

Sean Moore

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Education

- 2010 PhD Zoology, Oregon State University
Minor: Ecosystem Informatics
Advisor: Elizabeth T. Borer
- 2004 BS Biology, Virginia Tech
- 1998 BBA Operations and Information Technology, College of William and Mary
Minor: Mathematics

Professional Experience

- 2017-present *Research Assistant Professor*, Department of Biological Sciences, University of Notre Dame
- 2013-2017 *Postdoctoral Fellow*, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health
- 2010-2013 *Climate and Health Postdoctoral Research Fellow*, National Center for Atmospheric Research (NCAR) and U.S. Centers for Disease Control and Prevention (CDC)
- 2012 *Visiting Instructor*, Department of Earth and Planetary Sciences, University of New Mexico
Taught undergraduate course on Global Climate Change.
- 2009 *Visiting Research Collaborator*, Department of Ecology, Evolution, and Behavior, Princeton University
- 2005-2010 *Graduate Teaching Assistant*, Zoology Department, Oregon State Univ.
Taught undergraduate labs in General Biology and Human Anatomy and Physiology.
- 2003-2005 *Research Assistant*, Biology Department, Virginia Tech
- 1998-2002 *Technology Consultant*, Accenture, Reston, VA

Refereed Publications

Moore, S.M., Q.A. ten Bosch, A.S. Siraj, K.J. Soda, G. España, A. Campo, S. Gómez, D. Salas, B. Raybaud, E. Wenger, P. Welkhoff, and T.A. Perkins. 2018. Local and regional dynamics of chikungunya virus transmission in Colombia: the role of mismatched spatial heterogeneity. *BMC Medicine* 16: 152.

Del Valle, S.Y., B.H. McMahon, J. Asher, R. Hatchett, J.C. Lega, H.E. Brown, M.E. Leany, Y. Pantazis, D.J. Roberts, **S.M. Moore**, A.T. Peterson, L.E. Escobar, H. Qiao, N.W. Hengartner, and H. Mukundan. 2018. Summary results of the 2014-2015 DARPA Chikungunya challenge. *BMC Infectious Diseases* 18: 245. <https://doi.org/10.1186/s12879-018-3124-7>

M'bangombe, M., L. Pezzoli, B. Reeder, S. Kabuluzi, K. Msyamboza, H. Masuku, B. Ngwira, P. Cavailler, F. Grandesso, A. Palomares, N. Beck, A. Shaffer, E. MacDonald, M. Senbete, J. Lessler, **S.M. Moore**, and A.S. Azman. 2018. Oral cholera vaccine in cholera prevention and control, Malawi. *Bulletin of the WHO* 96: 428-435. <https://doi.org/10.2471/BLT.17.207175>

Carter, N.H., P. Bouley, **S.M. Moore**, M. Poulos, J. Bouyer, and S. Pimm. 2018. Climate change, disease range shifts, and the future of the African lion. *Conservation Biology* 32: 1207-1210. <https://doi.org/10.1111/cobi.13102>

Lessler, J.*, **S.M. Moore***, S.M., F.J. Luquero, H.S. McKay, et al. 2018. Mapping the burden of cholera in Africa and implications for control: an analysis of data across geographical scales. *Lancet* 391 (10133): 1908-1915. [https://doi.org/10.1016/S0140-6736\(17\)33050-7](https://doi.org/10.1016/S0140-6736(17)33050-7)

*Co-first authors

Moore, S.M., A.S. Azman, B.F. Zaitchik, E.D. Mintz, et al. 2017. El Niño and the shifting geography of cholera in Africa. *Proceedings of the National Academy of Sciences* 114 (17): 4436-4441.

Lessler, J., A. Azman, H.S. McKay, and **S.M. Moore**. 2017. What is a hotspot anyway? *American Journal of Tropical Medicine and Hygiene* 96 (6): 1270-1273.

