

## Ruth Geyer Shaw

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### **Education:**

1976 B.A. Oberlin College, Oberlin, Ohio. Biology.  
1983 Ph.D. Duke University, Durham, N.C. Botany, Genetics.  
1984-1986 Post-doctoral Research Fellow, University of Washington.

### **Positions Held:**

1977-1978 Research assistant, Microbial Ecology Laboratory, Division of Engineering and Applied Sciences, Harvard University.  
1978-1979 Teaching Assistant, Duke University.  
1983 Post-doctoral Research Assistant, Duke University.  
1984-1986 Post-doctoral Research Fellow, University of Washington.  
1987-1992 Assistant Professor, University of California, Riverside.  
1993-1994 Assistant Professor, University of Minnesota  
1994-2000 Associate Professor, University of Minnesota  
1995-1996 Sabbatical leave, University of Edinburgh  
2000- Professor, University of Minnesota  
2002-2003 Visiting Professor, Université de Montpellier II  
2009- Resident Fellow, Minnesota Center for Philosophy of Science  
2010-2011 Sabbatical leave, University of York (UK) and Université de Montpellier II  
2013-2016 Editor in Chief, *Evolution*  
2016 Interim Head, Department of Ecology, Evolution and Behavior  
2020- Director of Graduate Studies, Ecology, Evolution and Behavior

### **Awards and Fellowships:**

1975 Florence Frew prize in Classics, Oberlin College.  
1975 Phi Beta Kappa  
1979-1982 National Science Foundation Graduate Fellowship  
1982-1983 National Institutes of Health Traineeship administered by the University Program in Genetics, Duke University  
1984-1986 National Institutes of Health Individual Post-doctoral Fellowship  
1995-1996 Bush Sabbatical Fellowship, University of Minnesota  
2002-2003 Fellowship, John Simon Guggenheim Memorial Foundation

2002-2003 College of Biological Sciences (UM) Sabbatical Supplement  
 2009 President's Award, American Society of Naturalists  
 2010-2011 College of Biological Sciences (UM) Sabbatical Supplement  
 2010 William Skinner Cooper Award from the Ecological Society of America  
 (with M.B. Davis and J.R. Etterson)  
 2011 Outstanding Advisor award from the EEB graduate students  
 2012 Council of Graduate Students Outstanding Faculty Award  
 2017 Sewall Wright Award, American Society of Naturalists  
 2017 Distinguished Ecologist award, Colorado State University  
 2018 Member, American Academy of Arts and Sciences  
 2019 Marsden Lecturer, McGill University  
 2019-2021 President-elect, President, Past President, Society for the Study of Evolution  
 2021 U.S. National Academy of Sciences election

## Research Activities

### Publications:

#### Book Chapters:

Platenkamp, G. A. J., and R. G. Shaw. 1995. Limits to adaptive population differentiation of quantitative traits in plants. In *Ecogeographic Races: Papers presented at the 73rd annual meeting of the pacific division of AAAS in honor of the 100th anniversary of the birth of Gote Turesson*. A. Kruckeberg, R.B. Walker, and A. E. Leviton, Eds.

Shaw, R. G. and D. L. Byers. 1998. Genetics of maternal and paternal effects. In *Maternal effects as adaptations*, T. A. Mousseau and C. W. Fox, eds. Oxford Univ. Press.

#### Refereed Articles:

Clay, K. and R. G. Shaw. 1981. An experimental demonstration of density-dependent reproduction in a natural population of *Diamorpha smallii*, a rare annual. *Oecologia* 51: 1-6.

Shaw, R. G. 1986. Response to density in a wild population of the perennial herb *Salvia lyrata*: variation among families. *Evolution* 40: 492-505.

Shaw, R. G. and J. Antonovics. 1986. Density-dependence in *Salvia lyrata*: the effects of experimental alteration of seed densities. *Journal of Ecology* 74: 797-813.

Shaw, R. G. 1987. Density-dependence in *Salvia lyrata*: experimental alteration of densities of established plants. *Journal of Ecology* 75: 1049-1063.

- Shaw, R. G. and J. Antonovics. 1987. The dynamics of an experimental population of *Salvia lyrata*: the population cage approach applied to plants. *New Phytologist* 107: 415-426.
- Mitchell-Olds, T. and R. G. Shaw. 1987. Regression analysis of natural selection: statistical inference and biological interpretation. *Evolution* 41: 1149-1161.
- Shaw, R. G. 1987. Maximum-likelihood approaches applied to quantitative genetics of natural populations. *Evolution* 41: 812-826.
- Tsuji, J. S., R. G. Huey, F. H. Van Berkum, T. Garland, Jr, and R. G. Shaw. 1989. Locomotor performance of hatchling fence lizards (*Sceloporus occidentalis*): quantitative genetics and morphometric correlates. *Evol. Ecol.* B3: 240-252.
- Thompson E. A. and R. G. Shaw. 1990. Pedigree analysis for quantitative traits: variance components without matrix inversion. *Biometrics* 46: 399-413.
- Shaw, R. G. 1991. The comparison of quantitative genetic parameters between populations. *Evolution* 45: 143-151.
- Shaw, R. G. and H. L. Billington. 1991. Comparison of variance components between two populations of *Holcus lanatus*: a reanalysis. *Evolution* 45: 1287-1289.
- Platenkamp, G. A. J., and R. G. Shaw. 1992. Environmental and genetic constraints on adaptive population differentiation in *Anthoxanthum odoratum*. *Evolution* 46: 341-352.
- Thompson, E. A. and R. G. Shaw. 1992. Estimating polygenic models for multivariate data on large pedigrees. *Genetics* 131:971-978.
- Shaw, R. G. 1992. Comparison of quantitative genetic parameters: reply to Cowley and Atchley. *Evolution* 46: 1967-1969.
- Hill, J. P., E. M. Lord, and R. G. Shaw. 1992. Morphological and growth rate differences among outcrossing and self-pollinating races of *Arenaria uniflora* (Caryophyllaceae). *Journal of Evolutionary Biology* 5: 559-573.
- Platenkamp, G.A.J. and R. G. Shaw. 1993. Environmental and genetic maternal effects on seed characters in *Nemophila menziesii*. *Evolution* 47: 540-555.
- Shaw, R. G. and G. A. J. Platenkamp. 1993. Quantitative genetics of response to competitors in *Nemophila menziesii*. *Evolution* 47: 801-812.
- Mitchell, R. J. and R. G. Shaw. 1993. Heritability of floral traits for the perennial wild flower *Penstemon centranthifolius* (Scrophulariaceae): clones and crosses.

