

Curriculum Vitae

JEFFREY K. CONNER

Kellogg Biological Station and Department of Plant Biology
Ecology and Evolutionary Biology Program
Beacon Center for the Study of Evolution in Action
Michigan State University
3700 East Gull Lake Drive, Hickory Corners, MI 49060
connerj@msu.edu jeffreykconner.com
ResearcherID: F-3188-2011 orcid.org/0000-0003-1613-5826
Phone: 269-671-2269 FAX: 269-671-2104
Home: 7989 Fernwood Drive, Augusta, MI 49012

Education and Experience:

- Michigan State University. 2003-present. Professor, Kellogg Biological Station and Department of Plant Biology.
- Michigan State University. 1999-present. Adjunct Professor in the Department of Zoology.
- Michigan State University. 1997-2003. Associate Professor, Kellogg Biological Station and Department of Plant Biology.
- Michigan State University. 1996-1997. Assistant Professor, Kellogg Biological Station and Department of Botany and Plant Pathology.
- University of Illinois. 1990-1996. Assistant Professor in the Department of Ecology, Ethology, and Evolution. Affiliate Assistant Professor in the Department of Plant Biology and the Institute for Environmental Studies.
- Cornell University. 1987-1990. Post-doctoral Associate in evolutionary genetics (S. Via, sponsor).
- Cornell University. Ph.D. 1988 in the Section of Neurobiology and Behavior (T. Eisner, advisor). Dissertation title: Natural and Sexual Selection in a Fungus Beetle.
- Harvard College. B.A. *cum laude*, Biology. 1979.

Research Interests:

My lab studies the mechanisms by which natural and sexual selection in plants and insects produces (sometimes very rapid) adaptation to a variable environment, as well as possible constraints to this adaptation. To study adaptation and constraint we measure the strength of selection acting in present-day populations and combine this with quantitative and molecular genetic and genomic analyses to predict short-term evolutionary change. A closely related interest is how different traits evolve to work together as an adaptively integrated unit; the model system we use for this work is the evolution of flower size and shape. This research includes pollination ecology, measurements of additive genetic variances and correlations, molecular genetic paternity analysis to estimate selection through male fitness, QTL mapping of floral traits, and genomics for measuring both coding and regulatory evolution. I am also interested in the application of these basic concepts to environmental problems, especially the adaptation of weeds to human agriculture.

Honors and Awards:

Distinguished Sabbatical Scholar, National Evolutionary Synthesis Center, 2013-2014.
Elected Fellow, American Association for the Advancement of Science (AAAS), 2011.
Walton lecturer, Mountain Lake Biological Station, 2004.
Michigan State University, College of Natural Science Outstanding Graduate Advisor, 2003.
NIH Postdoctoral Fellowship (Individual National Research Service Award). 1989-1990.

Funding:

NSF, "FSML: Real-time genomics: enabling the next generation of field ecology and evolution", 2018-20, \$216,843 (co-PI with two others; K. Gross, PI).
NSF, "Collaborative Research: Fitness effects of loss-of-function mutations in duplicate genes", 2017-2021, \$884,000 (co-PI with P. Krysan; Shin-Han Shiu, PI).
Rackham Foundation, "Origins and adaptations of weedy and crop radish", 2016-19, \$90,000 (Kevin Childs and Patrick Edger, co-PIs).
Multinational Agricultural Research and Development Program (Israel), "Establishing a germplasm collection of East Mediterranean crucifer plant genetic resources", 2014-2016, \$50,000 (co-PI with 6 others; O. Barazani, PI).
NSF BEACON STC, "The genetic basis of weediness: rapid evolution of flowering time in wild radish," 2012-2013, \$154,875 (James Foster and David Tank, co-PIs).
NSF, REU and RET Supplements to below, 2010, 2011, 2012, 2013, 2015, \$208,000.
NSF, "Genetic mechanisms of rapid adaptive evolution in an outbred natural population", 2009-2016, \$732,229 (Ian Dworkin and Shin-Han Shiu, co-PIs).
NSF, "Greenhouse facility to support field ecology and evolution research and teaching at the Kellogg Biological Station", 2010-2013, \$200,000 (co-PI with 3 others; Kay Gross, PI).
NSF, "Field Facilities Improvements for Terrestrial and Aquatic Ecology at the Kellogg Biological Station", 2010-2013, \$176,000 (co-PI with 3 others; Kay Gross, PI).
NSF Research Coordination Network, "μMORPH: Microevolutionary Molecular and Organismic Research in Plant History", 2010-2015. Core participant (W. Friedman, PI).
NSF, REU Supplement to below, 2009, \$22,250.
NSF, "Changes in gene sequence and expression underlying rapid evolution," 2008-2009, \$95,000 (supplement to below).
NSF, "Comparative cDNA sequencing in radish (*Raphanus*), a crop, weed, and model system in ecology and evolution," 2006-2010, \$1,009,597 (Shin-Han Shiu and Yongli Xiao, co-PIs)
NSF, "GK-12: Ecological Literacy in the K-12 Classrooms of Rural Michigan", 2006-2009, \$1,558,161 (co-PI with 3 others; Phil Robertson, PI).
NSF, "Dissertation Research: Patterns of past and present selection on mating system traits in *Collinsia verna*", 2005-2007, \$12,000 (dissertation research of Frances Knapczyk).
NSF, "Dissertation Research: Selective predators and the dynamics of host-parasite interactions", 2005-2007, \$10,699 (dissertation research of Meghan Duffy).
NSF, "Dissertation Research: Morphological Adaptations to Individual Pollinator Taxa in a Generalist Plant", 2004-2006, \$12,000 (dissertation research of Heather Sahli).
Michigan Botanical Club Hanes Fund, "Past and present selection on traits related to the mating system of *Collinsia verna*, 2004-2005, \$8160 (dissertation research of Frances Knapczyk).
Michigan Agricultural Experiment Station, Disciplinary Research Grant, 2002-2005, \$90,000 (co-PI along with James Hancock; Alan Prather, PI).
USDA, "Genetic mechanisms of adaptation and integration among floral traits in a weed", 2001-

