexual dimorphism in floral traits of gynodioecious *Lobelia siphilitica* L. (Lobeliaceae) is consistent across populations. *Botany* 90: 1245-1251.
27. Parachnowitsch, A. L., **C. M. Caruso**, S. Campbell, and A. Kessler. 2012. *Lobelia siphilitica* plants that escape herbivory in time also have reduced latex production. *PLoS ONE* 7(5): e37745.
28. **Caruso, C. M.**, H. Maherali, and A. M. Benschoter<sup>#</sup>. 2012. Why are trade-offs between flower size and number infrequently detected? A test of three hypotheses. *International Journal of Plant Sciences* 173: 26-36.  
*Featured Cover Article*
29. Donovan, L. A., H. Maherali, **C. M. Caruso**, H. Huber, and H. de Kroon. 2011. The evolution of the worldwide leaf economics spectrum. *Trends in Ecology and Evolution* 26: 88-95.
30. **Caruso, C. M.**, S. L. Scott\*, J. C. Wray\*, and C. A. Walsh†. 2010. Pollinators, herbivores, and the maintenance of flower color variation: a case study with *Lobelia siphilitica*. *International Journal of Plant Sciences* 171: 1020-1028.

*Invited contribution for special issue on Natural Selection in Plant Populations*

31. Case, A. L. and **C. M. Caruso**. 2010. A novel approach to estimating the cost of male fertility restoration in gynodioecious plants. *New Phytologist* 186: 549-557.
32. Maherali, H., C. M. Caruso, M. Sherrard, and R. G. Latta. 2010. Adaptive value and costs of plasticity to soil moisture limitation in recombinant inbred lines of *Avena barbata*. *The American Naturalist* 175: 211-224. First authorship is shared
33. Maherali, H., C. M. Caruso, and M. E. Sherrard. 2009. The adaptive significance of ontogenetic changes in physiology: a test with *Avena barbata*. *New Phytologist* 183: 908-918. First authorship is shared  
*Selected for special issue on Plant Adaptation*
34. **Caruso, C. M.** and S. J. Yakobowski\*. 2008. Selection on floral and carbon uptake traits of *Lobelia siphilitica* is similar in females and hermaphrodites. *Journal of Evolutionary Biology* 21: 1514-1523.
35. Parachnowitsch, A. L. † and **C. M. Caruso**. 2008. Predispersal seed herbivores, not pollinators, exert selection on floral traits of *Lobelia siphilitica*. *Ecology* 89: 1802-1810.
36. **Caruso, C. M.** and A. L. Case. 2007. Sex-ratio variation in gynodioecious *Lobelia siphilitica*: effects of population size and geographic location. *Journal of Evolutionary Biology* 20: 1396-1405.
37. Mabry, C. and **C. M. Caruso**. 2006. Evidence for genetic differentiation of Iowa and Minnesota populations of two forest herbs: implications for restoration. *Ecological Restoration* 24: 191-192.
38. **Caruso, C. M.** 2006. The ecological genetics of floral traits. *Heredity* 97: 86-87.
39. **Caruso, C. M.**, H. Maherali, and M. E. Sherrard. 2006. Plasticity of physiological traits in *Lobelia*: testing for adaptation and constraint. *Evolution* 60: 980-990. First authorship is shared
40. **Caruso, C. M.** 2006. Plasticity of inflorescence traits in *Lobelia siphilitica* (Lobeliaceae) in response to soil water availability. *American Journal of Botany* 93: 531-538.
41. **Caruso, C. M.**, D. L. Remington\*, and K. E. Ostergren\*. 2005. Variation in resource limitation of plant reproduction influences natural selection on floral traits of *Asclepias syriaca*. *Oecologia* 146: 68-76.
42. **Caruso, C. M.**, H. Maherali, A. Mikulyuk\*, K. Carlson\*, and R. B. Jackson. 2005. Genetic variance and covariance for physiological traits in *Lobelia*: are there constraints on adaptive evolution? *Evolution* 59: 826-837. First authorship is shared  
*Recommended, Faculty of 1000*
43. **Caruso, C. M.** 2004. The quantitative genetics of floral trait variation in *Lobelia*: potential

constraints on adaptive evolution. *Evolution* 58: 732-740.

