

CURRICULUM VITA**JOEL G. KINGSOLVER****Personal Information:**

Date of Birth: February 16, 1953

Address: Department of Biology
University of North Carolina

Telephone: (919) 843-6291

email: jgking@bio.unc.edu

ACADEMIC POSITIONS:

1984-86 Assistant professor, Brown University (Biology and Medicine)

1986-88 Assistant professor, University of Washington (Zoology)

1988-1991 Associate professor, University of Washington (Zoology)

1991-1999 Professor, University of Washington (Zoology)

2000-present Kenan Distinguished Professor, University of North Carolina (Biology)

EDUCATION:

Duke University, Durham, North Carolina B. S. Zoology 1975

University of Wisconsin, Madison M. S. Zoology 1978

Advisor: Warren Porter

Stanford University, Stanford, CA Ph.D. Biol. Sci. 1981

Advisor: Ward Watt

AWARDS & HONORS:

1975 Summa cum laude; Departmental Honors in Zoology (Duke)

1976-78 University (WARF) Fellow (Wisconsin)

1977 Zoology Summer Scholar (Wisconsin)

1977 CIC Traveling Scholar (Michigan Biol. Station)

1978-81 Bio Fellow (Stanford)

1981-83 Miller Fellow, Miller Institute for Basic Research in Science (Berkeley)

1995 Pettingill Lecturer, University of Michigan

1998 Fellow of the AAAS

2000 Murray Lecturer, University of California (Berkeley)

2000-2001 Guggenheim Fellow

2003 Walton Distinguished Lecture, U of Virginia

2004 George C. Williams Distinguished Lecture, SUNY-Stony Brook

MAJOR GRANTS:

- 1984 "Thermoregulation, predation, and the evolution of wing pigment patterns in *Pieris* butterflies." NSF (Pop. Bio./Physiol. Ecol., \$118,000, 2 years). (PI)
- 1986 "Capricious spring weather and population fluctuations in the woodland butterfly, *Pieris virginiensis*: Linking a biophysical model to demography." (Co-PI with P. M. Kareiva) NSF (Pop. Biol./Physiol. Ecol.) (\$98,000, 2 years).
- 1986 "Dissecting correlated characters: Function and phenotypic variation in wing melanization patterns in *Pieris* butterflies." NSF (Pop. Biol./Physiol. Ecol.) (\$224,001, 3 years). (PI)
- 1987 "Microclimate variation and insect population dynamics." UW GSRF, \$12,700. (PI)
- 1989 "Natural selection and seasonal polyphemism in a complex trait." NSF (Pop. Biol.) (235, 046, 3 years). (PI)
- 1990 "Computational Facilities for Mathematical Biology." Murdoch Foundation (\$340,000). (Co-PI with T. Daniel, P. Kareiva, G. Odell)
- 1991 "Workshop on Biotic Interactions and Global Change." (Co-PI with P. Kareiva and R. Huey) NSF (Pop. Biol./Physiol. Ecol. and Ecology) (\$62,000)
- 1993 "Morphological determinants of flight performance and fitness in *Pieris* butterflies." NSF (Func./Phys. Ecol)) (\$164,000, 2 years). (PI)
- 1995 "Experimental analyses of body morphology, flight and survival in pierine butterflies" NSF EEP (\$280,000, 4 years). (PI)
- 1995 "Modeling insect growth: Temperature, nitrogen and caterpillar chemostats". Royalty Research Fund, UW (\$24,000, 1 year). (PI)
- 1996 "Inventory of Lepidoptera on McChord Air Force Base". The Nature Conservancy (\$29,000) (co-PI with J. Hoekstra)
- 1999 "Natural selection on continuous reaction norms: Thermal sensitivity of feeding in *Pieris* caterpillars." NSF EEP (\$290,000, 3 yrs) (PI)
- 1999 "Does habitat heterogeneity reduce population variability? An experimental analysis. NSF DEB (Dissertation Improvement, \$10,000) (co-PI with J. Hoekstra)
- 2000 "Evobeaker: Simulation software for teaching evolutionary biology: NSF SBIR (\$98,000, 1 yr) (with Eli Meir)

2002 "Natural selection on continuous reaction norms: relating environmental variation to natural selection". NSF IBN (\$360,000, 4 yrs) (PI)

2003 "Variation, selection and evolution of function-valued traits" NSF EF (Emerging Frontiers) (\$2,000,000, 4 yrs) (co-PI with R. Gomulkiewicz from WSU; UNC subcontract)

2004 "National Evolutionary Synthesis Center in the Triangle" EF (\$15,000,000, 5 yrs) (co-PI with C. Cunningham from Duke; UNC subcontract)

2006 "Causes and consequences of intraspecific variation in development plasticity". NSF IOS (\$240,000, 4 yrs) (PI, with co-PI Fred Nijhout)

2009 "National Evolutionary Synthesis Center in the Triangle" EF (\$25,000,000, 5 yrs) (co-PI with K. Smith from Duke; UNC subcontract)

2011 "Deconstructing the temperature-size rule: an integration of mechanistic and selection analyses". NSF IOS (\$470,000, 4 yrs) (PI, with co-PI Fred Nijhout)