2005, \$270,000 (James Hancock and Alan Prather, co-PIs).
NSF, "The evolution of tolerance to herbivory among populations of scarlet gilia, *Ipomopsis aggregata*", 2001-2006, \$91,200. (part of a collaborative grant with Dr. Ken Paige at University of Illinois).
NSF, REU supplements to above, 2004, 2005, \$12,000 total.
Michigan State University, "Examining the evolution of genetic correlations using QTL mapping of floral traits", 2000-2002, \$74,100 (James Hancock and Alan Prather, co-PIs).
NSF, "Understanding the roles of natural selection and evolutionary constraints in the maintenance of invariant floral traits", 1999-2003, \$142,000. (part of a collaborative grant with Dr. Keith Karoly at Reed College).
NSF, three REU supplements to above, 2000-2003, \$16,000 total.
NSF, "Direct and indirect effects of foliar herbivory on floral traits, insect pollination, and male and female plant fitness", 1995-1999, \$71,000. (part of a larger project with Dr. Sharon Strauss at UC Davis; total award \$242,000).
NSF, "The evolution of correlations among floral traits in an insect-pollinated plant", 1994-1998, \$140,000.
Three NSF REU supplements to above, 1994-1997, \$15,000 total.
USDA Competitive Grant, "Effects of increased UV-B radiation on plant-pollinator interactions", 1993-1997, \$180,000. J. Conner, P.I.; G. Robinson, co-P.I.; J. Cane, subcontractor.

Teaching Experience:

Field Ecology and Evolution, Kellogg Biological Station, 1997-present.
Evolutionary Biology (graduate level), Michigan State, 1997-present.
Seminar courses in Evolution, Michigan State, 2001-present.
Genetics in Applied Ecology (graduate level), Michigan State, 1999.
List of Teachers Ranked as Excellent, University of Illinois, 1990, 1992, 1994.
Ecological Genetics, University of Illinois, 1992, 1993, 1995.
Population Biology, University of Illinois, 1990, 1994, 1996.
Plant Ecology Seminar, University of Illinois, 1993, 1994, 1996.
Plant-Insect interactions seminar, University of Illinois, 1992.
Evolutionary Ecology seminar, University of Illinois, 1991, 1992, 1995.

Invited Seminars (last 10 years):

American Genetics Association Presidential Symposium, 2018.
Kellogg Biological Station, 2016.
Norwegian Plant Biology Meeting, 2016.
University of Illinois Urbana-Champaign, PEEC seminar, 2016.
MSU Plant Biology Department, 2015.
MSU Plant Biology Club, 2015.
AIBS/NSF Changing Practices in Data Publication Workshop, 2014.
University of New Mexico, Biology Department, 2014.
North Carolina State University, Genetics Program, 2014.
University of Virginia, Biology Department, 2014.
University of North Carolina Chapel Hill, Biology Department, 2014.
National Evolutionary Synthesis Center (NESCent), 2014
James Madison University, Biology Department, 2014

Duke University, Population Biology seminar, 2013
Lanzhou University, China, Ecology Institute, 2013
University of Akron, Biology Department, 2013
Royal Society Seminar on Adaptive Integration, Kavli International Center, UK, 2012
Annis Water Resources Institute, Grand Valley State University, 2012
microMorph RCN workshop, University of Colorado, 2011
Oberlin College, Biology Department, 2009.
University of North Carolina Chapel Hill, Biology Department, 2009.
University of Pittsburgh, Biology Department, 2009.
Frontiers of Sexual Plant Reproduction III conference, Tucson, 2008.
Symposium on The Ecology and Evolution of Plant-Pollinator Interactions, Milwaukee, 2008.

