Curriculum vitae

OTTAR NORDAL BJØRNSTAD

Distinguished Professor of Entomology and Biology
J. Lloyd & Dorothy Foehr Huck Chair of Epidemiology

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http://ento.psu.edu/research/labs/ottar-bjornstad/ottar-lab-about
https://github.com/objornstad/
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EDUCATION

Institution	Degree	Year	Field of study
University of Oslo, Norway	BSc	1991	Biology
University of Oslo, Norway	MSc	1993	Zoology
University of Oslo, Norway	Ph.D.	1997	Ecology

PROFESSIONAL POSITIONS

2014-present	J. Lloyd & Dorothy Foehr Huck Chair of Epidemiology, Pennsylvania State University.
2001-present	Departments of Entomology, Biology and Statistics (Adjunct), Pennsylvania State University. Assistant Professor (‘01-‘05), Associate Professor (‘05-‘07), Professor (‘07-‘13), Distinguished Professor (’14-current)
2019-present	Adjunct Senior Scientist, Centre for Ecological and Evolutionary Synthesis, University of Oslo, Norway
2015-2018	Visiting Professor, Department of Arctic and Marine Biology, University of Tromsø, Norway
2004-2014	Senior Research Fellow, Division of International Epidemiology and Population Studies, Fogarty International Center, National Institutes of Health
2008-2009	Visiting Professor, Department of Biostatistics, Institute of Basic Medical Sciences, University of Oslo, Norway
2004-2009	Co-director, Center for Infectious Disease Dynamics, The Pennsylvania State University
1998-2000	Postdoctoral Fellow, National Center for Ecological Analysis and Synthesis, UC Santa Barbara
1997-1998	Postdoctoral Fellow: Universities of Oslo and University of Cambridge

FELLOWSHIPS

1998-2000 Postdoctoral fellowship from the National Center for Ecological Analysis and Synthesis, University California Santa Barbara (a Center funded by NSF Grant #DEB-0072909, the University of California, and UC Santa Barbara)
1997-1998 Postdoctoral fellowship from Norwegian Science Foundation (Grant NFR 100720/410) (Oslo, Santa Barbara, Cambridge)
1994-1997 Doctoral fellowship from Norwegian Science Foundation (Grant NFR 119117/410)

AWARDS/HONORS

2021 Elected fellow of the Norwegian Academy of Science and Letters
2019 Elected fellow of the Ecological Society of America
2013 Elected fellow of the American Association for the Advancement of Science
2009 Alex and Jessie C. Black Award for Excellence in Research in the College of Agricultural Sciences, Pennsylvania State University
2008 ENRI Early Career Award. Environment & Natural Resources Institute, Pennsylvania State University
2008, '09 Ecological Research Award from the Ecological Society of Japan (awarded in consecutive years)
2007 Penn State University's 2007 Faculty Scholar Medal in Life and Health Sciences

EDITORIAL BOARDS

Associate Editor of *Royal Society Open Science* (2020-2021)
Ad hoc Editor *Proceedings of the National Academy of Sciences* (2011-2017)
Associate Editor of *Journal of Animal Ecology* (2005-2008)
Editorial Board of *Proceedings of the Royal Society of London Series B* (2003-2006)
Editorial board of *Population Ecology* (2003-)
Board of Editors of *Ecology* (2001-2004)
Board of Editors of *Ecological Monographs* (2001-2004)
Journal Club panel for *Trends in Ecology and Evolution* (2001-2002)

GRANTS

2019-2020	'Reproductive scaling in vectors and the impact on human disease under a changing climate'. PI: Dustin Marshall, Elisabeth McGraw; co-PI: Craig White, Ottar Bjornstad. Monash University – Penn State University 2019 Collaboration Development Fund (01/03/2019 – 02/28/2020) AUS55,000	$37,000
2014-2018	'Temperature, seasonality and recurrent insect outbreaks - Tortix moths as a new mathematical and empirical model system' PI: Ottar Bjornstad; co-PI: William A. Nelson; collaborators: Patrick C. Tobin, Takehiko Yamanaka. NSF DEB-1354819 (01/03/2014 – 02/28/2018)	$330,000
2013-2020	'Models to support decision-making for Measles and Rubella vaccination planning' Bill and Melinda Gates Foundation; PIs: Matthew Ferrari, Jess Metcalf, Justin Lessler; co-Investigator: Ottar Bjornstad. (10/18/2013 - 06/30/2020)	$2,356,253

2014-2017	'RAPID: Value of Information and Structured Decision-Making for Management of Ebola' PI: Katriona Shea; co-PI: Matthew J. Ferrari, Ottar N. Bjornstad. NSF DEB-1514704 (12/15/2014 – 11/30/2017)	$200,000
2009-2014	'Evaluate candidate vaccine technologies using computational models' Bill and Melinda Gates Foundation; PI: Ottar Bjornstad; co-PI's: Tim Reluga, Alan MacEachren, Murali Haran and Matthew Ferrari . (01/09/09 – 03/31/14)	$762,912[1]
2008-2012	'Intergovernmental Personnel Act (IPA) for Ottar Bjornstad' Fogarty International Center, NIH (PI). (07/01/08 – 06/30/12)	$173,962
2008-2012	'Synthesizing the Evolutionary and Ecological Dynamics of Acute RNA Viruses: Comparative analyses and method development'. PI: Bryan T. Grenfell; co-PIs: Ottar Bjornstad and Edward Holmes. NIH/GM R01-GM083983-01 (03/05/2008 – 02/29/2012).	$1,795,327
2008-2012	'Evolution of the Bordetellae from comensals to pathogens'. PI: Eric Harvill; co-PIs: Ottar Bjornstad, Reka Albert, Stephane Schuster and Edward holmes. NIH/GM R01-GM083113-01 (05/01/2008 – 02/29/2012).	$ 1,760,696
2008-2012	'Invasive plants: Integrated approaches for a national threat'. PI: David Mortensen; co-PIs: Katriona Shea and Ottar Bjornstad. USDA National Needs Program 2008-38420-18722 (01/01/2008-12/31/2012).	$153,000
2007-2012	'Novel Statistical Models for Synthesizing Social Networks and Epidemic Dynamics'. PI: David R Hunter; co-PIs: Mary Poss, Ottar Bjornstad and Bryan Grenfell. NIH/GM R01-GM083603-01 (08/01/2007 – 07/31/2012).	$ 1,454,834
2007-2008	'Emergence of human pathogens in the genus Bordetella'. PI: Eric Harvill; co-PIs: Ottar Bjornstad, Reka Albert and Stephane Schuster. NIH/NIAID R56-AI065507-01A2 (04/01/2007 – 03/31/2008).	$362,500
2006-2010	'Synchronization of invading Gypsy moth populations' PI: Ottar Bjornstad; co-PIs: Andrew Liebhold and Patrick Tobin. USDA National Research Initiative 2006-35302-17149 (09/01/2006 – 08/31/2010)	$385,000
2005-2010	'Parasite Induced Susceptibility and Transmission in a Seasonal Environment: Micro and Macro Interactions and the Dynamics of the Parasite Community of Mice' PI: Peter Hudson; co-PIs: Eric Harvill and Ottar Bjornstad. NSF EF-0520468 (10/01/2005 – 09/30/2010)	$1,250,000
2004-2007	'Intergovernmental Personnel Act (IPA) for Ottar Bjornstad' Fogarty International Center, NIH (PI). (04/19/2004 – 04/18/2007)	$ 94,572
2004-2008	'Ecologically Mediated Hybrid Speciation in Rhagoletis' PI: Bruce McPheron; co-PIs: Wendell Roelofs and Ottar Bjornstad. NSF DEB-0343771 (05/01/2004-04/30/2008)	$354,000
2004-2006	'PSU Center for Infectious Disease Dynamics' Seed grant jointly funded by the Huck Institute, Penn State Institutes of the Environment, Eberly College of Science and the College of Agricultural Sciences (PI: Peter Hudson; co-PI: Ottar Bjornstad)	$450,000
2004-2005	'The spatial pattern of gypsy moth colony persistence in the United States'. USDA Forest Service (PI).	$20,000

