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CAROL LINDA BOGGS

CURRICULUM VITAE

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University of South Carolina, Columbia, SC 29208
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EDUCATION

B.A. with high honors & special honors in zoology, University of Texas at Austin 1973
Ph.D. Zoology, University of Texas at Austin 1979

PROFESSIONAL POSITIONS

CURRENT:

Professor, University of South Carolina, 2013-
Principle Investigator, Rocky Mountain Biological Laboratory (RMBL) 1978 –
Director emerita, Program in Human Biology, Stanford University 2013-

PREVIOUS:

Professor (Teaching), Stanford University 2006-2012
Affiliated Faculty, Woods Institute for the Environment, Stanford Univ 2009- 2012
Consulting Professor, Stanford University 2002-2006
Associate Professor (Teaching), Stanford University 1997-2002
Senior Research Scientist, Stanford University 1994-2006
Consulting Assistant Professor, Stanford University 1989-1997
Lecturer, Stanford University 1986-1989
Research Associate, Stanford University 1980-1985
Visiting Scholar, Stanford University 1979-1980
Doctoral student, University of Texas, Austin & OTS, Costa Rica 1974-1979
"Stipendiat" (research associate), University of Tromsø, Norway 1973-1974

ADMINISTRATIVE:

Director, School of the Earth, Ocean & Environment, University of South Carolina, 2013-8
(Inaugural Director of the SEOE as a tenuring unit)
Bing Director, Program in Human Biology, Stanford University 2006-2012
Director, Center for Conservation Biology (CCB), Stanford University 1995-2006
Associate Director for Research, CCB, Stanford University 1994-1995

RESEARCH INTERESTS

The application of functional and evolutionary ecology to environmental questions:

- resource allocation strategies in variable environments, resulting in differential resilience of life history and population dynamics among species
- visual ecology in the context of resource allocation
- ecological and evolutionary dynamics of small populations
- evolutionary and ecological effects of non-native species' invasion into co-evolved systems

HONORS

EXTERNAL:

Named one of 20 top women professors in California by Online Schools California, 2013
Fellow, American Association for the Advancement of Science, 2001
Fellow, California Academy of Sciences, 2000
National Science Foundation Pre-doctoral Fellowship
Phi Beta Kappa, Phi Kappa Phi

INTERNAL:

Distinguished Research Service Award (U of South Carolina Vice Provost for Research award),
2023
Distinguished Undergraduate Research Mentor Award (U of South Carolina Vice Provost for
Research award), 2022
Lloyd W. Dinkelspiel Award for Distinctive Contributions to Undergraduate Education,
Stanford (a presidential-level award), 2012
Stanford Friends University Fellow in Undergraduate Education, 2010-2012
Outstanding Faculty Advisor, Program in Human Biology, 2001
Fellow of the Graduate School, University of Texas at Austin 1977-79

PUBLICATIONS

Google Scholar H-index 52, i10 index 89, citations 11,319

*graduate student, incl. collaborating students; **undergraduate; †deceased at time of
publication; if the same person collaborated post-graduation, they are not marked as a student

BOOKS:

1. **Boggs, C.L.**, Watt, W.B. and Ehrlich, P.R., eds., 2003. *Butterflies: Ecology and Evolution Taking Flight*. University of Chicago Press. 736 pp.

SUBMITTED/ IN REVISION:

Ravikanthachari*, N., Steward*, R.A. and **Boggs, C.L.** ms. Local adaptation of a native
herbivore to a lethal invasive plant. *Molecular Ecology*. In review.

Syskine**, D. and **Boggs, C.L.** ms. Nocturnal pollinator networks across space and
time. *Ecological Entomology* In review.

Ravikanthachari*, N., Burch**, L.L., Powell**, R.E., Scott**, D.M., Wayne**, C.R.,
Niitepõld, K., Rosenberg, R., and **Boggs, C.L.** ms. Impacts of assisted migration: An
introduced herbivore has short-term and long-term effects on its native host plant
population. *Entomologia Experimentalis et Applicata*.

IN PREPARATION (LATE DRAFT STAGE):

Ravikanthachari*, N., and **Boggs, C.L.** ms. Differential gene expression underlying
oviposition preference of and larval performance of a native herbivore on a toxic

invasive plant. Proceedings of the Royal Society, B.

Boggs, C.L., and Niitepõld, K. ms. Egg size and composition: The interplay of nutrient acquisition and allocation in species with contrasting larval life histories. *Functional Ecology*.

DuRant**, J., Fisher**, L., Shive**, N., and **Boggs, C.L.** ms. Does spatial distribution of eggs influence reproductive outcomes?

ON BIORXIV:

Ravikanthachari, N., and **Boggs, C.L.** 2023. Gene family evolution in brassicaceous-feeding insects: Implications for adaptation and host plant range.

<https://doi.org/10.1101/2023.06.09.544424>

Boggs, C.L. and Iyengar**, V. 2022. Age-specific and sex-specific nectar and pollen use by a butterfly pollinator. <https://doi.org/10.1101/2022.05.19.492749>

PEER REVIEWED:

2. Chappell*, D.R., **Boggs, C.L.**, and Speiser, D.I. 2023a. Two sides of the same wing: ventral scales enhance dorsal wing color in the butterfly *Speyeria mormonia*. *Journal of Experimental Biology* doi: 10.1242/jeb.246396.
3. Olson**, M.M., Ravikanthachari*, N., Blackwell, M., and **Boggs, C.L.** 2023b. The dispersal of microbes among and within flowers by butterflies. *Ecological Entomology* 48:458-465. doi: 10.1111/een.13239
4. Armstrong, A.R. and **Boggs, C.L.** 2023c. Antibody development to identify components of IIS and mTOR signaling pathways in lepidopteran species, a set of non-model insects. *microPublication Biology*. doi: 10.17912/micropub.biology.000755
5. **Boggs, C.L.** 2023d. Changes in insect population dynamics due to climate change. In Gonzalez-Tokman, D.M. and Dáttilo, W., eds., *Effects of Climate Change on Insects: Physiological, Evolutionary, and Ecological Responses*. Oxford University Press. In press.
6. Prather, R.M., Dalton, R.M., Barr, W., Blumstein, D.T., **Boggs, C.L.**, Brody, A.K., Inouye, D.W., Irwin, R.E., Martin, J.G.A., Smith, R.J., Van Vuren, D.H., Wells, C.P., Whiteman, H.H., Inouye, B.D., Underwood, N. 2023e. Current and lagged climate affects phenology across diverse taxa. *Proceedings of the Royal Society B* 290: 20222181.
7. Harvey, J., Tougeron, K., Gols, R., Heinen, R., Abarca, M., Abram, P., Basset, Y., Berg, M., **Boggs, C.**, Brodeur, J., Cardoso, P., de Boer, J., De Snoo, G., Deacon, C., Dell, J., Desneux, N., Dillon, M., Duffy, G., Dyer, L., Ellers, J., Espíndola, A., Fordyce, J., Forister, M., Fukushima, C., Gage, M., García-Robledo, C., Gely, C., Gobbi, M., Hallmann, C., Hance, T., Harte, J., Hochkirch, A., Hof, C., Kingsolver, J., Lamarre, G., Laurance, W., Lavandero, B., Leather, S., Le Lann, C., Ma, C.-S., Ma, G., Moiroux, J., Monticelli, L., Shah, A., Thakur, M., Thomas, M.,