Cauchemez, S., P. Nouvellet, A. Cori, T. Jombart, T. Garske, H. Clapham, **S.M. Moore**, et al. 2016. Unravelling the drivers of MERS-CoV transmission. *Proceedings of the National Academy of Sciences* 113 (32): 9081-9086.

Chang, L.W., Grabowski, M.K., R. Ssekubugu, F. Nalugoda, G. Kigozi, B. Nantume, J. Lessler, **S.M. Moore**, et al. 2016. Heterogeneity of the HIV epidemic in agrarian, trading, and fishing communities in Rakai, Uganda: an observational epidemiological study. *Lancet HIV* 3(8): e388-e396.

Lessler J, Salje H, Van Kerkhove MD, Ferguson NM, Cauchemez S, Rodriguez-Barraguer I, Hakeem R, Jombart T, Aguas R, Al-Barrak A, Cummings DA, and **MERS-CoV Scenario and Modeling Working Group**. 2016. Estimating the Severity and Subclinical Burden of Middle East Respiratory Syndrome Coronavirus Infection in the Kingdom of Saudi Arabia. *Am J Epidemiol* 183(7): 657-63.

Moore, S.M. and J. Lessler. 2015. Optimal allocation of the limited oral cholera vaccine supply between endemic and epidemic settings. *Journal of the Royal Society Interface* 12: 20150703. <http://dx.doi.org/10.1098/rsif.2015.0703>

Monaghan, A., **Moore, S.M.**, Sampson, K., C.B. Beard, and R.J. Eisen. 2015. Climate change influences on the annual onset of Lyme disease in the United States. *Tick and Tick-borne Diseases* 6: 615-622.

Moore, S.M., A. Monaghan, J.N. Borchert, J.T. Mpanga, L.A. Atiku, K.L. Gage et al. 2015. Seasonal fluctuations of small mammal and flea communities in a Ugandan plague focus: evidence to implicate *Arvicanthus niloticus* and *Crocidura spp.* as key hosts in *Yersinia pestis* transmission. *Parasites and Vectors* 8:11. doi:10.1186/s13071-014-0616-1

Lessler, J., D.A.T. Cummings, A. Albarrak, and **MERS-CoV Scenario and Modeling Working Group**. 2014. Estimating potential incidence of MERS-CoV associated with Hajj pilgrims in Saudi Arabia, 2014. *PLoS Currents Outbreaks* 6. doi:10.1371/currents.outbreaks.c5c9c9abd636164a9b6fd4dbda974369

Moore, S.M.*, K.L. Shannon*, C.E. Zalaya, A.S. Azman, and J. Lessler. 2014. Epidemic risk from cholera introduction in Mexico. *PLoS Currents Outbreaks* 6. doi: 10.1371/currents.outbreaks.c04478c7fbd9854ef6ba923cc81eb799
*Co-first authors

Moore, S.M., R.J. Eisen, K. Griffith, and P. Mead. 2014. Meteorological influences on the seasonality of Lyme disease in the United States. *American Journal of Tropical Medicine and Hygiene* 90: 486-496.

Moore, S.M., A. Monaghan, K. Griffith, T. Apungu, P. Mead, and R.J. Eisen. 2012. Improvement of disease prediction and modeling through the use of meteorological ensembles: human plague in Uganda. *PLoS One* 7(9): e44431. doi:10.1371/journal.pone.0044431

Graham, C., J.N. Borchert, W. Black, **S.M. Moore** et al. 2012. Blood meal identification in off-host cat fleas (*Ctenocephalides felis*) from a plague-endemic region of Uganda. *American Journal of Tropical Medicine and Hygiene* doi: 10.4269/ajtmh.2012.12-0532

Moore, S.M., K. P. Tomlinson, H. Voung, and S. E. Shresta. 2012. Predicting the effect of climate change on African trypanosomiasis: integrating epidemiology with parasite and vector biology. *Journal of the Royal Society Interface* 9: 817-830. doi:10.1098/rsif.2011.0654

Moore, S.M. and E.T. Borer. 2012. The influence of host diversity and composition on epidemiological patterns at multiple spatial scales. *Ecology* 93: 1095–1105. doi:10.1890/11-0086.1

Macmillan, K., A. Monaghan, **S.M. Moore**, R. Eisen, et al. 2012. Climate predictors of the spatial distribution of human plague in the West Nile region of Uganda. *American Journal of Tropical Medicine and Hygiene* 86: 514-523.