[1] This proposal replaced: 'Evaluate candidate vaccine technologies using computational models' Bill and Melinda Gates Foundation PI: Bryan Grenfell; co-PI's: Ottar Bjornstad, Tim Reluga, Alan MacEachren, Reka Albert, Murali Haran and Edward Holmes. (04/01/08 – 03/31/12) $ 2,871,465

2004-2005	'Dissertation Research: Exploring Metapopulation Dynamics and Life History Evolution in a Single versus Multiple Landscape' (Dissertation Improvement grant for Carrie Schwarz) PI: Ottar Bjornstad. NSF DEB-0407895 (06/01/2004 – 11/30/2006).	$4,632
2002-2005	'Complex Spatial Dynamics in Forest Insect Populations'. PI: Ottar Bjornstad; co-PI Andrew Liebhold. USDA National Research Initiative 2002-35302-12656 (09/15/2002 – 09/14/2005)	$160,000
2001-2006	'Methods for quantifying time-space patterns in forest insect outbreaks'. USDA Forest Service (PI).	$ 60,000
1999-2000	'Recruitment variability and populations dynamics' Post-doctoral fellowship. The National Center for Ecological Analysis and Synthesis, University California Santa Barbara, USA (PI)	$111,400
1997-1999	'Statistical models for fluctuations in age- and stage-structured populations' Post-doctoral fellowship. the Norwegian Science Foundation (PI)	$101,200
1994-1997	'An investigation on spatial aspects of the population biology of voles' Graduate fellowship. The Norwegian Science Foundation (PI)	$114,600
1994-1996	Various grants from Norwegian foundations (PI)	$14,200

SOFTWARE

Bjørnstad, O. N. 2001-2020. NCF: A package for analyzing spatial (cross-)covariance. https://CRAN.R-project.org/package=ncf

Bjørnstad, O. N. 2001-2020. NLTS: A package for nonlinear and nonparametric time series analysis. https://CRAN.R-project.org/package=nlts

Bjørnstad, O. N. 2018-2020. EPIMDR: Functions and Data for the "Epidemics: Models and Data in R" Book. https://CRAN.R-project.org/package=epimdr

BOOKS

Bjørnstad, O. N. 2018. Epidemics: Models and Data using R. Springer (312 pp) ISBN 978-3-319-97487-3 https://www.springer.com/gp/book/9783319974866

PUBLICATIONS (International journals with peer-review)

183. Lavine, J.O., Bjørnstad, O.N and Anitia, R. 2021. Immunological characteristics govern the transition of COVID-19 to endemicity. *Science* 371: 741-745.

182. Shea, K., Bjørnstad, O.N, Krzywinski, M. and Altman, N. 2020. Uncertainty and the management of epidemics. *Nature methods* 17: 867-868. https://doi.org/10.1038/s41592-020-0943-4.

181. Herzog, C.M., de Glanville, W.A., Willett, B.J., Cattadori, I.M., Kapur, V., Hudson, P.J., Buza, J., Swai, E.S. Cleaveland, S. and O. N. Bjørnstad. 2020. Peste des petits ruminants virus transmission scaling and husbandry practices that contribute to tncreased transmission risk: An investigation among sheep, goats, and cattle in Northern Tanzania. *Viruses*, 12(930):930 https://doi.org/10.3390/v12090930

180. Liebhold, A.M, Björkman, C., Roques, A., Bjørnstad, O.N. and Klapwijk, M.J. 2020. Outbreaking forest insect drives phase synchrony among sympatric folivores: Exploring potential mechanisms. *Population Ecology* 62: 372– 384. https://doi.org/10.1002/1438-390X.12060

179. Sezen, Z, Bjørnstad, O.N. and Shea, K. 2020. Oviposition response of the biocontrol agent Rhinocyllus conicus to resource distribution in its invasive host, *Carduus nutans*. *Biological Control* 152: 104369. https://doi.org/10.1016/j.biocontrol.2020.104369

178. Giles, J.R., zu Erbach-Schoenberg, E., Tatem, A.J., Gardner, L., Bjørnstad, O.N., Metcalf, C.J.E. and Wesolowski, A. 2020. The duration of travel impacts the spatial dynamics of infectious diseases. *Proceedings of the National Academy of Sciences* 117: 22572-22579

177. Bjørnstad, O.N, Shea, K., Krzywinski, M. and Altman, N. 2020. The SEIRS model for infectious disease dynamics. *Nature methods* 17: 867-868.

176. Tian, H. and Bjornstad, O.N. 2020. Population serology for SARS-CoV-2 is essential to regional and global preparedness. *The Lancet Microbes*. https://doi.org/10.1016/S2666-5247(20)30055-0

175. Tian, T., Liu, Y, Li, Y., Wu2, C.-H., Chen, B., Kraemer, M.U.G, Li, B., Cai, J., Xu, B., Yang, Q., Wang, B., Yan, P., Cui, Y., Song, Y., Zheng, P., Wang, Q., Bjornstad, O.N., Yang, R., Grenfell, B.T., Pybus, O.G, and Dye, C. 2020. An investigation of transmission control measures during the first 50 days of the COVID-19 epidemic in China. *Science* 368: 638-642. https://doi.org/10.1126/science.abb6105

174. Lau, M.S.Y., Becker, A.D, Korevaar, H.M., Caudron, Q., Shaw, D.J., Metcalf, C.J.E., Bjornstad, O.N. and Grenfell, B.T. 2020. A competing-risks model explains hierarchical spatial coupling of measles epidemics en route to national elimination. *Nature Ecology & Evolution*. https://doi.org/10.1038/s41559-020-1186-6

173. Bjørnstad, O.N, Shea, K., Krzywinski, M. and Altman, N. 2020. Modeling infectious epidemics. *Nature methods* 17:455-456. https://doi.org/10.1038/s41592-020-0822-z

172. Herzog, C.M., de Glanville, W.A., Willett, B.J., Cattadori, I.M., Kapur, V., Hudson, P.J., Buza, J., Swai, E.S. Cleaveland, S. and O. N. Bjørnstad. 2019. Identifying age cohorts responsible for Peste des petits ruminants virus transmission among sheep, goats, and cattle in northern Tanzania. *Viruses* 12:186. doi:10.3390/v12020186.

171. Becker, A.D., Wesolowski, A., Bjørnstad, O.N. and Grenfell, B.T. 2019. Long term dynamics of measles in London: titrating the impact of wars, the 1918 pandemic, and vaccination. *PLOS Computational Biology* 15(9): e1007305. https://doi.org/10.1371/journal.pcbi.1007305

170. Herzog, C.M., de Glanville, W.A., Willett, B.J., Kibona, T.J., Cattadori, I.M., Kapur, V., Hudson, P.J., Buza, J., Cleaveland, S. and O. N. Bjørnstad. 2019. Pastoral production is associated with increased peste des petits ruminants seroprevalence in northern Tanzania across sheep, goats and cattle. *Epidemiology and Infection*, 147, E242. https://doi.org/10.1017/S0950268819001262

169. Li, S-L., Ferrari, M.J., Bjørnstad, O.N., Runge, M.C., Fonnesbeck, C.J., Tildesley, M.J, Pannell, D. and Shea, K. 2019. Concurrent assessment of epidemiological and operational uncertainties for optimal outbreak control: Ebola as a case study. *Proceedings of the Royal Society of London Series B* 286:20190774. http://dx.doi.org/10.1098/rspb.2019.0774

168. Vindstad, O.P.L., Jepsen, J.U., Yoccoz, N.G., Bjørnstad, O.N., Mesquita, M.D.S and Ims, R.A. 2019. Spatial synchrony in sub-arctic geometrid moth outbreaks reflects dispersal in larval and adult lifecycle stages. *Journal of Animal Ecology*. https://doi.org/10.1111/1365-2656.12959

167. Pak, D., Biddinger, D. and Bjornstad, O.N. 2019. Local and regional climate variables driving spring phenology of tortricid pests -- A 36 year study. *Ecological Entomology* 44:367-369 doi.org/10.1111/een.12712