- Van de Pol, M., Verberk, W., Lehmann, P., Lopez-Uribe, M., Nice, C., Ode, P., Pincebourde, S., Ripple, W., Rowe, M., Samways, M., Sentis, A., Stork, N., Terblanche, J., Tylianakis, J., van Baaren, J., van der Putten, Wim; Wagner, D., Van Dyck, H., Chown, S., Wyckhuys, K., Woods, H.A., Wetzels, W., Weisser, W. 2023f. Scientists warning on the effects of climate change on insects. *Ecological Monographs* 93 e1553. doi.org/10.1002/ecm.1553
8. Steward*, R.A., Epanchin-Niell**, R.S., and **Boggs, C.L.** 2022a. Novel host unmasks heritable variation in plant preference within an insect population. *Evolution* 76: 2634-2648. doi.org/10.1111/evo.14608
 9. Niitepõld, K., and **Boggs, C.L.** 2022b. Carry-over effects of larval food stress on adult energetics and life history in a nectar-feeding butterfly. *Ecological Entomology* 47:391-399. doi: 10.1111/een.13124
 10. Steward, R.A., Okamura, Y., **Boggs, C.L.**, Vogel, H., Wheat, C.W. 2021. The genome of the Margined White butterfly (*Pieris macdunnoughii*): sex chromosome insights and the power of polishing with PoolSeq data. *Genome Biology and Evolution* evab053, doi.org/10.1093/gbe/evab053.
 11. Steward*, R.A. and **Boggs, C.L.** 2020. Experience may outweigh cue similarity in maintaining a persistent host plant-based evolutionary trap. *Ecological Monographs* 90: e01412, doi: 10.1002/ecm.1412.
 12. Hill, J., Rastas, P., Hornett, E.A., Neethiraj, R., Clark, N., Morehouse, N., Celorio-Mancera, M., Carnicer Cols, J., Dirksen, H., Meslin, C., Keehnen, N., Pruissher, P., Sikkink, K., Vives, M., Vogel, H., Wiklund, C., Woronik, A., **Boggs, C.L.**, Nylín, S., Wheat, C.W. 2019a. Unprecedented reorganization of holocentric chromosomes provides insights into the enigma of lepidopteran chromosome evolution. *Science Advances* 5: eaau3648.
 13. Ravenscraft* A., Kish N., Peay K., **Boggs, C.L.** 2019b. No evidence that gut microbiota impose a net cost on their butterfly host. *Molecular Ecology* 28:2100-2117. doi.org/10.1111/mec.15057
 14. Steward*, R.A., Fisher**, L., and **Boggs, C.L.** 2019c. Preingestive and postingestive defenses affect larval feeding on a lethal invasive hostplant. *Entomologia experimentalis et applicata* 167:292-305.
 15. Ravenscraft*, A., Berry*, M., Hammer*, T., Peay, K. and **Boggs, C.L.** 2019d. Structure and function of the bacterial and fungal gut microbiota of Neotropical butterflies. *Ecological Monographs* 89(2) e01346
 16. Rattan, A., Savani, K., Komarraju, M., Morrison, M., **Boggs, C.** and Ambady†, N. 2018. Meta-lay theories of scientific potential drive underrepresented students' sense of belonging to Science, Technology, Engineering, and Mathematics (STEM). *Journal of Personality and Social Psychology* 115:54-75.
 17. **Boggs, C.L.** 2016a. The Fingerprints of Global Climate Change on Insect Populations. *Current Opinion in Insect Science* 17:69-73.
 18. **Boggs, C.L.**, and Niitepõld, K. 2016b. Effects of larval dietary restriction on body morphology, with implications for flight and life history. *Entomologia Experimentalis et Applicata* 159:189-196. doi: 10.1111/eea.12420.

19. **Boggs, C.L.** 2016c. Human Niche Construction and the Anthropocene. In Emmett, Robert, and Thomas Lekan, eds. "Whose Anthropocene? Revisiting Dipesh Chakrabarty's 'Four Theses'," *RCC Perspectives: Transformations in Environment and Society* 2016, no. 2. pp. 27-31.
20. Ravenscraft*, A. and **Boggs, C.L.** 2016d. Nutrient acquisition across a dietary shift: Fruit feeding butterflies crave amino acids, nectivores seek salt. *Oecologia* 181:1-12. doi: 10.1007/s00442-015-3403-6.
21. Nakajima, M. and **Boggs, C.L.** 2015a. Fine-grained distribution of a non-native resource can alter the population dynamics of a native consumer. *PLoS One* 10(11):e0143052. doi: 10.1371/journal.pone.0143052.
22. Niitepõld, K., and **Boggs, C.L.** 2015b. Effects of increased flight on the energetics and life history of the butterfly *Speyeria mormonia*. *PLoS One* 10(10): e0140104. doi: 10.1371/journal.pone.0140104.
23. Bonebrake*, T.C., **Boggs, C.L.**, Stamberger, J.A., Deutsch, C.A. and Ehrlich, P.R. 2014a. From global change to butterfly flapping: biophysics and behavior affect tropical climate change impacts. *Proceeding of the Royal Society B*, 281, 20141264. (reviewed by Faculty of 1000)
24. Davison*, R., **Boggs, C.L.**, and Baudisch, A. 2014b. Resource allocation as a driver of senescence: Life history tradeoffs produce age patterns of mortality. *Journal of Theoretical Biology* 360:251-262.
25. Niitepõld, K., Perez, A. and **Boggs, C.L.** 2014c. Aging, lifespan, and energetics under adult dietary restriction in Lepidoptera. *Physiological and Biochemical Zoology* 87:684-694.
26. **Boggs, C.L.**, and Niitepõld, K. 2014d. Insights from stable isotope tracers on reproductive allocation under stress. *Integrative and Comparative Biology* 54:880-889.
27. Nakajima, M., **Boggs, C.L.**, Chew, F.S., Cummings, A., Bowsheer**, J. 2014e. Dynamics and structure of a native *Pieris* population in the presence of a non-native, toxic larval host plant. *Journal of the Lepidopterist's Society*, 68:175-184.
28. McCoy*, R.C., Garud*, N.R., Kelley, J.L., **Boggs, C.L.** and Petrov, D.A. 2014f. Genomic inference accurately predicts the timing and severity of a recent bottleneck in a non-model insect population. *Molecular Ecology* 23:136-150.
29. Nakajima, M., **Boggs, C.L.**, Bailey, S.-A., Reithel, J., and Paape**, T. 2013. Fitness costs of butterfly oviposition on a lethal non-native plant in a mixed native and non-native plant community. *Oecologia* 172:823-832.
30. **Boggs, C.L.** and Inouye, D.W. 2012. A single climate driver has direct and indirect effects on population dynamics. *Ecology Letters* 15:502-508. (selected by Faculty of 1000 as "must read")
31. Bonebrake*, T.C., Watt, W.B., Perez, A. and **Boggs, C.L.** 2011a. One variable species or multiple cryptic? Mitochondrial phylogeny of Central and North American *Chlosyne lacinia* (Lepidoptera: Nymphalidae). *European Journal of Entomology* 108:529-535.
32. Bonebrake*, T.C., Navratil*, R.T., **Boggs, C.L.**, Fendorf, S., Field, C., and Ehrlich, P.R. 2011b. Native and non-native community assembly through edaphic manipulation: implications for habitat creation and restoration. *Restoration Ecology* 19:709-716.

33. Bonebrake*, T.C., Christensen*, J., **Boggs, C.L.** and Ehrlich P.R. 2010a. Population decline assessment, historical baselines, and conservation. *Conservation Letters* 3:371-378.
34. Bonebrake*, T.C., Ponisio**, L., **Boggs, C.L.** and Ehrlich, P.R. 2010b. More than just indicators: A review of tropical butterfly ecology and conservation. *Biological Conservation* 143:1831-1841.
35. Bonebrake*, T.C., **Boggs, C.L.**, McNally**, J., Ranganathan*, J., and Ehrlich, P.R. 2010c. Oviposition behavior and offspring performance: Consequences of climatic and habitat heterogeneity. *Oikos* 119:927-934.
36. Eberhard S.H., Hikl, A.L., **Boggs, C.L.**, Krenn, H.W. 2009a. Saliva or regurgitated nectar? What *Heliconius* butterflies use for pollen feeding. *Annals of the Entomological Society of America* 102:1105-1108.
37. Molleman, F., Ding, J., **Boggs, C.L.**, Carey, J.R., Arlet, M.E. 2009b. Does dietary restriction reduce life span in male fruit-feeding butterflies? *Experimental Gerontology* 44:601-606.
38. **Boggs, C.L.** 2009c. Understanding insect life histories and senescence through a resource allocation lens. *Functional Ecology* 23:27-37.
39. Raubenheimer, D. and **Boggs, C.L.** 2009d. Nutritional ecology, functional ecology and *Functional Ecology*. *Functional Ecology* 23:1-3.
40. Morris, W.F., Pfister, C.A., Tuljapurkar, S., Haridas, C.V., **Boggs, C.L.**, Boyce, M.S., Bruna, E.M., Church, D.R., Coulson, T., Doak, D.F., Forsyth, S., Gaillard, J-M., Horvitz, C.C., Kalisz, S., Kendall, B.E., Knight, T.M., Lee, C.T., and Menges, E.S. 2008. Longevity can buffer plant and animal populations against changing climatic uncertainty. *Ecology* 89:19-25.
41. **Boggs, C.L.** and Ehrlich P.R. 2007a. Conservation of coevolved insect herbivores and plants. In K.J. Tilmon, ed. *Specialization, Speciation, and Radiation: the Evolutionary Biology of Herbivorous Insects*. University of California Press, Berkeley, pp. 325-332.
42. Jarvis, M.A., Ferns, P.N., and **Boggs, C.L.** 2007b. A trade-off between female lifespan and larval diet breadth at the interspecific level in Lepidoptera. *Evolutionary Ecology* 21:307-323.
43. Chan*, K.M.A., Pringle*, R.M., Ranganathan*, J., **Boggs, C.L.**, Chan*, Y.E., Ehrlich, P.R. Haff, P., Heller*, N.E., Al-Khafaji*, K., and MacMynowski, D. 2007c. When Agendas Collide: Human Welfare and Biological Conservation. *Conservation Biology* 21:59-68.
44. Jarvis, M.A., **Boggs, C.L.** and Ferns, P.N. 2007d. Egg maturation strategy and survival trade-offs in holometabolous insects: a comparative approach. *Biological Journal of the Linnean Society* 90:293-302.
45. **Boggs, C.L.**, Holdren, C.E., Kulahci**, I.G., Bonebrake*, T., Inouye, B., Fay, J.P., McMillan, A., Williams, E.H., and Ehrlich, P.R. 2006a. Delayed population explosion of an introduced butterfly. *Journal of Animal Ecology* 75:466-475. (reviewed by Faculty of 1000)
46. Boyce, M.S., Haridas, C.V., Lee, C., **Boggs, C.L.**, Bruna, E.M., Coulson, T., Doak, D., Drake, J.M., Gaillard, J-M., Horvitz, C.C., Kalisz, S., Kendall, B.E., Knight, T., Menges, E.S., Morris, W.F., Pfister, C.A., Tuljapurkar, S.D. 2006b. Demography in an increasingly variable world. *Trends in Ecology & Evolution* 21:141-147.