Peer-reviewed Publications – undergraduates in **bold**; Conner grads underlined, h = 39 ([Google Scholar](#))

1. Conner, J. and D. Crews. 1980. Sperm transfer and storage in the lizard, *Anolis carolinensis*. *J. Morph.* 163: 331-348.
2. Conner, J. and T. Eisner. 1983. Capture of bombardier beetles by ant lion larvae. *Psyche* 90: 175-178.
3. Conner, J., S. Camazine, D. Aneshansley, and T. Eisner. 1985. Mammalian breath: trigger of defensive chemical response in a tenebrionid beetle (*Bolitotherus cornutus*). *Behav. Ecol. Sociobiol.* 16: 115-118.
4. Conner, J. 1988. Field measurements of natural and sexual selection in the fungus beetle, *Bolitotherus cornutus*. *Evolution* 42: 736-749. (Summarized in Shuster, S. M., and M. J. Wade. 2003. *Mating systems and strategies*. Princeton University Press, Princeton, N.J.)
5. Conner, J. 1989. Older males have higher insemination success in a beetle. *Anim. Behav.* 38: 503-509.
6. Conner, J. 1989. Density-dependent sexual selection in the fungus beetle, *Bolitotherus cornutus*. *Evolution* 43: 1378-1386.
7. Eisner, T., J. Conner, J. E. Carrel, J. P. McCormick, A. J. Slagle, C. Gans, and J. C. O'Reilly. 1990. Systemic retention of ingested cantharidin by frogs. *Chemoecology* 1: 57-62.
8. Conner, J. and S. Via. 1992. Natural selection on body size in *Tribolium*: possible genetic constraints on adaptive evolution. *Heredity* 69: 73-83.
9. Conner, J. and S. Via. 1993. Patterns of phenotypic and genetic correlations among morphological and life history traits in wild radish, *Raphanus raphanistrum*. *Evolution* 47: 704-711.
10. Eisner, T., I. T. Baldwin, and J. Conner. 1993. Circumvention of prey defense by a predator: Ant lion vs. ant. *Proc. Natl. Acad. Sci. USA* 90: 6716-6720.
11. Conner, J. 1993. Tests for major genes affecting morphological and life history traits in wild radish, *Raphanus raphanistrum*. *Genetica* 90:41-45.
12. Via, S., and J. Conner. 1995. Evolution in heterogeneous environments: genetic variability within and across different grains in *Tribolium castaneum*. *Heredity* 74:80-90.
13. Conner, J. K. 1995. Extreme variability in sperm precedence in the fungus beetle, *Bolitotherus cornutus*. *Ethology Ecology & Evolution* 7:277-280.
14. Conner, J. K. and R. Neumeier. 1995. Effects of black mustard population size on the taxonomic composition of pollinators. *Oecologia* 104: 218-224.

15. Conner, J. K., **R. Davis**, and S. Rush. 1995. The effect of wild radish floral morphology on pollination efficiency by four taxa of pollinators. *Oecologia* 104: 234-245.
16. Conner, J. K. and **A. Sterling**. 1995. Testing hypotheses of functional relationships: a comparative survey of correlation patterns among floral traits in five insect-pollinated plants. *American Journal of Botany* 82: 1399-1406.
17. Rush, S., J. K. Conner, and P. Jennetten. 1995. The effects of natural variation in pollinator visitation on rates of pollen removal in wild radish, *Raphanus raphanistrum* (Brassicaceae). *American Journal of Botany* 82: 1522-1526.
18. Conner, J. K. and S. Rush. 1996. Effects of flower size and number on pollinator visitation to wild radish, *Raphanus raphanistrum*. *Oecologia* 105:509-516.
19. Strauss, S. Y., J.K. Conner, and S. L. Rush. 1996. Foliar herbivory affects floral characters and plant attractiveness to pollinators: implications for male and female plant fitness. *American Naturalist* 147: 1098-1107.
20. Conner, J. K., S. Rush, and P. Jennetten. 1996. Measurements of natural selection on floral traits in wild radish (*Raphanus raphanistrum*). I. Selection through lifetime female fitness. *Evolution* 50:1127-1136.
21. Conner, J. K., S. Rush, **S. Kercher**, and P. Jennetten. 1996. Measurements of natural selection on floral traits in wild radish (*Raphanus raphanistrum*). II. Selection through lifetime male and total fitness. *Evolution* 50:1137-1146.
22. Conner, J. K. and **A. Sterling**. 1996. Selection for independence of floral and vegetative traits: evidence from correlation patterns in five species. *Canadian Journal of Botany* 74:642-644.
23. Feldheim, K. and J. K. Conner. 1996. The effects of increased UV-B radiation on morphology, pollination success, and lifetime female fitness in two *Brassica* species. *Oecologia* 106:284-297.
24. **Kercher, S.** and J. K. Conner. 1996. Patterns of genetic variability within and among populations of wild radish, *Raphanus raphanistrum* (Brassicaceae). *American Journal of Botany* 83: 1416-1421.
25. Conner, J. K. 1996. Understanding natural selection: an approach integrating selection gradients, multiplicative fitness components, and path analysis. *Ethology Ecology & Evolution* 8:387-397.
26. Conner, J. K., D. Tjho, S. H. Berlocher, and S. L. Rush. 1997. Inheritance and linkage relationships of nine allozyme loci in wild radish. *Journal of Heredity* 88:60-62.
27. Collins, S. A., J. K. Conner, and G. E. Robinson. 1997. Foraging behavior of honey bees on *Brassica nigra* and *Brassica rapa* grown under simulated ambient and enhanced UV-B radiation. *Annals of the Entomological Society of America* 90:102-106.
28. Pfennig, K. S. and J. K. Conner. 1997. Pollen limitation in an experimental population of the wild radish *Raphanus raphanistrum*. *Canadian Journal of Botany* 75:72-73.
29. Conner, J. K. and S. Rush. 1997. Measurements of selection on floral traits in black mustard, *Brassica nigra*. *Journal of Evolutionary Biology* 10: 327-335.
30. Conner, J. K. and L. A. Zangori. 1997. A garden study of the effects of ultraviolet-B radiation on pollination success and lifetime female fitness in *Brassica*. *Oecologia* 111: 388-395.
31. Conner, J. K. 1997. Floral evolution in wild radish: the roles of pollinators, natural selection, and genetic correlations among traits. *International Journal of Plant Sciences* 158: S108-S120.

