

EDMUND DARRELL BRODIE III

Department of Biology
P.O. Box 400328
University of Virginia
Charlottesville, VA 22904

Phone: (434) 243-1068
Fax: (434) 982-5626
E-mail: bbrodie@virginia.edu
Internet: <http://faculty.virginia.edu/brodie>

EDUCATION

- 1985 Princeton University, B.A., Biology (Honors)
- 1987 University of Chicago, M.S., Evolutionary Biology
- 1991 University of Chicago, Ph.D., Ecology and Evolution

PROFESSIONAL APPOINTMENTS

- 1991, 1992 Visiting Professor, Organization for Tropical Studies, Costa Rica
- 1991-93 Miller Fellow, University of California, Berkeley
- 1993-97 Assistant Professor, T. H. Morgan School of Biological Sciences, University of Kentucky
- 1997-00 Assistant Professor, Department of Biology, Indiana University
- 1997- 2006 Core Faculty, Center for the Integrative Study of Animal Behavior, Indiana University
- 2000- 03 Associate Professor, Department of Biology, Indiana University
- 2002 - 06 Director, Evolution, Ecology and Behavior Program, Indiana University
- 2003 - 06 Professor, Department of Biology, Indiana University
- 2019 - 22 Director of Diversity, Equity and Inclusion, Department of Biology, University of Virginia
- 2006 - Director, Mountain Lake Biological Station & Professor, Department of Biology, University of Virginia**
- 2012 - B. F. D. Runk Professor, University of Virginia**

HONORS

AWARDS

- 1990 Best Student Paper Prize, Herpetologists' League
- 1991 Outstanding Graduating Student, Department of Ecology and Evolution, University of Chicago
- 1991 William Rainey Harper Dissertation Fellowship, University of Chicago
- 1992 Young Investigator Prize, American Society of Naturalists
- 1993 NSF-NATO Postdoctoral Fellowship to Oxford University, United Kingdom (Declined)
- 1994 NSF-Presidential Faculty Fellows Award Nominee, University of Kentucky
- 1996 NSF-CAREER Award
- 2002 Wallace-Franklin Medal, Indiana University
- 2002 Presidential Award, American Society of Naturalists (with A. Agrawal and M. Wade)
- 2004 Nominated for Howard Hughes Medical Institute Investigator, Indiana University
- 2012 Fellow, American Association for the Advancement of Science
- 2017 Atwood Lecturer, University of Toronto
- 2017 E. O. Wilson Naturalist Award (now the Distinguished Naturalist Award), American Society of Naturalists
- 2022 Distinguished Herpetologist, Herpetologists' League
- 2024 Society of Fellows, University of Virginia

TEACHING AWARDS

- 2000 Recognition of Teaching Excellence Award, Biology Department, Indiana University

- 2005 Senior Class Award for Teaching Excellence in Biology and Dedication to Undergraduates, Indiana University
- 2006 Seniors' Choice Faculty Appreciation Award, Indiana University
- 2014 Outstanding Teaching Award, Department of Biology, UVA
- 2016 Jefferson Scholars Foundation Award for Excellence in Teaching

NAMED LECTURES

- 2002 Donald W. Tinkle Memorial Lecturer, University of Michigan
 - 2002 Basic Science Lectureship, Swedish Medical Center
 - 2005 Eminent Ecologist, Kellogg Biological Station, Michigan State University
 - 2005 Darwin Day Speaker, Eastern Illinois University, Charleston, IL
 - 2006 Darwin Day Speaker, Indiana State University, Terre Haute, IN
 - 2007 Donald Thurston Memorial Lecturer, Washington University School of Medicine
 - 2008 Darwin Day Speaker, Virginia Commonwealth University, Richmond, VA
 - 2008 Phi Beta Kappa Speaker, University of Texas, Arlington, TX
 - 2010 DeCoursey Lecturer, Trinity University, San Antonio, TX
 - 2011 Storer Lecturer & Major Issues in Modern Biology Lecturer, University of California, Davis
 - 2011 PERT Distinguished Lecture, University of Arizona, Tucson, AZ
 - 2011 Futuyama Lecturer, Stony Brook University, Stony Brook, NY
 - 2012 Darwin Day Speaker, University of Wisconsin, Madison, WI
 - 2014 Darwin Day Speaker, Valparaiso University, Valparaiso, IN (snow cancellation)
 - 2017 Atwood Lecturer, University of Toronto, Toronto, Ontario
 - 2018 SEPEEG Conference Keynote Speaker, Mountain Lake Biological Station, Va
 - 2019 Darwin Day Speaker, North Dakota State University, Fargo, ND
 - 2019 MEEC Conference Keynote Speaker, Terra Haute, IN
 - 2021 Darwin Day Speaker, Valparaiso University, IN
 - 2021 Darwin Day Speaker, Bucknell University, Lewisburg, PA
- 10 additional student-invited seminars in since 2005

PROFESSIONAL SERVICE

- 1993-97 Board of Directors, Organization for Tropical Studies (Univ. of Kentucky)
- 1994-98 Board of Governors, American Society of Ichthyologists and Herpetologists
- 1997 Chair, Student Awards Committee, American Society of Ichthyologists and Herpetologists
- 1999-2001 Long Term Planning Committee, American Society of Ichthyologists and Herpetologists
- 1999-2006 Board of Directors, Organization for Tropical Studies (Indiana Univ.)
- 2000 Local Organizing Committee, 2000 Society for the Study of Evolution Meeting
- 2000-04 Board of Governors, American Society of Ichthyologists and Herpetologists
- 2009 Vice President, Society for the Study of Evolution
- 2011-2017 GRE Biology Test Development Committee (Committee Chair, 2017)
- 2011-13 Executive Vice President, Society for the Study of Evolution
- 2013-17 Executive Vice President, Society for the Study of Evolution (elected to 2nd term)
- 2014 - Oversight Committee (Founding), *Evolution Letters*
- 2017-2018 Long Term Vision Committee, Society for the Study of Evolution
- 2017- Finance Committee, Society for the Study of Evolution
- 2018 Ad Hoc Business Office Review Committee, Society for the Study of Evolution
- 2019 NSF Reintegrating Biology Jumpstart (Atlanta)

- 2019 - Publications Committee, Society for the Study of Evolution
 2020 President Elect, American Society of Naturalists
 2021 President, American Society of Naturalists
 2022-2024 Past President (voting member Executive Committee), American Society of Naturalists