166. Li, R., Xu, L., Bjørnstad, O.N., Liu, K., Song, T., Chen, A., Xu, B., Liu, B. and Stenseth, N.C. 2019. Climate-driven variation in mosquito density predicts the spatio-temporal dynamics of dengue. *Proceedings of the National Academy of Sciences USA* 116: 3624-3629. doi.org/10.1073/pnas.1806094116

165. Goldstein, J., Park, J., Haran, M., Liebhold, A. and Bjørnstad, O.N. 2019. Quantifying spatio-temporal variation of invasion spread. *Proceedings of the Royal Society of London Series B* 286: 20182294. doi.org/10.1098/rspb.2018.2294

164. Kissler, S.M., Gog, J.R., Viboud, C., Charu, V., Bjørnstad, O.N., Simonsen, L., Grenfell, B.T., 2019. Geographic transmission hubs of the 2009 Influenza pandemic in the United States. *Epidemics* 26: 86-94. doi.org/10.1016/j.epidem.2018.10.002

163. Nelson, W.A., Jouncour, B., Pak, D. and Bjørnstad, O.N. 2019. Asymmetric interactions and their consequences for vital rates and dynamics: the smaller tea tortrix as a model system. *Ecology* 100(2):e02558. doi.org/10.1002/ecy.2558

162. Dalziel, B.D., Kissler, S., Gog, J. Viboud, C., Bjørnstad, O.N., Metcalf, C.J.E., Grenfell, B.T. 2018. Urbanization and humidity shape the intensity of influenza epidemics in US cities. *Science* 362: 75-79. doi.org/ 0.1126/science.aat6030

161. Tian, H., Hu, S., Cazelles, B., Chowell, G., Gao, L., Laine, M., Li, Y., Yang, H., Li, Y., Yang, Q., Tong, X., Huang, R., Bjornstad, O.N., Xiao, H., Stenseth, N.C. 2018. Urbanization prolongs hantavirus epidemics in cities. *Proceedings of the National Academy of Sciences USA* 115: 4707-4712. doi.org/10.1073/pnas.1712767115

160. Morris, S.E., de Blasio, B.F., Viboud, C., Wesolowski, A., Bjørnstad, O.N. and Grenfell, B.T. 2018. Analysis of multi-level spatial data reveals strong synchrony in seasonal influenza epidemics across Norway, Sweden, and Denmark. *PLoS ONE* 13(5): e0197519; doi.org/10.1371/journal.pone.0197519.

159. Bhattacharyya, S., Ferrari, M.J. and Bjørnstad, O.N. 2018. Species interactions may help explain the erratic periodicity of whooping cough dynamics. *Epidemics* 23: 64-70 doi.org/10.1016/j.epidem.2017.12.005.

158. Haynes, K.J., Liebhold, A.M., Bjørnstad, O.N., Allstadt, A. and Morin, R.S. 2018. Geographic variation in forest composition and precipitation predict the synchrony of forest insect outbreaks. *Oikos* 127: 634-642 DOI: 10.1111/oik.04388.

157. Mowlaboccus, S., Mullally, C.A., Richmond, P.C., Howden, B.P., Stevens, K., Speers, D.J., Keil, A.D., Bjørnstad, O.N., Perkins, T.T. and Kahler, C.M. 2017. Differences in the population structure of Neisseria meningitidis in two Australian states: Victoria and Western Australia. *PLoS ONE*, 12:e0186839 doi.org/10.1371/journal.pone.0186839

156. Filho, W.M., Flechtmann, C.A.H., Godoy, W.A.C. and Bjornstad, O.N. 2017. The impact of the introduced Digitonthophagus gazella on a native dung-beetle community in Brazil during 26 years. *Biological Invasion* 20: 963-979 doi.org/10.1007/s10530-017-1603-1.

155. Russo, L., Miller, A.D., Tooker, J., Bjørnstad, O.N. and Shea, K. 2017. Quantitative evolutionary patterns in bipartite networks: Vicariance, phylogenetic tracking, or diffuse coevolution? *Methods in Ecology and Evolution* 9: 761-772 doi.org/10.1111/2041-210X.12914. **Awarded 2018 Robert May Prize for best paper submitted by an early career author at the start of their research career by British Ecological Society.**

154. Li, S-L., Bjørnstad, O.N., Ferrari, M., Mummah, R., Runge, M.C., Fonnesbeck, C., Tildesley, M.J, Probert, W.J.M. and Shea, K. 2017. Essential information: Uncertainty and optimal control of Ebola outbreaks. *Proceedings of the National Academy of Science USA* 114: 5659–5664. doi.org/10.1073/pnas.1617482114

153. Walter, J.A., Sheppard, L.W., Anderson, T.L., Kastens, J.H., Bjørnstad, O.N., Liebhold, A.M. and Reuman, D.C. 2017. The geography of spatial synchrony. *Ecology Letters* 20:801-814. doi.org/10.1111/ele.12782

152. Charu, V., Zeger, S., Gog, J., Bjørnstad, O.N., Kissler, S., Khan, F., Simonsen, L., Grenfell, B.T., Viboud, C. 2017. Human mobility and the spatial transmission of influenza in the United States. *PLOS Computational* Biology 13(2): e1005382. doi: 10.1371/journal.pcbi.1005382

151. Tian, H., Yu, P., Bjørnstad, O.N, Cazelles, B., Yang, J., Tan, H., Huang, S., Cui, Y., Dong, L., Ma, C., Ma, C., Zhou, S., Laine, M., Wu, X., Zhang, Y., Wang, J., Yang, R., Stenseth, N.C., Xu, B. 2017. Anthropogenically driven environmental changes shift the ecological dynamics of hemorrhagic fever with renal syndrome. *PLOS Pathogens* 13(1): e1006198. doi: 10.1371/journal.ppat.1006198.

150. Beck-Johnson, L.M., Nelson, W.A., Paaijmans, K.P., Read, A.F., Thomas, M.B. and Bjørnstad, O.N. 2017. The importance of temperature fluctuations in understanding mosquito population dynamics and malaria risk. *Royal Society Open Science* 4: 160969. http://dx.doi.org/10.1098/rsos.160969.

149. Bjørnstad, O.N., Nelson, W.A. and Tobin, P.C. 2016. Developmental synchrony in multivoltine insects: generation separation versus smearing. *Population Ecology* 58:479-491.

148. Bjørnstad, O.N. and Viboud, C. 2016. Timing and periodicity of influenza epidemics. *Proceedings of the National Academy of Science USA* 113: 12899–12901.

147. Marins, A., Costa, D., Russo, L., Campbell, C., DeSouza, O., Bjørnstad, O.N. and Shea, K. 2016. Termite cohabitation: the relative effect of biotic and abiotic factors on mound biodiversity. *Ecological Entomology* 41:532-541.

146. Greischar, M.A., Mideo, N., Read, A.F. and Bjørnstad, O.N. 2016. Predicting optimal transmission investment in malaria parasites. *Evolution* 70: 1542–1558. **Awarded the 2017 R. A. Fisher Prize by the Society for the Study of Evolution**

145. Greischar, M.A., Mideo, N., Read, A.F. and Bjørnstad, O.N. 2016. Quantifying transmission investment in malaria parasites. *PLOS Computational Biology* 12(2): e1004718. doi:10.1371/journal.pcbi.1004718.

144. Gouveia, A.R., Bjørnstad, O.N. and Tkadlec, E. 2016. Dissecting geographic variation in population synchrony using the common vole in central Europe as a test bed. *Ecology and Evolution 6:212-218*.

143. Dalziel, B.D., Bjørnstad, O.N., Van Panhuis, W.G., Burke, D.S., Metcalf, C. J. E. and Grenfell, B.T. 2016. Persistent chaos of measles epidemics in the prevaccination United

States caused by a small change in seasonal transmission patterns. *PLOS Computational Biology* 12(2): e1004655. doi:10.1371/journal.pcbi.1004655.