2011 "Phenotype-based models for ecological and evolutionary responses to climate change". NSF DEB (\$480,000, 3 yrs) (co-PI, with PI Lauren Buckley)

PUBLICATIONS: REFEREED JOURNAL ARTICLES

1. Kingsolver, J. G. and D. M. Norris, 1977. Morphology and developmental rates of males and females of *Xyleborus ferrugineus* during metamorphosis. Int. J. Insect. Morphol. and Embryol. 6: 31-39.
2. Kingsolver, J. G. and D. M. Norris, 1977. External morphology of *Xyleborus ferrugineus*. I. Head and prothorax of adult males and females. J. Morphol. 154: 147-156.
3. Kingsolver, J. G. and D. M. Norris, 1977. The interaction of the female ambrosia beetle, *Xyleborus ferrugineus*, in relation to the morphology of the gallery system. Exper. et Appl. 21: 9-13.
4. Kingsolver, J. G. and D. M. Norris, 1977. The interaction of behavior and initial reproduction in *Xyleborus ferrugineus*, in relation to its symbiotic fungi. Ann. Entomol. Soc. Amer. 70: 1-4.
5. Kingsolver, J. G., 1979. Thermal and hydric aspects of environmental heterogeneity in the pitcher plant mosquito. Ecological Monographs 49:357-376.
6. Kingsolver, J. G., 1981. The effects of environmental uncertainty on morphological design and fluid balance in *Sarracenia purpurea* L. Oecologia 48: 364-370.
7. Kingsolver, J. G. and R. K. Moffat, 1982. Thermoregulation and the determinants of heat transfer in *Colias* butterflies. Oecologia 53: 27-33.
8. Kingsolver, J. G., 1983. Thermoregulation and flight in *Colias* butterflies: Elevational patterns and mechanistic limitations. Ecology 64: 534-545.
9. Kingsolver, J. G., 1983. Ecological significance of flight activity in *Colias* butterflies: Implications for reproductive strategy and population structure. Ecology 64:545-551.
10. Kingsolver, J. G. and W. B. Watt, 1983. Thermoregulatory strategies in *Colias*

- butterflies: Thermal stress and the limits to adaptation in temporally varying environments. *American Naturalist* 121: 32-55.
11. Kingsolver, J. G. and T. L. Daniel, 1983. Mechanical determinants of nectar feeding strategy in hummingbirds: Energetics, tongue morphology, and licking behavior. *Oecologia* 60: 214-226.
 12. Daniel, T. L. and J. G. Kingsolver, 1983. Feeding strategy and the mechanics of blood sucking in insects. *J. Theoret. Biol.* 105: 661-672.
 13. Kingsolver, J. G. and W. B. Watt, 1984. Mechanistic constraints and optimality models: thermoregulatory strategies in *Colias* butterflies. *Ecology* 65: 1835-1839.
 14. Kingsolver, J. G., 1985. Thermal ecology of *Pieris* butterflies: A new mechanism of behavioral thermoregulation. *Oecologia* 66: 540-545.
 15. Kingsolver, J. G., 1985. Thermoregulatory significance of wing melanization pattern in *Pieris* butterflies: Physics, posture, and pattern. *Oecologia* 66: 546-551.
 16. Kingsolver, J. G. and M. A. R. Koehl, 1985. Aerodynamics, thermoregulation, and the evolution of insect wings: differential scaling and evolutionary change. *Evolution* 39: 488-504.
 17. Kingsolver, J. G., 1985. Butterfly thermoregulation: Organismic mechanisms and population consequences. *J. Res. Lepidop.* 24: 1-20.
 18. Tsuiji, J. A., J. G. Kingsolver and W. B. Watt, 1986. Thermal physiological ecology of *Colias* butterflies in flight. *Oecologia* 69: 252-261.
 19. Kingsolver, J. G., 1987. Evolution and coadaptation of thermoregulatory behavior and wing pigmentation pattern in pierid butterflies. *Evolution* 41: 472-490.
 20. Kingsolver, J. G. and D. C. Wiernasz, 1987. Dissecting correlated characters: Adaptive aspects of phenotypic covariation in melanization pattern in *Pieris* butterflies. *Evolution* 41: 49-503.
 21. Kingsolver, J. G., 1987. Mosquito host choice and the epidemiology of malaria. *Amer. Nat.* 130: 811-827.
 22. Kingsolver, J. G., 1987. Predation, thermoregulation, and wing color in pierid butterflies. *Oecologia* 73: 301-306.
 23. Kingsolver, J. G., 1988. Thermoregulation, flight, and the evolution of wing pattern in pierid butterflies: The topography of fitness surfaces. *Amer. Zool.*, 28: 899-912.
 24. Kingsolver, J. G., 1989. Weather and the population dynamics of insects: Integrating physiological and population ecology. *Physiol. Zool.*, 62: 314-334.
 25. Kingsolver, J. G. and M. A. R. Koehl, 1989. Selective factors in the evolution of insect wings: Response to Kukulova-Peck. *Canad. J. Zool.*, 67: 785-787.
 26. Daniel, T., J. Kingsolver, and E. Meyhoffer, 1989. Mechanical determinants of nectar-feeding energetics in butterflies: Muscle mechanics, feeding geometry, and functional equivalence. *Oecologia*, 79: 66-75.
 27. Huey, R. and J. G. Kingsolver, 1989. Evolution of thermal sensitivity of ectotherm performance. *Trends in Ecology & Evolution*, 4: 131-135.
 28. Kingsolver, J. G. and D. C. Wiernasz, 1991. Seasonal polyphenism in wing melanin pattern and thermoregulatory adaptation in *Pieris* butterflies. *American Naturalist*, 137: 816-830.
 29. Kingsolver, J. G. and D. Schemske, 1991. Path analyses of natural selection. *Trends in Ecology & Evolution*, 6: 276-280.
 30. Wiernasz, D. C. and J. G. Kingsolver, 1991. Wing melanin pattern mediates