EDITORIAL BOARDS

- 1997-2001 Associate Editor, *Evolution*
 2000-2003 Associate Editor, *Herpetologica*
 2003-2006 Associate Editor, *Ecology*
 2004-2010 *Faculty of 1000*, Evolutionary Ecology
 2001-2018 Associate Editor, *The American Naturalist*
 2018-2023 Natural History Miscellany Editor, *The American Naturalist*
 2011- Associate Editor, *Ecology and Evolution*

EXTRAMURAL FUNDING

- 1988 NSF Dissertation Improvement Grant (NSF BSR 87-14955), “*Genetic Correlations Between Morphology and Behavior in Natural Populations*” (PI, [S. J. Arnold, Faculty Sponsor], \$8K, 6/1/88-5/31/90).
 1993 NSF-NATO Postdoctoral Fellowship to Oxford University, UK “*Signal perception and the evolution of mimicry systems*” (Declined to take faculty position at University of Kentucky).
 1994 NSF Graduate Research Traineeships Program, “*Graduate training in evolutionary ecology at the University of Kentucky*”, (Co-PI with 10 others, \$538K, 7/1/94-6/31/99).
 1995 NSF-DEB 9509295, “*Collaborative Research: Evolutionary costs of exploiting poisonous prey*”, (PI, \$105K, 10/15/95-10/14/98).
 1996 NSF-IBN 9600775, “*NSF-CAREER Award: Maternal effects of parental care behavior*”, NSF Faculty Early Career Development Award (PI, \$442K, 7/15/95 - 9/30/2001).
 1997 NSF-DEB 9618702 “*Joint evolution of behavioral and morphological plasticity in multiple predation regimes*”, (Co-PI with A. Sih {PI} & T. DeWitt {Co-PI}, \$347K, 3/1/97-2/28/2001).
 1999 NSF-DEB 9903829 “*Patterns of variation in newt tetrodotoxin levels: evaluating the potential for predator-prey coevolution*”, (Co-PI with E. D. Brodie, Jr., \$370K 8/23/99-8/22/04).
 2002 NSF-IBN 0110386 “*The genetics of parental care behavior*”, (PI, \$400K, 2/15/02-2/14/05).
 2002 NSF-DEB 0210971 “*Using artificial selection to evaluate the causes of sexual dimorphism*”, (Co-PI with L. Delph, \$400K, 10/01/02-9/30/07).
 2003 NSF DEB 0316004 “*Collaborative Research: Independent evolutionary origins of tetrodotoxin resistance as a test of the geographic mosaic of coevolution*”, (PI, \$226K, 8/01/03-7/31/06).
 2003 National Geographic Society “*Geographic mosaics in a coevolutionary arms race between newts and snakes*”, (Co-PI with E. D. Brodie, Jr., \$18K, 9/1/03-8/30/04).
 2005 NSF-DEB 0519658 “*Collaborative Research: Phylogenetic analysis of G-matrix evolution in the repeated adaptive radiations of Anolis lizards*”, (PI, \$505K, 09/01/05-08/31/09).
 2005 MetaCyt (Indiana University) “*The molecular evolution of voltage-gated sodium channels*”, (PI, \$80K, 09/01/05 – 8/30/06).
 2007 NSF-FSML 0731423 “*Winterization of Faculty and Student Residences at Mountain Lake Biological Station*”, (Co-PI with E. Nagy, \$250K, 10/01/07-9/30/10).

- 2009 NSF-DEB 0922216 “*Collaborative Research: Molecular-genetic Basis of Parallel Adaptation Driven by Coevolutionary Interactions*”, (PI, \$431K, 08/01/09-7/31/12).
- 2010 NSF-REU 1005104 “*REU Site: Independent Field Research in Ecology, Evolution and Behavior at Mountain Lake Biological Station*”, (Co-PI with Eric Nagy, \$675K, 05/01/10 - 04/30/15).
- 2010 NSF-IOS 1027251 “*Phenotypic selection resulting from social interaction*”, (PI, \$450K, 08/01/10-07/31/13).
- 2012 NSF-DBI 1227098 “*Laboratory planning at Mountain Lake Biological Station*”, (Co-PI with Eric Nagy, \$25K, 9/1/12-8/31/13).
- NSF-IOS 1238477 “*Workshop: Professional Development in Writing and Publication for Early-Stage Underrepresented Faculty at MLBS*”, (Co-PI with B. Bleakley and A. Moore, \$16K).
- 2014 NSF IOS 1355003 “*Collaborative Research: Evolvability of social networks*”, (PI, \$545K, 2/14- 1/19).
- 2015 NSF-DBI 1461169 “*REU Site: Ecology, Evolution and Behavior Field Research at Mountain Lake Biological Station*” (Co-PI with Eric Nagy, \$553K, 03/15/15 - 03/14/20).
- 2019 NSF DEB 1911485 “*OPUS: CRS: Integrating organismal biology into the geographic mosaic of coevolution*”, (PI, \$363K 07/01/19-06/30/21)
- 2020 NSF DBI 1950734 “*REU Site: Ecology, Evolution and Behavior Field Research at Mountain Lake Biological Station*” (Co PI, with E. Nagy, \$514K, 03/01/20 – 02/28/22)
- 2020 NSF DGE “*NRT-URofL: Interdisciplinary Studies of the Phenotype: EXPANdING Training in Research and Career*” (CoPI with L. Galloway, D. Roach, J. Connelly, \$3M, 9/1/20-8/31/25)
- 2024 NSF DBI 2349462 “*REU Site: Ecology, Evolution and Behavior Field Research at Mountain Lake Biological Station*” (Co PI, with E. Nagy, \$510K, 03/01/24 – 02/28/27)