- Heredity 71: 185-192.
- Shaw, R. G. and T. Mitchell-Olds. 1993. ANOVA for unbalanced data: an overview. Ecology 74: 1638-1645.
- Shaw, R. G. and N. M. Waser. 1994. Quantitative genetic interpretations of postpollination reproductive traits in plants. American Naturalist 143: 617-635.
- Andersson, S. and R. G. Shaw. 1994. Phenotypic plasticity in *Crepis tectorum* (Asteraceae): genetic correlations across light regimes. Heredity 72: 113-125.
- Montalvo, A.M. and R.G. Shaw. 1994. Quantitative genetics of sequential life-history and juvenile traits in the partially selfing perennial, *Aquilegia caerulea*. Evolution 48: 828-841.
- Shaw, R. G., G. A. J. Platenkamp, F. H. Shaw, R. H. Podolsky. 1995. Quantitative genetics of response to competitors in *Nemophila menziesii*: a field experiment. Genetics 139: 397-406.
- Waser, N. M., R. G. Shaw, and M. V. Price. 1995. Seed set and seed mass in *Ipomopsis aggregata*: variance partitioning and inferences about postpollination selection. Evolution 49: 80-88.
- Shaw, F. H., R. G. Shaw, G. S. Wilkinson, and M. Turelli. 1995. Changes in the genetic variance-covariance: **G** whiz!. Evolution 49: 1260-1267.
- Wilens, C.A., Holt, J.S., Ellstrand, N.C., Shaw, R.G. 1995. Genotypic diversity of Kikuyugrass (*Pennisetum clandestinum*) populations in California. Weed Science 43: 209-214.
- Reznick, D. N., F. H. Shaw, F. H. Rodd, R. G. Shaw. 1997. Evaluation of the rate of evolution in natural populations of guppies (*Poecilia reticulata*). Science 275: 1934-1937.
- Byers, D. L., G. A. J. Platenkamp, and R. G. Shaw. 1997. Variation in seed characters in *Nemophila menziesii*: evidence of a genetic basis for maternal effect. Evolution 51: 1445-1456.
- Podolsky, R. P., R. G. Shaw, and F. H. Shaw. 1997. Population structure of morphological traits in *Clarkia dudleyana*. II. Constancy of within-population genetic variance. Evolution 51: 1785-1796.
- Mitchell, R. J., R. G. Shaw, and N. M. Waser. 1998. Pollinator selection, quantitative genetics, and predicted evolutionary responses of floral traits in *Penstemon centranthifolius* (Scrophulariaceae). International Journal of Plant Sciences 159: 331-337.

- Shaw, R. G., D. L. Byers, and F. H. Shaw. 1998. Genetic components of variation in *Nemophila menziesii* undergoing inbreeding: morphology and flowering time. *Genetics* 150: 1649-1661.
- Hauser, T. P., R. G. Shaw, and H. Ostergard. 1998. Hybridisation between weedy populations of *Brassica campestris* and varieties of oilseed rape (*B.napus*): I. Fitness of F<sub>1</sub> progeny. *Heredity* 81:429-435.
- Waser, N.M., M.V. Price, and R. G. Shaw. 2000. Outbreeding depression varies among cohorts of *Ipomopsis aggregata* planted in nature. *Evolution* 54: 485-491.
- Shaw, R. G., D. L. Byers, and E. Darms. 2000. Spontaneous mutational effects on reproductive traits of *Arabidopsis thaliana*. *Genetics* 155: 369-378.
- Jannink, J.-L., J. H. Orf, N. R. Jordan, and R. G. Shaw. 2000. Index selection for weed suppressive ability in soybean. *Crop Sci* 40: 1087-1094.
- Keightley, P. D., E. K. Davies, A. D. Peters, R. G. Shaw. 2000. Properties of ethylmethane sulfonate-induced mutations affecting life-history traits in *Caenorhabditis elegans* and inferences about bivariate distributions of mutation effects. *Genetics* 156: 143-154.
- Davis, M.B. and R. G. Shaw. 2001. Range shifts and adaptive responses to quaternary climate change. *Science* 292: 673-679.
- Etterson, J. R. and R. G. Shaw. 2001. Constraint to adaptive evolution in response to global warming. *Science* 294: 151-154.
- Shaw, F. H., C. J. Geyer and R. G. Shaw. 2002. A comprehensive model of mutation affecting fitness and inferences for *Arabidopsis thaliana*. *Evolution* 56:453-463.
- Mercer, K., J. Jordan, D. Wyse, and R. G. Shaw. 2002. Multivariate differentiation of quackgrass (*Elytrigia repens*) from three farming systems. *Weed Science* 50: 677-685.
- Neuhauser, C., D. A. Andow, G. Heimpel, G. May, R. G. Shaw, and S. Wagenius. 2003. Community genetics: expanding the synthesis of ecology and genetics. *Ecology* 84: 545-558.
- Shaw, R. G., F. H. Shaw, and C. J. Geyer. 2003. What fraction of mutations reduces fitness: a reply to Keightley and Lynch. *Evolution* 57: 686-689.
- Chang, S.-M. and R.G. Shaw. 2003. The contribution of spontaneous mutation to variation in environmental response in *Arabidopsis thaliana*: responses to nutrients. *Evolution* 57: 984-994.

- Kavanaugh, C.M. and R.G. Shaw. 2005. The contribution of spontaneous mutation to variation in environmental response in *Arabidopsis thaliana*: responses to light. *Evolution* 59: 266-275.
- Davis, M.B., R.G. Shaw, and J.R. Etterson. 2005. Evolutionary responses to changing climate. *Ecology* 86: 1704-1714.
- Heiser, D.A. and R.G. Shaw. 2006. The fitness effects of outcrossing in *Calylophus serrulatus*, a permanent translocation heterozygote. *Evolution* 60:64-76.
- Mercer, K.L., R.G. Shaw, and D.L. Wyse. 2006. Increased germination of diverse crop-wild hybrid sunflower seeds. *Ecol. Appl.* 16:845-854.
- Gomez, N. and R.G. Shaw. 2006. Inbreeding effect on male and female fertility and inheritance of male sterility in *Nemophila menziesii* (Hydrophyllaceae). *American Journal of Botany* 93: 739-746.
- Shaw, R.G. and Chang, S.-M. 2006. Gene action of new mutations in *Arabidopsis thaliana*. *Genetics* 172: 1855-1865.
- Mercer, K. M., D. L. Wyse, and R. G. Shaw. 2006. Effects of competition on the fitness of wild and crop-wild hybrid sunflower from a diversity of wild populations and crop lines. *Evolution* 60: 2044-2055.
- Geyer, C. J., S. Wagenius, and R. G. Shaw. 2007. Aster models for life history analysis. *Biometrika* 94: 415-426.
- Mercer, K. M., R. G. Shaw, D. A. Andow, and D. L. Wyse. 2007. Stress and domestication traits increase the relative fitness of crop-wild hybrids in sunflower. *Ecology Letters* 10: 383-393.
- Lau J.A., Shaw R.G., Reich P.B., P. Tiffin. 2007. Strong ecological but weak evolutionary effects of elevated CO<sub>2</sub> on a recombinant inbred population of *Arabidopsis thaliana*. *New Phytologist* 175: 351-362.
- Lopez, S., F. Rousset, F.H. Shaw, R.G. Shaw and O. Ronce. 2008. Migration load in plants: role of pollen and seed dispersal in heterogeneous landscapes. *J. Evol. Biol.* 21: 294-309.
- Shaw, R.G., C.J. Geyer, S. Wagenius, H.H. Hangelbroek, J.R. Etterson. 2008. Unifying life history analyses for inference of fitness and population growth. *American Naturalist* 172: E35-E47.
- Crozier, L. G., A. P. Hendry, P. W. Lawson, T. P. Quinn, N. Mantua, J. Battin, R. G. Shaw, R. B. Huey. 2008. Potential responses to climate change for organisms