- intraspecific mate choice and species recognition in *Pontia occidentalis*. *Animal Behavior*, 42:276-280.
31. Kingsolver, J.G. and D.C. Wiernasz, 1991. Development, function, and the quantitative genetics of wing melanin pattern in *Pieris* butterflies. *Evolution*, 45:1480-1492.
 32. Huey, R. B., W. D. Crill, J. G. Kingsolver and K. E. Weber. 1992. A method for rapid measurement of heat or cold resistance of small insects. *Functional Ecology*, 6:489-494.
 33. Kingsolver, J. G. and T. L. Daniel. 1993. The mechanics of fluid feeding in insects. *Proc. Thomas Say Publ. Entomol.*, 1:149-162.
 34. Huey, R. B. and J. G. Kingsolver. 1993. Evolutionary responses to extreme temperatures in ectotherms. *American Naturalist*, 143:S21-S46
 35. Kingsolver, J. G. and M. A. R. Koehl. 1994. Selection factors in the evolution of insect wings. *Annual Review of Entomology* 39:425-451.
 36. Kingsolver, J. G. and S. G. Smith. 1995. Estimating selection on quantitative traits using capture-recapture data. *Evolution* 49:384-388.
 37. Kingsolver, J. G. 1995. Viability selection on seasonally polyphenic traits: Wing melanin pattern in Western White Butterflies. *Evolution* 49:932-941.
 38. Kingsolver, J. G. 1995. Fitness consequences of seasonal polyphenism in the Western White Butterfly. *Evolution* 49:942-954.
 39. Kingsolver, J. G. 1996. Experimental manipulation of wing pigment patterns and survival in Western White Butterflies. *American Naturalist* 147:296-306.
 40. Kingsolver, J. G. and H. A. Woods. 1997. Thermal sensitivity of feeding and digestion in *Manduca* caterpillars. *Physiological Zoology* 70:631-638.
 41. Kingsolver, J. G. and R. B. Huey. 1998. Selection and evolution of morphological and physiological plasticity in thermally varying environments. *American Zoologist* 38:545-560.
 42. Srygley, R. B. and J. G. Kingsolver. 1998. Red-wing blackbird reproductive behaviour and the palatability, flight performance and morphology of temperate pierid butterflies. *Biological Journal of the Linnean Society* 64: 41-55.
 43. Kingsolver, J. G. and H. A. Woods. 1998. Interactions of temperature and dietary protein concentration in growth and feeding of *Manduca sexta* caterpillars. *Physiological Entomology*, 23:354-359.
 44. Kingsolver, J. G. 1999. Experimental analyses of wing size, flight and survival in the Western White Butterfly. *Evolution* 53:1479-1490.
 45. Petersen, C., H. A. Woods, and J. G. Kingsolver. 2000. Stage-specific effects of temperature and dietary protein on growth and survival of *Manduca sexta* caterpillars. *Physiological Entomology* 25:35-40.
 46. Woods, H. A. and J. G. Kingsolver. 1999. Feeding rate and the structure of protein digestion and absorption in lepidopteran midguts. *Archives of Insect Biochemistry and Physiology* 42:74-87.
 47. Kingsolver, J. G. and R. B. Srygley. 2000. Experimental analyses of body size, flight and survival in pierid butterflies. *Evolutionary Ecology Research* 2:593-612.
 1. Srygley, R. B. and J. G. Kingsolver. 2000. Effects of weight loading on flight performance and survival of palatable Neotropical *Anartia fatima* butterflies. *Biological Journal of the Linnean Society* 70:707-725.