STUDENT GRANTS

- 1996 NSF-IBN 9623840, “*Doctoral Dissertation Improvement Grant, “Dissertation Research: Parental effects on offspring fitness in *Dendrobates pumilio*”* (M. Maple, Co-PI, \$12K, 4/1/96 - 4/1/98)
- 1996 NSF-DEB 9623540, “*DISSERTATION RESEARCH: The evolution of plasticity: a quantitative genetic evaluation of costs*” (C. P. Grill, Co-PI, \$7K, 3/1/96 - 8/1/97)
- 2001 NSF-DEB 0104995, “*DISSERTATION RESEARCH: The scale of predator-prey interactions: gene flow and the geographic mosaic*”, (B. Ridenhour, Co-PI, \$10K, 5/1/01-9/30/03)
- 2005 NSF-IOB 0508791 “*DISSERTATION RESEARCH: Indirect genetic effects on social behavior*”, (B. H. Bleakley, Co-PI, \$9.7K, 5/15/05-5/14/07)
- 2009 NSF-IOB 0910075 “*DISSERTATION RESEARCH: Ecological correlates of circadian organization: photic niche and photosensitivity in *Anolis lizards*”*, (A. Moore, M. Menaker, Co-PIs, \$10K, 9/01/09-8/31/11)
- 2013 NSF-DEB 1311475 “*DISSERTATION RESEARCH: Environmentally-driven coupling of selection and heritability in a wild insect population*” (C. Wood, Co-PI, \$20K, 06/01/13 – 05/31/15)
- 2014 NSF-DEB 1407155 “*DISSERTATION RESEARCH: Ecological mechanisms of multilevel selection in *Silene vulgaris*”* (B. Sanderson, Co-PI, \$20K, 6/01/14-5/31/16)
- 2014 NSF-DEB 1407166 “*DISSERTATION RESEARCH: Between-class gene flow in complex mating systems: The evolution of sexual differentiation in *Silene vulgaris*”* (M. Augat, Co-PI, \$20K, 6/01/14-5/31/16)
- 2016 NSF-DEB 1601296 “*DISSERTATION RESEARCH: The conflicting effects of gene flow in a geographic mosaic of predator-prey coevolution*” (M. Hague Co-PI, \$20K, 06/01/16-05/31/18)

PUBLICATIONS (PEER REVIEWED PRIMARY RESEARCH; *= undergraduate coauthor †=equal contribution)

1. Brodie, E. D., Jr., D. R. Formanowicz, Jr. and E. D. Brodie III. 1978. The development of noxiousness of *Bufo americanus* tadpoles to aquatic insect predators. *Herpetologica* 34:302-306.
2. Brodie, E. D., Jr., and E. D. Brodie III. 1980. Differential avoidance of mimetic salamanders by free-ranging birds. *Science* 208:181-183.
3. Brodie, E. D., III, E. D. Brodie, Jr. and Judith A. Johnson. 1982. Breeding the African hedgehog *Atelerix pruneri* in captivity. *International Zoo Yearbook* 22:195-197.
4. Brodie, E. D., III. 1989. Antipredator displays of *Ambystoma jeffersonianum* in response to predatory and nonpredatory species of snakes. *Journal of Herpetology* 23:307-309.
5. Brodie, E. D., III. 1989. Behavioral modification as a means of reducing the cost of reproduction. *American Naturalist* 134:225-238.
6. Brodie, E. D., III. 1989. Genetic covariances between morphology and antipredator behavior in natural populations of the garter snake *Thamnophis ordinoides*. *Nature* 342:542-543.
7. Brodie, E. D., III, and P. K. Ducey. 1989. Reproductive strategies of female red-bellied snakes *Storeria occipitomaculata*. *American Midland Naturalist* 122:51-58.
8. Janzen, F. J., and E. D. Brodie III. 1989. Tall tails and sexy males: Sexual behavior of rough-skinned newts (*Taricha granulosa*) in a natural breeding pond. *Copeia* 1989:1064-1067.
9. Brodie, E. D., III, and E. D. Brodie, Jr. 1990. Tetrodotoxin resistance in garter snakes: An evolutionary response of predators to dangerous prey. *Evolution* 44:651-659.
10. Brodie, E. D., III, and E. D. Brodie, Jr. 1991. Evolutionary response of predators to dangerous prey: reduction of toxicity of newts and resistance of garter snakes in island populations. *Evolution* 45:221-224.
11. Brodie, E. D., Jr., D. R. Formanowicz, Jr., and E. D. Brodie III. 1991. Predator avoidance and antipredator mechanisms: distinct pathways to survival. *Ecology, Ethology, and Evolution* 3:73-77.
12. Brodie, E. D., III. 1992. Correlational selection for color pattern and antipredator behavior in the garter snake *Thamnophis ordinoides*. *Evolution* 46:1284-1298.
13. Janzen, F. J., G. L. Paukstis, and E. D. Brodie III. 1992. Observations on basking behavior of hatchling turtles in the wild. *Journal of Herpetology* 26:217-219.
14. Brodie, E. D., III. 1993. Consistency of individual differences in antipredator behaviour and colour pattern in the garter snake *Thamnophis ordinoides*. *Animal Behaviour* 45:851-861.
15. Brodie, E. D., III. 1993. Differential avoidance of coral snake banded patterns by free-ranging avian predators in Costa Rica. *Evolution* 47:227-235.
16. Brodie, E. D., III. 1993. Homogeneity of the genetic variance-covariance matrix for antipredator traits in two natural populations of the garter snake *Thamnophis ordinoides*. *Evolution* 47:844-854.
17. Janzen, F. J., and E. D. Brodie III. 1995. Visually-oriented foraging in a natural population of herbivorous lizards (*Ctenosaura similis*). *Journal of Herpetology* 29:132-136.
18. Brodie, E. D., III, and A. J. Moore. 1995. Experimental studies of coral snake mimicry: do snakes mimic millipedes? *Animal Behaviour* 49:534-536.
19. Brodie, E. D., III, and F. J. Janzen. 1995. Experimental studies of coral snake mimicry: Generalized avoidance of ringed snake patterns by free-ranging avian predators. *Functional Ecology* 9:186-190.
20. Brodie, E. D., III, A. J. Moore, and F. J. Janzen. 1995. Visualizing and quantifying natural selection. *Trends in Ecology and Evolution* 10:313-318
21. Brodie, E. D., III, and F. J. Janzen. 1996. On the assignment of fitness values in statistical analyses of selection. *Evolution* 50:437-442
22. Grill, C. P., A. J. Moore, and E. D. Brodie III. 1997. The genetics of phenotypic plasticity in a colonizing population of the ladybird beetle, *Harmonia axyridis*. *Heredity* 78:261-26.
23. Moore, A. J., E. D. Brodie, III, and J. B. Wolf. 1997. Interacting phenotypes and the evolutionary process: I. Direct and indirect genetic effects of social interactions. *Evolution* 51:1352-1362.
24. Wolf, J. B., A. J. Moore, and E. D. Brodie III. 1997. The evolution of indicator traits for parental quality: the role of maternal and paternal effects. *American Naturalist* 150:639-649.