Monaghan, A.J., K. MacMillan, **S.M. Moore**, P.S. Mead, M.H. Hayden, and R.J. Eisen. 2012. A regional climatology of West Nile, Uganda, to support human plague modeling. *J. Appl. Meteor. Climatol.*, 51: 1201-1221.

Moore, S.M., C. Manore, V. Bokil, and E.T. Borer. 2011. Spatiotemporal model of Barley and Cereal Yellow Dwarf virus transmission dynamics with seasonality and plant competition. *Bulletin of Mathematical Biology*, 73: 2707-2730.

Moore, S.M., E.T. Borer, and P. Hosseini. 2010. Predators indirectly control vector-borne disease: linking predator-prey and host-pathogen models. *Journal of the Royal Society Interface*, 7: 161-176.

Submitted Manuscripts

Azman, A., **S.M. Moore**, and J. Lessler. *In Review*. Surveillance and the global fight against cholera: setting priorities and tracking progress.

Johansson, M. et al. *In Review*. Advancing probabilistic epidemic forecasting through an open challenge: The Dengue Forecasting Project.

Other Publications

Azman, A.S., D. Legros, J. Lessler, F. Luquero, and S.M. Moore. 2015. Correspondence: Outbreaks of cholera in the time of Ebola: pre-emptive action needed. *Lancet* 385: 851. doi:10.1016/S0140-6736(15)60178-7

Moore, S.M. 2010. The effects of community composition, landscape structure, and climate on host-pathogen interactions. PhD Dissertation.

Research Grants

2018-2020 **National Aeronautics and Space Administration**, Earth Science Applications: Health and Air Quality
(Co-Investigator; Lead PI: Benjamin Zaitchik, Johns Hopkins University;
Total award: \$750,000, Sub-award: \$64,266)
African Cholera Risk Early Warning System (ACREWS)

- 2019-2023 **UNITAID**
 (Co-Investigator; Total proposed award: \$33,700,000)
Advancing Spatial Repellents for Vector-borne Disease Control
- 2017-2019 **Bill and Melinda Gates Foundation**
 (Co-Investigator; Lead PI: Justin Lessler, Johns Hopkins University; Total
 award: \$894,949, Sub-award: \$44,440)
*Continued and expanded cholera burden and transmission modeling to
 inform the global use of Oral Cholera Vaccine (OCV)*
- 2017 **Bill and Melinda Gates Foundation**
 (Co-Investigator; Lead PI: Justin Lessler, Johns Hopkins University; Total
 award: \$662,094, Sub-award: \$8,323)
*Modeling cholera burden and transmission to inform and support global
 use of Oral Cholera Vaccine (OCV)*
- 2012 **National Center for Atmospheric Research, NCAR Directorate**
 Diversity Fund (\$19,840)
*Ecology of plague and other vector-borne infectious diseases on the
 Navajo reservation in Arizona and New Mexico*
- 2005-2010 **NSF IGERT Ecosystem Informatics, Fellowship Research Grant**
 (\$10,000)
*Influence of host community composition and spatial structure on multi-
 host pathogens*
- 2009 **Oregon State University Zoology Department, Research Fund (\$500)**
*Ecological determinants of Barley Yellow Dwarf virus (BYDV)
 transmission in the Oregon Cascade range*