32. Conner, J. K. and L. A. Zangori. 1998. Combined effects of water, nutrient, and UV-B stress on female fitness in *Brassica* (Brassicaceae). *American Journal of Botany* 85: 925-931.
33. Karoly, K. and J. K. Conner. 2000. Heritable variation in a family-diagnostic trait. *Evolution* 54: 1433-1438.
34. Morgan, M.T. and J. K. Conner. 2001. Using genetic markers to directly estimate male selection gradients. *Evolution* 55:272-281.
35. Conner, J. K. 2001. How strong is natural selection? *Trends in Ecology and Evolution* 16: 215-217.
36. **Williams, J. L.** and J. K. Conner. 2001. Sources of phenotypic variation in floral traits in wild radish, *Raphanus raphanistrum* (Brassicaceae). *American Journal of Botany* 88: 1577-1581. (cover photo Sept. 2002)
37. Strauss, S. Y., J. K. Conner, and K. P. Lehtila. 2001. Effects of foliar herbivory by insects on the fitness of *Raphanus raphanistrum*: damage can increase male fitness. *American Naturalist* 158: 496-504. (Featured in April 2002 *Natural History* magazine)
38. Conner, J. K. and R. Neumeier. 2002. The effects of ultraviolet-B radiation and intraspecific competition on growth, pollination success, and lifetime female fitness in *Phacelia campanularia* and *P. purshii* (Hydrophyllaceae). *American Journal of Botany* 89: 103-110.
39. Agrawal, A. A., J. K. Conner, M. T. Johnson, and R. Wallsgrave. 2002. Ecological genetics of induced plant defense against herbivores in wild radish. *Evolution* 56: 2206-2213.
40. Conner, J. K. 2002. Genetic mechanisms of floral trait correlations in a natural population. *Nature* 420: 407-410. (Summarized, with redrawn figure, in Futuyma, D. J. 2005. *Evolution*. Sinauer Associates, Inc., Sunderland, MA.)
41. Conner, J. K. 2003. Artificial selection: a powerful tool for ecologists. *Ecology* 84: 1650-1660 (invited, peer-reviewed Special Feature).
42. Conner, J. K., **A. M. Rice**, C. Stewart, and M.T. Morgan. 2003. Patterns and mechanisms of selection on a family-diagnostic trait: evidence from experimental manipulation and lifetime fitness selection gradients. *Evolution* 57: 480-486.
43. Conner, J. K., **R. Franks**, and C. Stewart. 2003. Expression of additive genetic variances and covariances for wild radish floral traits: Comparison between field and greenhouse environments. *Evolution* 57: 487-495.
44. Agrawal, A.A., J.K. Conner, and J.R. Stinchcombe. 2004. Evolution of plant resistance and tolerance to frost damage. *Ecology Letters* 7: 1199-1208.
45. Conner, J.K. and A.A. Agrawal. 2005. Mechanisms of constraints: The contributions of selection and genetic variance to the maintenance of cotyledon number in wild radish. *Journal of Evolutionary Biology* 18: 238-242.
46. Strauss, S. Y., H. Sahli, and J.K. Conner. 2005. Toward a more trait-centered approach to diffuse (co)evolution. *New Phytologist* 165: 81-90 (invited, peer reviewed, for special edition).
47. Sahli, H. and J.K. Conner. 2006. Characterizing ecological generalization in plant-pollination systems. *Oecologia* 148: 365-372.
48. Conner, J.K. 2006. Ecological genetics of floral evolution. *In: Harder, L. D. and Barrett, S.C.H., eds. The Ecology and Evolution of Flowers.* Oxford University Press.
49. Sahli, H. and J.K. Conner. 2007. Visitation, effectiveness, and efficiency of 15 genera of visitors to wild radish, *Raphanus raphanistrum* (Brassicaceae). *American Journal of Botany* 94: 203-209.