47. Jervis, M.A., **Boggs, C.L.** and P.N. Ferns 2005a. Egg maturation strategy and its associated trade-offs: a synthesis focusing on Lepidoptera. *Ecological Entomology* 30:1-17.
48. **Boggs, C.L.** and Freeman**, K.D. 2005b. Larval food limitation in butterflies: effects on adult resource allocation and fitness. *Oecologia* 144:353-361.
49. Jervis, M.A. and **Boggs, C.L.** 2005c. Linking nectar amino acids to fitness in female butterflies. *Trends in Ecology and Evolution* 20:585-587.
50. Stjernholm*, F., Karlsson, B. and **Boggs, C.L.** 2005d. Age-related changes in thoracic mass: Possible reallocation of resources to reproduction in butterflies. *Biological Journal of the Linnean Society* 86:363-380.
51. O'Brien, D.M., **Boggs, C.L.** and Fogel, M.L. 2005e. The amino acids used in reproduction by butterflies: a comparative study of dietary sources using compound specific stable isotope analysis. *Physiological and Biochemical Zoology* 78:819-827. (*reviewed by Faculty of 1000*)
52. O'Brien, D.M, **Boggs, C.L.**, and Fogel, M.L. 2004a. Making eggs from nectar: Connections between butterfly life history and the importance of nectar carbon in reproduction. *Oikos* 105:279-291.
53. Fischer, K., O'Brien, D.M., and **Boggs, C.L.** 2004b. Allocation of larval and adult resources to reproduction in a fruit-feeding butterfly. *Functional Ecology* 18:656-663.
54. Ellers, J., and **Boggs, C.L.** 2004c. Functional ecological implications of intraspecific differences in wing melanization in *Colias* butterflies. *Biological Journal of the Linnean Society* 82:79-87.
55. Ellers, J., and **Boggs, C.L.** 2004d. Evolutionary genetics of dorsal wing color in *Colias* butterflies. *Journal of Evolutionary Biology* 17:752-758.
56. **Boggs, C.L.**, and Dau**, B. 2004e. Resource specialization in puddling Lepidoptera. *Environmental Entomology* 33:1020-1024.
57. Ellers, J., and **Boggs, C.L.** 2003a. The evolution of wing color: Male mate choice opposes adaptive wing color divergence in *Colias* butterflies. *Evolution* 57:1100-1106.
58. Hellmann*, J.J., Weiss, S.B., McLaughlin, J.H., **Boggs, C.L.**, Ehrlich, P.R., Launer, A.E., and Murphy, D.D. 2003b. Testing short-term hypotheses with a long-term study of a butterfly population. *Ecological Entomology* 28:74-84.
59. Horner-Devine*, M.C., Daily, G.C., Ehrlich, P.R. and **Boggs, C.L.** 2003c. Countryside biogeography of tropical butterflies. *Conservation Biology* 17:168-177.
60. O'Brien, D.M, **Boggs, C.L.** and Fogel, M.L. 2003d. Pollen feeding in the butterfly *Heliconius charitonia*: isotopic evidence for essential amino acid transfer from pollen to eggs. *Proceedings of the Royal Society London* 270:2631-2636.
61. **Boggs, C.L.** 2003e. Environmental variation, life histories, and allocation. In **Boggs, C.L.**, Watt, W.B. and Ehrlich, P.R., eds., *Butterflies: Ecology and Evolution Taking Flight*. University of Chicago Press. pp. 185-206.
62. Watt, W.B. and **Boggs, C.L.** 2003f. Butterflies as model systems in ecology and evolution: Present and future. In **Boggs, C.L.**, Watt, W.B. and Ehrlich, P.R., eds., *Butterflies: Ecology and*

Evolution Taking Flight. University of Chicago Press. pp. 603-613.

63. O'Brien, D.M., Fogel, M.L., and **Boggs, C.L.** 2002a. Renewable and non-renewable resources: The role of amino acid turnover in allocation to reproduction in Lepidoptera. *Proceedings of the National Academy of Sciences, USA* 99:4413-4418.
64. McLaughlin, J.F., Hellmann*, J., **Boggs, C.L.** and Ehrlich, P.R. 2002b. Climate change hastens population extinctions. *Proceedings of the National Academy of Sciences, USA* 99: 6070-6074.
65. Ellers, J. and **Boggs, C.L.** 2002c. Evolution of wing color in *Colias* butterflies: heritability, sex-linkage, and population divergence. *Evolution* 56:836-840.
66. Fleishman, E., Ray, C., Sjögren-Gulve, P., **Boggs, C.L.**, and Murphy, D.D. 2002d. Assessing the relative roles of patch quality, area, and isolation in predicting metapopulation dynamics. *Conservation Biology* 16:706-716.
67. McLaughlin, J.F., Hellmann*, J., **Boggs, C.L.** and Ehrlich, P.R. 2002e. The route to extinction: population dynamics of a threatened butterfly. *Oecologia* 132:538-548.
68. Heal, G., Daily, G.C., Ehrlich, P.R., Salzman, J., **Boggs, C.L.**, Hellmann*, J.J., Hughes*, J.B., Kremen, C. and Ricketts*, T.H. 2001. Protecting natural capital: Ecosystem service districts. *Stanford Environmental Law Journal* 20:333-364.
69. Fleishman, E., Launer, A.E., Weiss, S.B., Reed, J.M., **Boggs, C.L.**, Murphy, D.D., and Ehrlich, P.R. 1997 (2000). Effects of microclimate and oviposition timing on prediapause larval survival of the Bay checkerspot butterfly, *Euphydryas editha bayensis*. *Journal of Research on Lepidoptera* 36:31-44.
70. Fleishman, E., Wolff, G.H., **Boggs, C.L.**, Ehrlich, P.R., Launer, A.E., Niles*, J.O., Ricketts*, T.H. 1999. Conservation in practice: overcoming obstacles to implementation. *Conservation Biology* 13:450-452.
71. **Boggs, C.L.** 1997a. Reproductive allocation from reserves and income in butterfly species with differing adult diets. *Ecology* 78:181-191.
72. **Boggs, C.L.** 1997b. Dynamics of reproductive allocation from juvenile and adult feeding: radiotracer studies. *Ecology* 78:192-202.
73. **Boggs, C.L.** and Murphy, D.D. 1997c. Community composition in mountain ecosystems: climatic determinants of montane butterfly distributions. *Global Ecology & Biogeography Letters* 6:39-48.
74. **Boggs, C.L.** 1997d. Resource allocation in variable environments: Comparing insects and plants. in Bazzaz, F. & J. Grace, eds., *Plant Resource Allocation*. Academic Press. pp. 73-92.
75. **Boggs, C.L.** 1997e. The role of conservation biology in environmental policy. *Journal of Insect Conservation* 1(4) i - iii.
76. Sculley**, C.E. and **Boggs, C.L.** 1996a. Mating systems and sexual division of foraging effort affect puddling behavior by butterflies. *Ecological Entomology* 21:193-197.
77. Launer, A.E., Murphy, D.D., **Boggs, C.L.**, Baughman*, J., Weiss, S. and Ehrlich, P.R. 1993 (1996b). Puddling behavior by Bay checkerspot butterflies (*Euphydryas editha bayensis*). *Journal*

of Research on the Lepidoptera 32:45-52.