2. Kingsolver, J. G. 2000. Feeding, growth and the thermal environment of Cabbage White Caterpillars, *Pieris rapae* L. *Physiological and Biochemical Zoology* 73:621-628.
3. Kingsolver, J. G., H. E. Hoekstra, J. M. Hoekstra, D. Berrigan, S. N. Vignieri, C. E. Hill, A. Hoang, P. Gibert, P. Beerli. 2001. The strength of phenotypic selection in natural populations. *The American Naturalist* 157:245-261.
4. Hoekstra, H. E. J. M. Hoekstra, D. Berrigan, S. N. Vignieri, A. Hoang, C. E. Hill, P. Beerli and J. G. Kingsolver. 2001. Strength and tempo of directional selection in the wild. *PNAS* 98: 9157-9160.
5. Kingsolver, J. G., R. Gomulkiewicz, and P. A. Carter. 2001. Variation, selection and evolution of function-valued traits. *Genetica*, 112-113: 87-104.
53. Huey, R. B., M. Carlson, L. Crozier, M. Frazier, H. Hamilton, C. Harley, A. Hoang, and J. G. Kingsolver. 2002. Plants vs animals: Do they deal with stress in different ways? *Journal of Integrative and Comparative Biology* 42:232-240.
54. Kingsolver, J. G., and R. Gomulkiewicz. 2003. Environmental variation and selection on performance curves. *Integrative and Comparative Biology* 43:470-477.
55. Kingsolver, J. G., R. Izem, and G. Ragland. 2004. Plasticity of size and growth in fluctuating thermal environments: comparing reaction norms and performance curves. *Integrative and Comparative Biology* 44:450-460.
56. Kingsolver, J. G., and D. W. Pfennig. 2004. Individual-level selection as a cause of Cope's rule of phyletic size increase. *Evolution* 58:1608-1612.
57. Kingsolver, J. G., G. J. Ragland, and J. G. Shlichta. 2004. Quantitative genetics of continuous reaction norms: Thermal sensitivity of caterpillar growth rates. *Evolution* 58:1521-1529.
58. Izem, R. and J. G. Kingsolver. 2005. Variation in continuous reaction norms: quantifying directions of biological interest. *The American Naturalist* 166:277-289.
59. Parmesan, C., S. Gaines, L. Gonzalez, D. M. Kaufman, J. G. Kingsolver, A. T. Peterson, and R. Sagarin. 2005. Empirical perspectives on species borders: from traditional biogeography to global change. *Oikos* 108:58-75.
60. Helmuth, B., J. G. Kingsolver, and E. Carrington. 2005. Biophysics, physiological ecology and climate change: Does mechanism matter? *Annual Reviews of Physiology* 67:177-201.
61. Doak, P., P. M. Kareiva and J. G. Kingsolver. 2006. Fitness consequences of choosy oviposition for a time-limited butterfly. *Ecology* 87:395-408.
62. Kingsolver, J. G., J. G. Shlichta, G. J. Ragland, and K. R. Massie. 2006. Thermal reaction norms for caterpillar growth depend on diet. *Evolutionary Ecology Research* 8:1-13.
63. Knies, J. L., R. Izem, K. L. Supler, J. G. Kingsolver, and C. L. Burch. 2006. The genetic basis of thermal reaction norm evolution in lab and natural phage populations. *PLoS Biology* 4:1-8.
64. Kingsolver, J. G. 2007. Variation in growth and instar number in field and laboratory *Manduca sexta*. *Proceedings of the Royal Society of London, Series B* 274:977-981.
65. Kingsolver, J. G. , K. R. Massie, J. G. Shlichta, M. H. Smith, G. J. Ragland, and R. Gomulkiewicz. 2007. Relating environmental variation to selection on reaction norms: an experimental test. *The American Naturalist* 169:163-174.

66. Gomulkiewicz, R. and J. G. Kingsolver. 2007. A fable of four functions. *Journal of Evolutionary Biology* 20:20-21.
67. Kingsolver, J. G., K. R. Massie, G. J. Ragland, and M. H. Smith. 2007. Rapid population divergence in thermal reaction norms for an invading species: Breaking the temperature-size rule. *Journal of Evolutionary Biology* 20:892-900.
68. Kingsolver, J. G. and A. M. Nagle. 2007. Rapid divergence of thermal sensitivity and diapause in field and laboratory populations of *Manduca sexta*. *Physiological and Biochemical Zoology* 80:473-479.
69. Kingsolver, J. G. and D. W. Pfennig. 2007. Patterns and power of phenotypic selection in nature. *Bioscience* 57:561-571.
70. Meir, E., J. Perry, J. Herron, and J. G. Kingsolver. 2007. College students' misconceptions about evolutionary trees. *American Biology Teacher* 9:71-76.
71. Ragland, G. and J. G. Kingsolver. 2007. Influence of seasonal timing on thermal ecology and thermal reaction norm evolution in *Wyomyia smithii*. *Journal of Evolutionary Biology* 20:2144-2153.
72. Ragland, G. J. and J. G. Kingsolver. 2008. The effect of fluctuating temperatures on ectotherm life-history traits: comparisons among geographic populations of *Wyomyia smithii*. *Evolutionary Ecology Research* 10:29-44.
73. Kingsolver, J. G. and R. B. Huey. 2008. Size, temperature, and fitness: Three rules. *Evolutionary Ecology Research* 10:251-268.
74. Ragland, G. J. and J. G. Kingsolver. 2008. Evolution of thermotolerance in seasonal environments: The effects of annual temperature variation and life history timing in *Wyeomyia smithii*. *Evolution* 62:1345-1357.
75. Angilletta, M. J. E. A. Steel, K. K. Bartz, J. G. Kingsolver, M. D. Scheurell, B. R. Beckman, and L. G. Crozier. 2008. Big dams and salmon evolution: changes in thermal regimes and their potential evolutionary consequences. *Evolutionary Applications* 1: 286-299.
76. Knies, J. L., J. G. Kingsolver, and C. L. Burch. 2009. Hotter Is better and broader: Thermal sensitivity of fitness in a population of bacteriophages. *The American Naturalist* 173:419-430.
77. Kingsolver, J. G., G. J. Ragland, and S. E. Diamond. 2009. Evolution in the constant environment: thermal fluctuations and thermal sensitivity in laboratory and field populations of *Manduca sexta*. *Evolution* 63:537-541.
78. Kingsolver, J. G. 2009. The Well-Tempered Biologist. *The American Naturalist* 174:755-768.
79. Diamond, S. E., S. D. Hawkins, H. F. Nijhout, and J. G. Kingsolver. 2010. Evolutionary divergence of larval performance in *Manduca sexta* on preferred and novel host plants. *Ecological Entomology* 35:166-174.
80. Diamond, S. E., and J. G. Kingsolver. 2010a. Environmental dependence of thermal reaction norms: host plant quality can reverse the temperature-size rule. *The American Naturalist* 75:1-10.
81. Diamond, S. E., and J. G. Kingsolver. 2010b. Fitness consequences of host plant choice: a field experiment. *Oikos* 119:542-550.
82. Knies, J. L., and J. G. Kingsolver. 2010. Erroneous Arrhenius: Modified Arrhenius model best explains the temperature dependence of ectotherm fitness. *The American Naturalist* 176:227-233.