25. Wolf, J. B., E. D. Brodie III, J. M. Cheverud, A. J. Moore, M. J. Wade. 1998. Evolutionary consequences of indirect genetic effects. *Trends in Ecology and Evolution* 13:64-69.
26. Wolf, J. B., and E. D. Brodie III. 1998. The coadaptation of parental and offspring characters. *Evolution* 52:535-544.
27. Brodie, E. D., III, and N. Russell*. 1999. The consistency of individual differences in behaviour: temperature effects on antipredator behaviour in garter snakes. *Animal Behaviour* 57:445-451.
28. Wolf, J. B., E. D. Brodie III, and A. J. Moore. 1999. Interacting phenotypes and the evolutionary process. II. Selection resulting from social interactions. *American Naturalist* 153:254-266.
29. Sadowski, J. A., A. J. Moore and E. D. Brodie III. 1999. The evolution of empty nuptial gifts in a dance fly, *Empis snoddyi* (Diptera:Empididae): Bigger isn't always better. *Behavioral Ecology and Sociobiology* 45: 161-166.
30. Brodie, E. D., III, and E. D. Brodie, Jr. 1999. The cost of exploiting toxic prey: evolutionary tradeoffs in a predator-prey arms race. *Evolution* 53:626-631.
31. Ridenhour, B. J., E. D., Brodie, Jr. and E. D. Brodie III. 1999. Effects of repeated injections of tetrodotoxin on growth and resistance in the garter snake *Thamnophis sirtalis*. *Copeia* 1999: 531-535.
32. Clayton, D. H., P. L. M. Lee, D. M. Tompkins, and E. D. Brodie III. 1999. Reciprocal natural selection on host-parasite phenotypes. *American Naturalist* 154:261-270.
33. Wolf, J. B., E. D. Brodie III, and A. J. Moore. 1999. The role of maternal and paternal effects in the evolution of parental investment by sexual selection. *Journal of Evolutionary Biology* 12:1157-1167.
34. Motychak, J. E., E. D. Brodie, Jr., and E. D. Brodie III. 1999. Evolutionary response of predators to dangerous prey: preadaptation and the evolution of tetrodotoxin resistance in garter snakes. *Evolution* 53:1528-1535.
35. Hanifen, C. T., M. Yotsu-Yamashita, E. D. Brodie III, E. D. Brodie, Jr., and T. Yasumoto. 1999. Toxicity of dangerous prey: variation of tetrodotoxin levels within and among populations of the newt *Taricha granulosa*. *Journal of Chemical Ecology* 26:2161-2176.
36. Wolf, J. B., W. A. Frankino, A. F. Agrawal, E. D. Brodie III, and A. J. Moore. 2001. Developmental interactions and the constituents of quantitative variation. *Evolution* 55:232-245.
37. Agrawal, A. F., E. D. Brodie III, and L. Rieseberg. 2001. Possible consequences of genes of major effect: Transient changes in the G-matrix. *Genetica* 112/113:33-43.
38. Brodie, E. D., III, E. D. Brodie, Jr., and J. E. Motychak. 2001. Recovery of garter snakes (*Thamnophis sirtalis*) from the effects of tetrodotoxin. *Journal of Herpetology* 36: 95-98.
39. Brodie, E. D., III, and A. F. Agrawal. 2001. Maternal effects and the evolution of aposematic signals. *Proceedings of the National Academy of Sciences, USA* 98:7884-7887.
40. Williams, B. L., E. D. Brodie, Jr., and E. D. Brodie III. 2001. Comparisons between toxic effects of tetrodotoxin administered orally and by intraperitoneal injection to the garter snake *Thamnophis sirtalis*. *Journal of Herpetology* 36: 112-115.
41. **Agrawal, A. F., E. D. Brodie III, and M. J. Wade, 2001. On indirect genetic effects and structured populations. *American Naturalist* 158: 308-323. (**awarded Presidential Award for best paper of 2001 in the *American Naturalist*)
42. Agrawal, A. F., E. D. Brodie III, and J. Brown*. 2001. Parent-offspring coadaptation and the dual genetic control of maternal care. *Science* 292: 1710-1712.
43. Janzen, F. J., J. G. Krenz, T. S. Haselkorn*, E. D. Brodie, Jr., and E. D. Brodie III. 2002. Molecular Phylogeography of Common Garter Snakes (*Thamnophis sirtalis*) in Western North America: Implications for Regional Historical Forces. *Molecular Ecology* 11:1739-1751.
44. Hanifin, C. T., E. D. Brodie III, and E. D. Brodie, Jr. 2002. Tetrodotoxin levels of the rough-skin newt, *Taricha granulosa*, increase in long-term captivity. *Toxicon* 40:1149-1153.