44. **Caruso, C. M.**, S. B. Peterson\*, and C. Ridley\*. 2003. Natural selection on floral traits of *Lobelia* (Lobeliaceae): spatial and temporal variation. *American Journal of Botany* 90: 1333-1340.
45. **Caruso, C. M.**, H. Maherali, and R. B. Jackson. 2003. Gender-specific floral and physiological traits: implications for the maintenance of females in gynodioecious *Lobelia siphilitica*. *Oecologia* 135: 524-531.
46. **Caruso, C. M.** 2002. Influence of plant abundance on pollination and selection on floral traits of *Ipomopsis aggregata*. *Ecology* 83: 241-254.
47. **Caruso, C. M.** 2001. Differential selection on floral traits of *Ipomopsis aggregata* growing in contrasting environments. *Oikos* 94: 295-302.
48. **Caruso, C. M.** 2000. Competition for pollination influences selection on floral traits of *Ipomopsis aggregata*. *Evolution* 54: 1546-1557.
49. **Caruso, C. M.** and M. Alfaro\*. 2000. Interspecific pollen transfer as a mechanism of competition: effect of *Castilleja linariaefolia* pollen on seed set of *Ipomopsis aggregata*. *Canadian Journal of Botany* 78: 600-606.
50. **Caruso, C. M.** 1999. Pollination of *Ipomopsis aggregata* (Polemoniaceae): effects of intra- vs. interspecific competition. *American Journal of Botany* 86: 663-668.

## EDITED VOLUMES

1. **Caruso, C. M.**, C. Mason, and J. Medeiros, editors. 2020. The Evolution of Functional Traits in Plants: Is the Giant Still Sleeping? Special issue of *International Journal of Plant Sciences*.

## EXTERNAL GRANTS AND FELLOWSHIPS (2003-)

- Natural Science and Engineering Research Council of Canada Discovery Grant  
“The effect of multilevel selection on the evolution of gynodioecy” (2018-2023, \$165,000)
- National Evolutionary Synthesis Center Short-Term Visitor Fellowship  
“The strength of phenotypic selection on floral traits” (2014, living and travel expenses for up to 3 months)
- Natural Science and Engineering Research Council of Canada Discovery Grant  
“The evolutionary ecology of cytonuclear interactions in plants” (2013-2018, \$110,000)
- National Evolutionary Synthesis Center Short-Term Visitor Fellowship  
“Gynodioecy and the evolution of separate sexes in the flowering plants” (2013, living and travel expenses for up to 3 months)
- National Evolutionary Synthesis Center Long-Term Sabbatical Fellowship  
“The evolutionary ecology of genetic conflict in plants” (2011-2012, up to 50% of salary, plus \$1000/month living expenses)
- National Science Foundation Award (DEB-0842280)

“Understanding the causes of geographic variation in sex ratio of a gynodioecious plant” (2009-2014, \$140,000 to co-PI Caruso, \$260,000 to PI Andrea Case, Kent State University)

-REU Supplements (2010, \$7000; 2011, \$7250; 2014, \$6271)

-Research Opportunity Award (ROA) Supplement to fund collaboration with Dr. Maia Bailey, Providence College (2010, \$27,169)

- Natural Science and Engineering Research Council of Canada Discovery Grant “Adaptive evolution in natural plant populations” (2008-2013, \$123,125)
- Canada Foundation for Innovation/Ontario Innovation Trust Infrastructure Grant “Infrastructure for plant ecological genetics research” (2004-2007, \$250,000)
- Natural Science and Engineering Research Council of Canada Discovery Grant “Ecological genetics of adaptation and speciation in plants” (2003-2008, \$100,000)

### **EXTERNAL PROFESSIONAL SERVICE: SCIENTIFIC PUBLICATIONS**

- Editor-in-Chief, International Journal of Plant Sciences (2018-)
- Editorial Board, The American Naturalist (2014-2019)
- Editorial Board, International Journal of Plant Sciences (2013-2017)
- Editorial Board, Evolutionary Ecology (2010-2013)
- Editorial Board, Oecologia (2008-2014)
- Ad hoc manuscript reviewer for American Journal of Botany, American Naturalist, Annals of Botany, Australian Journal of Botany, Biological Journal of the Linnean Society, Canadian Journal of Botany, Conservation Biology, Ecology, Ecological Applications, Ecology Letters, Evolution, Evolution and Development, Evolutionary Ecology, Functional Plant Biology, Functional Ecology, Global Change Biology, Heredity, International Journal of Plant Sciences, Journal of Ecology, Journal of Evolutionary Biology, Molecular Ecology, New Phytologist, Oecologia, Oikos, Plant Cell and Environment, Plant Ecology, Plant Systematics and Evolution, Proceedings of the Royal Society B, The Wilson Bulletin, and Trends in Ecology and Evolution
- Ad hoc book chapter reviewer for The Ecology and Evolution of Flowers (Oxford), Conservation Biology: Evolution in Action (Oxford), and EcoBeaker SimUText (Symbiotic)