78. **Boggs, C.L.** 1995. Male nuptial gifts: Phenotypic consequences and evolutionary implications. in Leather, S.R. & J. Hardie, eds., *Insect Reproduction*. CRC Press. pp. 215-242.
79. **Boggs, C.L.** 1994a. The role of resource allocation in understanding reproductive patterns. in Leather, S.R. A.D. Watt, N.I. Mills & K.E.A. Walters, eds, *Individual, populations and patterns in ecology*. Intercept Press, United Kingdom. pp. 25-33.
80. Cushman, J.H., **Boggs, C.L.**, Weiss, S.B., Murphy, D.D., Harvey, A.W. and Ehrlich, P.R. 1994b. Estimating female reproductive success of a threatened butterfly: Influence of emergence time and hostplant phenology. *Oecologia* 99:194-200.
81. **Boggs, C.L.** and Ross**, C.L. 1993. The effect of adult food limitation on life history traits in *Speyeria mormonia* (Lepidoptera: Nymphalidae). *Ecology* 74:433-441.
82. **Boggs, C.L.** 1992. Resource allocation: exploring connections between foraging and life history strategies. *Functional Ecology* 6:508-518.
83. **Boggs, C.L.** and Jackson**, L.A. 1991. Mud puddling by butterflies is not a simple matter. *Ecological Entomology* 16:123-127.
84. **Boggs, C.L.** 1990. A general model of the role of male-donated nutrients in female insects' reproduction. *American Naturalist* 136:598-617.
85. **Boggs, C.L.** 1988. Rates of nectar feeding in butterflies: effects of sex, size, age and sugar concentration. *Functional Ecology* 2:289-295.
86. Watt, W.B. and **Boggs, C.L.** 1987a. Allelic isozymes as probes of the evolution of metabolic organization. *Isozymes* 15:27-47.
87. **Boggs, C.L.** 1987b. Demography of the unsilvered morph of *Speyeria mormonia* (Nymphalidae) in Colorado. *Journal of the Lepidopterist Society* 41:94-97.
88. **Boggs, C.L.** 1987c. Within population variation in the demography of *Speyeria mormonia* (Lepidoptera: Nymphalidae). *Holarctic Ecology* 10:175-184.
89. **Boggs, C.L.** and Gilbert, L.E. 1987d. Spatial and temporal distribution of *Lantana* mites phoretic on Lepidoptera. *Biotropica* 19:301-305.
90. **Boggs, C.L.** 1987e. Ecology of nectar and pollen feeding in Lepidoptera. in: Slansky, Jr., F. and Rodriguez, J.G. (eds), *Nutritional ecology of insects, mites and spiders and related Invertebrates*. John Wiley & Sons, New York. pp. 369-391.
91. **Boggs, C.L.** 1986a. Reproductive strategies of female butterflies: Variation in and constraints on fecundity. *Ecological Entomology* 11:7-15.
92. Springer**, P. and **Boggs, C.L.** 1986b. Resource allocation to oocytes: heritable variation with altitude in *Colias philodice eriphyle* (Lepidoptera: Pieridae). *American Naturalist* 127:252-256.
93. **Boggs, C.L.** 1981a. Nutritional and life history determinants of resource allocation in holometabolous insects. *American Naturalist* 117:692-709.
94. **Boggs, C.L.**, Smiley, J.T., and Gilbert, L.E. 1981b. Patterns of pollen exploitation by *Heliconius*

butterflies. *Oecologia* 48:284-289.

95. **Boggs, C.L.** 1981c. Selection pressures affecting male nutrient investment at mating in heliconiine butterflies. *Evolution* 35:931-940.
96. **Boggs, C.L.** and Watt, W.B. 1981d. Population structure of pierid butterflies IV. Genetic and physiological investment in offspring by male *Colias*. *Oecologia* 50:320-324.
97. **Boggs, C.L.** and Gilbert, L.E. 1979. Male contribution to egg production in butterflies: Evidence for transfer of nutrients at mating. *Science* 206:83-84.
98. Dunlap-Pianka, H., **Boggs, C.L.**, and Gilbert, L.E. 1977a. Ovarian dynamics in heliconiine butterflies: Programmed senescence versus eternal youth. *Science* 197:487-490.
99. Allen, H.M., **Boggs, C.L.**, Norris, E. and Doering, M. 1977b. Parental behavior of captive willow grouse *Lagopus l. lagopus*. *Ornis Scandinavica* 8:175-183.
100. **Boggs, C.L.**, Norris, E. and Steen, J.B. 1977c. Behavioral and physiological temperature regulation of young chicks of the willow grouse (*Lagopus lagopus*). *Comparative Biochemistry & Physiology* 58A:371-372.
101. Norris, E., **Norris**[§], C. and Steen, J.B. 1975a. Regulation and grinding ability of grit in the gizzard of Norwegian willow ptarmigan (*Lagopus lagopus*). *Poultry Science* 54:1839-1843.
102. Myrberget, S., **Norris**[§], C. and Norris, E. 1975b. Grit in Norwegian *Lagopus* spp. *Norwegian Journal of Zoology* 23:205-212.

§ former name of C.L. Boggs

INVITED:

103. **Boggs, C.L.** and Nieminen, M. 2004a. Checkerspot reproductive biology. In Ehrlich, P.R. and Hanski, I., eds., *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford University Press. pp. 92-111.
104. Sacchari, I., **Boggs, C.L.**, Hanski, I. and Ehrlich, P.R. 2004b. Genetics of checkerspot populations. In Ehrlich, P.R. and Hanski, I., eds., *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford University Press. pp. 199-218.
105. Wahlberg, N., Ehrlich, P.R., **Boggs, C.L.** and Hanski, I. 2004c. Bay checkerspot and Glanville fritillary compared with other species. In Ehrlich, P.R. and Hanski, I., eds., *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford University Press. pp. 219-244.
106. Hanski, I., Hellmann*, J., **Boggs, C.L.** and McLaughlin, J. 2004d. Checkerspots as model systems in population ecology. In Ehrlich, P.R. and Hanski, I., eds., *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford University Press. pp. 245-263.
107. Hanski, I., Ehrlich, P.R., Nieminen, M., Murphy, D.D., Hellmann*, J., **Boggs, C.L.**, and McLaughlin, J. 2004e. Checkerspots and conservation biology. In Ehrlich, P.R. and Hanski, I., eds., *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford University Press. pp. 264-287.

108. Ehrlich, P.R., Hanski, I. and **Boggs, C.L.** 2004f. What have we learned? In Ehrlich, P.R. and Hanski, I., eds., *On the Wings of Checkerspots: A Model System for Population Biology*. Oxford University Press. pp. 288-300.
109. **Boggs, C.L.** 2001. Species and Speciation. In Smelser, N. and Baltes, P., eds., *International Encyclopedia of the Social and Behavioral Sciences*. Elsevier, Oxford. pp. 14855-14861.
110. **Boggs, C.L.** and Roughgarden, J. 1999a. Biodiversity: Result of speciation and extinction. in Ernst, W.G., ed., *Earth Systems: Processes and Issues*. Cambridge Univ. Press. pp. 255-266.
111. **Boggs, C.L.** and Roughgarden, J. 1999b. Evolution: Adaptation and environmental change. in Ernst, W.G., ed., *Earth Systems: Processes and Issues*. Cambridge Univ. Press. pp. 267-277.
112. Merenlender, A.M., **Boggs, C.L.** and Murphy, D.D. 1997. The role of insects in conservation management. in Chiariello, N. and Dasmond, R., eds., *Proceedings of the Symposium on Biodiversity of the Central California Coast*. pp. 105-112.

ABSTRACTS AND BOOK REVIEWS:

113. Keck*, C.M.T. and **Boggs, C.** 2023. Investigating color preference in male butterflies during mating. *Integrative and Comparative Biology*
114. Duverglas*, L., **Boggs, C.L.** 2022. Examining the relationship between biotic and abiotic drivers of pollinator-population vital rates through a tri-trophic lens. *Journal of Agricultural and Urban Entomology*
115. Sanchez*, N., Speiser, D. and **Boggs, C.** 2018. The Visual Ecology of the Mormon Fritillary, *Speyeria mormonia*, Across an Elevational Gradient. *Integrative and Comparative Biology* 58: E413.
116. **Boggs, C.L.** and Niitepõld, K. 2014. Stress, nutrient allocation and multivariate life history: from lab to field. *Integrative and Comparative Biology* 54:E21
117. **Boggs, C.L.**, Niitepõld, K. and Perez, A. 2013. Comparative effects of adult food limitation on butterfly life histories. *Integrative and Comparative Biology* 53:E19
118. Niitepõld, K., Perez, A. and **Boggs, C.L.** 2013. Food limited butterflies: Resting and flight metabolic rate, fecundity and longevity. *Integrative and Comparative Biology* 53:E156.
119. O'Brien, D.M. Fogel, M. and **Boggs, C.L.** 2001. Amino acid metabolism in adult Lepidoptera: From biochemistry to life history evolution. *American Zoologist* 41: 1542.
120. Fleishman, E., **Boggs, C.L.**, Devine*, M.C., Kark, S., Ricketts*, T.H. 2000. Status of the Union. *Conservation Biology* 14: 1926-1927.
121. O'Brien D.M., **Boggs C.L.**, and Fogel M.L. 1999. Physiological constraints on reproductive nutrient allocation in Lepidoptera: The dietary origins of individual egg amino acids. *American Zoologist* 39: 565.
122. **Boggs, C.L.** 1984a. Insect mating system evolution: hypotheses and evidence. *Ecology* 65:1026-1027.
123. **Boggs, C.L.** 1984b. Predictions of size and function of spermatophores. *International Congress of Entomology Proceedings* 17:153.

