

## *RICHARD S. OSTFELD*

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### **Education:**

Ph.D. in Zoology, University of California Berkeley, 1985  
BA in Biology, University of California Santa Cruz, 1979

### **Professional Positions:**

2017-present: Distinguished Senior Scientist, Cary Institute of Ecosystem Studies  
2004- 2017: Senior Scientist, Cary Institute of Ecosystem Studies  
2001-4: Scientist, Institute of Ecosystem Studies  
1996: Visiting Scientist, Department of Integrative Biology, Univ. California, Berkeley  
1995-2000: Associate Scientist, Institute of Ecosystem Studies  
1995- present: Adjunct Professor and Scientist, Univ. of Connecticut  
1991- present: Associate Member of the Graduate Faculty in Ecology, Rutgers University  
1990-1995: Assistant Scientist, Institute of Ecosystem Studies

### **Selected Professional Honors:**

2018: Henry J. Oosting Memorial Lectureship, Duke University  
2017: Global Scholar, Harvard University, Planetary Health Alliance  
2017: EnviroDay Keynote Lecturer, University of Virginia  
2016: Edwin Way Teale Lecturer, University of Connecticut  
2015: George B. Saul Lecturer, Middlebury College  
2014: Elected Fellow, American Association for the Advancement of Science  
2014: Elected Fellow, Ecological Society of America  
2012: Keynote Speaker, Climate Change and Health Symposium, Brown University  
2009: C. Hart Merriam Award from the American Society of Mammalogists

### **Research Interests and Activities:**

My research interests fall into the following general topics: Ecology of infectious diseases; Linking community ecology and epidemiology; Behavioral, population, and community ecology of mammals; Animal population dynamics; Landscape epidemiology.

### **Publications:**

*In Press or In Revision*

Han, B. and R.S. Ostfeld. 2018. Topic modeling of major research themes in disease ecology of mammals. *Journal of Mammalogy*, in press.

Fischhoff, I.R., J. Burtis, F. Keesing, and R.S. Ostfeld. 2018. Tritrophic interactions between a fungal pathogen, a spider predator, and the blacklegged tick. *Ecology and Evolution*, in press.

Dhawan, R., I.R. Fischhoff, and R.S. Ostfeld. In revision. Effects of weather variability on population dynamics of white-footed mice (*Peromyscus leucopus*) and eastern chipmunks (*Tamias striatus*). *Journal of Mammalogy*

Emmering, Q., J.K. Kelly, R.S. Ostfeld, and K.A. Schmidt. In review. Nest site selection and nest survival in ground-nesting birds is influenced by predator clustering, but may be constrained by nesting preferences. *Journal of Animal Ecology*.

Keesing, F., R.S. Ostfeld, S. Okanga, S. Hockett, B.R. Bayles, R. Chaplin-Kramer, L.P. Fredericks, T. Hedlund, V. Kowal, H. Tallis, C.M. Warui, S.A. Wood, and B.F. Allan. In revision. Integrating livestock and wildlife in an African savanna. *Nature Sustainability*.

Fischhoff, I.R., S.E. Bowden, F. Keesing, and R.S. Ostfeld. In revision. Systematic review and meta-analysis of tick-borne disease risk factors in residential yards, neighborhoods, and beyond. *Ticks and Tick-Borne Diseases*.

#### *Published*

1. Ostfeld, R.S., T. Levi, F. Keesing, K. Oggenfuss, and C.D. Canham. 2018. Tick-borne disease risk in a forest food web. *Ecology*, in press.
2. Ostfeld, R.S., D. Brisson, K. Oggenfuss, J. Devine, M.Z. Levy, and F. Keesing. 2018. Effects of a zoonotic pathogen, *Borrelia burgdorferi*, on the behavior of a key reservoir host. *Ecology and Evolution*, in press.
3. Fischhoff, I.R., J. Burtis, F. Keesing, and R.S. Ostfeld. 2018. Tritrophic interactions between a fungal pathogen, and spider predator, and the blacklegged tick. *Ecology and Evolution*, in press.
4. Han, B. and R.S. Ostfeld. 2018. Topic modeling of major research themes in disease ecology of mammals. *Journal of Mammalogy*, in press.
5. Keesing, F., and R.S. Ostfeld. 2018. The Tick Project: testing environmental methods of preventing tick-borne diseases. *Trends in Parasitology* 34: 447-450.
6. Allan, B.F., H. Tallis, R. Chaplin-Kramer, S. Hockett, G. Kowal, J. Musengezi, S. Okanga, R.S. Ostfeld, J. Schieltz, C. Warui, S.A. Wood, and F. Keesing. 2017. Can integrating wildlife and livestock enhance the delivery of ecosystem services in central Kenya? *Frontiers in Ecology and the Environment* 15: 328-335.
7. Ostfeld, R.S. 2017. Biodiversity loss and the ecology of infectious diseases. *The Lancet Planetary Health* 1:e2-e3. [https://doi.org/10.1016/S2542-5196\(17\)30010-4](https://doi.org/10.1016/S2542-5196(17)30010-4).