### **EXTERNAL PROFESSIONAL SERVICE: GRANTING AGENCIES**

- Member, NSF Graduate Research Fellowship Panel (2010, 2016)
- Member, Ontario Graduate Fellowship Panel (2010)
- Ad hoc grant reviewer for the ANR (French National Research Agency); US National Science Foundation; Natural Science and Engineering Research Council of Canada; Irish Research Council for Science, Engineering, and Technology; Alberta Ingenuity Foundation; and Ohio Agricultural Research and Development Center

### **EXTERNAL PROFESSIONAL SERVICE: SCIENTIFIC SOCIETIES**

- Treasurer and member of Council, Society for the Study of Evolution (2020-2021)
- Past-Treasurer and member of Executive Committee, American Society of Naturalists (2019)
- Treasurer and member of Executive Committee, American Society of Naturalists (2018)
- Graduate Student Awards Committee, Botanical Society of America (2007-2010)

## **EXTERNAL PROFESSIONAL SERVICE: SCIENTIFIC MEETINGS**

- Co-organizer, Colloquium on the evolution of functional traits in plants, Botany meeting (2019)
- Panelist, Meet the editors workshop, Second Joint Congress on Evolutionary Biology (2018)
- Panelist, Session on navigating the journal submission process, Canadian Society for Ecology and Evolution meeting (2018)
- Member, Organizing Committee for the Symposium for Women Entering Ecology and Evolution Today (SWEET, 2018)
- Co-organizer, Peter Yodzis Colloquium on Fundamental Ecology (2007)
- Judge for Buell and Braun student paper awards, Ecological Society of America meetings (2000, 2001, 2004)

## **EXTERNAL PROFESSIONAL SERVICE: MISCELLANEOUS**

- External examiner for Ph.D dissertation, Department of Biological Sciences, University of Calgary (2017)
- External examiner for Ph.D dissertation, Department of Botany, University of British Columbia (2016)
- Scientist Mentor, Frontiers for Young Minds (2016-2019)
- Invited participant, NESCent working group on the environmental and demographic determinants of natural selection (2012-2014)
- Elected trustee, Rocky Mountain Biological Laboratory (1996-1998)

## **INTERNAL PROFESSIONAL SERVICE AT THE UNIVERSITY OF GUELPH**

- Member, Equity, Diversity, and Inclusion Audit Committee, College of Biological Science (2020-)
- Member, Committee on Diversity, Equity, and Inclusion, Department of Integrative Biology (2020-)
- Member, Canada Research Chair Advisory Committee (2020-)
- Member, Plant Biologist Search Committee, Department of Integrative Biology (2020-)
- Member, Plant Science Major Curriculum Committee (2019-2020)
- Member, Committee on Teaching Innovation and Experiential Learning, Department of Integrative Biology (2019-2020)
- Co-chair, Committee on Diversity, Equity, and Inclusion, Department of Integrative Biology (2019-2020)
- Member, Department chair search committee, Department of Integrative Biology (2018)
- Member, Planning committee, Teaching and Learning Innovations Conference, University of Guelph (2017-2018)
- Member, Scholarship of Teaching and Learning Grant Selection Committee, University of Guelph (2017)
- Alternate member, Tenure and Promotion Appeals Committee, University of Guelph (2017-2018, 2019-2020)
- Member, Genomics Search Committee, Department of Integrative Biology (2016)
- Member, Graduate Recruitment Committee, Department of Integrative Biology (2016-2018)