124. **Boggs, C.L.** 1983. Modes of mate acquisition: New ideas on the oldest subject. *Ecology* 64:1325.
125. **Boggs, C.L.** 1980. Resource allocation at metamorphosis in insects. 2nd International Congress of Systematic and Evolutionary Biology. University of British Columbia. P151.

PAPERS FROM WORK DONE IN MY LAB, ON WHICH I AM NOT AN AUTHOR:

1. Wong, S.C., Oksanen, A., Mattila, A.L.K., Lehtonen, R. **Niitepõld, K.**, and Hanski, I. 2016. Effects of ambient and preceding temperatures and metabolic genes on flight metabolism in the Glanville fritillary butterfly. *Journal of Insect Physiology* 85:23-31
2. Zhan, S., Zhang, W., **Niitepõld, K.**, Hsu, J., Haeger, J.F., Zalucki, M.P., Altizer, S., de Roode, J.C., Reppert, S.M. and Kronforst, M.R. 2014. The genetics of monarch butterfly migration and warning coloration. *Nature*, doi:10.1038/nature13812.
3. Ahola, V., Lehtonen, R., Somervuo, P., Salmela, L., Koskinen, P., Rastas, P., Välimäki, N., Paulin, L., Kvist, J., Wahlberg, N., Tanskanen, J., Hornett, E. A., Ferguson, L. C., Luo, S., Cao, Z., de Jong, M. A., Duploux, A., Smolander, O.-P., Vogel, H., **McCoy*, R. C.**, Qian, K., Chong, W. S., Zhang, Q., Ahmad, F., Haukka, J. K., Joshi, A., Salojärvi, J., Wheat, C. W., Grosse-Wilde, E., Hughes, D., Katainen, R., Pitkänen, E., Ylinen, J., Waterhouse, R. M., Turunen, M., Vähärautio, A., Schulman, A. H., Taipale, M., Lawson, D., Ukkonen, E., Mäkinen, V., Goldsmith, M. R., Holm, L., Auvinen, P., Frilander, M. J. & Hanski, I. 2014. The Glanville fritillary genome retains an ancient karyotype and reveals selective chromosomal fusions in Lepidoptera. *Nature Communications*, 5, doi:10.1038/ncomms5737.
4. Hoopes, M.F, Marsh, D.M., Beard, K.H., Goldberg, N., Aparicio, A., Arbuthnot, A., Hixon, B., LaFlower, D., Lee, L., Little, A., Mooney, E., Palette, A., **Ravenscraft*, A.**, Scheele, S., Stowe, K., Sykes, C., Watson, R., and Yang, B. 2013. Invasive plants in U.S. National Wildlife Refuges: A coordinated research project with undergraduate ecology students. *BioScience* 63: 644-656. (*this paper incorporated work done by my undergraduate Conservation Biology course; A. Ravenscraft was the TA and S. Scheele was a class member*)
5. **Bonebrake*, T.C.** 2012. Conservation implications of adaptation to tropical climates from a historical perspective. *Journal of Biogeography* DOI: 10.1111/jbi.12011.
6. **Bonebrake*, T.C.**, and Mastrandrea*, M.D. 2010. Tolerance adaptation and precipitation changes complicate latitudinal patterns of climate change impacts. *Proceedings of the National Academy of Sciences, USA* 28:12581-12586.
7. **Bonebrake*, T.C.** & Sorto, R. 2009. Butterfly (*Papilionoidea and Hesperioidea*) rapid assessment of a coastal countryside in El Salvador. *Trop. Cons. Sci.* 2:34-51.
8. **Karlsson, B.** 1995. Resource allocation and mating systems in butterflies. *Evolution* 49:955-961.
9. **Karlsson, B.** 1994. Feeding habits and change of body composition with age in 3 nymphalid butterfly species. *Oikos* 69:224-230.

POPULAR PUBLICATIONS:

- Boggs, C.L.** 2020. Carte blanche given to Carol Boggs. Debating the Anthropocene. Dossier #31. Cairn Info, International edition. <https://mailchi.mp/cairn/dossier31-the-anthropocene?e=7c54cc2abe>
- Inouye, D. 2012. Effects of frost on wildflowers: an unexpected consequence of climate change. EcoEd Digital Library, slides 20-22 are from joint work w/ C.L. Boggs
<http://ecoed.esa.org/index.php?P=AdvancedSearch&Q=Y&FK=Effects+of+frost+on+wildflowers%3A+an+unexpected+consequence+of+climate+change&RP=10&SR=0&ST=Quick>.
- Editor of, and contributing writer to, *Update*, semi-annual publication of the Center for Conservation Biology, 1994-2006.
- Ehrlich, A.H., **Boggs, C.L.**, Ehrlich, P.R., and Kremen, C. 2000. Missing connections.
<http://ccb.stanford.edu/connections/summary.html>
- Knight, W.M., Fallon, S.M., **Boggs, C.L.**, Ehrlich, A.H., Ehrlich P.R., and Kremen, C. 2000. Environmental disasters and human activities: do the media see the connection?
<http://ccb.stanford.edu/connections/mitch.html>
- Boggs, C.L.** 1999. Gatorade for butterflies. Crested Butte Chronicle & Pilot, Oct. 29, 1999. p. 25.
- Boggs, C.L.** 1998. Sex, salt, and the single butterfly. *American Butterflies* 6:4-9.
- Boggs, C.L.** 1997. The Sound Science Initiative. *Ecofables/Ecoscience* 1:10.
- Boggs, C.L.** and Daily, G.C. 1995. Politics, Biodiversity and Ecosystem Services. *Stanford Daily*, June 7.
- Boggs, C.L.** 1993. Ethos and Ecosystems. *Stanford Magazine*. June 1993. Pp. 10-11.

PRESENTATIONS, SEMINARS, WORKSHOPS, MEDIA, PUBLIC OUTREACH

INVITED CONFERENCE TALKS

- 2016 International Congress of Entomology, Orlando, Florida
- 2014 7th International Conference on Biology of Butterflies, Turku, Finland
Society for Integrative & Comparative Biology, Austin, TX
- 2011 Insect demography, Entomological Society of America, Reno, NV
- 2010 International Conference on Pollinator Biology, Health and Policy, Penn State Univ
6th International Conference on the Biology of Butterflies, Edmonton, Alberta
- 2007 Insect genetics and conservation, Entomological Society of America, San Diego (co-organized symposium w/ Roger Leopold, USDA)
- 2003 The Value of Long-Term Studies of Natural Ecosystems, Assoc. of Ecosystem Research Centers Symposium, Washington, DC
The evolutionary significance of variation in reproductive investment, European Society for Evolutionary Biology, Leeds, UK
- 2002 4th International Conference on the Biology of Butterflies, Leiden, Netherlands
- 1999 Museums, Universities and Biodiversity in the 21st Century, Stanford University
- 1998 3rd International Butterfly Ecology and Evolution Symposium, Mt. Crested Butte, CO
- 1997 Resource allocation, population dynamics & conservation, Savannah River Ecology Lab
- 1995 Invertebrate Conservation, Entomological Society of America, Las Vegas, NV
Paternal Investment, Animal Behavior Society, Lincoln, NE
Biodiversity of the Central California Coast, San Francisco, CA
- 1994 2nd Symposium on Butterfly Ecology and Evolution, Stockholm, Sweden
Complexity and Simplicity in Mountain Ecosystems, VI International Congress of Ecology, Manchester, UK
Resource Allocation in Plants and Animals, VI International Congress of Ecology, Manchester, UK
- 1992 Individuals, Populations, Patterns: a symposium honoring A.F.G. Dixon. Norwich, UK
- 1991 Evolution of Butterfly Mating Systems, Lepidopterists' Society, Tucson, AZ
- 1984 Insect Reproductive Physiology, XVII Int'l Congress of Entomology, Hamburg Germany
- 1982 Behavior and Ecology of Lepidoptera, Lepidopterists' Society, Laramie, WY

CONTRIBUTED PAPERS/ POSTERS

More than 90 contributed papers or posters at national and international meetings