142. Bhattacharyya, S., Gesteland, P.H., Korgenski, K., Bjørnstad, O.N. and Adler, F.R. 2015. Cross-immunity between strains explains the dynamical pattern of paramyxoviruses. *Proceedings of the National Academy of Science USA* 112 (43) 13396-13400. doi:10.1073/pnas.1516698112

141. Wesolowski, A., Metcalf, C. J. E., Eagle, N., Kombich, J., Grenfell, B.T., Bjornstad, O.N. Lessler, J., Tatem, A.J. and Buckee, C.O. 2015. Quantifying seasonal population fluxes driving rubella transmission dynamics using mobile phone data. *Proceedings of the National Academy of Science USA* 112 (35): 11114-11119, doi:10.1073/pnas.1423542112.

140. Bjornstad, O.N. 2015. Nonlinearity and chaos in ecological dynamics revisited. *Proceedings of the National Academy of Science USA* 112(20): 6252–6253, doi: 10.1073/pnas.1507708112.

139. Pomeroy, L.W., Bjornstad, O.N., Kim, H., Jumbo. S.D., Abdoulkadiri, S. and Garabed, R. 2015. Serotype-specific transmission and waning immunity of endemic foot-and-mouth disease virus in Cameroon. PLoS ONE 10(9): e0136642. doi:10.1371/journal.pone.0136642.

138. Morris, S.E., Pitzer, V.E., Viboud, C., Metcalf, C.J.E., Bjørnstad, O.N. and Grenfell, B.T. 2015. Demographic buffering: titrating the effects of birth rate and imperfect immunity on epidemic dynamics. *Journal of the Royal Society Interface* 12: 2014 1245; doi:10.1098/rsif.2014.1245 1742-5662.

137. Luis, A.D., Douglass, R.J., Mills, J.N. and Bjørnstad, O.N. 2015. Environmental fluctuations lead to predictability in Sin Nombre hantavirus outbreaks. *Ecology* 96: 1691-1701. doi.org/10.1890/14-1910.1

136. Metcalf, C.J.E., Andreasen, V., Bjørnstad, O.N., Eames, K., Edmunds, W.J., Funk, S., Hollingsworth, T.D., Lessler, J., Viboud, C. and Grenfell, B.T. 2015. Seven challenges in modelling vaccine preventable diseases. *Epidemics* 10:11-15.

135. Metcalf C.J.E., Tatem, A., Bjornstad, O.N. Lessler, J., O'Reilly, K., Takahashi, S. Cutts, F. and Grenfell, B.T. 2015. Transport networks and inequities in vaccination: remoteness shapes measles vaccine coverage and prospects for elimination across Africa. *Epidemiology and Infection* 143:1457–1466.

134. Gog, J.R., Ballesteros, S., Viboud, C., Simonsen, L., Bjornstad, O.N., Shaman, J., Chao, D.L., Khan, F. and Grenfell, B.T. 2014. Spatial transmission of 2009 pandemic influenza in the US. *PLoS Computational Biology* 10(6): e1003635. doi: 10.1371/journal.pcbi.1003635.

133. Shrestha, S., Bjørnstad, O.N. and King A.A. 2014. Evolution of acuteness in pathogen metapopulations: conflicts between "classical" and invasion-persistence trade-offs. *Theoretical Ecology* doi: 10.1007/s12080-014-0219-7

132. Beck-Johnson, L.M., Nelson, W.A., Paaijmans, K.P., Read, A.F., Thomas, M.B. and Bjørnstad, O.N. 2013. The effect of temperature on anopheles mosquito population dynamics and the potential for malaria transmission. *PLoS ONE* 8(11): e79276. doi: 10.1371/journal.pone.0079276

131. Metcalf, C.J.E, Hampson, K., Tatem, A., Klepac, P., Grenfell, B.T. and Bjørnstad, O.N. 2013. Persistence in epidemic metapopulations: quantifying the rescue effects for

measles, mumps, rubella and whooping cough. *PLoS ONE* 8(9): e74696. doi:10.1371/journal.pone.0074696

130. Greischar, M.A., Read, A.F. and Bjørnstad, O.N. 2014. Synchrony in malaria infections: How intensifying within-host competition can be adaptive. *American Naturalist* 183: E36–E49.

129. Nelson, W.A., Bjornstad, O.N. and Yamanaka, T. 2013. Recurrent insect outbreaks caused by temperature-driven changes in system stability. *Science* 341: 796-799.

128. Lavine, J., King, A.A., Andreassen, V. and Bjornstad, O.N. 2013. Immune boosting explains regime-shifts in prevaccine-era pertussis dynamics. *PLoS ONE* 8(8): e72086. doi:10.1371/journal.pone.0072086.

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14. Kaneko, Y., Nakata, K., Saitoh, T., Stenseth, N. C. and Bjørnstad, O. N. 1998. The biology of the grey-sided vole: a review. *Researches on Population Ecology* 40:21-37.

13. Stenseth, N. C., Falck, W., Bjørnstad, O.N. and Krebs, C. J. 1997. Population regulation in snowshoe hare and lynx populations: asymmetric food web configurations between the snowshoe hare and the lynx. *Proceedings of the National Academy of Science USA*, 94:5147-5152.

12. Framstad, E., Stenseth, N. C., Bjørnstad, O.N. and Falck, W. 1997. Limit cycles in Norwegian Lemmings: tensions between phase-dependence and density-dependence. *Proceedings of Royal Society London, B.* 264:31-38.

11. Saitoh, T., Stenseth, N. C. and Bjørnstad, O.N. 1997. Density dependence in fluctuating grey-sided vole populations. *Journal of Animal Ecology,* 66:14-24.

10. Frometin, J.-M., Stenseth, N. C., Gjøsæter, J., Bjørnstad, O.N., Falck, W. and Johannesen, T. 1997. Spatial patterns of the temporal dyanamics of three Gadoid species along the Norwegian Skagerrak coast. *Marine Ecological Progress Series*, 155:209-222.

9. Bjørnstad, O.N., Champely, S., Stenseth, N. C. and Saitoh, T. 1996. Cyclicity and stability of grey-sided voles, *Clethrionomys rufocanus*, of Hokkaido: spectral and Principal components analyses. *Philosophical Transactions of the Royal Society London Series B* 351:867-875.

8. Stenseth, N. C., Bjørnstad, O.N. and Falck, W. 1996a. Is spacing behaviour coupled with predation causing the microtine density cycle? A synthesis of current process-oriented and pattern-oriented studies. *Proceedings of Royal Society London, B.* 263:1423-1435. doi: 10.1098/rspb.1996.0208

7. Stenseth, N. C., Bjørnstad, O.N. and Saitoh, T. 1996b. A gradient from stable to cyclic populations of *Clethrionomys rufocanus* in Hokkaido, Japan. *Proceedings of Royal Society London, B.* 263:1117-1126.

6. Bjørnstad, O.N., Falck, W. and Stenseth, N. C. 1995a. A geographic gradient in small rodent density fluctuations: a statistical modelling approach. *Proceedings of Royal Society London, B.* 262:127-133.

5. Bjørnstad, O.N., Iversen, A. and Hansen, M. 1995b. The spatial structure of the gene pool of a viviparous population of *Poa alpina* - environmental controls and spatial constraints. *Nordic Journal of Botany* 15:347-354.

4. Falck, W., Bjørnstad, O.N. and Stenseth, N. C. 1995a. Bootstrap estimated uncertainty of the dominant Lyapunov exponent for Holarctic microtine rodents. *Proceedings of Royal Society London, B.* 261:159-165.

3. Falck, W., Bjørnstad, O.N. and Stenseth, N. C. 1995b. Voles and lemmings - chaos and uncertainty in fluctuating populations. *Proceedings of Royal Society London, B.* 262:363-370.

2. Bjørnstad, O.N. and Hansen, T. F. 1994. Individual variation and population dynamics. *Oikos* 69:167-171.

1. Bjørnstad, O.N. 1991. Changes in forest soils and vegetation in Søgne, southern Norway, during a 20 year period. *Holarctic Ecology* 14:234-244. (high school project)

BOOK CHAPTERS

8. Bjørnstad, O.N. 2019. Population dynamics of pathogens. Pages 13-36 in: N. Hens, L. Held, P.D. O'neill and J. Wallinga (eds.). Handbook of Infectious Disease Data Analysis. CRC press.