45. Brodie, E. D., Jr., B. J. Ridenhour, and E. D. Brodie III. 2002. The evolutionary response of predators to dangerous prey: Hotspots and coldspots in the geographic mosaic of coevolution between garter snakes and newts. *Evolution* 56:2067-2082.
46. Geffeney, S., E. D. Brodie, Jr., P. Ruben, and E. D. Brodie III. 2002. Mechanisms of adaptation in a predator-prey arms race: TTX resistant sodium channels. *Science* 297:336-339.
47. Hanifin, C. T., E. D. Brodie III, and E. D. Brodie, Jr. 2003. Tetrodotoxin levels of the eggs of the rough-skin newt, *Taricha granulosa*, are correlated with female toxicity. *Journal of Chemical Ecology* 29:1729-1739.
48. Grindstaff, J. L., E. D. Brodie III, and E. D. Ketterson. 2003. Immune function across generations: integrating mechanism and evolutionary process in maternal antibody transmission. *Proceeding of the Royal Society of London*, B 270:2309-2319.
49. Williams, B. L., E. D. Brodie, Jr., and E. D. Brodie III. 2003. Coevolution of deadly toxins and predator resistance: Self-assessment of resistance by garter snakes leads to behavioral rejection of toxic newt prey. *Herpetologica* 59:155-163.
50. Brodie, E. D., III, and B. J. Ridenhour. 2004. Reciprocal selection at the phenotypic interface of coevolution. *Integrative and Comparative Biology* 43:408-418
51. Brown, J.M.*, A. F. Agrawal, and E. D. Brodie III. 2004. An analysis of single clutch paternity in the burrower bug *Sehirus cinctus* using microsatellites. *Journal of Insect Behavior* 16:731-745.
52. Hanifin, C. T, E. D. Brodie, Jr., and E. D. Brodie III. 2004. A predictive model to estimate total skin tetrodotoxin in the newt *Taricha*. *Toxicon* 43:243-249.
53. Williams, B. L., E. D. Brodie, Jr., and E. D. Brodie III. 2004. A resistant predator and its toxic prey: Persistence of newt toxin leads to poisonous (not venomous) snakes. *Journal of Chemical Ecology* 30:1901-1919.
54. Young, K. V., E. D. Brodie, Jr., and E. D. Brodie III. 2004. How the horned lizard got its horns. *Science* 304:65.
55. Lehman, E. M., E. D. Brodie, Jr., and E. D. Brodie III. 2004. No evidence for an endosymbiotic bacterial origin of tetrodotoxin in the newt *Taricha granulosa*. *Toxicon* 44:243-249.
56. Agrawal, A. F., J. M. Brown*, E. D. Brodie III. 2004. On the social structure of offspring rearing in the burrower bug, *Sehirus cinctus* (Hemiptera: Cydnidae). *Behavioral Ecology and Sociobiology* 57:139-148.
57. Cardell, B. L.*, E. D. Brodie, III, E. D. Brodie, Jr., and C. T. Hanifin. 2004. Secretion and regeneration of tetrodotoxin in the rough-skin newt (*Taricha granulosa*). *Toxicon* 44:933-938.
58. Kölliker, M. J. P. Chuckalovcak, and E. D. Brodie III. 2005. Chemical signalling by nymphs regulates maternal food provisioning in burrower bugs (*Sehirus cinctus*). *Animal Behaviour* 69:959-966.
59. Agrawal, A. F., N. Combs*, E. D. Brodie III. 2005. Insights into the costs of complex maternal care behavior in the burrower bug (*Sehirus cinctus*). *Behavioral Ecology and Sociobiology* 57:566-574.
60. Brodie, E. D., III, C. R. Feldman, C. T. Hanifin, J. E. Motychak, D. G. Mulcahy, B. L. Williams, and E. D. Brodie, Jr. 2005. Parallel arms races between garter snakes and newts involving tetrodotoxin resistance as the phenotypic interface of coevolution. *Journal of Chemical Ecology* 31:343-356.
61. Geffeney, S. L., E. Fujimoto, E. D. Brodie III, E. D. Brodie, Jr., and P.C. Ruben. 2005. Evolutionary diversification of TTX-resistant sodium channels in a predator-prey interaction. *Nature* 434:759-763.
62. Kölliker, M. J., E. D. Brodie, III, and A. J. Moore. 2005. The coadaptation of parental supply and offspring demand. *American Naturalist* 166:506-516

63. Bleakley, B. H., C. M. Martell*, and E. D. Brodie III. 2006. Variation in anti-predator behavior among five strains of inbred guppies, *Poecilia reticulata*. *Behavior Genetics* 36:783-791
64. Kölliker, M. J., J. P. Chuckalovcak*, K.F. Haynes, and E. D. Brodie III. 2006. Maternal food provisioning in relation to condition-dependent offspring odours in burrower bugs (*Sehirus cinctus*). *Proceedings of the Royal Society of London, Series B* 273: 1523-1528
65. Steven, J. C., L. F. Delph, E. D. Brodie III. 2007. Sexual dimorphism in the quantitative genetic architecture of floral, leaf and allocation traits in *Silene latifolia*. *Evolution* 61:42-57.
66. Ridenhour, B. J., E. D. Brodie, Jr., and E. D. Brodie III. 2007. Patterns of genetic differentiation in *Thamnophis* and *Taricha* from the Pacific Northwest. *Journal of Biogeography*. 34:724-735.
67. Bleakley, B. H., D. Parker*, and E. D. Brodie III. 2007. Non-additive effects of group membership can lead to additive group phenotypes for anti-predator behaviour of guppies, *Poecilia reticulata*. *Journal of Evolutionary Biology* 20:1375-1384.
68. Bleakley, B. H., A. C. Eklund, and E. D. Brodie III. 2007. Are designer guppies inbred? Microsatellite variation in five strains of ornamental guppies, *Poecilia reticulata*, used for behavioral research. *Zebrafish* 5: 39-48.
69. Hanifin, C. F., E. D. Brodie, Jr., and E. D. Brodie III. 2008. Phenotypic mismatches reveal escape from arms-race coevolution. *PLoS Biology* 6:471-482.
70. McGlothlin, J. W., and E. D. Brodie III. 2009 How to measure indirect genetic effects: The congruence of trait-based and variance-partitioning approaches. *Evolution* 63: 1785-1795
71. Bleakely, B. H., and E. D. Brodie III. 2009. Indirect genetic effects influence antipredator behavior in guppies: Estimates of the coefficient of interaction, Psi, and the inheritance of reciprocity. *Evolution* 63:1796-1806.
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169. Brodie, E. D., III. 2011. Natural history first (but don't stop there). *Evolution* 65:3336-3337. (Book Review of *In Search of the Causes of Evolution* by P. Grant and B. R. Grant)
170. Losos, J. B., S. J. Arnold, G. Bejerano, E. D. Brodie III, D. Hibbett, H. E. Hoekstra, D. P. Mindell, A. Monteiro, C. Moritz, H. A. Orr, D. A. Petrov, S. S. Renner, R. E. Ricklefs, P. S. Soltis, and T. L. Turner. 2013. Evolutionary biology for the 21st century. *PLoS Biology* 11:e1001466
171. Brodie, E. D., III. 2013. Phenotypic selection on quantitative traits. pp 221-229 in J. B. Losos, (ed.), *Princeton Guide to Evolution*, Princeton University Press, Princeton, NJ.
172. Toledo, G., C. T. Hanifin, S.L. Geffeney, E. D. Brodie III. 2016. Convergent evolution of tetrodotoxin-resistant sodium channels in predators and prey. *Current Topics in Membranes* 78:87-113.
173. Wood, C.W., and Brodie, E.D. 2016. Natural Selection, Measuring. In: Kliman, R.M. (ed.), *Encyclopedia of Evolutionary Biology*. vol. 3, pp. 104–111. Oxford: Academic Press.
174. Brodie, E. D., III. 2018. Life's chemical weapons. *Current Biology* 21:R1227-R1228. [Book Review of *Venom: The Secrets of Nature's Deadliest Weapon*, by R. Jenner and E. Undheim]
175. Brodie, E. D., III. 2018. Improbable Destinies: Fate, Chance, and the Future of Evolution. *Quarterly Review of Biology* 93:375. [Book Review]
176. Van Velzen, E. and Brodie, E. D., III. 2018. Co-evolution of predators and prey. *Encyclopedia of Animal Behavior*. 2nd ed. Elsevier:Oxford.
177. Brodie, E. D., III, B. Gregory, D. Lisch and N. C. Riddle. 2021. The epigenome and beyond: How does non-genetic inheritance change our view of evolution? *Integrative and Comparative Biology*. <https://doi.org/10.1093/icb/icab084>
178. Brodie, E. D., III. 2021. Q&A Edmund D. Brodie. *Current Biology* 31:R1111-R1112.
179. Brodie, E. D., III 2024. Two sides to every poison. *Current Biology* 34:R749-R751. [Book Review of *Most Delicious Poisons: The Story of Nature's Toxins — From Spices to Vices* Noah Whiteman]