8. Ostfeld, R.S. 2017. Tropical forests and child health. *The Lancet Planetary Health* e165. DOI: [http://dx.doi.org/10.1016/S2542-5196\(17\)30085-2](http://dx.doi.org/10.1016/S2542-5196(17)30085-2)
9. Fischhoff, I.R., F. Keesing, and R.S. Ostfeld 2017. The tick biocontrol agent *Metarhizium brunneum* (= *M. anisopliae*) (strain F52) does not reduce non-target arthropods. *PLOS ONE* 12: e0187675.
10. Robertson, B.A., R.S. Ostfeld, and F. Keesing 2017. Trojan females and Judas goats: Evolutionary traps as tools in wildlife management. *BioScience* 67:982-993.
11. Ostfeld, R.S. 2017. Zoonoses: infectious diseases transmissible between humans and animals, 4<sup>th</sup> edition. [Book review]. *Quarterly Review of Biology* 92:346-347.
12. Kelly, J.K., K.A. Schmidt, and R.S. Ostfeld. 2017. Co-existing ground-nesting passerines are not alike: rodents and conspecific abundance differentially affect nest survival in the ovenbird and the veery. *Wilson Bulletin* 129(1):112-121.
13. Vuong, H.B., G.S. Chiu, P.E. Smouse, D.M. Fonseca, D. Brisson, P.J. Morin, and R.S. Ostfeld. 2017. Influences of host community characteristics on *Borrelia burgdorferi* infection prevalence in blacklegged ticks. *PLoS ONE* 12:e0167810. doi:10.1371/journal.pone.0167810.
14. Ostfeld, R.S. and F. Keesing. 2017. Is biodiversity bad for your health? *Ecosphere* 8(3):e01676. doi:10.1002/ecs2.1676.
15. Manore, C.A., R.S. Ostfeld, F.B. Agosto, H. Gaff, and S.L. LaDeau. 2017. Defining the risk of Zika and chikungunya virus transmission in human population centers of the eastern United States. *PLoS Neglected Tropical Diseases* 11:e0005255. doi:10.1371/journal.pntd.0005255.
16. Levi, T., F. Keesing, R.D. Holt, M. Barfield, and R.S. Ostfeld. 2016. Quantifying dilution and amplification in a community of hosts for tick-borne pathogens. *Ecological Applications* 26:484-498.
17. Granter, S.R., R.S. Ostfeld, and D.J. Milner, Jr. 2016. Where the wild things aren't. *American Journal of Clinical Pathology* 0:1-3. doi:10.1093/ajcp/aqw197.
18. Burtis, J., P. Sullivan, T. Levi, K. Oggenfuss, T. Fahey, and R.S. Ostfeld. 2016. The impact of temperature and precipitation on blacklegged tick activity and Lyme disease incidence in endemic and emerging regions. *Parasites & Vectors* 9:606-616.
19. Levi, T., A. Massey, R.D. Holt, F. Keesing, R.S. Ostfeld, and C.A. Peres. 2016. Does biodiversity protect humans against infectious disease?: comment. *Ecology* 97:536-546.
20. Springer, Y.P., D. Hoekman, P.T.J. Johnson, P.A. Duffy, R.H. Kao, D.T. Barnett, B.F. Allan, B.R. Amman, C.M. Barker, R. Barrera, C.B. Beard, L. Beati, M. Begon, M.S. Blackmore, W.E. Bradshaw, D. Brisson, C.H. Calisher, J.E. Childs, M.A. Diuk-Wasser, R.J. Douglass, R.J. Eisen, D.H. Foley, J.E. Foley, H.D. Gaff, S.L. Gardner, H.S. Ginsberg, G.E. Glass, S.A. Hamer, M.H. Hayden, B. Hjelle, C.M. Holzapfel, S.A. Juliano, L.D. Kramer, A.J. Kuenzi, S.L. LaDeau, T.P. Livdahl, J.N. Mills, C.G. Moore, S. Morand, R.S. Nasci, N.H. Ogden, R.S. Ostfeld, R.R. Parmenter, J. Piesman, W.K. Reisen, H.M. Savage, D.E. Sonenshine, A. Swei, and M.J. Yabsley.