7. Liebhold, A.M., Haynes, K.J. and Bjørnstad, O.N. 2012. Spatial Synchrony of Insect Outbreaks. Pages 113-125 in: P. Barbosa, D. Letourneau and A. Agrawal (eds.). Insect Outbreaks Revisited. Wiley-Blackwell.

6. Perkins, S., Altizer, S., Bjornstad, O., Burdon, J., Clay, K., Gomez-Aparicio, L., Jeschke, J., Johnson, P. T. J., Lafferty, K., Malstrom, C., Martin, P., Power, A., Thrall, P., Strayer, D. and M. Uriarte. 2008. Invasion biology and parasitic infections. Pages 179-204 in R. Ostfeld, F. Keesing and V. Eviner (eds.). Infectious disease ecology: effects of ecosystems on disease and of disease on ecosystems. Princeton University Press.

5. Leibold, M. A., Hall, S. R. and Bjornstad, O. 2006. Food web architecture and its effects on consumer resource oscillations in experimental pond ecosystems. Pages 37-47 in P. de Ruiter, J. Moore, and V. Wolters (eds.). Dynamic food webs: multispecies assemblages, ecosystem development, and environmental change. Academic Press.

4. Satake, A., Bjørnstad, O.N. and Iwasa, Y. 2005. Invasibility of seed predators on synchronized and intermittent seed production of host plants. Pages 281-298 in M. W. Cadotte, S. M. McMahon, and T. Fukami (eds.). Conceptual ecology and invasions biology: reciprocal approaches to nature.

3. Keeling, M. J., Bjørnstad, O. N. and Grenfell, B. T. 2004. Metapopulation dynamics of infectious diseases. Pages 415-445 in I. Hanski, and O. Gaggiotti (eds.). Ecology, Genetics, and Evolution of Metapopulations. Elsevier.

2. Wilson, K., O.N. Bjørnstad, A.P. Dobson, S. Merler, G. Poglayen, S.E. Randolph, A.F. Read, and A. Skorping. 2002. Heterogeneities in macroparasite infections: patterns and processes. Pages 6-44 *in* P. J. Hudson, A. Rizzoli, B.T. Grenfell, H. Heesterbeek and A. P. Dobson (eds.). The Ecology of Wildlife Diseases. Oxford University Press.

1. Grenfell, B.T., W. Amos, P. Arneberg, O.N. Bjørnstad, J.V. Greenman, J. Harwood, P. Lanfranchi, A. McLean, R.A. Norman, A.F. Read, and A. Skorping. 2002. Visions for future research in wildlife epidemiology. Pages 151-164 *in* P. J. Hudson, A. Rizzoli, B.T. Grenfell, H. Heesterbeek and A. P. Dobson (eds.). The Ecology of Wildlife Diseases. Oxford University Press.

THESES AND DISSERTATIONS

Bjørnstad, O.N., 1997. Statistical Models for Fluctuating Populations: Patterns and Processes in Time and Space. Dissertation for the Degree of Doctor Philosophiae at the Faculty of Mathematics and Natural Sciences, University of Oslo, Norway. (ISBN: 82-90934-57-2)

Bjørnstad, O.N., 1993. Effects of habitat fragmentation on spatial structuring of root vole (*Microtus oeconomus*) populations. MSc Thesis, University of Oslo, Norway.

IMPACT ANALYSIS

Impact summary

Dr Bjornstad has published 1 book, 8 book chapters and 183 journal articles including 11 in *Nature/Nature methods/Nature E&E/Nature physics*, 8 in *Science*, and 13 in *PNAS*. Dr Bjørnstad's work has been cited <18,500 times according to Google Scholar; H-factor: 70; i10-index:150. Bjørnstad's publications have been highlighted in commentaries and news & views perspectives in *Nature*, *Science*, *PNAS* and *Trends in Ecology and Evolution*.

High profile coverage in professional press

Trends in Ecology and Evolution (1997) 12: 340-341 ('Vole cycles of Hokkaido: a Time series gold mine' by C. J. Krebs). *Nature* (1998) 396: 409-410 ('The voles of Hokkaido' by R. M. May). *Trends in Ecology and Evolution* (1999) 14: 129-131 ('Can seasonal changes in density dependence drive population cycles?' by G. O. Batzli). *Proceedings of the National Academy of Science* (2000) 97: 14041–14043 ('Raccoon rabies in space and time' by A. P. Dobson). *Nature* (2001) 409: 992-993 ('Bagging the lag' by M. E. Hochberg and A. E. Weis). *Nature* (2001) 414: 695-696 ('Waving goodbye to measles' by P. M. Strebel and S. L. Cochi). *Trends in Ecology and*

Evolution (2002) 17: 493-495 ('Chaotic mating systems' by R.P. Freckleton). *Trends in Ecology and Evolution* (2002) 17: 399-401 ('Spatial dynamics of measles epidemics' by W.W. Murdoch and C.J. Briggs). Science (2002) 298: 973-974 ('On the Crest of a Population Wave' by E. Ranta, P. Lundberg, V. Kaitala, and N.C. Stenseth). *Science*'s Editors choice. 2002. 297: 159 ('Planting the seeds of chaos'). *Nature*'s news@nature.com Aug 12 2004 doi:10.1038/news040809-13 ('Gravity equations give rise to measles model' by Emma Marris). *Lancet*'s Newsdesk. 2006. 6:328 ('Daily work commute linked to flu spread' by M. Quirk). *Proceedings of the National Academy of Science* (2011) 108: 7279-7280 ('Boosting understanding of pertussis outbreaks' by B.T. Grenfell). *Science* (2012) 333: 943-944 ('Quantifying malaria dynamics within the host' by K.P. Day and F.J.I. Fowkes), *Proceedings of the National Academy of Science* (2020) 117 (37) 22637-22638 ('Trip duration modifies spatial spread of infectious diseases' by A.W. Park).

INVITED SEMINARS

2020
Fields Institute, University of Toronto, June 2020
National Institute of statistical Sciences, June 2020

2019
Department of Biology, Emory University, November 2019
Norwegian Academy of Sciences, November 2019
Queen's University, June 2019

2018
Department of Ecology and Evolution, University of California Los Angeles, November 2018

2017
The Norwegian Veterinary Institute, Oslo, Norway, September 2017
Center for ecological and evolutionary synthesis, University of Oslo, Norway, September 2017
The Marshall Centre for Infectious Diseases Research and Training, School of Pathology and Laboratory Medicine, Faculty of Medicine, University of Western Australia, March 2017
School of Environment, Griffith University, Queensland, Australia, March 2017

2016
South African Centre for Epidemiological Modeling and Analysis (SACEMA), University of Stellenbosch, South Africa, September 2016
Department of Biology, University of Cape Town, South Africa, August 2016
Department of Arctic and Marine Biology, University of Tromsø, Norway, June 2016

2015
Natural Resources Inventory Center, National Institute for Agro-Environmental Sciences, Tsukuba, Japan, November 2015

2014
Department of Biology, University of Hawaii, April 2014
Department of Entomology, ESALQ, University of Sao Paolo, Brazil, April 2014

2012
Department of Biology, Queen's University, Ontario, Canada, November 2012
Center for Biologics Evaluation and Research, Food and Drug Administration, January 2012

2011
Centre for Population Biology, Imperial College at Silwood Park, May, 2011
Centre for the Mathematical Modelling of Infectious Diseases, London School of Hygiene and Tropical Medicine, March 2011
Department of Zoology, Oxford University, February 2011

2009
Division of Biostatistics, College of Medicine, University of Oslo, November 2009

2008
Division of Biostatistics, College of Medicine, University of Oslo, October 2008

2007
Yokohama University, Japan, October 2007
Hokkaido University, Japan, October 2007
Institute of Ecology, University of Georgia, Athens, April 2007
Centre for Mathematical Biology, University of Alberta, Edmonton, March 2007

2006
Department of Biology, Norwegian University of Science and Technology, October 2006
Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, April 2006
Section of Evolution and Ecology, UC Davis, February 2006
Department of Zoology, Oregon State University, February 2006
Center of Ecological and Evolutionary Synthesis, University of Oslo, January 2006

2005
Department of Ecology and Evolutionary Biology, University of Tennessee, April 2005
Department of Integrated Biology, University of Texas, March 2005
Department of Zoology, University of Toronto, February 2005
Department of Ecology and Environmental Science, Umea University, Sweden, February 2005

2004
School of Biological Sciences. University of Aberdeen, Scotland, November 2004.
Department of Ecology and Evolutionary Biology University of Michigan. October 2004.
Ecology & Evolution of Infectious Diseases Meeting, Emory University. May 2004.

