AUSTON MARMADUKE KILPATRICK

EE Biology/EMS, University of California,
Santa Cruz, CA 95064; akilpatr@ucsc.edu
(831) 459-5070 Office; (845) 596-7474 Cell
http://kilpatrick.eeb.ucsc.edu/

EMPLOYMENT

2003 - 2004	*Research Fellow*	Consortium for Conservation Medicine
2004 – 2008	*Sr. Research Scientist*	Consortium for Conservation Medicine
2003 – 2009	*Adj. Research Scientist*	Columbia University
2005 – present	*Research Associate*	Smithsonian Migratory Bird Center
2008 – present	*Research Associate*	Consortium for Conservation Medicine
2008 – 2013	*Assistant Professor*	University of California, Santa Cruz
2014 – present	*Associate Professor*	University of California, Santa Cruz

EDUCATION

Ph.D. Zoology, University of Wisconsin-Madison, June 2003
Dissertation: "The evolution of resistance to malaria in Hawaiian honeycreepers"

M.S. Mechanical Engineering, Massachusetts Institute of Technology, 1997
Thesis: "Lean Manufacturing Principles: A Comprehensive Framework for Improving Production Efficiency"

B.S. Mechanical Engineering, B.A. Philosophy, University of California, Los Angeles, 1995, Magna cum laude

HONORS, AWARDS

2008 American Ornithologists Union, Ned K. Johnson Young Investigator's Award
2009 American Ornithologists Union, Elected Member

PUBLICATIONS

(for pdfs see: http://kilpatrick.eeb.ucsc.edu/)
(On Web of Science search for: (Kilpatrick, AM NOT (Kilpatrick, Adina M or Kilpatrick, Alastair M))
Graduate Students in or affiliated with my lab are in italics

73. Langwig, K.E., J.R. Hoyt, K.L. Parise, J. Kath, D, Kirk, W.F. Frick, J.T. Foster, A.M. Kilpatrick. **2015**. Disease dynamics of white-nose syndrome invasion, Midwest USA. (In Press at **Emerging Infectious Disease**)

72. *Hoyt J. R., T. L. Cheng, K. E. Langwig, M. M. Hee,* W. F. Frick, A.M. Kilpatrick. **2015**. Bacteria isolated from bats inhibit the growth of Pseudogymnoascus destructans, the causative agent of white-nose syndrome. **PLoS One** DOI: 10.1371/journal.pone.0121329

71. Mascuch, S.J., W.J. Moree, C-C. Hsu, G.G. Turner, *T.L. Cheng*, D.S. Blehert, A.M. Kilpatrick, W.F. Frick, M.J. Meehan, L. Gerwick, P.C. Dorrestein. **2015**. Ambient ionization mass spectrometry reveals siderophore production by *Pseudogymnoascus destructans*, the

causative agent of white-nose sydrome, on bat wings during infection (In Press at **PLoS One**)

70. *Langwig, K.E.*, W.F. Frick, R. Reynolds, K.L. Parise, K.P. Drees, J.R. *Hoyt, T.L. Cheng*, T.H. Kunz, J.T. Foster, A.M. Kilpatrick. **2015**. Host and pathogen ecology drive the seasonal dynamics of a fungal disease, white-nose syndrome. **Proceedings of the Royal Society B: Biological Sciences** 282 (1799) 20142335
69. *Langwig, K.E.*, J. Voyles, M.Q. Wilber, W.F. Frick, K.A. Murray, B.M. Bolker, J.P. Collins, *T.L. Cheng*, M.C. Fisher, *J.R. Hoyt*, D.L. Lindner, H.I. McCallum, R. Puschendorf, E.B. Rosenblum, M. Toothman, C.K.R. Willis, C.J. Briggs, A.M. Kilpatrick. **2015**. Context dependent conservation responses to emerging wildlife diseases. **Frontiers in Ecology and the Environment** DOI: 10.1890/140241
68. Frick, W.F., S.J. Puechmaille, *J.R. Hoyt*, B.A. Nickel, *K.E. Langwig*, J.T. Foster, I. Horáček, T. Bartonička, K.E. Barlow, A.J. Haarsma, J. van der Kooij, L. Rodrigues, B. Mulkens, B. Petrov, C. Herzog, R. Reynolds, C.W. Stihler, G.G. Turner, D. Feller, A.M. Kilpatrick. **2015**. Disease alters macroecological patterns of North American bats. **Global Ecology and Biogeography** DOI: 10.1111/geb.12290
67. Levi, T., A. M. Kilpatrick, M. Barfield, R.D. Holt, M. Mangel, C.C. Wilmers. **2015**. Threshold levels of generalist predation determine consumer response to resource pulses. **Oikos** doi: 10.1111/oik.01487
66. *Hoyt, J.R.*, J. Okoniewski, *K.E. Langwig*, W.F. Frick, W.B. Stone, A.M. Kilpatrick. **2015**. Long-term persistence of *Pseudogymnoascus destructans*, the causative agent of white-nose syndrome, in the absence of bats. **Ecohealth** DOI: 10.1007/s10393-014-0981-4
65. Voyles, J., A.M. Kilpatrick, J.P. Collins, M.C. Fisher, W.F. Frick, H. McCallum, C.K. R. Willis, D.S. Blehert, K.A. Murray, R. Puschendorf, E.B. Rosenblum, B.M. Bolker, *T.L. Cheng*, *K.E. Langwig*, D.L. Linder, M. Toothman, M.Q. Wilber, C.J. Briggs. **2015.** Beyond too little, too late: Managing emerging infectious diseases requires international action **Ecohealth** DOI: 10.1007/s10393-014-0980-5
64. Hewson, I., J.B. Button, B.M. Gudenkauf, B. Miner, A.L. Newton, J.K. Gaydos, J. Wynnee, C. Groves, G. Hendler, M. Murray, S. Fradkinh, M. Breitbarti, E. Fahsbender, K.D. Lafferty, A.M. Kilpatrick, C.M. Miner, P. Raimondi, L. Lahner, C.S. Friedman, S. Daniels, M. Haulena, J. Marliave, C.A. Burge, M.E. Eisenlord, C.D. Harvell. **2014**. Densovirus associated with sea star wasting disease and mass mortality. **PNAS** 111 (48) 17278–17283
63. Perrings, C., C. Castillo-Chavez, G. Chowell, P. Daszak, E.P. Fenichel, D. Finnoff, R.D. Horan, A.M. Kilpatrick, A. Kinzig, N.V. Kuminoff, S. Levin, B. Morin, K.F. Smith, M. Springborn. **2014.** Epidemiological economics is changing infectious disease management **Ecohealth** DOI: 10.1007/s10393-014-0963-6
62. Janousek, W.M., P.P. Marra, A.M. Kilpatrick. **2014**. Avian roosting behavior influences vector-host contact for West Nile virus hosts. **Parasites and Vectors** 7: 399
61. Ciota, A.T., A.M. Matacchiero, A.M. Kilpatrick, L.D. Kramer. **2014**. The effect of temperature on life history traits of *Culex* mosquitoes. **Journal of Medical Entomology** 51 (1) 55-62
60. Funk, S., T.L. Bogich, K.E. Jones, A.M. Kilpatrick (corresponding author), P. Daszak. **2013**. Quantifying Trends in Disease Impact to Produce a Consistent and Reproducible Definition of an Emerging Infectious Disease. **PLoS One** 8(8) e69951