INDEPENDENT PUBLICATIONS BY LAB MEMBERS (WHILE IN THE BRODIE LAB)

- Grill, C. P.**, and A. J. Moore. 1998. Effects of larval antipredator response and larval diet on adult phenotype in an aposematic ladybird beetle. *Oecologia* 114:274-282.
- Grill, C. P.** 1999. Development of colour in an aposematic ladybird beetle: the role of environmental conditions. *Evolutionary Ecology Research* 1:651-662.
- Grill, C. P.**, and V. Rush. 2000. Analysis of spectral data: A comparison of two analytic methods. *Biological Journal of the Linnean Society* 69: 121-138
- Preziosi, R. F., W. E. Snyder, **C. P. Grill**, and A. J. Moore. 1999. The fitness of manipulating phenotypes: Implications for studies of fluctuating asymmetry and multivariate selection. *Evolution* 53:1312-1318.
- Brandt, Y.** 1999. When size is not everything: determining the relative importance of two asymmetries influencing contest outcome. *Animal Behaviour* 57: F13-F14

- Wolf, J. B.** 2000. Indirect genetic effects and gene interactions. Pp. 158-176 in J. B. Wolf, E. D. Brodie III, and M. J. Wade (eds.). "Epistasis and the Evolutionary Process," Oxford University Press, New York.
- Wolf, J. B.** and M. J. Wade. 2001. On the assignment of fitness to parents and offspring: Whose fitness is it and when does it matter? *Journal of Evolutionary Biology* 14:347-356.
- Wolf, J. B.** 2001. Gene interactions from maternal effects. *Evolution* 54:1882-1898.
- Agrawal, A. F.** 2001. The evolutionary consequences of mate copying on male traits. *Behavioral Ecology and Sociobiology*: 51:33-40.
- Agrawal, A. F.** 2001. Kin recognition and the evolution of altruism. *Proceedings of the Royal Society, London, Series B* 268:1099-1104.
- Agrawal, A. F.,** and C. M. Lively. 2001. Parasites and the evolution of self-fertilization. *Evolution* 55:869-879.
- Agrawal, A. F.** and J. R. Chasnov. 2001. Recessive mutations and the maintenance of sex in structured populations. *Genetics* 158:913-917.
- Agrawal, A. F.** 2001. Sexual selection and the maintenance of sexual reproduction. *Nature* 411: 692-695.
- Wade, M. J., R. G. Winther, **A. F. Agrawal,** and C. J. Goodnight. 2001. Alternative definitions of epistasis: dependence and interaction. *Trends in Ecology and Evolution* 16:498-504.
- Agrawal, A. F.,** and C. M. Lively. 2002. Infection Genetics: gene-for-gene versus matching allele models, and all points in between. *Evolutionary Ecology Research* 4:79-90.
- Agrawal, A. F.** 2002. Genetic loads under fitness-dependent mutation rates. *Journal of Evolutionary Biology* 15:1004-1010.
- Macedonia, J. M., **Y. Brandt,** and D. L. Clark. 2002. Sexual dichromatism and differential conspicuousness in two populations of collared lizard (*Crotaphytus collaris*) from Utah and New Mexico, USA. *Biological Journal of the Linnean Society*. 77:67-85.
- Brandt, Y.** 2003. Lizard threat display handicaps endurance. *Proceedings of the Royal Society B* 270: 1061-1068.
- Agrawal, A. F.,** and C. M. Lively. 2003. Modeling infection as a two-step process combining gene-for-gene and matching alleles. *Proceedings of the Royal Society, London, Series B* 270:323-334.
- Wolf, J. B.** 2003. Genetic architecture and evolutionary constraint when the environment contains genes. *Proceedings of the National Academy of Sciences, USA*. 4655-4660.
- Brandt, Y.,** and J. R. Allen*. 2004. Persistence of individually distinctive display patterns in fatigued side-blotched lizards (*Uta stansburiana*) *Behavioral Ecology and Sociobiology* 55:257-265.
- Ridenhour, B. J.** 2005. Identification of selective sources: partitioning selection based on interactions. *American Naturalist* 166:12-25.
- Freedberg, S., M. A. Ewert, M. Neiman, **B. Ridenhour,** and C. E. Nelson. 2005. Nesting fidelity and molecular evidence for natal homing in the freshwater turtle, *Graptemys kohnii*. *Proceedings of the Royal Society: B* 272:1345-1350
- Lehman, E.** 2007. A simplified and inexpensive method for extraction and quantification of tetrodotoxin from tissue samples. *Herpetological Review*.38: 298-301.
- Lehman, E.** and C. Campbell*. 2007. Developmental window of response to predator chemical cues in rough-skinned newt embryos. *Functional Ecology* 21:880-885.