2003
Center for Applied Mathematics, Cornell University. November 2003.
Department of Applied Mathematics and Statistics, UC Santa Cruz. October 2003.

2002
Applied Mathematics, UC Davis. November 2002.
Center for Population Biology, UC Davis. November 2002.
Nicholas School of the Environment, Duke University. February 2002.
Department of Ecology and Evolution, University of Chicago. January 2002.

2001
Dept Ecol Evol Biol, Princeton Univ, US. Sept 2001.
Mt Lake Research Stn, University of Virginia, US. July 2001.
Dept Biol Sci, University of Alberta, Calgary. April 2001. (Invited speaker by Graduate students)

2000
Dept Zool, Cambridge, UK. November 2000.
Dept Biology, University of California Santa Cruz California. May, 2000.
Dept Zoology, University of Washington, Seattle, Washington. February 2000.
Dept Entomolgy, PennState, Pennsylvania. January 2000.

1999
Dept Biology, PennState, Pennsylvania. December 1999.
Dept Statistic/Dept Biology, Warwick, UK. October 1999.
Kings College, Cambridge, UK. October, 1999.
Centre for Disease Control and Prevention, Atlanta, Georgia. June, 1999.
School of Fisheries, University of Washington, Seattle, Washington. April, 1999.
Department of Statistics, University of California Santa Barbara, California. February, 1999.

1998
National Center for Ecological Analysis and Synthesis, Santa Barbara. January 1998.
Royal Statistical Society's Time series and applications group, London, UK. June, 1998.
School of Biological Sciences, University of Liverpool, UK. June, 1998.
Department of Ecology and Evolution, University of Princeton. October, 1998.
Department of Ecology, Evolution and Marine Biology. UC Santa Barabara. November 1998.

1997-
Department of Biology. University of Oslo, Norway, June 1997.
University of Hokkaido, Japan. October 1996
Department of Biology, University of Tokyo, Japan. October 1996
Department of Biological Sciences, Montréal, Canada. February 1995

INVITED TALKS AT NATIONAL AND INTERNATIONAL CONFERENCES

Bjørnstad, O.N., Lau, M., Metcalf, C.J.E, Grenfell, B.T and King, A.A. 2016. 'Loss of synchrony and changes in spatial dynamics from mass vaccination against measles', The 101st annual meeting of the Ecology Society of America. Ft. Lauderdale, August 2016.

Bjørnstad. O.N. 2016. Causes and consequences of spatial synchrony in population dynamics – data, statistics and theory. 16th annual conference on *Rodens et Spatium*. Olomouc, Czech Republic, July 2016. Invited plenary.

Bjørnstad, O.N. 2015. 'Nonlinearity and chaos in ecological dynamics: revisited', Current Topic Workshop on Uncertainty, Sensitivity and Predictability in Ecology: Mathematical Challenges and Ecological Applications, Mathematical Biology Institute, October 26-30, 2015.

Bjørnstad, O.N. 2015. 'Developmental synchrony, and recurrent insect outbreaks caused by temperature-driven changes in system stability', 15th International Conference on Models in Population Dynamics and Ecology (MPDE'15), Universidade Federal Fluminense, Niteroi, Brazil. August 24-28, 2015. Invited plenary.

Bjørnstad, O.N. 2014. 'Multi-generation population dynamics in seasonal environments: generation separation versus smearing', 30th Symposium of the Society of Population Ecology, Tsukuba, Japan. October 2015.

Bjørnstad, O.N. 2013. ‘Some challenges to make current data-driven (‘statistical’) models even more relevant to public health', Programme on Infectious Disease Dynamics, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK. August 19 – 24, 2013.

Liebhold, A., O. Bjørnstad, D. Johnson, K. Haynes, C. Robinet. 2008. ‘Spatial synchrony in forest insect outbreaks: Why is it so ubiquitous?’ presented in symposium, ‘Insect outbreaks revisited’ at XXIII International Congress of Entomology July 6-12, 2008, Durban, South Africa.

Bjørnstad, O.N. 2007. ‘Forest Insect outbreaks: synchronization and spatiotemporal dynamics in the gypsy moth', 23rd Symposium of the Society of Population Ecology, Sapporo, Japan. Invited presentation.

Bjørnstad, O.N. 2005. ‘The dynamics of spatially-extended populations: statistics and theory for spatial correlation functions', Ecological Society of America, Montreal, Quebec. Invited presentation (Special Session #8: 'Spatial statistics at multiple scales').

Bjørnstad, O.N. 2005. 'Spatial contact networks and timing of outbreaks in epidemic metapopulations: theory, data and statistics', International Biometric Society - Eastern North American Region Spring meeting. March, 2005. Invited symposium presentation (Symposium #46. 'Statistics in Disease Ecology')

Bjørnstad, O.N. 2005. 'Spatial contact networks and timing of outbreaks in epidemic metapopulations: theory, data and statistics', Workshop on 'Spatial Ecology: The Interplay between Theory and Data'. University of Miami. January, 2005. (http://www.math.miami.edu/anno/spatial/index.htm)

Bjørnstad, O. N. 2005. Spatial contact networks and timing of outbreaks in epidemic metapopulations: theory, data and statistics. Workshop on ' Modelling of infectious diseases: New trends and developments’. Section of Medical Statistics, University of Oslo, Norway. February 2005.

Bjørnstad, O. N. 2004. Contact networks and timing of outbreaks in an epidemic metapopulation: theory, statistics and data. Ecology & Evolution of Infectious Diseases Meeting, Emory University. May 2004.

Liebhold, A. M. and Bjørnstad, O. N. 2003. Roles of climate and dispersal in the synchronization of insect outbreaks over large spatial scales. In symposium ‘Severe Insect Outbreaks in North American Forests: recent trends, long term recurrence and the role of climate’ (D. Gavin and M. Ayers, organizers), Ecological Society of America, Savannah, GA.

Bjørnstad, O.N. 2002. 'Estimating spatial coupling in epidemic metapopulations through inter-epidemic periods', Conference on 'Distribution, Diversity, and Evolutionary Dynamics' University of Virginia. June, 2002. (http://wallis.phys.virginia.edu/~tn2k/dded.html)

Bjørnstad, O. N., Nisbet, R. M. and Fromentin, J. M. 2002. Stochastic age-structured dynamics: The cohort resonance effect. Ecological Society of America, Tucson, AZ. Invited symposium presentation (Symposium #30: 'Stochasticity in population ecology')

Bjornstad, O.N., Finkenstadt, B.F. and Grenfell, B.T. 2000. 'Stochastic epidemics: predictability and TSIR estimation' Invited talk at the Joint Statistics Meeting, Indianapolis, Indiana. August, 2000.

Bjørnstad, O.N. and Saitoh, T. 1999. ‘The population dynamics of the grey-sided voles in Hokkaido'. Symposium in Honor of Professor Nils Chr Sthenseth. The Norwegian Academy of Science an letters, Oslo, Norway. September 1999.

Bjørnstad, O. N. 1996. Population dynamics of the Indean meal Moth. Workshop on Non-linear Methods for Analysis of Biological Time Series, Rosendal, Norway.

'Simple models for complex populations: what can we say about individual variation using one-dimensional models?' 8th Culterty Workshop, Aberdeen, Scotland 10.-11. September 1994.

CONTRIBUTED TALKS AT NATIONAL AND INTERNATIONAL CONFERENCES
(* indicates presenter)

Charu*, V., Zeger, S., Gog, J., Bjørnstad, O., Kissler, S, Simonsen, L., Grenfell, B. and Viboud, C. 2017. Minimum-path work- commute distance and the spatial spread of influenza. The 6th International Conference on Infectious Disease Dynamics. Barcelona, December 2017.