59. Kilpatrick, A.M., R.J. Peters, A.P. Dupuis, M.J. Jones, P. Daszak, P.P. Marra, L.D. Kramer. **2013**. Predicted and observed mortality from vector-borne disease in wildlife: West Nile virus and small songbirds **Biological Conservation** 165 79–85
58. Kilpatrick, A.M., W. J. Pape. **2013**. Predicting human West Nile virus infections with mosquito surveillance data. **Am J Epidemiology** 178(5) 829–835
57. T.L. Bogich, S. Funk, T.R. Malcolm, N. Chhun, J.H. Epstein, A.A. Chmura, A.M. Kilpatrick, J.S. Brownstein, O.C. Hutchison, C. Doyle-Capitman, R. Deaville, S.S. Morse, A.A. Cunningham, P. Daszak. **2013**. Using network theory for identifying disease outbreaks of unknown origin. **Journal of the Royal Society Interface** 10 20120904
56. Schwarz, L.K., M.E. Goebel, D.P. Costa, A.M. Kilpatrick. **2013**. Top-down and bottom-up influences on demographic rates of Antarctic fur seals, *Arctocephalus gazella*. **Journal of Animal Ecology** 82 903–911
55. Morales-Betoulle, M.E., N. Komar, N. Panella, D. Alvarez, M.R. López, J.L. Betoulle, S.M. Sosa, M.L. Müller, A.M. Kilpatrick, R.S. Lanciotti, B.W. Johnson, A.M. Powers, C. Cordón-Rosales, Arbovirus Ecology Work Group. **2013**. Ecology of West Nile Virus in a Tropical Ecosystem in Guatemala. **Am J Tropical Medicine & Hygiene** 88(1) 116-126
54. Kilpatrick, A.M., S.E. Randolph. **2012**. Drivers, dynamics, and control of emerging vector-borne zoonotic diseases. **Lancet** 380 (9857) 1946-1955
53. *Langwig, K.E.*, W.F. Frick, J.T. Bried, A.C. Hicks, T.H. Kunz, A.M. Kilpatrick. **2012**. Sociality, density-dependence, and microclimates determine the persistence of populations suffering from a novel fungal disease, white-nose syndrome. **Ecology Letters** 15 (9) 1050-1057
52. Levi, T., A. M. Kilpatrick, M. Mangel, C.C. Wilmers. **2012**. Deer, predators, and the emergence of Lyme disease. **Proceedings of the National Academy of Sciences USA.** 109 (27) 10942–10947
51. *Jones, C.J.**, L.P. Lounibos, P.P. Marra, A.M. Kilpatrick* (*corresponding authors). **2012**. Rainfall influences survival of *Culex pipiens* mosquitoes in a residential neighborhood in the mid-Atlantic USA. **Journal of Medical Entomology** 49(3) 467-473
50. Paull, S.H., S.J. Song, *K.M. McClure*, L.C. Sackett, A.M. Kilpatrick, P.T.J. Johnson. **2012**. Superspreaders, amplification hosts and disease hotspots: Linking transmission heterogeneity across hosts and space. **Frontiers in Ecology and Evolution** 10(2) 75-82
49. Kilpatrick, A.M. **2011**. Globalization, land use, and the emergence of West Nile virus. **Science** 334 (6054) 323-7
48. Kunz, T.H., J.T. Foster, W.F. Frick, A.M. Kilpatrick, G.F. McCracken, M.S. Moore, J.D. Reichard, D.M. Reeder, A.H. Robbins. **2011**. White-nose syndrome: an overview of ongoing and future research needs. Pp. 195-209. In: Proceedings of Protection of Threatened Bats at Coal Mines: A Technical Interactive Forum (K.C. Vories, A.H. Caswell, T.M. Price, eds.). USDOI Office of Surface Mining and Coal Research Center, Southern Illinois University, Carbondale, Illinois.
47. Farajollahi, A., D.M. Fonseca, L.D. Kramer, A.M. Kilpatrick (corresponding author)**. 2011.** Bird biting mosquitoes and human disease: a review of the role of *Culex pipiens* complex mosquitoes in epidemiology. **Infection, Genetics, Evolution 11** 1577-1585
46. Rohr, J.R., A.P. Dobson, P.T.J. Johnson, A.M. Kilpatrick, S.H. Paull, T.R. Raffel, D. Ruiz-Moreno, M.B. Thomas. **2011**. Frontiers in climate change-disease research. **Trends in Ecology and Evolution**. 26(6):270-7