- Advisor, Ecology Minor, Department of Integrative Biology (2015-2018, 2019-)
- Advisor, Wildlife Biology and Conservation Major, Department of Integrative Biology (2015-2018, 2019-)
- Member, Ecology Curriculum Subcommittee, Department of Integrative Biology (2012-2014)
- Member, Tenure and Promotion Committee, Department of Integrative Biology (2012-2014)
- Member, Faculty Senate (2010-2011)
- Member, Growth Facilities Committee, College of Biological Science (2009-)
- Chair and/or member, Seminar Committee, Departments of Botany and Integrative Biology (2003-2008, 2009-2011)
- Member, Undergraduate Curriculum Committee, Department of Integrative Biology (2008-2009, 2014-2015)
- Member, Coevolutionary Ecologist Search Committee, Department of Integrative Biology (2007)
- Member, Chair's Advisory Committee, Department of Integrative Biology (2006-2007, 2012-2013)
- Member, Technical Services Committee, Department of Integrative Biology (2005-2006)
- Member, Provost's Working Group on Faculty Recruitment and Retention (2003-2004)

## TEACHING EXPERIENCE

### Undergraduate courses taught

#### Instructor

- Ecology (2<sup>nd</sup> year course; ~350 students; Fall 2013, Fall 2014, Fall 2015, Fall 2016)
- Plant Diversity and Evolution (3<sup>rd</sup> year course; ~40 students; Winter 2010, Winter 2011, Winter 2016, Winter 2017, Winter 2018, Winter 2020)
- Population Ecology (3<sup>rd</sup> year course; ~120 students; Winter 2004, Winter 2005, Winter 2006, Fall 2006, Winter 2009, Winter 2011, Fall 2012)
- Plant Ecology (2<sup>nd</sup> year course; ~80 students; Fall 2004, Fall 2005)
- Freshman Seminar: Darwin's Dangerous Idea (1<sup>st</sup> year course; 5 students; Winter 2004)

#### Co-instructor

- Lab and Field Work in Ecology (3<sup>rd</sup> year course; ~75 students; Fall 2019, Fall 2020)
- Ecology (2<sup>nd</sup> year course; ~350 students; Fall 2017)
- Biostatistics for Integrative Biology (2<sup>nd</sup> year course; ~160 students; Winter 2013, Winter 2014, Winter 2015, Winter 2021)
- Biostatistics in the Life Sciences (2<sup>nd</sup> year course; ~100 students; Winter 2007, Winter 2008, Winter 2009)
- Introduction to Biological Inquiry: Prairie Restoration (1<sup>st</sup> year course; ~24 students; Fall 1999, Fall 2000)

### Undergraduate thesis students mentored

- Katie Brown (Canada graduate scholar, University of Toronto (M.S. 2018))
- Megan Clifford
- Olyvia Foster
- Nigel Gale (Ph.D student and Canada graduate scholar, University of Toronto)

- Rachel Germain (Bryant Family Research Award for best undergraduate thesis proposal; Canada graduate scholar, University of Toronto (Ph.D 2016))
- Kiana Lee
- Sarah McDonald (Canada graduate scholar, Western University (M.S. 2020))
- Brook Peterson (NSF graduate fellow, University of Wisconsin-Madison (Ph.D 2007))
- Caroline Ridley (EPA-STAR fellow, University of California-Riverside (Ph.D 2008))
- L. Ruth Rivkin (Award for best talk by an undergraduate, 2014 Ontario Ecology Ethology and Evolution Colloquium; Ph.D student and Canada graduate scholar, University of Toronto)
- Stephanie Scott (Queens' University (M.S. 2009))
- Christopher Thomas
- Julie Wray (Bryant Family Research Award for best undergraduate thesis proposal; Canada graduate scholar, Simon Fraser University (M.S. 2014))

### **Undergraduate summer research students advised**

- Monica Alfaro (NSF-REU student)
- Katie Black
- Katie Brown (College of Biological Science Summer Research Assistantship)
- Kjarstin Carlson (College of William and Mary (M.S. 2007))
- Olyvia Foster
- Nigel Gale
- Kiana Lee
- Sarah McDonald
- Alison Mikulyuk (NSF graduate fellow, University of Wisconsin-Madison (Ph.D 2017))
- Emily Mills (NSF-REU student)
- Kate Ostergren
- Davin Remington (University of North Texas (M.L.S. 2003))
- L. Ruth Rivkin (NSF-REU student)
- Peter Rose (Ontario College of Art and Design (M.A. 2012))
- Stephanie Scott
- Amy Turnbull (Canada graduate scholar, University of Calgary (Ph.D 2010))
- Julie Wray
- Sarah Yakobowski (Ontario graduate scholar, University of Waterloo (M.S. 2007))