- Roberts, A. M*, **E. B. Liebgold**. 2008. The effects of perceived mortality risk on above-ground habitat selection in a terrestrial salamander. *Behavioral Ecology* 19:621-626.
- Liebgold E. B.**, P. R. Cabe. 2008. Familiarity with adults, but not relatedness, affects the fitness of juveniles of *Plethodon cinereus*, a territorial salamander. *Behavioral Ecology and Sociobiology* 63: 277-284.
- Galloway, L. F., J. R. Etterson, and J. W. **McGlothlin**. 2009. The contribution of direct and maternal genetic effects to life-history evolution. *New Phytologist* 183: 826-838.
- Formica, V. A.** and E. M. Tuttle. 2009. Examining the social landscapes of alternative reproductive strategies. *Journal of Evolutionary Biology* 22: 2395-2408.
- McGlothlin, J. W.** 2010. Combining selective episodes to estimate lifetime nonlinear selection. *Evolution*: 64:1377-1384.
- Ousterhout B.H.,* and **E. B. Liebgold**. 2010. Limited dispersal versus site tenacity in adults and juveniles of a territorial salamander, *Plethodon cinereus*. *Herpetologica*: 66:269-275.
- Buderman F. E. *, and **E. B. Liebgold**. 2012. Effect of search method and age class on mark-recapture parameter estimation in red-backed salamanders. *Population Ecology* 54:157-167.
- McPeck, S. J.**, Bronstein, J. B., & McPeck, M. A. 2021. The evolution of resource provisioning in pollination mutualisms. *American Naturalist* 198:441-459. <https://doi.org/10.1086/715746>
- McPeck, M. A., **S. J. McPeck**, J. L. Bronstein. 2022. Nectar dynamics and the coexistence of two plants that share a pollinator. *Oikos* 2022: e08869. <https://doi.org/10.1111/oik.08869>
- McPeck, S. J.**, Bronstein, J. L., & McPeck, M. A. 2022. Eco-Evolutionary Feedbacks Among Pollinators, Herbivores, And Their Plant Resources. *Evolution* 76(6): 1287-1300.
- Baud, A., **McPeck, S. J.**, Chen, N., & Hughes, K. A. 2022. Indirect Genetic Effects: A Cross-disciplinary Perspective on Empirical Studies. *Journal of Heredity* 113(1): 1-15.
- Narayanan, N., Hale, K., Koffel, T, and **McPeck, S.** 2023. Theoretical advances in the ecology and evolution of mutualistic interactions - ESA+CSEE 2022 meeting symposium review. *Bulletin of the Ecological Society of America* 104: 1-9.

INVITED SYMPOSIA, WORKSHOPS, AND KEYNOTES

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| 1990 | Snake Ecology Meeting |
| 1992 | Young Investigators Prize Symposium; American Society of Naturalists/Society for the Study of Evolution meeting
Symposium on Latin American Herpetofauna; Herpetologists' League/American Society of Ichthyologists and Herpetologists meeting |
| 1995 | Symposium on Maternal Effects as Adaptations; Society for the Study of Evolution meeting |
| 1997 | Chemical Ecology of Predator/Prey Relationships among Fishes, Amphibians and Reptiles, American Society of Ichthyologists and Herpetologists meeting |
| 2001 | Biocomplexity workshop on geographic mosaics in coevolution, University of California at Santa Cruz |
| 2002 | Basic Science Lectureship, Swedish Medical Center, Seattle Washington |
| 2003 | Selection and the Evolution of Performance Symposium, Society for Integrative and Comparative Biology, Toronto
Winter Evolution Lecture Series, University of Georgia, Athens, GA |
| 2005 | Darwin Day, Eastern Illinois University, Charleston, IL
Eminent Ecologist Series, Kellogg Biological Station, Hickory Corners, MI |
| 2006 | Darwin Day Speaker, Indiana State University, Terre Haute, IN |

- Workshop on Spatial Heterogeneity in Biotic and Abiotic Environment Effects on Species Ranges, Co-evolution, and Speciation, Mathematical Biology Institute, Ohio State University, Columbus, OH
- 2007 Donald Thurston Memorial Lectureship, Department of Pediatrics, Washington University School of Medicine, St. Louis, MO
- Symposium on Maternal effects: Evaluating maternal effects on the basis of Tinbergen's four questions; International Ethological Conference, Halifax, NS (Declined)
- 2008 Sequestered Defensive Compounds in Tetrapod Vertebrates, 6th World Congress of Herpetology, Manaus, Brasil (Declined)
- 2010 Molecular Insights into "Classic Examples" of Evolution, National Association of Biology Teachers Meeting, sponsored by the National Evolutionary Synthesis Center, Minneapolis, MN
- 2012 Social Networks: The Mechanistic Basis and Evolution of Social Traits, Entomological Society of America, Knoxville, TN
- 2014 Brains and Behavior of Predator and Prey, 26th Karger Workshop for Evolutionary Neuroscience, Washington, DC
- 2018 If Salamanders Could Speak: Tales of the Remarkable Career of Edmund D. Brodie Jr., Joint Meeting of Ichthyologists and Herpetologists, Rochester, NY
- Southeastern Population Ecology and Evolutionary Genetics Conference, Invited Keynote Speaker, Mountain Lake Biological Station, VA
- 2019 Midwest Ecology and Evolution Conference, Invited Keynote Speaker, Terra Haute, IN
- 2020 Genes as Environment: Indirect Genetic Effects in Evolution, Agriculture, and Medicine, American Genetics Association President's Symposium, Snowbird, UT
- 2021 "In defense of pre-hypothesis science", Presidential Address, American Society of Naturalists, Virtual Evolution 2021
https://www.youtube.com/watch?v=TtdKtyBe06k&list=PLnl_pi1g6UvcmmhPPwyx8kCC3F94JP5Xd&index=2&t=3220s
- 2022 Distinguished Herpetologist Lecture, 2022 Joint Meeting of Ichthyologists and Herpetologists, Spokane, WA

INVITED SEMINARS

- 1988 North Central College, Naperville, IL
- 1990 University of California, Berkeley, CA
 PEW Undergraduate Research Symposium, Univ. of Chicago, Chicago, IL
- 1992 Harvard University, Cambridge, MA
 University of Illinois, Champaign-Urbana, IL
 University of Texas at Arlington, Arlington, TX
- 1993 Iowa State University, Ames, IA
 University of California, Davis, CA
 University of California, Riverside, CA
 University of California, Santa Barbara, CA
 University of Cincinnati, Cincinnati, OH
 University of Kentucky, Lexington, KY
 University of North Carolina, Chapel Hill, NC
 University of Missouri, Columbia, MO
 University of Tennessee, Knoxville, TN
 University of Virginia, Charlottesville, VA
- 1994 Transylvania University, Lexington, KY
 University of Oregon, Eugene, OR
- 1995 Carleton College, Northfield, MN (**Student Invited Speaker**)
 University of Kansas, Lawrence, KS
 University of Toronto, Toronto, Ontario
 University of Utah, Salt Lake City, UT
 Utah State University, Logan, UT
- 1996 Kentucky State University, Frankfort, KY
 Miami University, Oxford, OH (**Student Invited Speaker**)
 Ohio University, Athens, OH
- 1997 Indiana University, Bloomington, IN
- 1998 Indiana State University, Terre Haute, IN