INVITED OUTSIDE SEMINARS (LAST 10 YEARS ONLY)

- 2022 University of Georgia
- 2021 Wofford College
- 2020 Washington State University, Vancouver
Winthrop University
Univ. of South Carolina, Columbia (Biological Sci)
- 2019 Frances Marion University
- 2016 Univ. of South Carolina, Aiken
- 2015 Univ. of California, Berkeley
Stockholm University
- 2014 Univ. of Alabama, Birmingham

- 2013 Strickland Lectures, Univ. of Alberta
Clemson University
- 2012 Univ. of California, Irvine
Univ. of South Carolina
Univ. of Minnesota
Rice University
Univ of California, Berkeley, Essig Museum Brunch (invited by grad students)

WORKSHOPS/ WORKING GROUPS

- Consortium for History of Science, Technology & Medicine, Applied Historical Methods for the Environment Working Group. Virtual presentation on baselines in conservation biology Jan 28, 2022
- History Center, Univ. of South Carolina, "After Nature", workshop, 2 panels, Feb 27 2015
- South Carolina Environmental Law Symposium, panel moderator, Feb 20 2015
- Congaree National Park, "Climate Friendly Parks", workshop; presentation on phenology and climate change, Sept 9 2014
- Stanford Woods Institute for the Environment Uncommon Dialogue: "Commercial Outfitting and the Wilderness Act: Legal, Scientific, and Policy Challenges and Opportunities" Co-organizer and speaker, Feb 2012
- Voice & Influence Program, Clayman Institute for Gender Research, Stanford (a year-long leadership workshop for faculty women) 2011-12
- Ecology and Evolution of Aging, Napa, 2011
- National Center for Ecological Analysis & Synthesis (NCEAS) working group: "Stochastic Demography for an Increasingly Variable World" 2004-5
- Work Group on Biotechnology, Project for Hemispheric Cooperation in the Development of Science and Technology Policy, Office of Science and Technology of the Organization of American States; Quito, Ecuador 2003
- Workshop on land use/biodiversity in the Telluride, CO region 2001

MEDIA INTERVIEWS

- 50+ interviews for local and national newspapers, radio, television, journals and websites, including: Associated Press, Animal Planet, BioMed Net, California Academy of Sciences, Crested Butte Chronicle, Denver Post, Inverse.com, KBUT and KZSU radio, KQED, Los Angeles Times, Mongabay, Nature, New Scientist, New York Times, Palo Alto Daily, Palo Alto Weekly, Rocky Mtn. Chronicle (Ft. Collins), Sacramento Bee, Salt Lake Tribune, San Francisco Chronicle, San Jose Mercury News, Science, Science News, Stanford Daily, WACH tv
- 2 microdocumentaries w/ S. Palumbi

PUBLIC OUTREACH PRESENTATIONS/ ACTIVITIES

- On-going Environmental Education Program, Rocky Mountain Bio Lab 4-10yr olds, adults
- 2021 Podcast interview on "Insects & Climate Change", Trevin Stewart, Ohio State University Landscape Architecture Program
- 2020 Research presentation, Board of Trustees, Rocky Mountain Bio Lab
KQED (PBS) Earth Day Film Series, Deep Look panel expert
Scout troop presentation as part of a merit badge activity

- 2019 Marmot Club presentation, Rocky Mountain Bio Lab
- 2017 Colorado Biology Teachers Association field trip
 Consultation on a KQED video about insect biology
- 2015 Panelist, "Future of Conservation", part of Rocky Mountain Bio Lab "Geek Week"
- 2014 Consultation on museum exhibit content, Rocky Mountain Biological Laboratory
- ~2005-12 KBUT radio "Nature Notes" (Crested Butte, CO)
- 2012 Stanford Historical Society panel: The Program in Human Biology at 40
 Consultation on museum exhibit content, Rocky Mountain Biological Laboratory
- 2011 organized a session on dealing with the media for scientists at RMBL
 Judge Panel (Indiana), Student Spaceflight Experiments Program, National Center for
 Earth and Space Science Education
 The Program in Human Biology 40th birthday party, Stanford Reunion Weekend
 Stanford Alumni Club, Reno, NV
 Stanford Travel/Study, Galapagos
 Presentation at "Walk the Farm", Stanford
- 2010 Museum exhibit on my research, Rocky Mountain Biological Laboratory
- 2009 Presentation to Stanford class of '79
 Presentation at "Walk the Campus", Stanford Reunion Weekend
- 2007 Bay checkerspot butterfly, at Society of Environmental Journalists field trip
 Lecture, "Environmental Issues: From Policy to Practice" for a distance learning class
 for 3 African universities
- 2006 California Academy of Sciences Bioforum (for K-12 teachers)
 Fromm Lecture, USF
 Pescadero Conservation Alliance
- 2005 Pacific Grove Museum of Natural History
- 2001 Science Forum, Valley Floor Project, Telluride, Colorado
- 1998 Castilleja School Career Lecture
- 1997 Friends of Hopkins Marine Station
 Speaker, Avian Conservation Center Dedication, San Francisco Zoo
 Christ's Church Environmental Discussion Group, Woodside, CA
- 1996 Stanford Faculty Women's Club Lunch Bunch speaker
- 1994 Palo Alto Comprehensive Plan Forum on Practical Sustainability
 Santa Clara Biodiversity Coalition

RESEARCH SUPPORT

EXTERNAL (FUNDED ONLY):

(notes: I had PI status at Stanford beginning only in 1997; small external grants including to graduate students are listed separately)

2020-2022	Rocky Mountain Biological Lab, REU Mentor grant, \$2,500
2019	Rocky Mountain Biological Lab, "Scientist Fellowship in memory of Dr. Navjot Sodhi" \$4,000
2018	South Carolina Army National Guard contract, "Medium and Large Wildlife Diversity and Abundance at the McCrady Training Site" \$60,000; co-PI w/ T. Mousseau
2017-2022	Congaree National Park CESU "Environmental Research and Education Collaboration" \$4000
2017	Rocky Mountain Biological Lab, "Scientist Fellowship" \$5,000.
2017	South Carolina Army National Guard contract, "Medium and Large Wildlife Diversity and Abundance at the McCrady Training Site" \$19,500; co-PI w/ T. Mousseau
2016-2017	South Carolina Army National Guard contract, "Pollinator Diversity and Abundance at The McCrady and Clarkhill Training Sites" \$31,675; co-PI w/ Tim Mousseau.
2014-present	Gills Creek Watershed Association. Coordinator. \$684,760
2009-2014	National Science Foundation, "Allocation, life history, and senescence: an integrated approach" \$688,515
2009-2012	National Institutes of Aging, "Evolutionary dynamics of lifespan", co-PI on P01 grant, \$16,000 of ~\$680,000 overall budget
2008-2009	National Science Foundation, "International: U.S.- El Salvador Dissertation Enhancement: Climate, ecophysiology, and evolution in a tropical butterfly (<i>Chlosyne lacinia</i>)", DDEP for T. Bonebrake, \$12,680
2000-2002	National Science Foundation, "Reproductive allocation of specific nutrients: the effects of foraging, life history and flight", \$226,510
1999-2000	Netherlands Organization for Scientific Research, NATO-Science Fellowship to J. Ellers for post-doctoral work w/ C. Boggs
1998-2000	National Science Foundation, "Support for Third International Butterfly Ecology and Evolution Symposium: Butterflies as Model Systems", \$15,000; coPI w/ W. Watt and P.R. Ehrlich
1991-1992	Swedish Natural Science Research Council, post-doctoral fellowship to B. Karlsson for post-doctoral work w/ C. Boggs
1991-present	National Science Foundation Research Experience for Undergraduates, RMBL site grant, co-investigator.
1986-1989	Whitehall Foundation, "Resource allocation and reproductive strategies in Lepidoptera", \$66,732
1978	National Science Foundation dissertation improvement grant "Parental nutrient investment and sexual selection in the Heliconiini (Lepidoptera: Nymphalidae)", \$4,000

INTERNAL (FUNDED ONLY):

SOUTH CAROLINA:

- 2019-2022 ASPIRE-I, Track IV, Vice President for Research. "Revision: Development of molecular tools for comparison of *Drosophila* and Lepidoptera signaling pathways involved in nutrient cycling" C. Boggs PI, A. Armstrong, co-PI. \$15,000
- 2018-2019 College of Arts & Sciences. "A Near Infrared Spectrometer for Biological Research", J. Quattro, PI, N. Senner, C. Boggs co-PI. \$20,000
- 2018 "SPARC: Zachary Cannizzo: Development of a bioenergetics model to explore the impacts of a climate-mediated range shift." \$4,999
- 2015 VPR Flood Initiative Grant. "Flooding effects on a newly described and very rare plant species, *Stachys caroliniana*" co-PI J. Nelson (AC Moore Herbarium) \$12,650