45. Foufopoulos, J., A.M. Kilpatrick, A.R. Ives. **2011**. Climate change, and elevated extinction rates of reptile from Mediterranean Islands. **American Naturalist** 177(1) 119-129
44. Kilpatrick, A.M. & S. Altizer. **2010.** Disease Ecology. **Nature Education Knowledge** 1(11):13
43. Carver, S. A.M. Kilpatrick, A. Kuenzi1, R. Douglass, R.S. Ostfeld, P. Weinstein. **2010**. Integration of environmental monitoring to enhance comprehension of the ecology and epidemiology of infectious diseases. **Journal of Environmental Monitoring** 12 2048–2055
42. Hosseini, P., S.H. Sokolow, K.J. Vandegrift, A.M. Kilpatrick, P. Daszak. **2010**. Predictive power of air travel and socio-economic data for early pandemic spread. **PLoS One** 5(9) e12763
41. Kilpatrick, A.M. D.M. Fonseca, G.D. Ebel, M.R. Reddy, L.D. Kramer. **2010**. Spatial and temporal variation in vector competence of *Culex pipiens and Cx. restuans* mosquitoes for West Nile virus. **Am. J. Tropical Medicine and Hygiene** 83(3) 607-13
40. Vandegrift, K., S.H. Sokolow, P. Daszak, A.M. Kilpatrick (corresponding author). **2010**. Ecology of influenza viruses in a changing world. **Annals of the New York Academy of Science** 1195 (2010) 113–128
39. Kramer, L.D. and A.M. Kilpatrick. **2010**. Unraveling a complex transmission cycle: implications for control. pp. 191-202 *in* **Vector Biology, Ecology and Control** (P.W. Atkinson Ed.) Springer, New York
38. Kilpatrick, A.M., C.J. Briggs, P. Daszak. **2010**. The ecology and impact of chytridiomycosis, an emerging disease of amphibians. **Trends in Ecology and Evolution** 25(2) 109-118 (Featured Article)
37. Kilpatrick, A.M., A.P. Dupuis, G.J.J. Chang, L.D. Kramer. **2010**. DNA vaccination of American robins (*Turdus migratorius*) against West Nile virus **Vector-Borne Zoonotic Disease** 10(4) 377-380
36. Daszak, P., and A. M. Kilpatrick. **2009**. Regulating Services: A Focus on Disease Regulation. Pages 634-641 in S. A. Levin, editor. **The Princeton Guide to Ecology**. Princeton University Press, Princeton, NJ, USA
35. Schloegel, L.M., A. Picco, A.M. Kilpatrick, A. Hyatt, P. Daszak. **2009.** Magnitude of the US trade in amphibians and presence of *Batrachochytrium dendrobatidis* and ranavirus infection in imported North American bullfrogs (*Rana catesbeiana*) **Biological Conservation** 142 1420-1426
34. Kilpatrick, A.M., C.M. Gillin., P. Daszak. **2009**. Wildlife-livestock conflict: the risk of pathogen transmission from bison to cattle outside Yellowstone National Park. **Journal of Applied Ecology** 46(2) 476-485 (Editor's Choice)
33. Ladeau, S.L., A.M. Kilpatrick, C.A. Calder, P.P. Marra. **2008**. West Nile virus revisited: Consequences for North American ecology. **Bioscience 58(10) 937-946**
32. Kilpatrick, A.M., Meola, M.A., Moudy, R.M., Kramer, L.D. **2008**. Temperature, viral genetics, and the transmission of West Nile virus by *Culex pipiens* mosquitoes. **PLoS Pathogens 4(6)** e1000092
31. Gomez, A. L.D. Kramer, A.P. Dupuis II, A.M. Kilpatrick, L.J. Davis, M.J. Jones, P. Daszak, A.A. Aguirre. **2008**. Experimental infection of eastern gray squirrels (*Sciurus carolinensis*) with West Nile virus **American Journal of Tropical Medicine and Hygiene** 79(3) 447-51