- with complex life histories: evolution and plasticity in Pacific salmon. *Evolutionary Applications* 1:252-270.
- Franks, S. J., Avise, J. C., Bradshaw, W. E., Conner, J. K., Etterson, J. R., Mazer, S. J., Shaw, R. G., Weis, A. E. 2008. The Resurrection Initiative: Storing ancestral genotypes to capture evolution in action. *Bioscience* 58: 870-873.
- Ronce, O., F. H. Shaw, F. Rousset, R. G. Shaw. 2009. Is inbreeding depression lower in maladapted populations? A quantitative genetic model. *Evolution* 63: 1807-1819.
- Marriage T. N., S. Hudman, M. E. Mort, M. E. Orive, R. G. Shaw, J. K. Kelly. 2009. Direct estimation of the mutation rate at dinucleotide microsatellite loci in *Arabidopsis thaliana* (Brassicaceae). *Heredity* 103:310-317.
- Lopez, S., F. Rousset, F. H. Shaw, R. G. Shaw, O. Ronce. 2009 Joint effects of inbreeding and local adaptation on the evolution of genetic load after fragmentation. *Conservation Biology* 23: 1618–1627.
- Ossowski, S., K. Schneeberger, J. I. Lucas-Lledo, N. Warthmann, R. M. Clark, R. G. Shaw, D. Weigel, M. Lynch. 2010. The rate and molecular spectrum of spontaneous mutations in *Arabidopsis thaliana*. *Science* 327: 92-94.
- Wagenius, S., H. H. Hangelbroek, C. E. Ridley, R. G. Shaw. 2010. Biparental inbreeding and inter-remnant mating in a perennial prairie plant: fitness consequences for progeny in their first eight years. *Evolution* 64:761-771.
- Lau, J. A., R. G. Shaw, P. B. Reich, and P. Tiffin. 2010. Species interactions in a changing environment: elevated CO<sub>2</sub> alters the ecological and potential evolutionary consequences of competition. *Evolutionary Ecology Research* 12: 435-455.
- Shaw, R. G. and C. J. Geyer. 2010. Inferring fitness landscapes. *Evolution* 64: 2510-2520.
- Ridley, C. E., H. H. Hangelbroek, S. Wagenius, J. Stanton-Geddes and R. G. Shaw. 2011. The effect of plant inbreeding and stoichiometry on interactions with herbivores in nature: *Echinacea angustifolia* and its specialist aphid. *PLoS One* 6(9): e24762. DOI: 10.1371/journal.pone.0024762
- Wagenius, S., A. Dykstra, C. E. Ridley, and R. G. Shaw. 2012. Seedling recruitment in the long-lived perennial, *Echinacea angustifolia*: a ten year experiment. *Restoration Ecology* 20:352-359. DOI: 10.1111/j.1526-100X.2011.00775.x
- Stanton-Geddes, J. R. G. Shaw, and P. Tiffin. 2012. Interactions between soil habitat and geographic range location affect plant fitness. *PLoS One*7(5): e36015 DOI: 10.1371/journal.pone.0036015

- Rutter, M. T., Roles, A., Conner, J. K., Shaw, R. G., Shaw, F. H., Schneeberger, K., Ossowski, S., Weigel, D. and Fenster, C. B. 2012. Fitness of *Arabidopsis thaliana* mutation accumulation lines whose spontaneous mutations are known. *Evolution* 66: 2335–2339. DOI:10.1111/j.1558-5646.2012.01583.x
- Stanton-Geddes, J., P. Tiffin, and R. G. Shaw. 2012. Role of climate and competitors in limiting fitness across range edges of an annual plant. *Ecology* 93:1604–1613. <http://dx.doi.org.ezp1.lib.umn.edu/10.1890/11-1701.1>
- Shaw, R. G. and J. R. Etterson. 2012. Tansley Review: Rapid climate change and the rate of adaptation: insight from experimental quantitative genetics. *New Phytologist* 195:752–765. (Invited)
- Aguilée, R., F. H. Shaw, F. Rousset, R. G. Shaw and O. Ronce. 2013. How does pollen vs. seed dispersal affect niche evolution? *Evolution* 67: 792-805. DOI: 10.1111/j.1558-5646.2012.01816.x
- Gomulkiewicz, R. and R. G. Shaw. 2013. Evolutionary rescue beyond the models. *Phil. Trans. R. Soc. B* 368:20120093 .
- Stanton-Geddes, J., R. G. Shaw, and P. Tiffin. 2013. Insights from population genetics for range limits of a widely distributed native plant. *Am. J. Bot.* 100: 744-753.
- Geyer, C. J., Ridley, C. E., Latta, R. G., J. R. Etterson, and R. G. Shaw. 2013. Local adaptation and genetic effects on fitness: Calculations for exponential family models with random effects. *Annals of Applied Statistics* 7: 1778-1795.
- Shaw, R. G. and F. H. Shaw. 2014. Quantitative genetic study of the adaptive process. *Heredity* 112: 13-20.
- Lau, J. A., R. G. Shaw, P. Reich and P. Tiffin. 2014. Indirect effects drive evolutionary responses to global change. *New Phytologist* 201: 335-343.
- van der Graaf, A., Wardenaar, R., Neumann, D. A., Taudt, A., Shaw, R. G., Jansen, R. C., Schmitz, R. J., Maria Colomé-Tatché and Johannes, F. 2015. Rate, spectrum and evolutionary dynamics of spontaneous epimutations. *Proc. Nat. Acad. Sci.* 112: 6676-6681.
- Shaw, R. G., S. Wagenius, and C. J. Geyer. 2015. The susceptibility of *Echinacea angustifolia* to a specialist aphid: eco-evolutionary perspective on genotypic variation and demographic consequences. *Journal of Ecology* 103: 809-818.
- Kittelson, P., S. Wagenius, R. Nielsen, S. Qazi, M. Howe, G. Kiefer, and R. G. Shaw. 2015. How functional traits, herbivory, and genetic diversity interact in *Echinacea*: implications for fragmented populations. *Ecology* 96:1877–1886.



- Eck, D. J., R. G. Shaw, C. J. Geyer, and J.G Kingsolver. 2015. An integrated analysis of phenotypic selection on insect body size and development time. *Evolution* 69: 2525-2532.
- Eckberg, J.O., Casler, M.D., Johnson, G.A., Seefeldt, L.L., Blaedow, K.E., and Shaw, R.G. 2015. Switchgrass population and cold-moist stratification mediate germination. *Crop Science* 55: 2746-2752.
- Etterson, J. R., S. J. Franks, S. J. Mazer, R. G. Shaw, N. L. Soper Gorden, H. E. Schneider, J. J. Weber, K. J. Winkler, and A. E. Weis. 2016. Project Baseline: An unprecedented resource to study plant evolution across space and time. *American Journal of Botany* 103: 164 – 173. (Invited).
- Tanner, J.C., J.L. Ward, R.G. Shaw, M.A. Bee. 2017. Multivariate phenotypic selection on a complex sexual signal. *Evolution* 71: 1742–1754.
- Warwell, M.V. and R. G. Shaw. 2017. Climate-related genetic variation in a threatened tree species, *Pinus albicaulis*. *American Journal of Botany* 104: 1205-1218.
- Eckberg, J. O., Johnson, G. A., Seefeldt, L. L., Felton, A. J., Casler, M. D., & Shaw, R. G. 2018. Competitive effects of cultivar and wild switchgrass on other native grasses. *Biological Invasions* 20: 2439-2449. [doi: 10.1007/s10530-018-1711-6](https://doi.org/10.1007/s10530-018-1711-6)
- Pain, R. E., Shaw, R. G., & Sheth, S. N. 2018. Detrimental effects of rhizobial inoculum early partridge pea, *Chamaecrista fasciculata*. *American Journal of Botany* 105: 796-802. [doi: 10.1002/ajb2.1077](https://doi.org/10.1002/ajb2.1077)
- Sheth, S. N., M. W. Kulbaba, R. E. Pain, and R. G. Shaw. 2018. Expression of additive genetic variance for fitness in a population of partridge pea in two field sites. *Evolution* 72: 2537-2545. [doi: 10.1111/evo.13614](https://doi.org/10.1111/evo.13614)
- Warwell, M. V., & Shaw, R. G. 2018. Phenotypic selection on growth rhythm in whitebark pine under climatic conditions warmer than seed origins. *Journal of Evolutionary Biology* 31: 1284-1299. [doi: 10.1111/jeb.13301](https://doi.org/10.1111/jeb.13301)
- Flint, S. A., Jordan, N. R., & Shaw, R. G. 2018. Plant community response to switchgrass (*Panicum virgatum*) population source in establishing prairies. *Ecological Applications* 28: 1818-1829. [doi: 10.1002/eap.1772](https://doi.org/10.1002/eap.1772)
- Shaw, R. G. 2019. From the past to the future: Considering the value and limits of evolutionary prediction. *American Naturalist* 193: 1-10.