2016. Continental-scale surveillance of infectious agents: tick-, mosquito, and rodent-borne parasite sampling designs for NEON. *Ecosphere* 7(5):e01271.
21. Burtis, J.C., R.S. Ostfeld, J.B. Yavitt, and T.H. Fahey. 2016. The relationship between soil arthropods and the overwinter survival of *Ixodes scapularis* (Acari: Ixodidae) under manipulated snow cover. *Journal of Medical Entomology* 53:225-229.
22. Keesing, F. and R.S. Ostfeld. 2015. Is biodiversity good for your health? *Science* 349:235-236.
23. Johnson, P.T.J., R.S. Ostfeld, and F. Keesing. 2015. Frontiers in research on biodiversity and disease. *Ecology Letters* 18:1119-1133.
24. Ostfeld, R.S. and J.L. Brunner. 2015. Climate change and *Ixodes* tick-borne diseases of humans. *Philosophical Transactions of the Royal Society B* 370:20140051. doi:10.1098/rstb.2014.0051.
25. Rosenthal, S.R., R.S. Ostfeld, S.T. McGarvey, M. Lurie, and K.F. Smith. 2015. Redefining disease emergence to improve prioritization and macroecological analyses. *One Health* 1:17-23.
26. Levy, M.Z., A. Tustin, R. Castillo-Neyra, T.S. Mabud, K. Levy, C.M. Barbu, V.R. Quispe-Machaca, J. Ancca-Juarez, K. Borrini-Mayori, C. Naquira-Velarde, and R.S. Ostfeld. 2015. Bottlenecks in domestic animal populations can facilitate the emergence of *Trypanosoma cruzi*, the etiological agent of Chagas Disease. *Proceedings of the Royal Society B*: 282:20142807. <http://dx.doi.org/10.1098/rspb.2014.2807>.
27. Estrada-Peña, A., J. de la Fuente, R.S. Ostfeld, and A. Cabezas-Cruz. 2015. Interactions between tick and transmitted pathogens evolved to minimize competition through nested and coherent networks. *Nature Scientific Reports* 5:10361. doi:10.1038/srep10361.
28. Ostfeld, R.S. 2015. Interactions between mammals and pathogens: an introduction. *Journal of Mammalogy* 96:2-3.
29. Parham, P.E., J. Waldock, G.K. Christophides, D. Hemming, F. Augusto, K.J. Evans, N. Fefferman, H. Gaff, A. Gumel, S. LaDeau, S. Lenhart, R.E. Mickens, E.N. Naumova, R.S. Ostfeld, P.D. Ready, M.B. Thomas, J. Velasco-Hernandez, and E. Michael. 2015. Climate, environmental and socio-economic change: weighing up the balance in vector-borne disease transmission. *Philosophical Transactions of the Royal Society B* 370:20130551. doi:10.1098/rstb.2013.0551.
30. Levi, T., F. Keesing, K. Oggenfuss, and R.S. Ostfeld. 2015. Accelerated phenology of blacklegged ticks under climate warming. *Philosophical Transactions of the Royal Society B* 370:20130556. doi:10.1098/rstb.2013.0556.
31. Ostfeld, R.S., T. Levi, A.E. Jolles, L.B. Martin, P.R. Hosseini, and F. Keesing. 2014. Life history and demographic drivers of reservoir competence for three tick-borne zoonotic pathogens. *PLoS ONE* 9:e107387.

32. Ostfeld, R.S. 2014. "Disease Ecology." In: D. Gibson (ed.). Oxford Bibliographies in Ecology. New York: Oxford University Press. doi:10.1093/OBO/9780199830060-0128.
33. Granter, S.R., A. Bernstein, and R.S. Ostfeld. 2014. Of mice and men: Lyme disease and biodiversity. *Perspectives in Biology and Medicine* 57:198-207.
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35. Hersh, M.H., R.S. Ostfeld, D.J. McHenry, M. Tibbetts, J.L. Brunner, M.E. Killilea, K. LoGiudice, K.A. Schmidt, and F. Keesing. 2014. Co-Infection of blacklegged ticks with *Babesia microti* and *Borrelia burgdorferi* is higher than expected and acquired from small mammal hosts. *PLoS ONE* 9:e99348.
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37. Richer, L.M., D. Brisson, R. Melo, R.S. Ostfeld, N. Zeidner, and M. Gomes-Solecki. 2014. Reservoir targeted vaccine against *Borrelia burgdorferi*: A new strategy to prevent Lyme disease transmission. *Journal of Infectious Diseases* 209:1972-1980. doi:10.1093/infdis/jiu005.
38. Hersh, M.H., S.L. LaDeau, M.A. Previtali, and R.S. Ostfeld. 2014. When is a parasite not a parasite? Effects of larval tick burdens on white-footed mouse survival. *Ecology* 95:1360-1369.
39. Estrada-Peña, A., R.S. Ostfeld, A.T. Peterson, R. Poulin, and J. de la Fuente. 2014. Effects of environmental change on zoonotic disease risk: an ecological primer. *Trends in Parasitology* 30:205-214.
40. Keesing, F., D.J. McHenry, M. Hersh, M. Tibbetts, J.L. Brunner, M. Killilea, K. LoGiudice, K.A. Schmidt, and R.S. Ostfeld. 2014. Prevalence of human-active and variant 1 strains of the tick-borne pathogen *Anaplasma phagocytophilum* in hosts and forests of eastern North America. *American Journal of Tropical Medicine and Hygiene* 91:302-309.
41. Vuong, H.B., C.D. Canham, D. Fonseca, D. Brisson, P.J. Morin, P.E. Smouse, and R.S. Ostfeld. 2014. Occurrence and transmission efficiencies of *Borrelia burgdorferi* ospC types in avian and mammalian wildlife. *Infection, Genetics & Evolution* 27:594-600. <http://dx.doi.org/10.1016/j.meegid.2013.12.011>.
42. Luber, G., K. Knowlton, J. Balbus, H. Frumkin, M. Hayden, J. Hess, M. McGeehin, N. Sheats, L. Backer, C.B. Beard, K.L. Ebi, E. Maibach, R.S. Ostfeld, C. Wiedinmyer, E. Zielinski-Gutiérrez, and L. Ziska, 2014. Ch. 9: Human Health. *Climate Change Impacts in the United States: The Third National Climate*