### **Undergraduate work-study and volunteer students advised**

Jessica Boekhoff, Lesley Bulman, Luke Bonham, Katie Brown, Lucy Burns, Rob Cassell, Adrienne Clark, Cassia Dal Bello, Angie Darbyson, Jasmin Dawson, Nariman Deravi, Nancy-Gioia DeThomas, Emily Drystek, Andrea Ellis, Kyla Ferguson, Kory Ford, Andrew Frewin, Nigel Gale, Rachel Germain, Sarah Gettings, Sarah Stanger Guy, Aaron Hudson, Kayleigh Hutt-Taylor, Alicia Irwin, Bhavin Kapadia, Chloe Katsademas, Kaitlin Kennedy, Alina Kislenko, Katherine Kistowska, Anisha Lad, Ann Lee, Lindsay MacDonald, Kelsie Maclellan, Carrie Marotta, Eric McArthur, Hope McCaslin, Jenna McGillivray, Lauren Paulson, Kim Perry, Amelia Porter, Bethany Rentz, Kylee Ronnenberg, Peter Rose, Joshua Shipp, Emily Singer, Jennifer Thompson, Amy Turnbull, Elizabeth Twieg, Kim Vance, Heather Van Den Diepstraten, Rachel Walker, Stefan Weber, Emily Williams, Jennifer Wood, and Melissa Yungblut

## **Graduate courses taught**

### Instructor

- Scientific Communication (20 students; Fall 2014)
- Advances in Evolutionary Biology (~12 students; Winter 2008, Winter 2014)

### Co-instructor

- Graduate Seminar II (~10 students; Fall 2003, Fall 2004)

## **Graduate students advised**

- Hannah Brazeau, Ph.D 2021-
- Gavin Hossack, M.S. 2019-
- Ariana Longley, M.S. 2019 (Ontario graduate scholar)
- Hazel Panique, M.S. 2018
- Zach Teitel, Ph.D 2015- (Canada graduate scholar)
- Amanda Benoit, M.S. 2016 (Ph.D student, University of Tennessee)
- Jesse Jarvis, M.S. 2014 (co-advised with Gard Otis, School of Environmental Sciences)
- Erica Wassink, M.S. 2012 (Canada and Ontario graduate scholar)
- Stefan Weber, M.S. 2011 (Ph.D student, McMaster University)
- Catherine Walsh, M.S. 2010
- Amy Parachnowitsch, M.S. 2005 (Cornell University (Ph.D 2010))

## **Research technicians supervised**

- Melissa Arcand (University of Saskatchewan (Ph.D 2013))
- Allison (Lambert) Benscoter
- Kate Eisen (Cornell University (Ph.D 2020))
- L. Ruth Rivkin
- Elizabeth Seifert
- Tomomi Suwa (Michigan State University (Ph.D 2015))
- Catherine Walsh
- Erica Wassink
- Stefan Weber

## **INVITED PRESENTATIONS AT SCIENTIFIC MEETINGS**

1. Caruso, C. M. and H. Maherali. 2018. Limits on the evolution of photosynthetic and stomatal physiology: Insights from artificial selection. Symposium on evolutionary physiology, Second Joint Congress on Evolutionary Biology.

2. Caruso, C. M. 2015. Identifying the causes of natural selection: What have we learned from 25 years of experiments? Symposium on variation in natural selection: patterns, causes, and consequences, Congress of the European Society for Evolutionary Biology.

3. Caruso, C. M. and A. L. Case. 2014. Confronting models with data: the case of sex-ratio evolution in gynodioecious plants. Symposium on models and methods pertaining to plant reproduction, Botany meeting.
4. Case, A. L. and C. M. Caruso. 2013. Antagonistic cyto-nuclear interactions and the evolution of separate sexes in angiosperms. Symposium on the evolutionary causes and consequences of dioecy across the land plants, Botany meeting.
5. Caruso, C. M., A. L. Case, and M. F. Bailey. 2011. Why do *Lobelia* females like it hot? Potential effects of environmental stress on the expression of male sterility. Symposium on plant reproductive strategies under environmental stress, Botany meeting.
6. Caruso, C. M. 2009. On the importance of evolutionary ecology: what we can learn from studying the agents of natural selection. Plenary speaker, Ontario Ecology Ethology and Evolution Colloquium.
7. Caruso, C. M. 2009. Forewarned is forearmed: how being a woman will affect your academic career. Symposium for Women Entering Ecology and Evolution Today (SWEEET), Canadian Society for Ecology and Evolution meeting.
8. Brown, J. M., C. M. Caruso, V. Eckhart and L. Mottl. 2002. Promoting an understanding of biological inquiry: curricular reform and The Center for Prairie Studies. Symposium on ecological education, Ecological Society of America/Society for Ecological Restoration meeting.