- Warwell, M. V., & Shaw, R. G. 2019. Phenotypic selection on Ponderosa pine seed and seedling traits in the field under three experimentally manipulated drought regimes. *Evolutionary Applications* 12: 159-174.
- Weng, M-L, C. Becker, J. Hildebrandt, M. Neumann, M. T. Rutter, R. G. Shaw, D. Weigel, and C. B. Fenster. 2019. Fine-grained analysis of spontaneous mutation spectrum and frequency in *Arabidopsis thaliana*. *Genetics* 211: 703-714.
- Kulbaba, M. W., Sheth, R. E. Pain, R. E., V. M. Eckhart, and R. G. Shaw. 2019. Additive genetic variance for lifetime fitness and capacity for adaptation in an annual plant. *Evolution* 73: 1746-1758.
- Flint, S. A., D. Olofson, N. R. Jordan, and R. G. Shaw. 2019. Population source affects competitive response and effect in a C4 grass (*Panicum virgatum*). *Restoration Ecology* 27: 1317-1326.
- Peschel, A. R., E. L. Boehm, R. G. Shaw. 2020. Estimating the capacity of *Chamaecrista fasciculata* for adaptation to change in precipitation. *Evolution* 75: 73-85.
- Kulbaba, M. W. and R. G. Shaw. 2021. Lifetime fitness through female and male function: influences of genetically effective population size and density. *American Naturalist* 197: 434-447.
- Flint, S. A., R. G. Shaw and N. R. Jordan. 2021. Effects of selection regime on invasive characteristics in an emerging biomass crop, switchgrass (*Panicum virgatum* L.). *Sustainability* 13 (9): article 5045
- Other articles (not refereed):
- McPeck, M.A., D.L., DeAngelis, R.G., Shaw, A.J., Moore, and 10 others. 2009. The Golden rule of reviewing. *Am. Nat.* 173: E155-E158.
- Travisano, M. and R. G. Shaw. 2013. Lost in the Map. *Evolution* 67: 305-314. (Commentary) doi:10.1111/j.1558-5646.2012.01802.x
- Whitlock, M.C., Bronstein, J. L., Bruna, E. M., Ellison, A. M., Fox, C. W., McPeck, M. A., Moore, A. J., Noor, M. A. F., Rausher, M. D., Rieseberg, L. H., Ritchie, M. G., Shaw, R. G. 2016. A balanced data archiving policy for long-term studies. *Trends in Ecology & Evolution* 31: 84–85.
- Shaw, R. G., Moore, A.J., Noor, M., Ritchie, M.G. 2016 Transparency and reproducibility in evolutionary research. 2016. *Evolution* 70: 1433-1434. (published simultaneously in *J. Evolutionary Biology* and *Ecology and Evolution*).
- Hamilton, J. S. Flint, J. Lindstrom, K. Volk, R. Shaw, and M. Ahlering. 2020. Evolution-

ary approaches to seed sourcing for grassland restorations: An organized workshop in Minneapolis, MN, USA, 21 March 2019. *New Phytologist* 225: 2246–2248

Software:

Shaw, R. G. and F. H. Shaw. 1992, 1994. Quercus: programs for quantitative genetic analysis using maximum likelihood. Published electronically on the Internet, <http://biosci.cbs.umn.edu/eeb/quercus.html>.

Invited Research Presentations:

1987 Michigan State University, Ecology and Evolutionary Biology Program  
1987 Kellogg Biological Station  
1987 Second International Conference on Quantitative Genetics, Raleigh, NC  
1987 University of California, San Diego, Population Biology Group  
1987 University of California, Irvine, Department of Ecology and Evolutionary Biology  
1987 Pennsylvania State University, Department of Biology  
1988 University of California, Santa Barbara, Department of Biological Sciences  
1988 University of California, Davis, Ecology Group  
1989 University of California, Riverside, Statistics Department  
1989 University of Illinois, Urbana-Champaign, Department of Ecology, Ethology, and Evolution  
1989 Cornell University, Section of Ecology and Systematics  
1989 Genetics Society of America, Annual Meeting, Workshop on Genetics of Conservation  
1990 California State University, Long Beach, Department of Biology  
1990 San Diego State University, Department of Biology  
1992 University of Minnesota, Department of Ecology, Evolution, and Behavior  
1992 University of North Carolina, Department of Biology  
1993 Gordon Research Conference, Quantitative Genetics and Biotechnology  
1993 University of Minnesota, Department of Agronomy and Plant Genetics  
1993 McGill University, Montreal, Department of Biology  
1993 West Virginia University, Department of Biology  
1993 University of Chicago, Department of Ecology and Evolution  
1993 Midwest Population Biology Conference, University of Kansas  
1994 Kellogg Biological Station, Michigan State University, Ecology and Evolutionary Biology Program  
1995 University of Edinburgh, Institute for Cell, Animal and Population Biology, Genetics  
1996 University of Edinburgh, Institute for Cell, Animal and Population Biology, Evolution  
1997 10th meeting on Plant Population Biology of the Gesellschaft für Ökologie, Zurich  
1998 University of Wisconsin, 3rd Annual Sewell Wright Symposium  
1999 University of Minnesota, Plant Biological Sciences Colloquium

1999 Symposium on Spontaneous mutation, European Society of Evolutionary Biology,  
Barcelona

1999 University of South Dakota, Department of Biology

2000 University of California, Davis, Evolution and Ecology Seminar

2000 NCR21 meeting (Plant and animal breeders from midwest land-grant universities),  
St. Paul.

2001 University of Minnesota, Department of Physiology

2001 Minnesota Agricultural Extension Agents and Specialists

2001 Washington State University, Department of Biology, invited by graduate students

2001 University of Southern California, Department of Molecular Biology

2002 University of Minnesota, Ecology, Evolution and Behavior

2002 Université de Montpellier II, Institut des Sciences de l'Evolution

2003 University of Edinburgh, ICAPB, Genetics

2003 University of Fribourg, Ecology and Evolution

2004 Kellogg Biological Station, Michigan State University

2004 Initiative in Organismal Interactions Retreat, Washington State University and  
University of Idaho

2004 Plant Biological Sciences Colloquium, University of Minnesota

2005 Department of Biology, University of Minnesota-Duluth, March 4

2005 Center for Population Biology, University of California, Davis. (Distinguished  
speaker, 5 talks, April 11-15; Invited by graduate students in CPB)