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  44. Jeschke, J.M., F. Keesing, and R.S. Ostfeld. 2013. The ecology of novel organisms: invasive species, GMOs, and emerging pathogens. *Ambio* 42:541-548.
  45. Myers, S.S., L. Gaffikin, C.D. Golden, R.S. Ostfeld, K.H. Redford, T.H. Ricketts, W.R. Turner, and S.A. Osofsky. 2013. Human health impacts of ecosystem alteration. *Proceedings of the National Academy of Sciences*. 110:18753-18760.
  46. Ostfeld, R.S. and F. Keesing. 2013. Biodiversity and human health. Pages 357-372 in *Encyclopedia of Biodiversity*, edited by S. Levin. Elsevier, New York.
  47. Altizer, S., R.S. Ostfeld, P.T.J. Johnson, S. Kutz, and C.D. Harvell. 2013. Climate change and infectious diseases: from evidence to a predictive framework. *Science* 341:514-519.
  48. Dupuis, A., R.J. Peters, M.A. Prusinski, R.C. Falco, R.S. Ostfeld, and L.D. Kramer. Isolation of deer tick virus (Powassan virus, lineage II) from *Ixodes scapularis* and detection of antibody in vertebrate hosts sampled in the Hudson Valley, New York State. 2013. *Parasites and Vectors* 6:185-196.
  49. Brunner, J., F. Keesing, M. Killilea, K. LoGiudice, S. Duerr, and R.S. Ostfeld. 2013. An experimental test of competition among mice, chipmunks, and squirrels in deciduous forest fragments. 2013. *PLoS ONE* 8:e66798.
  50. Keesing, F., B.F. Allan, T.P. Young, and R.S. Ostfeld. 2013. Effects of wildlife and cattle on tick abundance in central Kenya. *Ecological Applications* 23:1410-1418.
  51. Ostfeld, R.S. 2013. A Candide response to Panglossian accusations by Randolph and Dobson: biodiversity buffers disease. *Parasitology* 140:1196-1198.
  52. Ostfeld, R.S. and F. Keesing. 2013. Straw men don't get Lyme disease: response to Wood and Lafferty. *Trends in Ecology and Evolution* 28:502-503.
  53. Ostfeld, R.S. and F. Keesing. 2012. Effects of host diversity on infectious disease. *Annual Review of Ecology, Evolution, and Systematics* 43:157-182.
  54. Schwanz, L, A. Previtali, M. Gomes-Solecki, D. Brisson, and R.S. Ostfeld. 2012. Immunochallenge reduces risk sensitivity during foraging in white-footed mice. *Animal Behaviour* 83:155-162.
  55. Keesing, F., and R.S. Ostfeld. 2012. Disease ecology. Pages 217-230 in J.C. Ingram, F. DeClerck, and C. Rumbaitis del Rio, eds. *Integrating ecology and poverty reduction: ecological dimensions*. Springer, New York.
  56. Kershenbaum, A., L. Stone, R.S. Ostfeld, and L. Blaustein. 2012. Modelling transmission of vector-borne pathogens shows complex dynamics when vector feeding sites are limited. *PLoS ONE* 7:e36730.

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understanding vector and vector-borne disease dynamics. *Israel Journal of Ecology and Evolution* 56:251-262.

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