30. Gomez, A., A.M. Kilpatrick, L.D. Kramer, A.P. Dupuis, J.G. Maffei, S.J. Goetz, P.P. Marra, P. Daszak, A.A. Aguirre. **2008**. Land use and West Nile virus seroprevalence in wild mammals. **Emerging Infectious Diseases** 14(6): 962-5
29. Zhang, J.-s.., P. Daszak, H.-l. Huang, G.-y. Yang, A.M. Kilpatrick, S.-y. Zhang. **2008**. Parasite Threat to Panda Conservation **Ecohealth** 5(1) 6-9
28. Newman, S.H., S. Wright, K., Converse, A.M. Kilpatrick, A.A. Chmura, N. Patel, E. Lammers, P. Daszak. **2007**. Disease associated aquatic bird mortality as an indicator of changing marine ecosystem health: Analysis of a 30-year USA mortality database **Marine Ecosystem-Progress Series** 352: 299-309
27. Douglas, K.O., A.M. Kilpatrick, P.N. Levett, M.C. Lavoie. **2007**. A quantitative risk assessment of West Nile virus introduction into Barbados **West Indian Medical Journal** 56(5) 394-7
26. Kilpatrick, A.M., LaDeau, S.L., Marra, P.P. **2007** The ecology and impact of West Nile virus in the Western Hemisphere. **Auk** 124(4):1121–1136
25. Kilpatrick, A.M., L.D. Kramer, M.J. Jones, P.P. Marra, P. Daszak, D.M. Fonseca. **2007**. Genetic influences on mosquito feeding behavior and the emergence of zoonotic pathogens **Am J Tropical Medicine & Hygiene** 77(4) 667-671
24. Griffing, S.M., A.M. Kilpatrick, L. Clark, P.P. Marra. **2007**. Mosquito landing rates on nesting American robins (*Turdus migratorius*). **Vector-Borne and Zoonotic Diseases** 7(3) 437-443
23. Daszak, P., J.H. Epstein, A.M. Kilpatrick, A.A. Aguirre, W.B. Karesh, A.A. Cunningham. **2007**. Collaborative research approaches to the role of wildlife in zoonotic disease emergence. Pp. 463-475 in **Current Topics in Microbiology and Immunology** Vol 315: Wildlife and Emerging Zoonotic Diseases: The Biology, Circumstances and Consequences of Cross-Species Transmission. Springer.
22. LaDeau, S.L., A.M. Kilpatrick, P.P. Marra. **2007**. West Nile virus emergence and large-scale declines of North American bird populations. **Nature** (447) 710-713
21. Cohen, J.K., A.M. Kilpatrick, R. Kelly, F. Stroud, K. Paul, F. Wolf, J. Else. **2007**. A comparative analysis of the seroprevalence of West Nile virus in non-human primate populations as predicted by mosquito abundance at two national primate research centers. **Comparative Medicine** 57 (1) 115-119
20. Kilpatrick, A.M., A.A. Chmura, D.W. Gibbons, R.C. Fleischer, P.P. Marra, P. Daszak. **2006**. Predicting the global spread of H5N1 avian influenza. **Proceedings of the National Academy of Sciences USA** 103 (51) 19368-19373
19. Epstein, J.H., J. McKee, P. Shaw, V. Hicks, G. Micalizzi, P. Daszak, A.M. Kilpatrick, G. Kaufman. **2006**. The Australian white ibis (*Threskiornis molucca*) as a reservoir of zoonotic and livestock pathogens. **Ecohealth** 3(4) 290-8
18. Kilpatrick, A.M., P. Daszak, M.J. Jones, P.P. Marra, L.D. Kramer. **2006**. Host heterogeneity dominates West Nile virus transmission. **Proceedings of the Royal Society B: Biological Sciences** 273 (1599) 2327-2333
17. Kilpatrick, A.M., L.D. Kramer, M.J. Jones, P.P. Marra, P. Daszak. **2006**. West Nile virus epidemics in North America are driven by shifts in mosquito feeding behavior **PLoS Biology** 4(4) 606-610
16. Kilpatrick, A.M., P. Daszak, S.J. Goodman, H. Rogg, L.D. Kramer, V. Cedeno, A.A. Cunningham. **2006**. Predicting pathogen introduction: West Nile virus spread to Galápagos **Conservation Biology** 20 (4): 1224-1231

15. Kilpatrick, A.M., D. LaPointe, C.T. Atkinson, B.L. Woodworth, J.K. Lease, M.E. Reiter, K. Gross. **2006**. Effects of chronic avian malaria (*Plasmodium relictum*) infection on the reproductive success of Hawaii Amakihi (*Hemignathus virens*). **Auk** 123 (3): 764-774
14. Kilpatrick, A.M. **2006**. Facilitating the evolution of resistance to avian malaria (*Plasmodium relictum*) in Hawaiian birds. **Biological Conservation** 128(4) 475-485
13. Kilpatrick, A.M., W.A. Mitchell, W.P. Porter, D. Currie. **2006**. Testing a mechanistic hypothesis for the latitudinal gradient in mammalian species diversity. **Evolutionary Ecology Research** 8(2) 333-344
12. Daszak, P., D.E. Scott, A.M. Kilpatrick, C. Faggioni, J.W. Gibbons, D. Porter. **2005**. Amphibian population declines at the Savannah River Site are linked to climate, not chytridiomycosis. **Ecology** 86(12) 3232-7
11. Wolfe, N.D., P. Daszak, A.M. Kilpatrick, and D.S. Burke. **2005**. Bushmeat Hunting, Deforestation and Predicting Zoonotic Emergence. **Emerging Infectious Diseases** 11(12): 1822-7
10. Kilpatrick, A.M., L.D. Kramer, S. Campbell, E.O. Alleyne, A.P. Dobson, P. Daszak. **2005**. West Nile Virus Risk Assessment and the Bridge Vector Paradigm. **Emerging Infectious Diseases** 11(3) 425-9
9. Leinwand, I., A.M. Kilpatrick, N. Cole, C.G. Jones, P. Daszak. **2005**. Drivers of Coccidial Infection in Endemic and Introduced Lizards of Mauritius. **Journal of Parasitology** 91(5): 1103-8
8. Kilpatrick, A.M., Y. Gluzberg, J. Burgett, and P. Daszak. **2004**. A quantitative risk assessment of the pathways by which West Nile virus could reach Hawaii. **Ecohealth** 1(2) 205-209
7. Marra, P.P., S. Griffing, C.L. Caffrey, A.M. Kilpatrick, R.G. McLean, C. Brand, E. Saito, A.P. Dupuis, L.D. Kramer, R. Novak. **2004**. West Nile Virus and Wildlife. **Bioscience** 54(5) 393-402
6. Patz, J.A., P. Daszak, G.M. Tabor, A.A. Aguirre, M. Pearl, J. Epstein, N.D. Wolfe, A.M. Kilpatrick, J. Foufopoulos, D. Molyneux, D.J. Bradley, & Members of the Working Group Land Use Change and Infectious Disease Emergence. **2004**. Unhealthy landscapes: Policy recommendations on land use change and disease emergence. **Environmental Health Perspectives** 112(10): 1092-1098
5. Hanselmann, R., A. Rodríguez, M. Lampo, L. Fajardo-Ramos, A. A. Aguirre, A.M. Kilpatrick, J. P. Rodríguez, and P. Daszak. **2004**. Presence of an emerging pathogen of amphibians in introduced bullfrogs *Rana catesbeiana* in Venezuela. **Biological Conservation** 120: 115-119
4. Daszak, P., G.M. Tabor, A.M. Kilpatrick, J. Epstein, R. Plowright. **2004**. Conservation medicine and a new agenda for emerging diseases. **Annals of the New York Academy of Science** 1026: 1-11
3. Kilpatrick, A.M., A.R. Ives. **2003**. Species interactions can explain Taylor's power law for ecological time series. **Nature** 422: 65-68
2. Kilpatrick, A.M. **2003**. The impact of thermoregulatory costs on foraging behaviour: a test with American Crows *(Corvus brachyrhynchos*) and eastern grey squirrels *(Sciurus carolinensis*). **Evolutionary Ecology Research** 5: 781-786
1. Kilpatrick, A.M. **2002**. Variation in growth of Brown-headed cowbird (*Molothrus ater*) nestlings and energetic impacts on their host parents. **Canadian Journal of Zoology** 80: 145-153