Kissler*, S.M., Viboud, C., Charu, V., Bjørnstad, O.N., Simonsen, L., Grenfell, B.T. and Gog, J.R. 2017. Contrasting the geographic transmission of seasonal and pandemic influenza in the United States using a gravity-based model. The 6th International Conference on Infectious Disease Dynamics. Barcelona, December 2017.

Pak*, D., Bjornstad, O. and Biddinger, D.J. 2017. Climate and the spring phenology of tortricid moths from 1981 to 2016: Local temperatures and the North Atlantic Oscillation. The 102nd annual meeting of the Ecology Society of America. Portland, August 2017.

Yamanaka*, T., Bjornstad, O.N., Nelson, W. and Tabata, J. 2017. Remarkable generation separation by temperature destabilization appears in a tortrix pest all across Japan. The 102nd annual meeting of the Ecology Society of America. Portland, August 2017.

Pak*, D., Bjornstad, O. and Biddinger, D.J. 2016. Species-specific generation cycles of tortrix moths and their effects on community dynamics. The 101st annual meeting of the Ecology Society of America. Ft. Lauderdale, August 2016.

Haynes*, K.J., Bjornstad, O., Allstad, J.A. and Liebhold, A.M. 2016. Multi-trophic interactions and spatially synchronous forest insect outbreaks. The 101st annual meeting of the Ecology Society of America. Ft. Lauderdale, August 2016.

Yamanaka*, T., Satu, Y., Bjornstad, O., Nelson, W. and Tabata, J. 2016. Remarkable generation separation appears in extra-ordinary long-term surveillance records of a moth pest all across Japan. XXV International Congress of entomology, Orlando, September 2016.

Bjornstad*, O.N., Nelson, W.A. and Yamanaka, T. 2015. Developmental synchrony, and recurrent insect outbreaks caused by temperature-driven changes in system stability. The 100th annual meeting of the Ecology Society of America. Baltimore, August 2015.

Beck-Johnson*, L.M., Nelson, W.A., Paaijmans, K.P., Thomas, M.B., Read, A.F. and Bjørnstad, O.N. 2014. Using temperature to predict mosquito population dynamics and malaria risk in a changing climate. The 99th annual meeting of the Ecology Society of America. Sacramento, August 2014.

Bhattacharyya*, S., Ferrari, M. and Bjornstad, O.N. 2014. 'Ecological interference: A mechanism of pathogen interaction may explain erratic periodicity of whooping cough dynamics'. The 99th annual meeting of the Ecology Society of America. Sacramento, August 2014.

Greischar*, M.A., Andrew F. Read, and Ottar N. Bjørnstad. 2013. Synchrony in malaria infections: why maximize within-host competition? Society for the study of Evolution annual meeting, Snowbird, Utah, June 2013.

Greischar*, M.A., Nicole Mideo, Andrew F. Read, and Ottar N. Bjørnstad. 2013. How do malaria parasites optimize growth and transmission? Poster presentation at 11th Annual Ecology and Evolution of Infectious Diseases Conference, University Park, PA, May 2013.

Greischar*, M.A., Silvie Huijben, Andrew F. Read, and Ottar N. Bjørnstad. 2012. Explaining synchrony in malaria infections: why maximize within-host competition? Poster presentation at Evolution Meeting, Ottawa, Canada, July 2012.

Greischar*, M.A., Silvie Huijben, Andrew F. Read, and Ottar N. Bjørnstad. 2012. What drives synchronization of malaria parasites within the host? Poster presentation at 10th Annual Ecology and Evolution of Infectious Diseases Conference, Ann Arbor, MI, May 2012.

Haynes*, K.J., Bjornstad, O.N., Allstadt, A.J. and Liebhold, A.M. 2012. ' Geographical variation in spatial synchrony of forest-insect outbreaks: Isolating the drivers of synchrony ' 97th annual meeting of the Ecology Society of America. Portland, August 2012

Walter*, J.A., Bjornstad, O.N., Tobin, P.C. and Haynes, K.J. 2012. ' Estimation and analysis of variability in the invasion rate of the gypsy moth ' 97th annual meeting of the Ecology Society of America. Portland, August 2012

Greischar*, M.A., Silvie Huijben, Andrew F. Read, and Ottar N. Bjørnstad. Modeling synchronization of within-host malaria dynamics. Poster presentation at 9th Annual Ecology and Evolution of Infectious Diseases Conference, Santa Barbara, CA, June 2011.

Lavine*, J.S., King, A.A., and Bjornstad, O.N. 2011. 'Re-examining pertussis cycles and the role of waining immunity' 96th annual meeting of the Ecology Society of America. Austin, August 2011

Beck-Johnsen*, L.M., Nelson, W.A., Read, A.F., Thomas. M.B. and Bjornstad, O.N. 2011. 'Modeling *Anopheles* mosquito population dynamics, and forecasting malaria vector capacity in the face of global warming' 96th annual meeting of the Ecology Society of America. Austin, August 2011

Lavine*, J.S., King, A.A., and Bjornstad, O.N. 2010. 'Variability in global pertussis dynamics: dynamical regime switching the in prevaccine era' 95th annual meeting of the Ecology Society of America. Pittsburgh, August 2010

Beck-Johnsen*, L.M., Bjornstad, O.N., Nelson, W.A., Read, A.F. and Thomas. M.B. 2010. 'Modeling the malaria vector: Population dynamics of Anopheles mosquitoes with respect to temperature' 95th annual meeting of the Ecology Society of America. Pittsburgh, August 2010

Chien, L., Lavine*, J.S., and Bjornstad, O.N. 2010. 'Understanding whooping cough transmission among age groups' 95th annual meeting of the Ecology Society of America. Pittsburgh, August 2010

Bjornstad*, O.N., Liebhold, A., and Robinet, C. 2010. ‘Geographic variation in North American gypsy moth cycles: Subharmonics, generalist predators and spatial coupling’ 95th annual meeting of the Ecology Society of America. Pittsburgh, August 2010

Luis*, A.D., Douglass, R.J and Bjornstad, O.N. 2010. 'A quantitative evaluation of the trophic cascade hypothesis for hantavirus outbreaks ' 95th annual meeting of the Ecology Society of America. Pittsburgh, August 2010

Metcalf*, C.J.E, Munayco-Escate, C., Chowell, G., Grenfell, B.T. and Bjornstad, O.N. 2010. ‘Rubella meta-population dynamics and importance of spatial coupling to the risk of CRS in Peru’ 95th annual meeting of the Ecology Society of America. Pittsburgh, August 2010

Klepac*, P., Bjornstad, O., Grais, R.F. and Grenfell, B.T. 2009. 'Optimizing reactive responses to outbreaks of immunizing infections: Case management vs vaccination' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

Lavine*, J.S., King, A.A., Shrestha, S. and Bjornstad, O.N. 2009. 'Models with natural immune-boosting help explain pertussis dynamics and changes in age-specific incidence during the

vaccination era' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

Ferrari, M.J., Bharti, N., Djibo, A., Grais, R.F., Grenfell, B.T. and Bjornstad, O.N. 2009. 'Measles dynamics on a seasonal and population gradient: implications for vaccination programs in Niger' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

Shrestha*, S. King, A.A., and Bjornstad, O.N. 2009. 'Host ecology and conflicting evolutionary pressure for pathogens' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

Yamanaka*, T., Nelson, W.A., Uchimura, K. and Bjornstad, O.N. 2009. 'Ecological aspect of generation separation in multivoltine insects in temperate zone' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

King*, A.A., Shrestha, S. Lavine, J.S. and Bjornstad, O.N. 2009. 'Boosting of acquired immunity through re-exposure: Dynamical consequences' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

Luis*, A.D. and Bjornstad, O.N. 2009. 'An age structured model for Sin Nombre hantavirus' 94th annual meeting of the Ecology Society of America. Albequerque, August 2009

Luis*, A.D., Douglass, R.J and Bjornstad, O.N. 2008. 'The effect of seasonality, climate, and density on hantavirus dynamics in the deer mouse in Montana' 93rd annual meeting of the Ecology Society of America. Milwaukee, August 2008

Rauschert*, E.S.J., Mortensen, D., Bjornstad, O.N. and Nord, A. 2008. 'The spread of Microstegium vimineum (Japanese stiltgrass), an invasive weed' 93rd annual meeting of the Ecology Society of America. Milwaukee, August 2008

Lavine*, J.S., Bjornstad, O., Harvill, E. and Han, L. 2008. ' Coexistence through age-structured or temporal niche segregation in Bordetella pertussis and B. parapertussis' 93rd annual meeting of the Ecology Society of America. Milwaukee, August 2008

Liebhold*, A., Bjornstad, O., Johnson, D., Haynes, K. and Robinet-Makdoud, C. 2008. Spatial dynamics of gypsy moth outbreaks in North America. presented at 23rd Annual Landscape Ecology Symposium, Madison, Wisconsin, April 6-10, 2008.