83. Kingsolver, J. G., and S. E. Diamond. 2011. Phenotypic selection in natural populations: What limits directional selection? *The American Naturalist*, 177: 36-357.
84. Kingsolver, J. G. H. A. Woods, L. B. Buckley, K. A. Potter, H. MacLean, J. K. Higgins. 2011. Complex Life Cycles and the Responses of Insects to Climate Change. *Integrative and Comparative Biology* xx:1-14
- Diamond, S. E. and J. G. Kingsolver. Host plant quality, selection history and tradeoffs shape the immune responses of *Manduca sexta*. 2011. *Proceedings of the Royal Society B*, xx:1-9.
- Huey, R. B. and J. G. Kingsolver. 2011. Variation in universal temperature dependence of biological rates. *Proceedings of the National Academy* xx:1-2
- Buckley, L. B., and J. G. Kingsolver. 2012. The demographic impacts of shifts in climate means and extremes on alpine butterflies. *Functional Ecology*, in press.
- Kingsolver, J. G., S. E. Diamond, S. A. Seiter, and J. K. Higgins. 2012. Direct and indirect phenotypic selection on developmental trajectories in *Manduca sexta*. *Functional Ecology*, in press.
- Diamond, S. E. and J. G. Kingsolver. 2012. Host plant adaptation and the evolution of thermal reaction norms. *Oecologia*, in press.
- Kingsolver, J. G., S. E. Diamond, A. M. Siepielski, S. M. Carlson. 2012. Synthetic analyses of phenotypic selection in natural populations: lessons, limitations and future directions. *Evolutionary Ecology*, in press.

PUBLICATIONS: BOOK CHAPTERS

- Kingsolver, J. G. and D. C. Wiernasz, 1990. Analysing color pattern as multivariate evolution: Wing melanization in pierine butterflies, pp. 89-100. In: *Adaptive coloration in invertebrates*, (ed. M. K. Wicksten). Texas A&M Univ. Press, College Station TX.
- Kingsolver, J. G. and R. T. Paine, 1991. Conversational biology and ecological debate. pp. 309-317 In: *Foundations of Ecology*, (eds. L. A. Real and J. H. Brown). Univ. of Chicago Press, Chicago.
- Kingsolver, J. G., R. B. Huey and P. M. Kareiva, 1993. An agenda for population and community research on global change. In: *Biotic Interactions and Global Change*, (eds. P. M. Kareiva, J. G. Kingsolver and R. B. Huey), Sinauer Associates, Sunderland MA.
- Kingsolver, J. G. and T. L. Daniel. 1995. The mechanics and energetics of fluid feeding. pp. 32-73 In: *Insect Feeding*, (ed. R. F. Chapman and G. de Boer). Chapman and Hall, New York.
- Kingsolver, J.G. 1996. Physiological sensitivity and evolutionary responses to climate change. In: *Carbon Dioxide: populations and communities*, (eds. Ch. Korner and F. A. Bazzaz), Academic Press, San Diego.
- Thomas, S. C. and J. G. Kingsolver. 2000. Natural selection: responses to current environmental changes. in: *Encyclopedia of Life Sciences*, Macmillan Reference Ltd, London.
- Gilchrist, G. W. and J. G. Kingsolver. 2001. Is optimality over the hill? The fitness

landscapes of idealized organisms. pp 219-241 in: *Adaptationism and Optimality* (eds. S. Orzack and E. Sober), Cambridge U Press, Cambridge.

Kingsolver, J. G. 2001. Impacts of global change on animals. Pp 1-11 In: *Encyclopedia of Global Change*, volume 2 (eds. J. Canadell and H. A. Mooney), John Wiley and Sons, London.