**CONTRIBUTED PRESENTATIONS AT SCIENTIFIC MEETINGS (scheduled, †denotes graduate student, \*denotes undergraduate student, #denotes lab technician)**

1. Yakimowski, S., Z. Teitel<sup>†</sup>, and C. M. Caruso. 2021. Defense by duplication: the relation between phenotypic resistance and gene copy number variation (CNV). Evolution meeting.
2. Foster, O.\* and C. M. Caruso. 2021. Delayed pollination extends floral longevity and reduces seed production in an Eastern North American wildflower. Botany meeting.
3. Hossack, G.<sup>†</sup> and C. M. Caruso. 2021. Effects of pollinator declines on selection on floral traits in a species with separate sexes. Botany meeting.

**CONTRIBUTED PRESENTATIONS AT SCIENTIFIC MEETINGS (last 7 years, †denotes graduate student, \*denotes undergraduate student, #denotes lab technician)**

1. Foster, O.\* and C. M. Caruso. 2021. Delayed pollination extends floral longevity and reduces seed production in a native flower. Ontario Ecology Ethology and Evolution Colloquium.
2. Teitel, Z.<sup>†</sup> and C. M. Caruso. 2019. Evolution of three herbicide defense strategies: fitness costs of glyphosate resistance, escape, and tolerance in an agricultural weed. Plant Canada meeting.
3. Longley, A.<sup>†</sup> and C. M. Caruso. 2019. The effect of urbanization on the evolution of floral traits in the wildflower *Linaria vulgaris*. Plant Canada meeting.

4. Caruso, C. M., H. Maherali, and R. A. Martin. 2019. A meta-analysis of natural selection on plant functional traits. Evolution meeting.
5. Teitel, Z.<sup>†</sup> and C. M. Caruso. 2019. The evolution of herbicide defense responses: escape, resistance, and tolerance to glyphosate in *Amaranthus palmeri*. Ontario Ecology Ethology and Evolution Colloquium.
6. Longley, A.<sup>†</sup> and C. M. Caruso. 2019. The effect of urbanization on reproductive biology of the wildflower *Linaria vulgaris*. Ontario Ecology Ethology and Evolution Colloquium.
7. Knox, E. B., A. L. Case, H. Appiah-Madson, and C. M. Caruso. 2018. Post-glacial colonization of the Midwest by *Lobelia siphilitica*. Botany meeting.
8. Longley, A.<sup>†</sup> and C. M. Caruso. 2018. The effect of urbanization on reproductive traits of the wildflower *Linaria vulgaris*. Ontario Ecology Ethology and Evolution Colloquium.
9. McDonald, S.\* and C. M. Caruso. 2018. The effect of nectar robbers on selection on floral traits of *Impatiens capensis*. Ontario Ecology Ethology and Evolution Colloquium.
10. Adhikari, B., C. M. Caruso, and A. L. Case. 2018. Diversity and complexity of sex-determining genetics in a gynodioecious wildflower *Lobelia siphilitica* L. (Campanulaceae). Botany meeting.
11. McDonald, S.\* and C. M. Caruso. 2018. The effect of nectar robbers on selection on floral traits of *Impatiens capensis*. Canadian Society for Ecology and Evolution meeting.
12. Panique, H.<sup>†</sup> and C. M. Caruso. 2018. Pollinator declines affect selection on floral traits in *Impatiens capensis*. Canadian Society for Ecology and Evolution meeting.
13. Kirchoff, B. K. and C. M. Caruso. 2018. How to get your paper accepted (or rejected) for publication: lessons from two editors. 6<sup>th</sup> International Conference on Comparative Biology of Monocotyledons.
14. Benoit, A.<sup>†</sup> S. Kalisz, and C. M. Caruso. 2018. Mutualism disruption by fear: Do predators modify plant-pollinator interactions and affect phenotypic selection on plant traits? Gordon Research Conference, Mechanisms and Outcomes of Predator-Prey Interactions: Scaling Across Space and Time.
15. Caruso, C. M., K. Eisen<sup>#</sup>, R. A. Martin, and N. Sletvold. 2017. A meta-analysis of the causes of natural selection on floral traits. Evolution meeting.
16. Adhikari, B., C. M. Caruso, and A. L. Case. 2017. Understanding natural expression of cytoplasmic male sterility in gynodioecious *Lobelia siphilitica* L. Plant Biology meeting.
17. Panique, H.<sup>†</sup> and C. M. Caruso. 2017. Can herbivores affect the evolution of floral traits in response to pollinator declines? Ontario Ecology Ethology and Evolution Colloquium.