- 1999 Purdue University, West Lafayette, IN
Michigan State University, East Lansing, MI
University of Dayton, Dayton, OH
- 2000 Texas A&M, College Station, TX
Iowa State University, Ames, IA (**Student Symposium Keynote Invitee**)
Reed College, Portland, OR
- 2001 University of British Columbia, Vancouver, BC
Western Carolina University, Cullowhee, NC
- 2002 University of Montana, Missoula, MT
University of Michigan, Ann Arbor, MI (**2002 Tinkle Lecturer**)
Swedish Medical Center, Seattle, WA (**Basic Science Lectureship**)
- 2003 University of Georgia (**2003 Winter Evolution Lecture**)
Rice University, Houston, TX
- 2004 Washington University, St. Louis, MO
University of Illinois, Champaign-Urbana, IL
- 2005 Emory University, Atlanta, GA (**Student Invited Speaker**)
Eastern Illinois University, Charleston, IL (**Darwin Day Speaker**)
University of Virginia, Charlottesville, VA (**Student Invited Speaker**)
Kellogg Biological Station, Hickory Corners, MI (**Eminent Ecologist Series**)
University of Idaho, Moscow, ID
- 2006 Indiana State University, Terre Haute, IN (**Darwin Day Speaker**)
University of Toronto, Toronto, Ontario
- 2007 Washington University, St. Louis (**Thurston Lecture**)
College of William & Mary, Williamsburg, VA
- 2008 University of Texas, Arlington, TX (**Phi Beta Kappa Invited Speaker**)
Virginia Commonwealth University, Richmond, VA (**Darwin Day Speaker**)
Middle Tennessee State University, Murfreesboro, TN
University of California, Berkeley, CA (**Centennial Museum Lunch**)
University of Texas, Austin, TX
- 2009 University of New Orleans (**Graduate Student Invited Speaker**)
State University of New York, Stony Brook, NY
Virginia Tech, Blacksburg, VA
- 2010 University of Michigan, Ann Arbor, MI
Duke University, Durham, NC
Trinity University, San Antonio, TX (**DeCoursey Lecture**)
- 2011 University of Maryland, College Park, MD
University of Arizona, Tucson, AZ (**PERT Distinguished Lecture**)
SUNY Stony Brook, Stony Brook, NY (**Futuyma Lecturer**)
University of Minnesota, Minneapolis, MN
Virginia Herpetological Society, Bridgewater, VA (**Keynote Lecture**)
University of California, Davis, CA (**Major Issues in Modern Biology Lecture**)
- 2012 Harvard University, Cambridge, MA (**Graduate Student Invited Speaker**)
Michigan State University, East Lansing, MI
University of Wisconsin, Madison, WI (**Darwin Day Speaker**)
James Madison University, Harrisonburg, VA
- 2013 Rutgers University, New Brunswick, NJ
University of Guelph, Guelph, Ontario
- 2014 Valparaiso University, Valparaiso, IN (**Darwin Day Speaker**) (snow cancellation)
University of Tennessee, Knoxville, TN
Swarthmore College, Swarthmore, PA
University of Illinois, Champaign-Urbana, IL (**Graduate Student Invited Speaker**)
- 2015 University of Missouri, Columbia, MO (**Graduate Student Invited Speaker**)
University of Texas, Austin, TX (**Graduate Student Invited Speaker**) (cancelled)
- 2016 Ohio University, Athens, OH (**Graduate Student Invited Speaker**)
Randolph-Macon College, Ashland, VA (**Senior Seminar Speaker**)
Iowa State University, Ames, IA
Auburn University, Auburn, AL
- 2017 University of Texas at Arlington (**Graduate Student Invited Speaker**)
University of Toronto, Toronto, Ontario (**Atwood Lecture**)

- 2018 The College of New Jersey, Ewing, NJ
University of North Carolina, Chapel Hill, NC
The University of Nevada, Reno, NV
- 2019 North Dakota State University, Fargo, ND (**Darwin Day Speaker**)
Wake Forest University, Winston-Salem, NC (**Frontiers in Biology Speaker**)
Virginia State University, Petersburg, VA
- 2020 Davidson College, Davidson, NC
Ivy Creek Nature Center, Charlottesville, VA
- 2021 Bucknell University, Lewisburg, PA (**Darwin Day Speaker**)
Valparaiso University, Valparaiso, IN (**Darwin Day Speaker**)
- 2024 Texas A&M University, College Station, TX
University of California, Berkeley, CA

GRANT REVIEW PANELS

- 1998 NSF-DEB Doctoral Dissertation Improvement Grant Panel
1999 NSF-DEB Population Biology Grant Panel
2002 NSF-DEB Population Biology Grant Panel
2003 NSF-IBN Animal Behavior Grant Panel
2008 NSF-IBN Animal Behavior Grant Panel
2009 NSF-DEB Evolutionary Genetics Panel
2013 NSF-DEB Evolutionary Genetics Preproposal Panel
2018 NSF-DEB Dimensions in Biodiversity Panel

REVIEWER FOR

Acta Oecologia, American Journal of Botany, American Midland Naturalist, American Naturalist, Animal Behaviour, US Army Research Office, Behavior Genetics, Behavioral Ecology, Behavioural Ecology and Sociobiology, Benjamin-Cummings, Biological Journal of the Linnean Society, Bioscience, Biotropica, Canadian Foundation for Innovation, Canadian Journal of Zoology, Copeia, Current Biology, Ecology and Evolution, Ecology, Ecology Letters, Ethology, Evolution, Evolution Letters, Evolution and Development, Frontiers in Zoology, Functional Ecology, Genetica, Genetics, Heredity, Herpetologica, Journal of Animal Ecology, Journal of Ethology, Journal of Herpetology, Molecular Biology and Evolution, Molecular Ecology, McGraw-Hill, National Science Foundation (USA), Natural History, Nature, Netherlands Organisation for Scientific Research, Oecologia, PLoS Biology, PLoS One, Prentice-Hall, Proceedings of the National Academy of Sciences, USA, Proceedings of the Royal Society Series B, Science, Symbiotic, South American Journal of Herpetology, Southeastern Naturalist, Swiss National Science Foundation, Toxicon, Trends in Ecology and Evolution, WW Norton

SOCIETY MEMBERSHIPS

American Association for the Advancement of Science, American Society of Naturalists, Animal Behavior Society, Herpetologists' League, Sigma Xi, Society for the Study of Evolution, Virginia Herpetological Society