50. Knapczyk, F.N. and J.K. Conner. 2007. Estimates of the average strength of natural selection are not inflated by sampling error or publication bias. *American Naturalist* 170: 501-508. (lead article)
51. Duffy, M.A., C.E. Brassil, S.R. Hall, A.J. Tessier, C.E. Caceres, and J.K. Conner. 2008. Parasite-mediated disruptive selection in a natural *Daphnia* population. *BMC Evolutionary Biology* 8: 80.
52. Roles, A.J., and J.K. Conner. 2008. Fitness effects of mutation accumulation in a natural outbred population of wild radish (*Raphanus raphanistrum*): comparison of field and greenhouse environments. *Evolution* 62: 1066-1075.
53. Franks, S.J., J.C. Avise, W.E. Bradshaw, J. K. Conner, J.R. Etterson, S.J. Mazer, R.G. Shaw and A.E. Weis. 2008. The resurrection initiative: storing ancestral genotypes to capture evolution in action. *BioScience* 58: 870-873. (Featured at ABCnews.com).
54. Sahli, H.F., J.K. Conner, F.H. Shaw, **S. Howe**, and **A. Lale**. 2008. Adaptive differentiation of quantitative traits in the globally distributed weed, wild radish (*Raphanus raphanistrum*). *Genetics* 180: 945-955.
55. Conner, J.K., Sahli, H.F., and Karoly, K. 2009. Tests of adaptation: functional studies of pollen removal and estimates of natural selection on anther position in wild radish. *Annals of Botany* 103: 1547-1556 (invited, peer-reviewed Special Feature).
56. Agrawal, A.A., J.K. Conner, and S. Rasmann. 2010. Tradeoffs and negative correlations in evolutionary ecology. pp. 243-268 *in*: M.A. Bell, W.F. Eanes, D.J. Futuyma, and J.S. Levinton, eds. *Evolution After Darwin: the First 150 Years*. Sinauer Associates, Sunderland, MA.
57. Sahli, H. and J.K. Conner. 2011. Testing for conflicting and non-additive selection: floral adaptation to multiple pollinators through male and female fitness. *Evolution* 65: 1457-1473.
58. Conner, J.K., Karoly, K., Stewart, C., Koelling, V.A., Sahli, H.F., and Shaw, F.H. 2011. Rapid independent trait evolution despite a strong pleiotropic genetic correlation. *American Naturalist* 178: 429-441. (lead article)
59. Rutter, M.T., A.J. Roles, J.K. Conner, R.G. Shaw, F.H. Shaw, K. Schneeberger, S. Ossowski, D. Weigel, C.B. Fenster. 2012. Fitness of *Arabidopsis thaliana* mutation accumulation lines whose spontaneous mutations are known. *Evolution* 66: 2335-2339.
60. Kuester, A., J.K. Conner, T. Culley, and R.S. Baucom. 2014. How weeds emerge: a taxonomic and trait-based examination using United States data. *New Phytologist* 202:1055-1068 (doi: 10.1111/nph.12698).
61. Moghe, G. D., **D. E. Hufnagel**, H. Tang, Y. Xiao, I. Dworkin, C. D. Town, J. K. Conner, and S.-H. Shiu. 2014. Consequences of whole-genome triplication as revealed by comparative genomic analyses of the wild radish *Raphanus raphanistrum* and three other Brassicaceae species. *The Plant Cell* 26:1925-1937.
62. Conner, J.K., I.A. Cooper, R.J. La Rosa, S. G. Pérez, and A. M. Royer. 2014. Patterns of phenotypic correlations among morphological traits across plants and animals. *Philosophical Transactions of the Royal Society B: Biological Sciences* 369:20130246.
63. Conner, J.K., and R. Lande. 2014. Raissa L. Berg's contributions to the study of phenotypic integration, with a professional biographical sketch. *Philosophical Transactions of the Royal Society B: Biological Sciences* 369:20130250.
64. Conner, J.K., C.J. Mills, V.A. Koelling, and K. Karoly. 2014. Artificial selection on anther exertion in wild radish, *Raphanus raphanistrum*. *Scientific Data* 1:140027 doi: 10.1038/sdata.2014.27.