Invited Presentations

- 2016 State University of New York at Albany, Albany, NY.
 State University of New York College of Environmental Science and Forestry,
 Syracuse, NY.
- 2014 University of St. Thomas, St. Paul, MN.
 “Climate, Weather, and Infectious Disease” RAPIDD Meeting, Princeton, NJ.
- 2012 University of Georgia, School of Ecology, Athens, GA.
 University of New Mexico, Department of Planetary Sciences, Albuquerque, NM.
 Centers for Disease Control and Prevention, National Center for Emerging
 Zoonotic Diseases, Atlanta, GA

2011 Symposium: *Climate and Health*, American Society of Tropical Medicine and Hygiene Annual Meeting, Philadelphia, PA

Recent Conference Presentations

Moore, S.M. Q.A. ten Bosch, A.S. Siraj, J. Soda, G. España, B. Raybaud, E. Wenger, P. Eckhoff, and T.A. Perkins. 2017. Local and regional dynamics of chikungunya virus transmission in Colombia: the importance of spatial heterogeneity for disease forecasting. Epidemics Conference, Sitges, ES. *Poster*

Moore, S.M. A. Azman, and J. Lessler. 2017. The cholera burden in Africa and implications for control. American Society of Tropical Medicine and Hygiene Annual Meeting, Baltimore, MD. *Talk*

Moore, S.M. A. Azman, and J. Lessler. 2017. Who is at risk of cholera in Africa? Quantifying potential vaccine demand and impact at policy-relevant spatial levels. 8th Vaccines of Enteric Diseases Conference, Albufeira, PT. *Talk*

Moore, S.M. A. Azman, H. McKay, and J. Lessler. 2017. El Nino and the shifting geography of cholera in Africa. Impact of Environmental Changes on Infectious Diseases, Trieste, IT. *Talk*

Teaching Experience

2012 Instructor, Global Climate Change (EPS/GEOG352), University of New Mexico

2005-2010 Graduate Teaching Instructor, Human Anatomy and Physiology Lab (Z341, Z342), Oregon State University

2006 Graduate Teaching Instructor, Introduction to Biology Lab (BIO203), Oregon State University

Student research and training supervision

2011 Meeting mentor, Ecological Society of America SEEDS program for underrepresented students

2008-2009 Mentor to undergraduate Life Sciences Club, Oregon State University

2008 Supervised undergraduate NSF REU research project

2007 Supervised undergraduate student project for Ecosystem Informatics summer REU program

Teaching and mentoring training

- 2008 The future professoriate (FE607), Oregon State University
- 2007 Success in the college classroom (MB699), Oregon State University

Competitive Fellowships and Awards

- 2015 DARPA Chikungunya Forecasting Challenge, Bronze Prize: 5th out of 461 entrants (\$50,000)
- 2010-2012 NSF/NCAR/CDC Climate and Health Postdoctoral Research Fellowship (\$116,000)
- 2012 Lee Segel Prize for Best Student Paper in 2010-2011, Society of Mathematical Biology (\$1500)
- 2011 6th International Conference on Emerging Zoonoses, Best Poster Presentation, (\$200)
- 2005-2010 NSF IGERT Ecosystem Informatics, Graduate Fellowship (\$96,000)
- 2009-2010 Oregon Lottery Scholarship (\$3000)
- 2009 Oregon State University, Zoology Department Travel Award (\$500)
- 2004 Commonwealth Scholar, Virginia Tech
- 2004 Cabell Brand Center Quality of Life Award (\$5000)
- 2004 Garden Club of America, Environmental Studies Scholarship (\$1500)

Extracurricular Activities and Community Service

- Reviewer, *Ecosphere*, *Emerging Infectious Diseases*, *Journal of the Royal Society Interface*, *PLoS One*, *PLoS Neglected Tropical Diseases*, *American Journal of Epidemiology*, *Nature Microbiology*, *Ecological Modelling*, *BMC Infectious Diseases*
- Invited Speaker Committee, Zoology Dept., OSU