2005 Department of Biology, Carleton College, October 24

2006 Dept. of Ecology, Evolution and Organismal Biology, Iowa State University.

2006 Symposium: Evolutionary consequences of anthropogenic changes to Pacific  
salmon

2007 Elroy L. Rice Lecture in Ecology, University of Oklahoma

2007 Yodzis Colloquium, University of Guelph, Ontario Canada

2008 Department of Biological Sciences, University of Notre Dame

2008 Department of Biology, University of Virginia

2009 Instituto de Ecología, Universidad Autónoma de México

2009 Department of Biology, Hamline University

2010 Department of Horticultural Sciences, University of Minnesota

2010 Atwood Lecture (Invited by graduate students), Dept of Ecology and Evolutionary  
Biology, University of Toronto

2010 Meeting: Evolutionary potential in natural populations, Aarhus Denmark

2010 Institute of Evolutionary Biology, University of Edinburgh

2011 CEFE, CNRS Montpellier (2/4/2011)

2011 Institut des Sciences de l'Evolution Montpellier, Université de Montpellier II (2/14/2011)

2011 Evolutionary Biology Centre, University of Uppsala (3/15/2011)

2011 Department of Biology, University of Manchester UK (5/9/2011)

2011 Department of Biology, University of York UK (5/12/2011)

2011 School of Biology, University of St. Andrews UK (5/13/2011)

2011 Department of Biology, University of Iowa (10/28/2011)

2012 Biology Department, Winona State U. (3/22/2012)

2012 webinar, genetic sources for prairie restorations (11/29/2012)

2012 Plenary speaker, Crop Wild Relative Genomics: a Key to Unlocking Diversity

- (2/12/2012)
- 2013 2nd Annual Cornell University Plant Breeding Symposium: Crop improvement in a changing environment. (3/8/2013)
- 2014 Department of Ecology, Evolution, and Organismal Biology, Iowa State University (3/7/2014)
- 2014 Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville (3/28/2014)
- 2015 Department of Ecology and Evolution, University of Chicago, (2/9/2015): 1st invitee in new program empowering post-docs to choose/invite speaker
- 2015 Symposium for Minnesota Native Plant Society (3/15/2015)
- 2015 Department of Ecology and Evolution, Michigan State University (4/9/2015)
- 2015 Kellogg Biological Station (4/10/2015)
- 2016 The Nature Conservancy, Minneapolis (1/28/2016)
- 2016 St. Louis Ecology and Evolution Conference – Keynote address (9/17/2016)
- 2017 University of Missouri – Columbia (2/28/2017)
- 2017 Colorado State University: CSU Distinguished Ecologist Seminar (April 18-20)
- 2017 University of Kansas (8/29/2017)
- 2017 JoeFest (6/22/2017) celebrating the career of Joe Felsenstein
- 2018 Statistics, Monte Carlo, and So Much More: A Conference in Honor of Charlie Geyer, "Charlie and evolutionary statistical genetics," Institute for Research on Statistics and its Applications, Minneapolis. (April 6, 2018).
- 2018 U. Georgia Plant Center Symposium. Advancing Plant Sciences: Plants in an Evolving World, "Breeding for Environmental Change: Lessons from Evolutionary Quantitative Genetics," DuPont Pioneer, (May 9, 2018).
- 2018 II Joint Congress on Evolutionary Biology, "Fitness effects of mutations in plants: setting the stage for evolutionary change," European Society of Evolutionary Biology, Society for the Study of Evolution, American Society of Naturalists, Montpellier, France. (August 20, 2018).
- 2019 University of Minnesota-Duluth, Biology, Darwin Day talk. (February 8, 2019)
- 2019 McGill University, Biology Department. Marsden Lecture. (April 25, 2019)
- 2020 Annual Science Studies Colloquium, Minnesota Center for Philosophy of Science (Jan 24, 2020)
- 2020 Departmental seminar, EEB, UMN (Feb 12 2020)
- 2021 Auburn University, Biology Department (March 11 2021)

Submitted presentations:

- Contributed talks at the joint meeting of the Society for the Study of Evolution and the American Society of Naturalists in 1981, 1983, 1985, 1992, 1995, 1997 (2), 1998 (2), 2004 (1 talk, co-author on 3 posters), 2005 (1 talk, co-author on 1 poster), 2008 (1 talk, co-author on 3 others), 2009 (1 talk), 2010 (1 talk), 2012 (poster), 2014 (talk), 2017 (talk), 2018 (talk)
- Contributed talks at the meeting of the British Population Genetics Group: Dec 1985, Jan 2011

## Grants and Contracts - Funded

Genetic Basis of Plant Interactions, 1989 - 1992. NSF. \$145,000. PI Shaw.

Maximum likelihood analysis of Quantitative Genetic Data, 1991 - 1993. NSF \$58,330. PI Shaw.

Mating Success in Montane Wildflowers: Postpollination Mechanisms and Relative Fitness Contribution of Differential Outcrossing Distance, (P.I. N.M. Waser, coPIs, M.V. Price and R.G. Shaw), 1989 - 1993. NSF. \$214,000.

Patterns of Genetic Variation in Natural Populations: Chromosomal, Single Gene and Polygenic, 1992-1994. NSF. \$5,330. (Doctoral Dissertation Improvement Award for Robert Podolsky, PI, Shaw).

Estimation of Quantitative Genetic Parameters in Inbred Populations", 1993 - 1995. Pioneer Hi-Bred International, Inc. \$60,000. PI, Shaw)

STAR Graduate Fellowship for Julie Otterson, 1995-1998, EPA \$23,262.

Underwood Fund Grant, 1995 - 1996. BBSRC(UK) \$8000. PI, Shaw

Mutational effects on quantitative traits of *Arabidopsis thaliana*, 1996 - 2000. NSF. \$264,000. PI, Shaw.

Spontaneous mutation affecting quantitative traits in *Arabidopsis thaliana*, 2000-2005. NSF. \$404,000. PI, Shaw.

Biocomplexity: Evolution and ecology of perturbed interactions: modeling disequilibria in time and space, 2000 - 2005, NSF PI C. Neuhauser, PI, DN Alstad, G. May, P. Graham, RG Shaw co-PIs. \$2,965,346.

DISSERTATION RESEARCH: The effect of inbreeding on nitrogen use efficiency, 2002 -2003. NSF. \$8,000, co-PI with D. Alstad, for E. Lonsdorf.

Genetic basis of biomass accumulation in the model plant *Arabidopsis thaliana* grown in ambient and elevated CO<sub>2</sub> environments. \$25,000. 2004-2005. University of Minnesota Initiative for Renewable Energy and the Environment PI P. Tiffin (PI), co-PIs, R. Shaw and P. Reich.

Natural selection and evolutionary constraints in an elevated CO<sub>2</sub> environment. \$237,452 2004 - 2006. NSF. co-PI with P. Tiffin (PI) and co-PI P. Reich

LTREB: The interplay of genetic and numerical dynamics in severely fragmented prairie populations of *Echinacea*, \$225,000 2006-2011. NSF. PI Shaw, collaborative with S. Wagenius.

IGERT: Risk Analysis for Invasive Species and Genotypes, \$3,000,000; 2007-2012. NSF. PI R. Newman, co-PIs, D. Andow, S. Galatowitsch, A. Kapuscinski, RG Shaw.

LTREB: The interplay of genetic and numerical dynamics in severely fragmented prairie populations of *Echinacea*, \$225,000; 2011-2016. NSF. PI Shaw, collaborative with S. Wagenius.

Project Baseline, a living plant genome reserve for the study of evolution, \$1,199,984; 2011-2015. NSF. PI Eттerson (UM-Duluth), co-PI S Franks (Fordham), Mazer (UCSB), Shaw.

Potential for adaptation, and its realization, in natural plant populations, \$700,000; 2013-2017. NSF. PI R.G. Shaw.

Prairie Sustainability Through Seed Storage, Beneficial Microbes, and Adaptation, \$600,000; 2014-2017. Environmental and Natural Resources Trust Fund (MN). PI R.G. Shaw, co-Pis, G. May, D. Wyse.