65. Zhao, Z-G., Z-J Liu, and J.K. Conner. 2015. Plasticity of floral sex allocation within inflorescences of the hermaphrodite *Aconitum gymnantrum*. *Journal of Plant Ecology* 8:130-135.
66. terHorst, C.P., J.A.Lau, I.A.Cooper, K.R.Keller, R.J. La Rosa, A.M. Royer, E.H. Schultheis, T. Suwa, and J.K. Conner. 2015. Quantifying non-additive selection caused by indirect ecological effects. *Ecology* 96:2360-2369.
67. Pannell, J.R., J.R. Auld, Y. Brandvain, M. Burd, J.W. Busch, P-O. Cheptou, J.K. Conner, E. Goldberg, A. Grant, D. Grossenbacher, S.M. Hovick, S. Kalisz, T. Petanidou, A. Randle, R. Rubio de Casas, A. Pauw, J. Vamosi, A. Winn. 2015. The scope of Baker's law (Tansley Review). *New Phytologist* 208:656-667.
68. Dittmar, E.L., C.G. Oakley, J.K. Conner, B.A. Gould, and D.W. Schemske. 2016. Factors influencing the effect size distribution of adaptive substitutions. *Proceedings of the Royal Society B* 283:20153065. (F1000 Prime recommended)
69. Roles, A.J., M.T. Rutter, I. Dworkin, C.B. Fenster, and J.K. Conner. 2016. Field measurements of genotype by environment interaction for fitness caused by spontaneous mutations in *Arabidopsis thaliana*. *Evolution* 70: 1039-1050.
70. Zhao, Z., N. Lu, and J.K. Conner. 2016. Adaptive pattern of nectar volume within inflorescences: bumblebee foraging behavior and pollinator-mediated natural selection. *Scientific Reports* 6:34499 (DOI: 10.1038/srep34499).
71. Royer, A.M., C. Kremer, **K. George**, S.G. Pérez, D.W. Schemske, and J.K. Conner. 2016. Incomplete loss of a conserved trait: function, latitudinal cline, and genetic constraints. *Evolution* 70: 2853-2864. (DOI: 10.1111/evo.13121).
72. La Rosa, R.J., and J.K. Conner. 2017. Floral function: effects of traits on pollinators, male and female pollination success, and female fitness across three species of milkweeds (*Asclepias*). *American Journal of Botany* 104: 150-160.
73. terHorst, C.P., J.A.Lau, and J.K. Conner. 2017. Quantifying nonadditive selection caused by indirect ecological effects: Reply to Comment. *Ecology* 98: 1171-1175.
74. Van Etten, M.L, J.K. Conner, S-M Chang, and R.S. Baucom. 2017. Not all weeds are created equal: a database approach uncovers differences in the sexual system of native and introduced weeds. *Ecology and Evolution* 7: 2636-2642.
75. Grossenbacher, D., Y. Brandvain, J.R. Auld, M. Burd, P-O. Cheptou, J.K. Conner, A. Grant, S.M. Hovick, J.R. Pannell, A. Pauw, T. Petanidou, A. Randle, R. Rubio de Casas, J. Vamosi, A. Winn, B. Igit, J.W. Busch, S. Kalisz, E. Goldberg. 2017. Self-compatibility is overrepresented on islands. *New Phytologist* 215: 469-478.
76. Sapir, Y, K. Karoly, V. Koelling, H.F. Sahli, F.N. Knapczyk, and J.K. Conner. 2017. Effect of expanded variation in anther position on pollinator visitation to wild radish, *Raphanus raphanistrum*. *Annals of Botany* 120: 665-672.
77. Conner, J. K. 2018. Field Studies of Natural Selection. *In: Oxford Bibliographies in Evolutionary Biology*. Ed. Karin Pfennig. New York: Oxford University Press. DOI: 10.1093/OBO/9780199941728-0097 [LINK](#)

Non-peer reviewed:

- Conner, J. K. 1997. Pollination reviewed (book review). *Ecology* 78: 327-328.
- Conner, J. K. 2002. Trade-offs in evolutionary ecology (book review). *Ecology* 83: 2356-2357.

- Conner, J. K. 2007. A tale of two methods: putting biology before statistics in the study of phenotypic evolution. *Journal of Evolutionary Biology* 20: 17-19. (Invited commentary)
- Conner, J. K. 2010. Natural selection in plants 151 years after the *Origin*: Introduction. *International Journal of Plant Sciences* 171: 927-929 (Introduction to special issue).
- Conner, J.K. 2012. Quantitative genetic approaches to evolutionary constraint: how useful? *Evolution* 66:3313-3320. (Invited Commentary)
- Conner, J.K. 2016. Artificial Selection. In: Kliman, R.M. (ed.), *Encyclopedia of Evolutionary Biology*. vol. 1, pp. 107–113. Oxford: Academic Press.
- Stinchcombe, J.R., J.L. Kelley, and J.K. Conner. 2017. How to measure natural selection: special feature. *Methods in Ecology and Evolution* 8: 660-662. (Introduction to special feature)

Book:

- Conner, J. K. and D. L. Hartl. 2004. *A Primer of Ecological Genetics*. Sinauer Associates, Sunderland, MA. (Second printing; translated into Italian and Lithuanian)

Publications of my graduate students from work done while in my lab:

- Royer, A. M.** and E.H. Schultheis. 2014. Evolving better cars: teaching evolution by natural selection with a digital inquiry activity. *American Biology Teacher*. Vol. 76, No 4 (April 2014), pp. 259-264.
- Whitehead, S.R., E. Reid, J. Sapp, K.A. Poveda, **A.M. Royer**, A. Posto, A. Kessler. 2014. A specialist herbivore uses chemical mimicry to overcome the defenses of an ant-plant mutualism. *PloS One* 9 (7), e102604.
- Duffy, M.A.** 2007. Selective predation, parasitism, and trophic cascades in a bluegill-Daphnia-parasite system. *Oecologia* 153: 453-460.
- Duffy, M.A.** and L. Sivars-Becker. 2007. Rapid evolution and ecological host-parasite dynamics. *Ecology Letters* 10: 44-53.
- Pfennig, K. S.** 2000. Female spadefoot toads compromise on mate quality to ensure conspecific matings. *Behavioral Ecology* 11: 220-227.
- Pfennig, K. S.**, K. Rapa and R. McNatt. 2000. Evolution of male mating behavior: male spadefoot toads preferentially associate with conspecific males. *Behavioral Ecology and Sociobiology* 48: 69-74.
- Pfennig, K. S.** 1998. The evolution of mate choice and the potential for conflict between species and mate-quality recognition. *Proceedings of the Royal Society of London Series B* 265: 1743-1748.