18. Adhikari, B., C. M. Caruso, and A. L. Case. 2016. Discordant patterns of cytoplasmic genetic variation in a native flowering plant (*Lobelia siphilitica*, Campanulaceae). Evolution meeting.

19. Benoit, A.<sup>†</sup> and C. M. Caruso. 2016. The evolutionary consequences of cascading food web interactions: Do predators indirectly affect the strength of pollinator-mediated selection on floral traits? Evolution meeting.

20. Brown, K.\* and C. M. Caruso. 2016. How do pollinator declines affect selection on attractive floral traits? Evolution meeting.

21. Caruso, C. M. and H. Maherali. 2016. Limits on the evolution of photosynthetic and stomatal traits: insights from artificial selection. Evolution meeting.

22. Benoit, A.<sup>†</sup> and C. M. Caruso. 2016. The evolutionary consequences of cascading food web interactions: Do predators indirectly affect the strength of pollinator-mediated selection on floral traits? Ontario Ecology Ethology and Evolution Colloquium.

23. Brown, K.\* and C. M. Caruso. 2016. How do pollinator declines affect selection on attractive floral traits? Ontario Ecology Ethology and Evolution Colloquium.

24. Teitel, Z.<sup>†</sup> and C. M. Caruso. 2016. Escape, resist or tolerate? Context-dependent evolution in response to glyphosate herbicide in a noxious weed, *Amaranthus palmeri*. Ontario Ecology Ethology and Evolution Colloquium.

25. Parachnowitsch, A. L. and C. M. Caruso. 2015. Do plants eavesdrop on floral scent signals? Annual Meeting of the Scandinavian Association for Pollination Ecologists.

26. Martin, R. A., C. M. Caruso, N. Sletvold, J. G. Kingsolver, M. B. Morrissey, M. J. Wade, K. Augustine, S. M. Carlson, A. D. C. MacColl, and A. M. Siepielski. 2015. The environmental determinants of natural selection. Ecological Society of America meeting.

27. Eisen, K.<sup>#</sup>, A. L. Case, and C. M. Caruso. 2015. Sources of variation in pollen dispensing schedules of *Lobelia siphilitica*. Botany meeting.

28. Case, A. L. and C. M. Caruso. 2015. Cost of male-fertility restoration varies with maternal genotype in a gynodioecious plant. Evolution meeting.

29. Rivkin, L. R.\* , A. L. Case, and C. M. Caruso. 2015. Why is gynodioecy rare? Lessons from the Lamiaceae. Ontario Ecology Ethology and Evolution Colloquium.

## **INVITED RESEARCH SEMINARS**

2019: University of Minnesota, University of Guelph

2017: University of Calgary

2016: McMaster University

2015: University of Toronto-Mississauga

2012: Mountain Lake Biological Station, University of Guelph, University of North Carolina  
2011: Bucknell University, College of Charleston, East Carolina University, National Evolutionary Synthesis Center, University of Guelph  
2008: Iowa State University  
2007: Colorado State University, University of Toronto  
2006: University of California-Santa Cruz  
2005: University of Nebraska, Kent State University, McMaster University, Miami University, University of Iowa  
2004: Michigan State University, Queens' University  
2002: University of Tennessee  
2001: Colgate University, University of Guelph, University of Cincinnati, Amherst College, Utah State University, University of Montana, Duke University, University of Minnesota-Duluth, Kalamazoo College  
2000: Ithaca College, University of Missouri, University of Toronto at Mississauga, Grinnell College  
1999: Grinnell College

### **OUTREACH PRESENTATIONS**

- St John's-Kilmarnock School (2015)
- Guelph Montessori School (2015, 2018)
- Rare Charitable Research Reserve (2011)
- Oak Openings Research Forum, Toledo Metroparks (2011)
- Guelph and Wellington County Master Gardeners (2005)
- American Association of University Women, Winston-Salem Chapter (2002)