Collaborative Research: LTREB: Feedbacks between evolution and demography in severely fragmented prairie populations of *Echinacea angustifolia*, \$200,000; 2016-2021. NSF. PI Shaw, collaborative with S. Wagenius.

Preserving Minnesota Prairie Plant Diversity – Phase II, \$900,00; 2017-2020. LC-CMR. PI Shaw, co-PIs G. May, M. Kuchenreuther (UM-Morris).

Collaborative Research: LTREB: Feedbacks between evolution and demography in severely fragmented prairie populations of *Echinacea angustifolia*, \$539,390; 2021-2026. NSF. PI Shaw, collaborative with S. Wagenius.

Sustaining Prairies Against Climate Change, 77,866.00, Jan 1 2021 – June 30 2022. Grant in Aid, Office of the Vice President for Research, UMN, PI Georgiana May, co-PI Ruth Shaw.

### **Grants and Contracts – Submitted**

Preserving Minnesota Prairie Plant Diversity – Phase III, \$1,300,00; 2020-2023. LCCMR. PI Shaw, co-PIs G. May, M. Kuchenreuther (UM-Morris).

### **Teaching and Advising Activities**

Courses taught:

Biol 3008: Ecology and Evolution (60-80 students) W97, W98, W99

Biol 3409: Evolution (70-120 students, cotaught with S. Lanyon, A. Dean or G. May), F99, F00, F01, S06, S07, S08, S21 (cotaught with G. May and W. Harcombe)

EEB 5042: Quantitative Genetics (15-30 students) S97, S98, S99, F06, F07, F08, F09, F11, F12, F13, F14, F15, F16, F18, F19, F20

EEB 5033: Population and Quantitative Genetics (20-30 students, cotaught with J. Curtsinger in F93, F94, F99, F00, F01, F03; taught solo, F04, F05.

EEB 8390: Graduate seminars: Topics include Plant Evolutionary Biology, Practicum in Quantitative Genetics, Community Genetics (with Community Genetics faculty) Professional Issues (with Hobbie and Lanyon [2000], with Cotner and Lanyon [2004]), Advanced Topics in Quantitative Genetics, 1998, 2005, 2015.

EEB 8980: Proposal writing seminar for second year EEB grad students (6-12 students F11, F12, F13, F14, F15, F16

ISG 8001: Seminar on Introduced Species and Genotypes S08, F09, F11, F12

ISG 5010: Risk Analysis for Introduced Species and Genotypes (one of 12 co-instructors) F08, F09

AGRO/Hort 8280: Orientation to Scientific Thought (10 students) F16; Agroecology (14 students) F19 (with 1 faculty and 2 graduate student co-instructors).

EEB 8500: Proposal writing seminar for first year EEB grad students (3 students)

### **Graduate advising:**

Member of graduate faculties: Ecology, Evolution, and Behavior; Plant and Microbial Biology (formerly Plant Biological Sciences); Conservation Biology; Applied Plant Sciences; Invasive Species and Genotypes (graduate minor)

Students advised:

Robert Podolsky, Plant Genetics (UC-Riverside), Ph.D. 1994. "Population genetic structure of *Clarkia dudleyana*". Director of Informatics and Biostatistics, Beaumont Health.

Elizabeth Svenson, Ecology (co-advised with P. Morrow), M.S. 1995. "Response of prairie species and old-field vegetation in an experimental restoration from seed".

Julie Etterson, Ecology, Evolution and Behavior, Ph.D. 2000. "Evolutionary potential of



the annual legume, *Chamaecrista fasciculata*, in relation to global warming." Professor, U. Minnesota-Duluth.

David Heiser, Ecology, Evolution and Behavior, M.S. 2000. "Fitness effects of outcrossing and the occurrence of insect-mediated cross-pollination in *Calylophus serrulatus*, a prairie perennial". Director of Student Programs, Peabody Museum, Yale University.

Christine Kavanaugh, Plant Biological Sciences, M.S. 2000. "The effects of spontaneous mutation on fitness and response to shading in *Arabidopsis thaliana*." Monsanto.

Nadilia Gomez, Plant Biological Sciences, M.S. 2001 (G. May, co-advisor). "Effect of inbreeding on male and female fertility of *Nemophila menziesii*." Ph.D. completed in Applied Plant Sciences, U.M. Currently staff at Dupont-Pioneer.

Stacey Halpern, Ecology, Evolution and Behavior Ph.D. 2003 (co-advised with P. Morrow). "Evaluating the potential for adaptation to climate change in *Lupinus perennis*." Professor, Pacific University.

Eric Lonsdorf, Ecology, Evolution and Behavior Ph. D. 2003 (co-advised with D. Alstad). "Consequences of inbreeding in fragmented habitat for plant populations and communities." Visiting Assistant Professor of Biology, Franklin and Marshall College.

Jason Hill, Plant Biological Sciences, Ph. D.2004. "Effects of spontaneous mutation on fitness of *Arabidopsis thaliana*". Associate Professor, Bioproducts and Biosystems Engineering, U. Minnesota-TC.

Kristin Mercer, Applied Plant Sciences Ph.D. 2005 (co-advised with D. Wyse). "Seed germination, growth and fitness in crop-wild sunflower hybrids from multiple genetic backgrounds: genetic and environmental effects on evolution of wild populations." Associate Professor, Ohio State Univ.

Laurie Stone, Plant Biological Sciences, M.S. 2007 (co-advised with P. Tiffin). "CO<sub>2</sub>, N, and Biodiversity Effects on Phenotypic Selection and Demography of Native Grassland Perennials."

Rachel Mills (Plant Biological Sciences), M.S. 2008. Evolutionary divergence of the invasive prairie species *Melilotus officinalis*. Currently Environmental consultant in Anchorage, Alaska.

John Stanton-Geddes (EEB, coadvisor Tiffin), Ph.D. 2011. Limits to range expansion in the native annual legume, *Chamaecrista fasciculata*. Currently in industry.

Amy Dykstra (PBS), Ph.D. 2013. Seedling recruitment in fragmented populations of *Echinacea angustifolia*. Currently Associate Professor, Bethel University.

Gina Quiram (EEB, coadvisor Cavender-Bares), Ph.D. 2013. The ecology and evolution of an invasive perennial plant (*Lythrum salicaria*) in the context of biological control by specialist herbivores (*Galerucella spp.*). Currently staff in MN Department of Natural Resources.

Marcus Warwell (EEB), Ph.D. 2015. Genecology and phenotypic selection in Whitebark pine (*Pinus albicaulis*) and Ponderosa pine (*Pinus ponderosa*) under warm-dry climate. US Forest Service.

Shelby Flint (Conservation Biology, coadvisor Jordan), Ph.D. 2015. Translocating *Panicum virgatum* L.: performance, community impact and competitive outcome. Currently tenure track faculty member at Southwest Minnesota State University.

Amber Eule-Nashoba (PBS), Ph. D. 2016. Fitness and adaptive capacity in a Minnesota prairie.

Samantha Delserra (EEB), Ph.D. co-advisor 5/2016 – 7/2017). Withdrew.

Nicholas Goldsmith (EEB), Ph.D. 2018. Human Impacts on Minnesota Prairie Genetics: Salted Environments, Echinacea Hybrids, and Local Seed Sourcing. Currently, AAAS public policy fellow at NSF.

**Current graduate advisees:** Anna Peschel (Ph.D., Conservation Biology), Naomi Rushing (Ph.D.,EEB), Rachel Pain (Ph.D. EEB, co-advisor with Jessica Hellman), Amy Waananen (Ph.D., EEB), Wesley Braker (Ph.D., Conservation Biology).