Kingsolver, J. G. 2001. Mechanisms and patterns of selection on performance curves: thermal sensitivity of caterpillar growth. Pp 305-320 In: *Environment and Animal Development*, (eds. D. Atkinson and M. Thorndyke), BIOS Scientific, Oxford.

Frankham, R. and J. G. Kingsolver. 2003. Adaptation and extinction: The empirical view. In: *Evolutionary Conservation Biology*, (ed. R. Ferrier, U. Dieckman and D. Couvet).

PUBLICATIONS: BOOKS, MULTIMEDIA & SOFTWARE

Kareiva, P. M., J. G. Kingsolver and R. B. Huey (eds.). 1993. *Biotic Interactions and Global Change*. Sinauer Associates, Sunderland MA.

Hartwell, L.A., L. E. Hood, J. G. Kingsolver, C. L. Laird, A. E. Reynolds, W. B. Woods, E. T. Young. 1996. *Genetics: Fundamentals and Frontiers*. (CD-ROMs, Videodisks and supporting materials for teaching high school and college genetics). VideoDiscovery, Inc, Seattle WA.

EvoBeaker 1.0: Simulation software for teaching evolutionary biology (2005).
Developed in collaboration with Simbiotic Software, Inc.

PUBLICATIONS: POPULAR ARTICLES

Kingsolver, J. G. 1985. Butterfly engineering. *Sci. Amer.* 253: 106-113.

INVITED LECTURES AT UNIVERSITIES:

- 1981: Stanford University (Biological Sciences)
University of California-Berkeley (Zoology)
- 1982: University of Texas (Zoology)
Pennsylvania State University (Biology)
- 1983: University of California-Davis (Zoology)
Vassar College (Biology)
University of Washington (Zoology)
University of Miami (Florida) (Biology)
Hopkins Marine Station (Stanford)
- 1984: Brown University (Biology and Medicine)

- Pennsylvania State University (Biology)
University of Pennsylvania (Biology)
Cambridge Entomological Society
Oregon State University (Zoology and Entomology)
- 1985: University of Chicago (Biology)
University of Wisconsin (Zoology)
Syracuse University (Biology)
Harvard University (MCZ)
- 1986: University of Washington (Zoology)
University of Utah (Biology)
University of Massachusetts (Biology)
Harvard School of Public Health
Duke University (Zoology)
North Carolina State University (Entomology)
University of Connecticut (Ecology and Evolution)
- 1987: University of California - Irvine (Physiology)
- 1988: University of Minnesota (Ecology and Evolution)
Princeton University (Biology)
Yale University (Biology)
University of California-Davis (Ecology and Evolution)
- 1989: University of Chicago (Evolutionary Biology)
University of Houston (Biology)
- 1990: Stanford University (Biological Sciences)
Max-Planck Institute for Behavioral Physiology, Seewiesen
University of Arizona (Ecology and Evolution)
- 1991: University of Southern California (Biological Sciences)
University of Nebraska (Biological Sciences)
- 1992: University of California-Santa Barbara (Biological Sciences)
Arizona State University (Zoology)
- 1993: University of Oregon (Biology)
University of Colorado (EPO Biology)
- 1994: University of Arizona (Entomology)
University of Colorado (EPO Biology)
- 1995: University of Virginia (Biology)

University of Michigan Biological Station (Pettingill Lecture)

1996: University of Arizona (Ecology & Evolution)
University of New Mexico (Biology)

1997: University of Nevada-Reno

1998: Washington University (Biology)
University of Vermont

1999: University of North Carolina (Biology)
Washington State University (Botany and Zoology)

2000: University of California-Berkeley (Integrative Biology)

2001: North Carolina State (Entomology)
University of Toronto (Zoology)
McMaster University (Biology)
University of South Carolina (Biology)

2002: University of Maryland (BEES)
National Marine Fisheries Service (Seattle)

2003: University of Virginia (Mountain Lake Biological Station)
Duke University (Biology)

2004: SUNY-Stony Brook (Ecology and Evolution)
University of Washington (Friday Harbor Labs)

2005: North Carolina State (Entomology)

2007: University of Kentucky (Entomology, Biology)
National Evolutionary Synthesis Center

2008: Friday Harbor Labs

2009: Dartmouth College

2010: University of Ottawa
University of Vermont
Michigan State University

2011: Rocky Mountain Biological Lab

2012: University of Florida
University of South Carolina
Duke University

PAPERS AND INVITED LECTURES PRESENTED AT MEETINGS:

12/78 Mechanics and energetics of fluid feeding in insects. American Society of Zoologists (with T. L. Daniel).

7/82 Thermal ecology of *Colias* butterflies. Lepidopterist Society, Symposium on the Ecology of butterflies, invited speaker.

8/82 Optimal thermoregulatory strategies in *Colias* butterflies. Ecological Society of America.

8/82 Mechanical determinants of nectar feeding strategy in hummingbirds. Ecological Society of America (with T. L. Daniel).

12/82 Aerodynamics, thermoregulation, and the evolution of insect wings. American Society of Zoologists (with M.A.R. Koehl).