Book Review: Kilpatrick, A.M., T.D. Havlicek, A.R. Ives 2000. An Illustrated Guide to Theoretical Ecology by Ted J. Case, **Quarterly Review of Biology** 75(4) 486-487

PRESS on RESEARCH

(numbers refer to publication # from publications list above)

Television:

ABC News (22,20), Canadian Broadcasting Corporation (20), CBS (18), Discovery Health Hunters Documentary, ABC Earth Documentary

Radio:

NPR(5 times: 53,22,20,17,16), BBC Radio (49,32), EarthSky(34,53), WNYC(49), WAMU(20), CNN Radio(20), KOPT(20), WPKN(8), CBS Radio: Osgood Files(16,8), CBS Radio Chicago (22), CBC Radio (22), WCBS (53), Deutschlandfunk (53)

News Services:

Associated Press (22 – with 222 newspapers/news sources publishing the article; 20 - with 169 news sources publishing the article; 34 – with 48 news sources publishing the article), Reuters (22 – with 32 news sources publishing the article; 20 - with 5 news sources publishing the article; 32, with 13 news sources publishing the article)

***Peer-based accolades*:**

Faculty of 1000 Medicine (22, 32), Faculty of 1000 Biology (17, 22, 34, 49, 52), Science Editor's Choice (17), Conservation In Practice (14), J. Applied Ecology Editor's Choice (34)

Periodicals:

New York Times(52,53), National Geographic News(38,35,22,20,18,17), Science(52,22,20,17,16,8), Nature Reviews Microbiology(17), ScienceNow(53,22,20,17), Science Editor's Choice(17), J. Applied Ecology Editor's Choice (34), JAMA(17,8), Washington Post (22,20,18,17,16), LA Times(22,20,17), Toronto Globe & Mail(22,17), San Francisco Chronicle (32), American Scientist(22,20,17), La Presse(17), Die Zeit(17), New Scientist(35,34,22,20), US News and World Report (49), E-magazine (17,20,22), LiveScience(20), The Daily Green(22), Scientific American(26, 34, 49,52,53), USA Today (53,front page:29), ScienceLine(17,18), Santa Cruz Sentinel (32, 34,49), ScienceDaily (32,49,53), San Jose Mercury News (34,49), Science News (52,53), MSNBC (52), DiscoveryNews(52), Grist (49,32), Texas Climate News (49,32)

GRANTS

(>$50K, received since PhD in May 2003): ***Total*** *- $14,305,057*

Studies of Host-Pathogen Interactions between Geomyces destructans and Bats		Role: **Co-PI**
US Fish and Wildlife Service	**$236,105**	2012-2014
Pre- and Post-White Nose Syndrome Survival of Bats Assessed using Passive Transponders on a Continental Scale		Role: **Co-PI**
US Fish and Wildlife Service	**$173, 919**	2012-2014
Antifungal skin microbes as tools for WNS management		Role: **Co-PI**
US Fish and Wildlife Service	**$195,536**	2012-2014
Modeling anthropogenic effects in the spread of infectious diseases		Role: **Co-PI**
NIH(NIGMS)/National Science Foundation	**$1,600,000**	2011-2015
Wetlands in a Working Landscape: Links Between Landowner Decisions, Climate, Disease Ecology, and Metapopulation Dynamics		Role: **Co-PI**
National Science Foundation	**$1,250,000**	2011-2015