Graduate Students Advised with current positions:

- Peter Jennetten, M.S. 1993. Attorney, Quinn Johnston.
- Scott Rush, M.S. 1994. Vice President for Research & Development, Bolton Medical.
- Kevin Feldheim, M.S. 1994. Manager of the Field Museum's Pritzker Laboratory for Molecular Systematics and Evolution.
- David Tjhio, M.S. 1995. Program Director, Clinical Surveillance at Premier, Inc.
- Laura Zangori, M.S. 1995. Assistant Professor of Science Education at University of Missouri.
- Rachel Neumeier, M.S. 1997. Novelist and Academic Specialist, Mineral Area College.
- Karin Pfennig, Ph.D. 1999. Associate Professor, University of North Carolina at Chapel Hill.
- Brian Black, Ph.D. 2000 (NSF Doctoral Dissertation Improvement Grant awardee; Instructor, Bay College).

Meghan Duffy, Ph.D. 2006 (NSF Graduate Fellow, NSF Doctoral Dissertation Improvement Grant awardee). Associate Professor, University of Michigan; Presidential Early Career Award for Scientists and Engineers (PECASE) awardee.

Heather Sahli, Ph.D. 2006 (NSF Doctoral Dissertation Improvement Grant awardee). Associate Professor, Shippensburg University.

Angela Roles, Ph.D. 2007. Assistant Professor, Oberlin College.

Frances Knapczyk, Ph.D. 2007 (NSF Graduate Fellow; NSF Doctoral Dissertation Improvement Grant awardee). Conservation Program Manager for the Napa County Resource Conservation District.

Anne Royer, Ph.D. 2014. Assistant Professor, University of Scranton.

Raffica La Rosa, Ph.D. 2015 (NSF Graduate Fellow). Postdoctoral Fellow, University of Colorado Boulder.

Samuel Pérez, M.S. 2017 (Ford Foundation Fellow).

Amanda Charbonneau, Ph.D. candidate.

Ava Garrison, Ph.D. candidate.

Postdoctoral Fellows with current positions:

Kari Lehtilä, 1996-1998 (co-advised with S. Strauss). Professor, Södertörn University College, Sweden.

Jeremie Fant, 2002-2003. Conservation Scientist, Chicago Botanic Garden.

M. Gabriela Bidart-Bouzat, 2004-2006; NSF Minority Postdoctoral Fellow. Associate Professor, Bowling Green State University.

Annat Haber, BEACON Distinguished Postdoctoral Fellow, 2013-2016 (co-advised with I. Dworkin).

Sarah Fitzpatrick, MSU Postdoctoral Fellow, 2015-2016 (co-advised with G. Mittelbach). Assistant Professor, MSU.

National and International Service:

Member, USDA NIFA Fellowship Panel 2017; NSF Evolutionary Processes Panels, 1996, 2004, 2010, 2012; Plant Genome Panel 2015.

Editor, special issue on measuring natural selection, *Methods in Ecology and Evolution*, 2016-17.

Steering Committee, microMorph Research Coordination Network, 2010-present.

Guest Editor, *Proceedings of the National Academy of Sciences*, 2016.

Handling Editor, *Evolution*, 2013-2015.

Editorial Board, *International Journal of Plant Sciences*, 2010-2012.

Editor, special issue on natural selection, *International Journal of Plant Sciences*, 2009-2010.

Editorial Board, *Oecologia*, 2007-2008.

Project Baseline initial workshop organizing committee, 2007.

Editorial Board, *Journal of Evolutionary Biology*, 2004-2007.

Editorial Board, *Evolution*, 1999-2001.

Plant Population Ecology Section of the Ecological Society of America, Chair, 1998-99, Vice-chair, 1997-98.

Reviewer for: **Journals:** *American Journal of Botany*, *American Naturalist*, *Animal Behaviour*, *Annals of Botany*, *Behavioral Ecology*, *Behavioral Ecology and Sociobiology*, *Biological Journal of the Linnean Society*, *BMC Evolutionary Biology*, *Ecology*, *Ecology Letters*,

Evolution, Evolutionary Ecology Research, International Journal of Plant Sciences, Journal of Ecology, Journal of Evolutionary Biology, Journal of Theoretical Biology, Journal of Tropical Biology, Journal of Tropical Ecology, Global Change Biology, Molecular Ecology, Molecular Phylogenetics and Evolution, Nature, Nature Reviews Genetics, New Phytologist, Oecologia, Philippine Agricultural Scientist, Plant Biology, Plant Physiology, Proceedings of the National Academy of Sciences (PNAS), Proceedings of the Royal Society of London B, Public Library of Science (PLoS) Biology, Southwestern Naturalist, Trends in Ecology and Evolution (TREE).