Departmental or Graduate School grants to graduate students:

- 2023 Elsie Taber & Graduate School Travel grants to L. Duverglas
- 2023 Elsie Taber & Graduate School travel grants to C. Keck
- 2022 Elsie Taber Travel grant to N. Ravikanthachari \$3,392

Magellan, SERF and UREP undergraduate research grants:

- 2023 UREP grant to A.M. Sanders \$1000
- 2023 UREP grant to M. Kay \$1000
- 2022/23 SERF grant to L. Littleton \$1,500
- 2022/23 Magellan & SERF grants to N. Shive \$4,500
- 2020/21 Magellan & SERF grants to H. Walton \$4,700
- 2018/9 Apprentice, Capstone & Magellan grants to E. Wagner, \$3,500

STANFORD:

- 2012 Hoagland Award, Vice Provost for Undergraduate Education, "Development of a Web- and Mobile-device-based Game on Cell Signaling/ Website Platform for Virtual Experiments on Epigenetics" co-PIs J.A.Edelman (Design School), R. Nusse, & M. Scott (Developmental Biology) \$32,830,
- 2011-2012 Woods Institute for the Environment: Uncommon Dialogue "Commercial Outfitting and the Wilderness Act: Legal, Scientific, and Policy Challenges and Opportunities" Co-PIs N. Ardoin (Education), C. Boggs, M. Dauber (Law/ Sociology) & D. Sivas (Law), co-sponsored by Stanford Law School. \$50,000
- 2009 Stanford Initiative for the Creative Arts (SICA), "The Origin Cycle", co-PIs L. Anderson (Philosophy), C. Boggs & E. Hadly (Biology), \$12,000
- 2005-2008 Environmental Interdisciplinary Initiatives Program, "Feasibility Study: Reintroduction of the Bay checkerspot butterfly to Stanford University lands", co-PIs C. Boggs, P. Ehrlich (Biology), S. Fendorf (Geological Sciences), C. Field (Carnegie Institute), B. Thompson (Law) & R. White (History), \$119,875
- ~2000-2015 Undergraduate summer funding: Biology Field Studies &/or Human Biology Research Exploration, >\$100,000 total
- ~2000-2015 Grants for undergraduate research through Stanford UAR office, ~\$30,000 total
- 1994-2006 Center for Conservation Biology, Stanford: writing foundation proposals for and administering ~\$1,400,000 annual budget

EXTERNAL SMALL GRANTS:

2005-present *direct to graduate students working with me:* multiple grants from Rocky Mountain Biological Lab, American Society of Naturalists, Sigma Xi, Colorado Mountain Club, Southeastern Section of the Ecological Society of America, Evolution meetings

1975-1990 Colorado Natural History Grant, The Nature Conservancy, Nat'l Academy of Sciences, American Philosophical Society, Roosevelt Memorial Fund, Univ. of Texas Office of Graduate Studies.

TEACHING

UNIVERSITY OF SOUTH CAROLINA

BIOLOGICAL SCIENCES:

BIOL/ENVR 571. "Conservation Biology", 35-45 students; 2015-
BIOL 703. "Life History Strategies", 7-10 students, 2020-

SCHOOL OF THE EARTH, OCEAN & ENVIRONMENT:

ENVR 590/480. "Issues in Environment", Senior Seminar, 14-40 students; 2016-

GUEST LECTURES:

BIOL/MSCI 510 "Invertebrate Zoology"
ENVR 201 "Environmental Science and Policy I"
ENVR 331 "Integrating Sustainability"
HIST 700 "Envisioning Eden: Environmental History and the Ecological Imagination"

STANFORD

PROGRAM IN HUMAN BIOLOGY:

"Genetics, Evolution and Ecology"; core course, 180-325 students; 1987-2011
"Darwin's Legacy" ~260 students; joint with Continuing Studies; 2008
"Environmental & Health Policy Analysis"; core course, 165-240 students; 1998, 2001-3
"Evolutionary Ecology", 20-25 students; 1984-1993

BIOLOGY DEPARTMENT:

"Conservation Biology", 16-40 students; cross-listed w/ Human Biology; 1991-2012
"Resource Allocation Strategies", a sophomore tutorial; 1993
"Biology of Insects", 10 students; 1990
Coordinator, undergraduate core laboratory sequence, 225-300 students; 1986-1989

GOLDMAN INTERSCHOOL HONORS PROGRAM IN ENVIRONMENTAL SCIENCE, TECHNOLOGY, AND POLICY:

Instructional team for honors seminar, 2009-2011

CONTINUING STUDIES:

"Insects: Creatures that run the world", 2010

GUEST LECTURES:

courses in behavioral ecology, biology of butterflies, biosystematics, evolution, earth systems, environmental law, environmental policy, ethics, island biogeography, Jasper Ridge Biological Preserve docents, undergraduate and graduate research seminars

GUEST LECTURES OUTSIDE ACADEMIC HOME INSTITUTION:

Rocky Mtn. Bio. Lab: field ecology, field entomology, natural history, physiological ecology, plant-animal interactions, outreach environmental education courses
International graduate course on conservation biology, National Autonomous University of Mexico (in Spanish); 2000
International graduate conservation biology course, Colégio de Biólogos del Perú, Lima (in Spanish); 1997
International graduate conservation biology field course, Tambopata, Peru (in Spanish); 1997

STUDENT ADVISING

UNDERGRADUATE

GENERAL:

Supervised 22 NSF REU or Independent Studies students, Rocky Mtn. Bio. Lab. 1991-present
2nd reader on honors thesis, Brown University 2016

UNIVERSITY OF SOUTH CAROLINA:

Advisor, School of the Earth, Ocean & Environment, Environment & Sustainability (2013-)
Supervised ~50 undergraduate research projects, incl. 10 honors projects plus 6 honors 2nd
readers (2013-)

STANFORD:

Advisor, Dept. of Biology (1986-2013); Program in Human Biology (1985-2013); Earth Systems
Program (1995-2013); Freshman advisor (1982-1992)
Stanford-in-Government undergraduate faculty mentor 2005
Supervised ~ 80 undergraduate & co-terminal masters research projects (first reader on 31
Stanford honors theses, incl. 4 winners of Firestone Medals given to top 10% of theses)

MASTER'S

MASTER'S MAJOR ADVISOR:

UNIVERSITY OF SOUTH CAROLINA:

Elizabeth Anderson, MEERM Program, internship track, 2023-present
L. Nicole Fipps, MS Biological Sciences, 2020-2021
Ojaswee Shrestha, MEERM Program, 2018-2020 ("Best MEERM thesis" award)
Connor Bacon, MS Biological Sciences, 2016-2018
Victoria Schwartz, MEERM Program, 2016- 2018 ("Best MEERM thesis" award)
Shelby Moody, MEERM Program, joint w/ John Nelson, 2015-2017
Austin Clarridge, MEERM Program, 2014- 2016 ("Best MEERM thesis" award)

ADDITIONAL MS COMMITTEES:

8 MS committees, University of South Carolina, 2013-present
2 MS committees, Western Colorado University (outside member), 2021-present
MS committee, San Francisco State University (outside member) 2001-4
Supervised 3 Master of Arts in Teaching (MAT) projects 2013-present

DOCTORAL

DOCTORAL MAJOR ADVISOR:

UNIVERSITY OF SOUTH CAROLINA:

Laurent Duverglas, 2021-present
Chloe Keck, 2021-present
Nitin Ravikanthachari 2018-present, will post-doc at Univ. Montana
Zachary Cannizzo 2017-2018, now at the Office of National Marine Sanctuaries, NOAA
Rachel Steward 2013-2019, now post-doctoral fellow at Lund University, Sweden

STANFORD: (note: I was eligible to be primary co-advisor only from 2006)

Alison Ravenscraft, 2010-2016, now assist professor at Univ. of Texas Arlington
Rajiv McCoy, 2010-2015, now assist. professor at Johns Hopkins University
Timothy Bonebrake, 2005-2010, now professor at Hong Kong University

COMMITTEES:

14 PhD committees, University of South Carolina, 2013-present
13 PhD committees, Stanford, 1994-2017
2 PhD committees, UC Santa Cruz (outside member), 1998-2002; 2004-2007

OUTSIDE EXAMINER:

Outside examiner, PhD dissertation, SASTRA Deemed University, Thanjavur, India 2021
Outside examiner, PhD dissertation, Tufts University 2019
Outside examiner, PhD dissertation, Massey University, New Zealand 2016
"Opponent", PhD dissertation, University of Stockholm 2015
Outside examiner, PhD dissertation, University of Vienna 2015
Pre-examiner, PhD dissertation, University of Helsinki, Finland 2004
Outside examiner, PhD dissertation, Griffith University, Australia 1988
Outside examiner, PhD dissertation, Univ. of Queensland, Australia 1987