**Current graduate committees (in addition to advisees, above):**

Husain Agha (Ph.D., PMB), Mara DeMers (Ph.D. PBS), Josie Griffin (Ph.D., EEB), Alex Harkness (Ph.D., EEB), Cedric Ndinga-Muniana (Ph.D., PMB), Kelsey Peterson (Ph.D., PMB), Lea Richardson (Ph.D., Northwestern University)

**Postdoctoral Associates:**

Gerrit A. J. Platenkamp, postdoctoral funded by my NSF grant 1988-1991, currently environmental consultant.

Stefan Andersson, postdoctoral funded by Swedish NSF 1992-1993, currently Professor at Lund University, Sweden.

Diane Byers, postdoctoral funded by my setup funds and NSF grant 1993-1998, Currently Associate Professor at Illinois State University.

Shumei Chang, postdoctoral funded by NSF grant 1999-2001. Currently, Professor at Univ. of Georgia.

Stuart Wagenius, postdoctoral funded by NSF biocomplexity grant, 9/2000 - 5/2001.

Currently, Conservation scientist, Chicago Botanic Garden.

Helen Hangelbroek, postdoctoral funded by NSF biocomplexity grant, 2003 - 2005.

Jen Lau, postdoctoral funded by NSF grant (Peter Tiffin, PI, P. Reich and R. Shaw, co-PIs), (2005-2007). Currently Associate Professor, Indiana University.

Caroline Ridley, postdoctoral funded by NSF LTREB grant (2008-2009). Currently at US Environmental Protection Agency.

Seema Sheth, postdoctoral funded by NSF grant (R.G. Shaw, PI), 2014 – 2015. Currently Assistant Professor at North Carolina State University.

Shelby Flint, postdoctoral funded by Environment and Natural Resources Trust Fund (2015 - 2019). Co-mentored by G. May. Currently Assistant Professor at Southwest Minnesota State University.

Kane Keller, postdoctoral funded by Environment and Natural Resources Trust Fund (2015 -2017). Co-mentor with G. May as primary advisor. Currently Assistant Professor at California State University – Bakersfield.

Mason Kulbaba, postdoctoral funded by NSF grant (R.G. Shaw, PI), (2016 –2018).

Adrien Pozzi, postdoctoral funded by Environment and Natural Resources Trust Fund (2018 -). Co-mentor, with G. May as primary advisor.

Laura Grieneisen (Grand challenges, 2017 - 2020). Co-mentor with R. Blekhman as primary advisor.

### **Undergraduate advising:**

Since 1993, 28 undergraduates have gained experience in research by assisting in my research program. In addition, the following undergraduate students have conducted independent research under my supervision:

Julie Etersson (summa cum laude, 1994), Professor, University of Minnesota-Duluth

Jon Poppele (magna cum laude, 1997)

Jennifer Larson

Christy Olson

Emily Wennerlind (cum laude, 1998)

Kelly Wilson

Abe Gol (spring, 2004)

Jeremy Kobany (2004-5)

Karl Tinsley (2006)

Allegra Halverson (2009), REU

Hillary Lyons (2010), REU  
Lee Rodman (2011), REU  
Shona Sanford-Long (2012), REU  
Tao Li (2012-2013), UROP  
Xiang Li (2012-2014)  
Sarah Baker (2013), REU  
Dana Olofson (2013-2014), Honors  
Mindi Depaola (2013-2014)  
Allison Grecco (2014), REU  
Sam Weaver (2015), REU, currently Ph.D. student in EEB, UMN  
Gina Hatch (2015), REU  
Mallory Thomas (2015), UROP  
Carlee Steppe (2016), REU  
James Eckhardt (2016), REU  
Will Reed (2014 - 2018), REU, Directed Research, currently Ph.D. student at U. Colorado  
Emma Boehm (2016 - 2019), UROP, REU, currently Ph.D. student at Indiana University  
Anja Holtz (2017), Directed Research  
Alli Olson (2017), Directed Research  
Amanda van den Ligt (2019)

### **Visiting Professional Associates:**

Thure Hauser, Postdoc in Riso, Denmark. visitor for several weeks in 1996,  
Philip Service, Associate Professor, Northern Arizona Univ. sabbatical visitor fall, 1997.  
Alejandra Ramos, Depto de Ecologia Evolutiva, Inst de Ecologia UNAM, May 2010  
Cynthia Norton, Professor, Biology, St. Catherine's University, summer, fall 2013  
Pamela Kittelson, Professor in Biology, Gustavus Adolphus College, sabbatical 2013-4  
(partially funded by supplement to NSF LTREB award).  
Christina Caruso, Associate Professor, U. of Guelph, sabbatical 2018-9.

### **Service at University of Minnesota**

1993-1994

Seminar Committee, EEB, chair

Crop-weed ecologist search for Agronomy and Plant Genetics (outside member)

1994-1995

Advisory Committee, EEB

Greenhouse use committee, EEB

1995-1996

Sabbatical: University of Edinburgh

1996-1997

Curriculum Committee, EEB, chair [conversion to semesters]

Salary Committee, EEB  
Long-range planning committee, EEB  
Greenhouse planning committee, campus

1997-1998

Co-leader (with N. Jordan) of University of Minnesota Center for Community Genetics  
Salary Committee, EEB, chair  
Curriculum Committee, EEB, chair  
Committee to convert to salary ladder, EEB  
Centralized Greenhouse Oversight Committee (campus)  
Committee to design new greenhouses for the St. Paul Campus  
Ichthyology search for Bell Museum and Fisheries and Wildlife (outside member)  
Awards Committee, Ecology graduate program  
Curriculum Committee, Plant Biological Sciences graduate program  
Task force for establishment of Department of Plant and Fungal Biology

1998-1999

Advisory Committee, EEB  
Search for Department Head, EEB  
Seminar Committee, EEB  
Post-Tenure Review Committee, EEB  
Committee to convert to salary ladder, EEB  
Centralized Greenhouse Oversight Committee, campus  
Committee to design new greenhouses for the St. Paul Campus

1999-2000

Advisory Committee, EEB  
Long-range planning Committees, EEB  
Awards Committee, Ecology graduate program  
Centralized Greenhouse Oversight Committee, campus  
Committee to design new greenhouses for the St. Paul Campus

2000-2001

Chair, Search Committee for Endowed Chair in Evolutionary Biology, EEB  
Centralized Greenhouse Oversight Committee, campus  
Committee to design new greenhouses for the St. Paul Campus  
Faculty Consultative Committee, CBS  
Colloquium Committee, Plant Biological Sciences

2001-2002

Search Committee for two spousal hires, EEB  
Seminar Committee, EEB  
Ombudsperson for 2nd floor, EEB  
Search Committee for five faculty positions in Genomics and Development, Plant  
Biology  
Imaging Center Oversight Committee, CBS

Executive Committee, NIH Cardiovascular Disease Training Grant, AHC

2002-3

Sabbatical: Université de Montpellier II, France

2003-4

Advisory Committee, EEB

Ombudsperson for 5th floor, EEB

Pre-tenure review Committee, EEB

Awards Committee, EEB Graduate Program

Recruitment Committee, Plant Biological Sciences Graduate Program

Committee to design new greenhouses for the St. Paul Campus

TA award committee, CBS

Organizer of ad hoc meetings (monthly, Spring semester) of evolution faculty to discuss recruitment and curriculum

Participant in Brown bag lunches to discuss plans for microbial evolution

2004-5

Search committee for faculty hire in evolution, EEB

Advisory Committee, EEB

Ombudsperson for 5th floor, EEB

Post-tenure review Committee, EEB

Interim Associate Director of Graduate Studies, PBS (Jan-Aug)