12/82 Thermal biology of a small butterfly (*Colias*) in flight. American Society of Zoologists (with J. S. Tsuji).

6/84 Differential scaling and evolutionary change: the evolution of insect wings. American Society of Naturalists (with M. A. R. Koehl).

8/84 Weather and insect ecology: mechanistic models for variable environments. Ecological Society of America, Symposium on Mechanistic Approaches to the Ecology of Animals, invited speaker.

10/84 Thermoregulation and the functional significance of wing melanization patterns in *Pieris* butterflies. Population Biologists of New England.

3/85 Modeling heat and water budgets of organisms in stochastic environments. Department of Energy workshop (Buffalo, NY) on Animal Energetics in Extreme Environments, invited speaker.

6/86 Adaptive aspects of phenotypic covariation in wing melanization pattern in *Pieris* butterflies. Society for the Study of Evolution (with D. C. Wiernasz).

12/86 Thermoregulation, flight, and the evolution of wing pattern in pierid butterflies. American Society of Zoologists, Symposium on Energetics and Animal Behavior, invited speaker.

3/87 Analysis of organisms in fluctuating environments: identifying times cycles. Pacific Ecology Conference, invited speaker.

12/87 Adaptive coloration and adaptive covariation: Wing pattern in *Pieris* butterflies. American Society of Zoologists, Symposium on Adaptive Coloration in Invertebrates, invited speaker (with D. C. Wiernasz).

12/87 Weather and insect ecology: Linking physical biology to population dynamics. American Society of Zoologists, Symposium on Constraints of Bioenergetics on Animal Population Dynamics, invited speaker.

6/88 Developmental constraints on wing melanization pattern in pierine butterflies. Society for the Study of Evolution (with D. C. Wiernasz).

8/89 Energy accounting, limiting resources, and fitness variation. Ecological Society of America, Symposium on Physiology of Fitness Variation in Plants and Animals, invited speaker.

12/89 The mechanics of fluid-feeding: Implications for functional morphology and food choice. Entomological Society of America, Symposium on Functional Morphology of Insect Feeding, invited speaker (with T. L. Daniel).

6/92 Evolution of seasonal polyphenisms in butterflies. Society for Study of Evolution, Symposium on Evolution of Developmental Polymorphisms, invited speaker.

6/92 Evolutionary responses to extreme temperatures in ectotherms. American Society of Naturalists, Symposium on Evolutionary Responses to Environmental Stress, invited speaker (with R. B. Huey).

6/93 Thermal sensitivity and the evolutionary response to climate change. Society for the Study of Evolution.

8/94 Physiological tolerance and evolutionary responses to climate change. GCTE Workshop, Basel, Switzerland, invited speaker.

6/95 Selection and adaptive limits on phenotypically plastic traits: wing pattern in the Western White Butterfly. Society for Study of Evolution.

8/96 Thermal performance and population consequences of climate change. International Congress of Entomology.

12/96 Selection and evolution of morphological and physiological plasticity. Society of Integrative and Comparative Biology, Symposium on Thermal and Hydric Responses to Variable Environments, invited speaker (with R. B. Huey)

6/97 Experimental analyses of selection on wing and body size in temperate pierid butterflies. Society for Study of Evolution. (with R. B. Srygley)

10/97 Physiological determinants of species borders. NCEAS workshop on Species Borders, invited speaker.

6/98 Natural selection on thermal sensitivity of feeding in *Pieris* caterpillars. Society for Study of Evolution.

8/98 Wing and body size, palatability and survival in temperate pierid butterflies. International Symposium on Butterfly Ecology and Evolution. (with R. B. Srygley)

12/98 Mutations, adaptation and extinction: The empirical view. IIASA workshop on Evolutionary Conservation Biology (with R. Frankham)

1/00 The strength of phenotypic selection in natural populations. Society of Integrative and Comparative Biology (with 8 co-authors)

3/00 Mechanisms and patterns of selection on thermal performance curves. Society for Experimental Biology (invited speaker)

- 6/00 The strength of phenotypic selection in natural populations: a review of the literature. Society for Study of Evolution (with 8 co-authors)
- 6/01 Selection on continuous reaction norms: thermal sensitivity of caterpillar growth. Society for Study of Evolution
- 6/02 Quantitative genetics of continuous reaction norms: thermal sensitivity of caterpillar growth. Society for Study of Evolution (with 2 co-authors)
- 1/03 Environmental variation and selection on performance curves. Society of Integrative and Comparative Biology, invited speaker (with 1 co-author)
- 1/04 Plasticity of size and growth in fluctuating thermal environments. Society of Integrative and Comparative Biology, invited speaker (with 2 co-authors)
- 6/04 Individual-level selection as a cause of Cope's rule of phyletic size increase. Society for Study of Evolution (with 1 co-author)
- 8/05 Variation, selection and evolution of function-valued traits. NSF Workshop on Functional data analysis in Biology (UC-Davis), invited speaker.
- 1/06 Breaking the temperature-size rule. Society of Integrative and Comparative Biology (with 3 co-authors)
- 6/06 Rapid evolution of reaction norms in an invading species. Society for Study of Evolution (with 3 co-authors).
- 3/07 Evolutionary responses of insects to rapid climate change: development time, size and thermal sensitivity. European Science Foundation, Workshop on Thermal Adaptation, invited speaker
- 7/07 Temperature, size, performance and fitness. International Congress in Vertebrate Morphology, invited speaker
- 7/08 Thermal adaptation and metabolic ecology. Gordon Research Conference, invited speaker
- 6/09 The well-temperated biologist. American Society of Naturalists, Presidential Address, invited speaker.
- 11/09 Phenotypic selection in natural populations. Darwin Bicentennial Celebration, Chicago ILL, invited speaker.
- 1/11 Life cycle complexity and responses to climate change. Society of Integrative and Comparative Biology, invited speaker