The effect of sociality on transmission and spread of a multi-host pathogen		Role: **PI**
National Science Foundation	**$2,000,000**	2011-2016
The Impact of Climate and Climate Change on West Nile Virus Transmission		Role: **PI**
National Institute of Health/NIAID	**$2,005,318**	2010-2014
Environmental Perturbations and Population Response of the Northern Elephant Seal		Role: **Co-PI**
Office of Naval Research	**$236,137**	2010-2013
A predictive model for of the global spread of H5N1 avian influenza		Role: **Co-PI**
National Institute of Health/Fogarty International Center	**$150,000**	2008-2009
Anthropogenic Drivers of Emerging Infectious Diseases		Role: **Co-PI**
National Science Foundation	**$749,945**	2008-2011
The Ecology, Emergence and Pandemic Potential of Nipah virus in Bangladesh		Role: **Co-PI**
National Institute of Health/Fogarty International Center	**$2,498,829**	2008-2013
Relating Behavior and life functions to populations level effects in marine mammals: An empirical and modeling effort to develop the PCAD model		**Role: Co-PI**
OGP Exploration & Production Sound and Marine Life	**$1,039,999**	2008-2010
Predicting spatial variation in West Nile virus transmission		Role: **PI**
National Science Foundation/National Institute of Health	**$2,263,188**	2006-2011
A Quantitative Risk Assessment of Transmission from Bison and Elk to Cattle		Role: **PI**
Wilburforce Foundation	**$55,000**	2004-2005

PhD GRANTS (total $12,422)

American Museum of Natural History Frank Chapman Grant ($1622) 2002
Society for Integrative and Comparative Biology ($800) 2002
American Ornithologists Union Research and Travel Grants ($1800, $300) 2001
John Jefferson Davis Research and Travel Grants ($1500,$1500,$300) 1999,2001,2001
Zoological Society of Milwaukee Research Grant ($2000, $2000) 2001, 2002
Vilas Research Travel Grant ($600) 2002

POLICY APPLICATIONS OF RESEARCH

- Expert panelist for Endangered Species listing for little brown bat (*Myotis lucifugus*); Publication #53 used in assessment. 2013
- Member of Epidemiological and Ecological Research Working Group of the USFWS White-Nose Syndrome Response Group 2012, 2013
- Contributor to Assessment of Climate Change in the Southwest United States: A Technical Report Prepared for the U.S. National Climate Assessment, for the South West Region 2012
- Invited expert panelist for "Bat Population Monitoring and Modeling Workshop" organized by the USFWS aimed to develop a North American monitoring program for bat populations. April, 2012
- Invited expert panelist to review the state of Massachusetts' "Arbovirus Surveillance and Response Plan as it pertains to Eastern Equine Encephalitis", organized by the Massachusetts Department of Public Health, April 2012
- Invited Expert Witness for US Intelligence Community conference entitled: "Avian Influenza: Threat to Homeland Security". Based on Pub. #20. Hosted by the Central Intelligence

Agency, Armed Forces Medical Intelligence Center, Defense Intelligence Agency, September 5th, 2007

- Testified before Congress in Congressional hearing entitled "Current Challenges in Combating the West Nile Virus", October 6, 2004 (Committee on Government Reform, Subcommittee on Energy Policy Natural Resources and Regulatory Affairs)
- Publication #32 used by the U.S. Global Change Research Program in assessment of climate change impacts on human health.
- Publication #20 used by USDA and Government Accountability Office to revise H5N1 avian influenza surveillance/management plans and in a Congressional Research Report for Congress
- Publication #10 used by >6 county health departments in USA, and in Canada's West Nile virus preparedness and prevention plan
- Publication #17 used in Suffolk County Vector Control & Wetlands Management Long Term & Environmental Impact Plan
- Publication #16 used to enforce aircraft disinsection (killing of hitchhiking insects) in Galapagos, and in IUCN's development of a long term vision initiative for Galapagos Islands, a World Heritage site.
- Publication #8 used by task force in preventing the introduction of West Nile virus to Hawaii.

EDITORIAL EXPERIENCE

Editorial Board (Journals) – Ecology (2013-present), Ecological Monographs (2013-present), Ecohealth (2003-pres.), Vector-Borne and Zoonotic Diseases (2010-pres.)

Review Panels for Granting Agencies: NSF (Ecology and Evolution of Infectious Diseases), NIH (Climate and Health Panel, Vector Biology Panel, ad hoc reviewer)

Ad hoc reviewier of grants (Agencies): National Science Foundation (DEB, CAREER awards), Natural Sciences and Engineering Research Council of Canada, Czech National Science Foundation, Leverhulme Trust, UK Medical Research Council

Book reviews (Publishers) - Springer

Award reviewer: Macarthur Award, Packard Fellow

Guest Editor: PLoS Pathogens

Journals (198 manuscripts reviewed from 2006-2013) – Nature, Science, J. American Medical Association, Ecology Letters, Nature Communications, PLoS Biology, PNAS, Proceedings of the Royal Society B, Ecology, PLoS Pathogens, Nature Climate Change, Nature Knowledge, Emerging Infectious Diseases, Conservation Biology, Trends in Ecology and Evolution, PLoS Comp. Biol., American Naturalist, Ecology, Trends in Parasitology, Biological Conservation, PLoS One, Interface, J. Applied Ecology, Ecological Applications, J. Animal Ecology, Frontiers in Ecology and Evolution, Am. J. Tropical Medicine and Hygiene, Future Virology, Vector-borne and Zoonotic Diseases, Molecular Ecology, Parasites and Vectors, Behavioral Ecology, J. Thermal Biology, Acta Theriologica, Journal of Wildlife Diseases, Oikos, Oecologia, Ecohealth, Theoretical Population Biology, Theoretical Biology and Medical Modeling, Functional Ecology, J. of Insect Science, Ibis

MENTORING

Graduate Students: Joseph Hoyt (PhD, UCSC, in progress), Kate Langwig (PhD, UCSC, in progress), Tony Kovach (PhD, UCSC, in progress), Tina Cheng (PhD, UCSC, in progress), Jordan Ruybal (PhD, UCSC, in progress), Katherine McClure (PhD, UCSC, in progress), Will