2005-6

Search committee for faculty hire in evolution, EEB

Post-tenure review Committee, EEB

Admissions Committee, EEB Graduate Program

2006-7

Admissions Committee, EEB Graduate Program

Mentoring Committee, EEB (Chair)

2007-2008

Promotion and Tenure Committee, EEB

Mentoring Committee, EEB

Awards Committee, PBS

Executive Committee, ISG-IGERT

2008-2009

Promotion and Tenure Committee, EEB

Advisory Committee, EEB

Steering Committee, PBS

Promotion and Tenure Committee, CBS

Executive Committee, ISG-IGERT

2009-2010

Promotion and Tenure Committee, EEB  
Advisory Committee, EEB  
Promotion and Tenure Committee, College of Biological Sciences (chair)  
Steering Committee, PBS  
Executive Committee, ISG-IGERT  
Executive Committee, Center for Foundations of Evolutionary Biology

2010-2011

Sabbatical: University of York, UK and Université de Montpellier II, France

2011-2012

Promotion and Tenure Committee, EEB  
Post-tenure Review Committee, EEB  
Cluster hire process: drafted proposal for evolution hires, helped edit proposal for theory hires  
Executive Committee, ISG-IGERT  
Executive Committee, Center for Foundations of Evolutionary Biology  
Mentor for David Moeller (Plant Biology)

2012-2013

Elected member of the University Senate (to 2015)  
Co-chair, Search Committee for two faculty in quantitative and theoretical biology  
Interim DGS, EEB  
Post-tenure Review Committee, EEB, Chair  
Executive Committee, Center for Foundations of Evolutionary Biology  
Mentor for David Moeller (Plant Biology)

2013-2014

Elected member of Advisory Committee, EEB  
Elected member of the University Senate (to 2015)  
Executive Committee, Center for Foundations of Evolutionary Biology  
Mentor for David Moeller (Plant Biology) and Emilie Snell-Rood (EEB)

2014-2015

EEB representative to CBS Salary Equity Review Committee  
Elected member of Advisory Committee, EEB  
Elected member of the University Senate (to 2015)  
Executive Committee, Minnesota Center for Philosophy of Science  
Executive Committee, Center for Foundations of Evolutionary Biology  
Mentor for David Moeller (Plant Biology) and Emilie Snell-Rood (EEB)

2015-2016

Elected member of the University Senate (to 2015)  
Executive Committee, Minnesota Center for Philosophy of Science  
Executive Committee, Center for Foundations of Evolutionary Biology  
Mentor for David Moeller (Plant Biology) and Emilie Snell-Rood (EEB)  
Post-tenure Review Committee, EEB (Chair)

Committee to reconsider the merit process (EEB)  
Editorial Board of the Minnesota Studies in the Philosophy of Science, July 2015 -

2016-2017

Interim Head of EEB, June 20 – Dec 31 2016

Post-tenure review committee, EEB, chair.

Executive Committee, Minnesota Center for Philosophy of Science

Governing Board, Minnesota Center for Philosophy of Science

Executive Committee, Center for Foundations of Evolutionary Biology

Mentor for David Moeller (Plant Biology) and Emilie Snell-Rood (EEB)

Editorial Board of the Minnesota Studies in the Philosophy of Science, July 2015 -

Elected member of Advisory Committee, EEB (Spring 2017)

2017-2018

Sabbatical

Executive Committee, Minnesota Center for Philosophy of Science

Governing Board, Minnesota Center for Philosophy of Science

2018-2019

Sabbatical

Executive Committee, Minnesota Center for Philosophy of Science

Governing Board, Minnesota Center for Philosophy of Science

Mentor for Paloma Gonzalez-Bellido

EEB strategic planning:

chair of Evolution group, participant in Community and Diversity group

CLA, Interdisciplinary Collaborative Workshop: 'After Janus': participant

2019-2020

Faculty Evaluation Committee, Department of Ecology, Evolution, and Behavior

Mentor for Paloma Gonzalez-Bellido

Executive Committee, Minnesota Center for Philosophy of Science

Governing Board, Minnesota Center for Philosophy of Science

Editorial Board of the Minnesota Studies in the Philosophy of Science, July 2015 -

American Association of University Professors-UMTC, Member-at-large

2020-2021

Director of Graduate Studies, Ecology, Evolution and Behavior

Executive Committee, Minnesota Center for Philosophy of Science

Governing Board, Minnesota Center for Philosophy of Science

Editorial Board of the Minnesota Studies in the Philosophy of Science, July 2015 -

American Association of University Professors-UMTC, Member-at-large

### **Professional Affiliations and Service**

American Genetic Association: Editorial Board, Journal of Heredity, 1992-1995; elected member of Council, 1999-2001



American Society of Naturalists: Editorial Board, *American Naturalist*, 1993-1997; Committee to name recipient of Sewall Wright Award, 1995, 2001; Committee to name recipients of Young Investigator Prizes, 1995, 1998 [Chair]; Committee to name new Editor-In-Chief for *American Naturalist*, 2007; Handling Editor, *American Naturalist*, 2008-2011

Genetics Society of America: Editorial Board, *Genetics*, 1994-2001

Society for the Study of Evolution: Member; Editorial Board, 1995-1997; Member of the Council, 1997-1999; Member of Finance Committee, 1999-2001; Vice President, 2005; member, planning committee for 2008 meeting held in Minneapolis; Editor-In-Chief, *Evolution*, June 2013 – June 2016; President-elect, Jan. 1 2019, President, Jan 1 2020, Past President, Jan 1 2021.

Editor, *New Phytologist*, 2004-2009

NSF - Population Biology Panel, Spring 1993, Fall 1997, Spring 2004; RTG site visit, Spring 1992; Committee of Visitors, Spring 1995; STC site visit, Jan 1999; IRC-EB panel, Spring 1999, Spring 2000; Evolutionary Synthesis Center workshop, Spring 2002; Population and Evolutionary Processes Panel, Spring 2006, Spring 2008; Evolutionary Genetics Panel, Fall 2011.

Reviewer of grant proposals for NSF, USDA, NSERC (Canada), RCENR (Finland; chaired grant panel on Ecology, Sept 2002)

NIH (Program Project Review Panel, Fall 1994; Genetic Variation and Evolution Panel, Spring 2006, Fall 2007, Fall 2017, reviews of single proposals, spring and summer 2009)

Reviewer of manuscripts for *The American Naturalist*, AoB PLANTS, *Canadian Journal of Botany*, *Ecological Monographs*, *Ecology*, *Evolution*, *Genetical Research*, *Genetics*, *International Journal of Plant Science*, *Journal of Evolutionary Biology*, *Livestock Production Science*, *Nature*, *New Phytologist*, *Oikos*, *Proceedings of the National Academy of Sciences*, *Proceedings of the Royal Society of London*, *Science*, *Trends in Ecology and Evolution*.

Detailed comment on book chapters for Sinauer, W.H. Freeman, and Roberts and Co.

Evolutionary Biology Advisory Committee of the Department of Ecology, Evolution and Environmental Biology at Columbia University, 2003-2004

Board of Advisors, Initiative in Organismal Interaction, Washington State University and University of Idaho, 2004-2005

Committee on Native grasses and forbs: Minnesota Crop Improvement Association, 2009-2010, 2012-2021.

Mini-symposium: Establishing Climate-Adapted Prairies: Scientific Consensus on Sourcing Seed for Prairie Restoration, March 21 2019, co-organizer and local host. ~25 attendees.