Funding Agencies: NSF, USDA, National Geographic Society, BBSRC (UK), Czech Science Foundation, Israel Science Foundation, NERC (UK), Research Council of Norway.

Publishers: Blackwell Scientific, W.H. Freeman, Oxford University Press, Prentice-Hall, University of Chicago Press.

External examiner for Ph.D theses at: McGill University, University of British Columbia, University of Toronto, University of Western Australia

Recent Papers and Posters Presented (*undergraduate):

- Weed Adaptation: Genetic Differentiation vs. Phenotypic Plasticity. Society for the Study of Evolution (SSE) Annual meeting, 2017 (Poster presented by Ava Garrison)
- Mechanisms of trait loss: ongoing elimination of short stamens in a selfing plant. SSE Annual meeting, 2015; Samuel Pérez, Anne Royer, Tom Juenger, co-authors.
- Testing Bateman: selection on floral traits through male and female fitness in two milkweed species. SSE Annual meeting, 2015 (Presented by Raffica La Rosa).
- Maintenance of a conserved trait: natural and artificial selection on stamen lengths in wild radish. BEACON Center Annual Congress, 2014.
- Maintenance of a conserved trait: natural selection on stamen lengths in wild radish. SSE Annual meeting, 2014; Anne Royer, Zhigang Zhao, Vanessa Koelling, and Keith Karoly, co-authors. [Video](#)
- Selection on floral traits through male and female fitness in two species of milkweed that differ in pollen limitation of seed set. SSE Annual Meeting, 2014 (Presented by Raffica La Rosa).
- Evolution of weed phenotypes in radish. SSE Annual Meeting, 2014 (Presented by Amanda Charbonneau; Ian Dworkin, co-author).
- Patterns and genetic mechanisms of nonfunctional trait loss. SSE Annual Meeting, 2014 (Poster presented by Samuel Pérez; Doug Schemske, co-author).
- Patterns of phenotypic correlations and integration in animals and plants. SSE Annual meeting, 2013; I. Cooper, R. La Rosa, S. Pérez, and A. Royer, co-authors.
- Don't put all your sperm in one basket: are dimorphic stamens adaptive in wild radish? SSE Annual Meeting, 2013 (Presented by A. Royer; Samuel Slowinski*, co-author).
- Phylogenetic comparative analysis of milkweed floral traits: patterns of evolution across the genus *Asclepias*. SSE Annual Meeting, 2013 (Presented by R. La Rosa; Mark Fishbein, co-author).
- Evolution of an agricultural weed from native Mediterranean ancestors: adaptive loss of vernalization and rosette leaves in wild radish. Evolution 2012 (First International Congress of Evolutionary Biology); Ian Dworkin and Amanda Charbonneau, co-authors.
- Selection on floral traits in two species of milkweeds: testing Bateman's principle. Evolution 2012 (presented by R. La Rosa).
- Evolutionary constraint: stamen loss in *Arabidopsis*. European Society for Evolutionary Biology

Annual Congress, 2011 (placed in the top 10 of posters; presented by A. Royer, D. Schemske, coauthor).

Adaptive floral traits of milkweeds: selection through male and female fitness. ESEB Annual Congress, 2011 (poster presented by R. La Rosa).

Spontaneous mutations and fitness. SSE Annual Meeting, 2011 (presented by C. Fenster, seven coauthors).

Why using genetic correlations for predicting/infering/estimating evolutionary constraints is totally lamesauce. SSE Annual Meeting, 2010.

Adaptation vs. constraint: evolution of stamen position in mustards. SSE Annual Meeting 2010 (presented by Anne Royer, D. Schemske, coauthor).

Selection through male and female fitness: trends over three years in milkweed floral traits. SSE Annual Meeting 2010 (presented by Raffica La Rosa).

Field measurements of GEI for spontaneous mutations in *Arabidopsis thaliana*. SSE Annual Meeting 2010 (presented by Anglea Roles, C. Fenster and M. Rutter, coauthors).

Genomic changes accompanying rapid floral evolution in the face of a pleiotropic constraint assessed with RNA-Seq. SSE Annual Meeting, 2009.

Selection on Floral Traits across Variable Pollinator Communities. Ecological Society of America Annual meeting, 2009 (poster presented by A. Royer).

Evolution of Novel Traits: Floral Adaptation in Milkweed. ESA and SSE annual meetings, 2009 (posters presented by R. La Rosa).

Comparative cDNA sequencing in radish (*Raphanus*), a crop, weed, and model system in ecology and evolution. NSF Plant Genome Awardee meeting, 2008 (poster).

Stabilizing/correlational selection on conserved floral traits. SSE Annual Meeting, 2008 (5 coauthors).

The evolution of novel traits: measurements of selection on floral traits in two species of milkweed. SSE Annual Meeting, 2008 (poster presented by R. La Rosa).

Evolutionary loss of short stamens in *Arabidopsis thaliana*. SSE Annual Meeting, 2008 (poster presented by A. Royer; D. Schemske, co-author).

Professional Societies:

American Association for the Advancement of Science (AAAS; Elected Fellow), American Society of Naturalists (ASN), Society for the Study of Evolution (SSE).