Janousek (MS, UCSC, 2012), Andres Gomez (PhD, Columbia University, '08), Ryan Peters (MS, George Mason University '09), Cathy Tuglus (MS, Columbia University '04)

Undergraduate Students: Michael Kohatsu (BS honors thesis, UCSC, '12), Kile Bigbee (BS, UCSC, '12), Violeta Jimenez (BS honors, Columbia University '06), Alexandria Vickery (BS, honors thesis UCSC, '12)

Post-Docs: Susanne Sokolow (2008-2009); Lisa Schwarz (2008-2011); Kyrre Kausrud (2010-2012); Sara Paull (2013-2015)

CONFERENCE SERVICE, WORKSHOPS, WORKING GROUPS

- Lead organizer for Ignite session ESA 2014. Theory vs. empiricism in the advancement of science
- NCEAS Working group 2012-2013: Fungal pathogens and disease-induced extinction: Are fungal diseases different?
- Science Committee, Wildlife Disease Association Conference, 2012
- Young Investigators Award Review Panelist, American Society of Tropical Medicine and Hygiene Conference, 2011, 2012, 2013
- Abstract review committee for the Ecohealth 2010 international conference
- Presider for Disease Ecology Session, Ecological Society of America conference 2007
- Abstract review committee for the Society for Conservation Biology 2004
- Judge for Buell/Braun Student presentations, ESA 2007

PRESENTATIONS

Invited talks

- *USFWS White-nose workshop*. Mechanisms allowing persistence of remnant populations and actions to conserve bats in epidemic regions
- *UC Davis*. 2014. Urbanization and vector-borne disease: Drivers of opposing patterns for West Nile virus and Lyme disease
- *UCSC Applied Math and Statistics Department*. 2014. The ecology of West Nile virus
- *Institute of Medicine Forum on Microbial Threats.* 2014. Globalization, Land Use, Global Warming, and the Invasion of West Nile Virus
- *Washington State University*. 2013. Urbanization and vector-borne disease: Drivers of opposing patterns for West Nile virus and Lyme disease
- *Ecological Society of America*. 2013. Urbanization and Disease.
- *University of California, Riverside*. 2013. Urbanization and the ecology of West Nile virus transmission
- *Emory University.* 2012. The ecology and impacts of multi-host pathogens
- *Princeton University*. 2012. Sociality, density-dependence and microclimates determine the persistence of populations suffering from a novel fungal disease, white-nose syndrome.
- *American Ornithologists Union*/*North American Ornithologists Conference*. 2012. Biodiversity and disease risk: Dilution effect or simply habitat change?
- *USFWS Bat Population Monitoring and Modeling Workshop*. 2012. Predicting and measuring the impact of WNS on bat populations

- *Scientific and Technological Barriers To Global Real Time Risk Assessment of Vector Borne Infections*. 2011. A mathematical framework and research plan for predicting which vector-borne pathogens could cause epidemics in North America
- *NIH Workshop: Emergence and Re-Emergence of Arboviral Infections of Global Health Importance.* 2011. The ecology of West Nile virus
- *University of Colorado, Boulder*. 2011. Land use, super spreaders, and vector borne pathogens: ecological insights to benefit human health and wildlife
- *Ecological Society of America*. 2011. Host traits and their contribution to pathogen amplification.
- *Smithsonian Conservation Biology Institute*. 2011. Urbanization, super spreaders, and the transmission of vector borne pathogens: ecological insights to benefit human health and wildlife
- *Penn State Center for Infectious Disease Dynamics Spring Seminar Series*. 2011. Land use, super spreaders, and vector borne pathogens: ecological insights to benefit human health and wildlife
- *Montgomery County Parks*. 2011. Birds, mosquitoes, and disease: West Nile virus
- *Institute of Zoology, London Zoological Society*. 2010. Host heterogeneity in the transmission of multi-host pathogens: a challenge and an opportunity for control
- *Ecological Society of America*. 2010. Climate and vector-borne disease: From pattern to mechanistic analysis.
- *Ecology and Evolution of Infectious Diseases Grantee Conference*. 2010. Land use, super spreaders, and vector borne pathogens: ecological insights to benefit human health and wildlife
- *NextSpace Coworking and Innovation Seminar Series*. 2010. Birds, Viruses, and Global Change - A Dangerous Combination
- *Montgomery County Parks*. 2009. West Nile virus in the mid-Atlantic.
- *Diversitas Open Science Conference*. 2009. Avian Influenza H5N1: a case study of disease spread via globalization and environmental change.
- *Society for Conservation Biology: National Meeting*. 2009. West Nile virus ecology and impacts on birds.
- *American Ornithologists Union*. 2009. (Keynote Speaker). Birds, viruses, and anthropogenic change - a Molotov cocktail in the making
- *Ecological Society of America*. 2009. Vector feeding and the seasonal transmission of multi-host pathogens.
- *Influenza Break-out Session, Ecology and Evolution of Infectious Diseases Network Meeting*. 2009. Analyzing the global spread of avian influenza.
- *UC Berkeley*. 2009. West Nile virus ecology in a changing world
- *Stanford University*. 2009. The ecology of West Nile virus transmission
- *American Society of Tropical Medicine and Hygiene Conference. 2008.* Local scale patterns of host seeking and feeding and implications for pathogen transmission
- *American Society of Tropical Medicine and Hygiene Conference. 2008.* West Nile Virus Risk Assessment and important vectors in Colorado and the mid-Atlantic
- *Patuxent National Wildlife Refuge. 2008.* West Nile virus transmission across a land use gradient
- *American Ornithologists Union. 2008.* The ecology of West Nile virus impacts on birds