POST-DOCTORAL FELLOWS / RESEARCH ASSOCIATES

Maria Stager, now Asst. Professor, Univ. of Massachusetts Amherst
Kristjan Niitepõld, now Science Outreach at Heureka Science Center, Finland
Mifuyu Nakajima, now ESG analyst
Steve Burke (deceased?)
Diane O'Brien, now Professor at Univ. of Alaska Fairbanks
Jacinta Ellers, now Professor at Free Univ. of Amsterdam
Bengt Karlsson, now Professor at Stockholm University
Co-supervised 14 post-docs & research associates, Center for Conservation Biology, Stanford
1994-2006

PROFESSIONAL SERVICE

EDITORIAL BOARDS

Founding Editorial Board, *Current Research in Insect Science* 2020-
Editorial Board, *Entomologia Experimentalis et Applicata* 2020-
Handling Editor, *Proceedings of the National Academy of Sciences, USA* 2017, 2018
Associate Editor, special issue of *Functional Ecology* 2008
Associate Editor, *Functional Ecology* 2005-2007
Associate Editor, *Ecological Applications* 2003-2006
Associate Editor, *Evolution* 1998-2000
Founding Editorial Board, *Journal of Insect Conservation* 1996-2007
Founding Editorial Board, *Functional Ecology* 1986-1999

ROCKY MOUNTAIN BIOLOGICAL LABORATORY

BOARD OF TRUSTEES:

President 1993-8; 2006-7
Member 1991-2000; 2005-9

COMMITTEES:

Development (chair 1999-2000), Scientific Advisory Board, director search (chair 2000), RMBL
75th anniversary, research (chair 1987-92), by-laws, Board nominating, governance,
strategic planning, & Board steering committees, Board committee to select architect for
new campus, Board sustainability committee, Douglass Distinguished Lecturer
committee
Moderator, RMBL PI listserv, 2012-present

PROFESSIONAL SOCIETIES

AAAS, section G – Biological Sciences, Steering Committee member-at large 2018-2022
American Society of Naturalists, Secretary 2013-15; past Secretary 2016-2018.
Ecological Society of America Emerging Issues Conference Proposal committee 2010
American Society of Naturalists' nominating committee 2005-2008
Xerces Society DeWind award committee 1998 -2003
American Society of Naturalists' E.O.Wilson Award committee chairperson 1998/9
Chair, Organizing Committee, 3rd International Butterfly Ecology & Evolution Symposium,
Mt. Crested Butte, CO 1997/8
Host organizing committee, American Naturalists/ Evolution meetings, Mt. Crested Butte,
CO 1984

ADVISORY PANELS AND BOARDS (EXCLUDING ROCKY MTN. BIO. LAB.)

Sacramento Mountains Checkerspot Butterfly conservation working group, USFS & FWS
2021-
Board of Trustees, Coyote Point Museum, San Mateo, CA 2002-2004
Advisory Panel, code of professional ethics for the US Dept. of Interior 2003
Advisory Board, Sustainable Ecosystems Institute, Portland, OR 1998-2009
Advisory Board, Silicon Valley Environmental Indicators Project 1998 -2003
National Science Foundation Population Biology Program panel 1994
National Science Foundation BSR Presidential Young Investigator and Faculty Awards for
Women Advisory Committee 1991

REVIEWS, EXTERNAL REVIEWS, BRIEFINGS

External Review Committees

- University of California, Merced, Biological Sciences 2017
- Florida Atlantic University, Environmental Science Program 2015
- San Francisco State Univ., Biology Dept. 2000
- Briefing for congressional staff on the value of long-term research, organized by AIBS, Washington, DC 2003
- External evaluator for 27 tenure/promotion/chair appointments, US & international
- Reviewer for ~52 different journals, publishers, granting agencies or environmental firms, ~12-20 reviews/year 1978-present

UNIV. OF SOUTH CAROLINA

UNIVERSITY COMMITTEES

- Search committee for Faculty Master, Green Quad, 2022
- Magellan proposal evaluation committee, 2020
- Fulbright Internal Interview committee, 2018
- AASHE steering committee, 2017
- ASPIRE III proposal evaluation committee, 2016, 2019
- NSF Graduate Research Fellowship mentoring committee, 2016- (chair 2021-)

COLLEGE OF ARTS & SCIENCES

- Chair, Baruch Marine Institute Director Search committee, 2023
- CAS Dean's Budget Committee, 2022-2024
- CAS Dean's interdisciplinary working group, spring 2019
- Chair, internal search committee for Chair, Dept of Mathematics, 2018
- Presentation, CAS Friends & Alumni Retreat, Baruch Marine Field Lab, 2016
- Search committee for Facilities Administrative Associate, 2014
- Presentation, CAS Board of Visitors, 2014
- Chair, internal search committee for Director, Marine Science Program. 2013

SCHOOL OF THE EARTH, OCEAN AND ENVIRONMENT

- Faculty Advisory / Executive Committee, 2020-present
- Program Lead, Environment & Sustainability 2021-present
- SEOE future visioning committee, 2022-3
- Faculty search committee, marine conservation biology, chair 2022
- Awards Committee Chair, 2020-1; member 2021-3
- Faculty Merit Raise Committee Chair, 2021
- Tenure & Promotion Committee Chair, 2018-9; 2020-1; 2023-present
- Development Committee Chair, 2018-9
- Baruch Marine Field Lab director search committee, 2018
- Faculty co-mentor for 2 Assistant Professors, 2018-
- Director, 2013-2018 (Inaugural Director of the SEOE as a tenuring unit)

ENVIRONMENT & SUSTAINABILITY PROGRAM:

- Tenure and post-tenure evaluation committees: 3 (2015-20)

DEPT OF BIOLOGICAL SCIENCES

- Greenhouse oversight 2020- present

Faculty search committee, experimental community ecology 2021-2
Diversity & Inclusion committee, 2020-present
Faculty search committee, evolution 2018-9
Faculty search committee, evolutionary population biology 2017-8
Faculty mentor for 2 Assistant Professors, 2014-
Belser Arboretum Committee, 2014-2020

MISCELLANEOUS

Carolinas Climate Resilience Conference, Steering Committee, 2014; 2016; 2018
Planning Committee for Annual Nutrition Conference (2015-2017)
SEOE Presentation for Parents' Day (10/2013)

STANFORD

PROGRAM IN HUMAN BIOLOGY:

Bing Director of Human Biology 2006-2012
Faculty Supervisor for Student Advisors (peer advisors for majors) 1996-2002; 2004-5
Executive, core curriculum, honors program, curriculum (chair, 1992-3; 2005-6), advising,
awards, environmental track evaluation (chair), middle school curriculum development
committees at various times 1989-2006

BIOLOGY DEPARTMENT:

Greenhouse, master's program, retreat and seminar committees

EARTH SYSTEMS PROGRAM:

Committee of the Whole 1997-2012

EMMETT INTERDISCIPLINARY PROGRAM IN ENVIRONMENT AND RESOURCES

Advisory committee 2002-2008
Affiliated faculty 2002-2012

UNIVERSITY COMMITTEES:

Faculty Senate Committee on Undergraduate Admissions and Financial Aid 2011-2012
Undergraduate Advising & Research (UAR) Faculty Advisory Committee 2011-2012
Bass Undergraduate Advisory Committee for the Vice Provost of Undergraduate Education
2010-2012
Haas Center for Public Service, Faculty Steering Committee, 2010-2012
Study of Undergraduate Education at Stanford – Breadth subcommittee 2010-11
Incorporating Diversity within the Curriculum, 2009
Race Forward/Woods Institute task force chair, integration of race/ethnicity into the
environment curriculum 2009-2010
Stanford's Western Association of Schools & Colleges Re-accreditation Steering Committee
2007-2012
I-Earth Advisory Committee 2006-2012
Environmental Ventures Program committee, Woods Environmental Institute 2004-06
Provost's Advisory Committee on Recreational Use of the Dish 2001-03
H&S committee for a proposal for a center for human origins, ecology & health 2001-02
Earth Systems Program Review Committee, School of Earth Sciences 2001
Beagle II Award Selection Committee 2000

UNIVERSITY MISCELLANEOUS

Presentations for Admit weekend, New Student Orientation, Parent's Day, various undergraduate events and alumni/ fund-raising events

Presentations/evaluation/focus groups for various university offices

PROFESSIONAL MEMBERSHIPS

Rocky Mountain Biological Laboratory, AAAS, American Society of Naturalists, Ecological Society of America, Evolutionary Demography Society, Lepidopterists' Society, Society for Integrative & Comparative Biology, Society for the Study of Evolution, Sigma Xi