1/12 Direct and indirect selection on developmental trajectories in *Manduca sexta*.
Society of Integrative and Comparative Biology (with 3 co-authors)

4/12 Thermal adaptation and insect life cycles. European Science Foundation,
Workshop on Thermal Adaptation, invited speaker

PROFESSIONAL ACTIVITIES AND SERVICE:

Acting Associate Director of Informatics, National Evolutionary Synthesis Center (2011-present)

UNC Program for the Humanities, Advisory Board (2010-present)

Adventures in Ideas Series, UNC Program for the Humanities, speaker and participant in 4-5 workshops/seminars (2007-present)

Board of Reviewers, Science (2011-present)

Editorial Board, PLoS Biology (2004-2011)

Editorial Board, Evolutionary Applications (2009-2011)

President, American Society of Naturalists (2009); ASN Executive Council (2009-present)

Associate Director, National Evolutionary Synthesis Center (2004-2010)

Scientific advisor for *The Tangled Bank: An introduction to evolution*, by Carl Zimmer, Roberts and Company (2008-2010)

Co-organizer and co-developer of *Evobeaker 1.0 and 2.0*, simulation software for teaching evolutionary biology (2003-2009)

Contributor, Faculty of 1000 (2005-2008)

Chair, Graduate Curriculum in Ecology (2002-2003)

Board of Visitors, College of Life Sciences, University of Maryland (2001- 2004)

Graduate Program Coordinator, Department of Zoology, UW (1999-2000)

Vice-President, Society for the Study of Evolution (1999-2000)

Editor-in-Chief, *The American Naturalist* (1995-1998).

Associate Editor, *American Zoologist* (1999-2000)

Special Editor, *Evolution*, (1998-present)

NSF Review Panel, Ecological and Evolutionary Physiology Program (1994-1996; 2001)

NSF Review Panel, Integrated Research Program (1999-2000)

Co-author of *Genetics Today*, a multimedia package for teaching high school and college

genetics (produced by VideoDiscovery, Inc: 1996)

External Review Committee (chair), Section of Ecology & Systematics, Cornell University (1999)

External Review Committee, Rocky Mountain Biological Lab (1997)

NCEAS Workshops on “Species Borders” (1997-99). Invited workshop participant.

Editorial Board, *Bioscience* (1993-1995).

Member of US SCOPE (Scientific Committee on Problems of the Environment) (1994-1995)

Editorial Board, *The American Naturalist* (1991-1994).

Editorial Board, *Oecologia* (1989-1992).

Young Investigators Award Committee, Society of American Naturalists (1991 and 1992).

NSF Workshop on “Ecological Modeling in Global Change” (1992). Invited workshop participant.

NSF Workshop on “National Center for Ecological Synthesis and Analysis (1992). Invited workshop participant and report co-author.

NSF workshop on “Biotic Interactions and Global Change” (1991). Co-organizer and steering committee member.

Foundations of Ecology (published by Univ. of Chicago Press), organizing committee (1991).

ESA Research Agenda for the 1990's (1990). Invited workshop participant.

Editorial Review Committee for *American Naturalist* (1989-90)

Former and Current Postdocs & Graduate Students:

Postdocs:

Diane Wiernasz (1986-89): Currently Associate Professor, University of Houston

Robert Srygley (1995-98): Currently Visiting Assistant Professor, University of Seoul

Graduate Students:

George Gilchrist (PhD, 1993): Currently Associate Professor, William and Mary

Juliette Winterer (PhD, 1995): Currently Assistant Professor, Franklin & Marshall College)

Art Woods (PhD, 1998): Currently Associate Professor, University of Montana

Ben Strauss (MS, 2000): Currently PhD student at Princeton

Lisa Crozier (1995-2001) Currently Senior Scientist at National Marine Fisheries Service

Jon Hoekstra (1995-2001): Currently Senior Scientist at The Nature Conservancy

Brad Klepetka (1998-2001): Currently Assistant Professor at Washington State University

Rima Izem (co-advisor with Steve Marron) (2000-2004): Currently Assistant Professor at Harvard University

Greg Ragland (2001-2007): Currently postdoc at University of Florida

Justin McAlister (2004-2007): Currently postdoc at Clemson University

Sarah Diamond (2005-2010): Currently postdoc at North Carolina State University

Sarah Seiter (2008-present)

Jessica Higgins (2009-present)