- *Ecology and evolution of infectious diseases conference. 2008.* Quantifying the amplification contribution of hosts for multi-host vector borne pathogens
- *Avian Influenza: A threat to homeland security (sponsored by the CIA/AFMIC/DIA) 2007.* Predicting the spread of H5N1 Avian Influenza
- *Influenza 2007 (Pasteur Institute) 2007.* Predicting the spread of H5N1 Avian Influenza
- *Smithsonian Environmental Research Center, 2007.* Globalization, urbanization, and the ecology of infectious disease.
- *Yale, 2007*. Globalization, urbanization, and the ecology of infectious disease.
- *UC Santa Cruz, 2007*. Mixing models and data to understand the impact of globalization and urbanization on the emergence of infectious diseases
- *North American Ornithological Council, 2006*. West Nile Virus Introduction and Spread: The Role of Vector Feeding Ecology and Avian Population Dynamics
- *CDC West Nile virus Conference, 2006*. Drivers of WNV transmission in a Mid-Atlantic ecosystem
- *Diversitas: International programme of biodiversity Science, 2005.* The impact of West Nile virus on bird communities.
- *Columbia University Fall Seminar Series, 2005*. The ecology of West Nile virus
- *UC Berkeley,* 2004. The ecology and emergence of West Nile virus
- *Society for Conservation Biology, 2004*. The ecology of West Nile virus across an urbanization gradient.
- *Protecting Hawaii and the Pacific from West Nile Virus, 2004*. Pathways for West Nile virus in the Pacific.
- *Building capacity and determining disease threats to endemic Galapagos fauna, 2004*. West Nile virus risk assessment for Galápagos.

<u>*Submitted talks*</u>

- *North American Society for Bat Research.* 2014. Mechanisms allowing persistence of remnant populations and actions to conserve bats in epidemic regions
- *North American Society for Bat Research*. 2013. Multispecies transmission dynamics of *Geomyces destructans*: Who acquires infection from whom?
- *North American Society for Bat Research*. 2012. Sociality, density-dependence and microclimates determine the persistence of populations suffering from a novel fungal disease, white-nose syndrome.
- *Ecological Society of America*. 2012. Biodiversity and disease risk: Dilution effect or simply habitat change?
- *Ecology and Evolution of Infectious Diseases Grantee Conference.* 2012. Sociality, transmission, and impacts of a virulent fungal pathogen of bats
- *North American Society for Bat Research*. 2011. Predicting impacts of WNS on bat populations.
- *Ecology and Evolution of Infectious Diseases Grantee Conference.* 2011. Vector survival and competence across a land-use gradient
- *American Society of Tropical Medicine and Hygiene Conference.* 2011. Predicting West Nile virus transmission with limited resources
- *American Society of Tropical Medicine and Hygiene Conference.* 2010. Spatial and temporal variation in vector competence of *Culex pipiens and Cx. restuans* mosquitoes for West Nile virus

- *American Ornithologists Union*. 2010. Hidden impacts of West Nile virus on small songbirds.
- *American Society of Tropical Medicine and Hygiene Conference.* 2009. Vaccination of wildlife to control zoonotic disease: West Nile virus as a case study
- *The Wildlife Society*, 2009. Wildlife-livestock conflict: the risk of pathogen transmission from bison to cattle outside Yellowstone National Park
- *Ecology and Evolution of Infectious disease*, 2009. Wildlife-livestock conflict: the risk of pathogen transmission from bison to cattle outside Yellowstone National Park
- *CDC West Nile virus conference,* 2009. Predicting West Nile virus transmission with limited resources.
- *American Society of Tropical Medicine & Hygiene, 2007*. Climate, evolution, and the transmission of West Nile virus by mosquitoes.
- *Ecological Society of America, 2007*. Globalization and the spread of pathogens
- *American Society of Tropical Medicine & Hygiene, 2006*. Predicting the transmission of West Nile virus
- *Ecological Society of America, 2006*. The impact of urbanization on West Nile virus transmission
- *International Conference of Emerging Infectious Diseases. 2006*. Super spreaders and feeding shifts in the emergence of West Nile virus
- *American Society of Tropical Medicine & Hygiene, 2005*. West Nile virus transmission across space and time
- *Ecological Society of America, 2004.* The ecology of West Nile virus across an urbanization gradient.
- *International Conference of Emerging Infectious Diseases, 2004.* Assessing West Nile virus risk challenges the bridge vector paradigm.
- *Ecological Society of America, 2003.* The effects of predation on the evolution of resistance to avian malaria in Hawaiian birds.
- *American Ornithologists Union, 2002.* The effect of malaria on the breeding success of Hawaii Amakihi (*Hemignathus virens*).
- *Society for Integrative and Comparative Biology, 2002*. Variation in growth of Brown-Headed Cowbird nestlings and energetic impacts on their host parents.
- *Ecological Society of America Conference, 2001*. Spatial and temporal variation in the per capita strength of competition between two desert annuals.
- *American Ornithologists Union, 2001*. Variation in growth of Brown-Headed Cowbird nestlings and energetic impacts on their host parents.

PROFESSIONAL SOCIETIES

Ecological Society of America (1998-present), American Society of Tropical Medicine & Hygiene (2005-present), American Ornithologists Union (2001-present), American Society of Naturalists (1998-1999), Sigma Xi (1998-2001), Society for Integrative and Comparative Biology (2001-2002), American Society of Mechanical Engineers (1994-1997)