Luis*, A.D., Douglass, R.J and Bjornstad, O.N. 2007. 'Population dynamics of the primary hantavirus reservoir host in the US, the deer mouse' 92th annual meeting of the Ecological Society of America. San Jose, August 2007

Bharti*, N., Xia, Y., Bjornstad, O.N., Ferrari, M.J. Grais, R.F, Grenfell, B.T. 'Demographic and social underpinnings of transmission: Host movement and disease dynamics' 92th annual meeting of the Ecology Society of America . San Jose, August 2007

Ferrari,* M., Grenfell, B., Bjornstad, O.N., Bharti, N., Grais, R.F. 'Metapopulation on the edge of chaos: Measles persistence in the Sahel' 92th annual meeting of the Ecology Society of America . San Jose, August 2007

Bjornstad*, O.N., Liebhold, A.M. Tobin, P. Robinet, C. and Johnson, D.M. 'Synchronization of gypsy moth outbreaks along an invasion front'. 92th annual meeting of the Ecology Society of America. San Jose, August 2007

Warlow*, L. and Bjornstad, O. 2005. Modeling Phocine distemper virus in harbor seals in the North Sea. 90th annual meeting of the Ecology Society of America, Montreal, Canada.

Ferrari*, M., Stephenson, A., Winsor, J. and Bjornstad, O. 2005. The effects of inbreeding on the host-pathogen dynamics of bacterial wilt (*Erwinia tracheiphila*) in the wild gourd, *Cucurbita pepo* ssp texana. 90th annual meeting of the Ecology Society of America, Montreal, Canada.

Schwarz*, C. A. and Bjørnstad, O. N. 2005. Population dynamics and life history strategies of Forked Fungus Beetles in a single host species and two host species landscape. 90th annual meeting of the Ecology Society of America, Montreal, Canada.

Ferrari*, M. J. and Bjørnstad, O. N. 2004. A gravity framework for modeling the spread of vector-borne plant pathogens. Ecological Society of America, Portland, OR.

Bjørnstad*, O. N., Grenfell, B. T. and Xia, Y. 2004. Contact networks and timing of outbreaks in epidemic metapopulations. Ecological Society of America, Portland, OR.

Warlow*, L. and Bjørnstad, O. N. 2004. Modeling the spatial spread of phocine distemper virus in harbor seals. Ecological Society of America, Portland, OR.

Schwarz*, C. A. and Bjørnstad, O. N. 2004. Modeling host choice of an obligate fungivorous beetle on its seasonally varying fungal hosts. Ecological Society of America, Portland, OR.

Clark*, J. S. and Bjørnstad, O. N. 2004. Population time series with errors, missing values, and time lags. Ecological Society of America, Portland, OR.

Cattadori*, I., Boag, B., Bjørnstad, O. N., Cornell, S. and Hudson, P. J. 2004. Immunity mediated regulation in seasonal host-parasites interactions. Ecological Society of America, Portland, OR.

Johnson,* D. M., Bjørnstad, O. N., Liebhold, A. M. 2004. Landscape geometry and spatial waves of defoliation by an insect pest. Ecological Society of America, Portland, OR.

Tobin*, P. C. and Bjørnstad, O. N. 2003. Roles of dispersal, stochasticity, and nonlinear dynamics in the spatial structuring of transient predator-prey populations. Poster presented at the National Entomological Society of America Meeting, Cincinnati, OH.

Tobin*, P. C. and Bjørnstad, O. N. 2003. The regulation of eruptive pest abundance by a specialist predator is associated with transitions in spatial structuring. Poster presented at the USDA Interagency Research Forum on Gypsy Moth and other Invasive Species, Annapolis, MD.

Humston*, R., Mortensen, D.A., Bjørnstad, O. N. and Wyse-Pester, D.Y. 2003. The influence of management intensity and crop rotation on common sunflower, Helianthus annuus, patch dynamics. Weed Science Society of America.

Humston*, R., Mortensen, D.A. and Bjørnstad, O. N. 2003. Assessing patch dynamics of common sunflower (Helianthus annuus) in response to weed management in row crop agriculture. Ecological Society of America, Savannah, GA.

Satake*, A., Bjørnstad, O. N. and Y. Iwasa. 2003. Masting and trophic cascade. Fukuoka Workshop of Theoretical Biology, Fukuoka, Japan.

Tobin*, P. C. and Bjørnstad, O. N. 2003. The regulation of eruptive pest abundance by a specialist predator is associated with transitions in spatial structuring. 14th Annual USDA Interagency Research Forum on Gypsy Moth and Other Invasive Species, Annapolis, MD.

Schwarz*, C. A. and Bjørnstad, O. N. 2002. Extinction and colonization dynamics in a multiple resource-type metapopulation model. Ecological Society of America, Tucson, AZ.

Bolker*, B. M. and Bjørnstad, O. N. 2002. You can't subtract thunderstorms from lemmings: a statistical test of the Moran effect. Ecological Society of America, Tucson, AZ.

Bjørnstad*, O. N., Nisbet, R. M. and Fromentin, J. M. 2002. Stochastic age-structured dynamics: The cohort resonance effect. Ecological Society of America, Tucson, AZ.

Tobin*, P. C. and Bjørnstad, O. N. 2001. Spatial synchrony in transient predator-prey dynamics. Annual U.S. EPA S.T.A.R. Fellowship Conference, Silver Spring, MD.

Tobin*, P. C. and Bjørnstad, O. N. 2001. Spatial clustering and cross-correlation in transient predator-prey populations. National Entomological Society of America Annual Meeting, San Diego, CA.

Grenfell*, B. T. and Bjørnstad, O. N. 2001. Epidemic waves in the dynamics of measles: wavelets and spatial hierarchies. Ecological Society of America, Madison, WI.

Peltonen*, M., Liebhold, A. M. and Bjørnstad, O. N. 2001. The causes of spatial synchrony among forest insect populations: dispersal vs. the Moran effect. Joint meeting of International Union of Forestry Research Organizations (IUFRO) and the Royal Entomological Society, Aberdeen, Scotland.

Peltonen*, M., Liebhold, A. M. and Bjørnstad, O. N. 2001. Spatial synchrony in forest insect populations. North American Forest Insect Work Conference, Edmonton, Alberta.

Liebhold*, A. M., Peltonen, M., Bjørnstad, O. N. and Williams D. 2001. The Moran effect, global climate change, and forest defoliator outbreaks. North American Forest Insect Work Conference, Edmonton, Alberta.

Peltonen*, M., Liebhold, A. M. and Bjørnstad, O. N. 2000. Spatial synchrony in forest insect populations. Joint meeting of the Entomological Society of America and the Entomological Society of Canada, Montreal, Quebec.

Bjørnstad*, O. N. 2000. Stochastic age-structured dynamics: Cycles and trends. Ecological Society of America, Snowbird, UT.

MENTORING

Postdoctoral fellows

Dr Akiko Satake (postdoctoral advisor)	2002-2003
Dr Bjorn Okland (postdoctoral advisor)	2002-2003
Dr Derek Johnson (postdoctoral advisor)	2003-2005
Dr Isabella Cattadori (postdoctoral co-advisor)	2003-2006
Dr Takehiko Yamanaka (postdoctoral advisor)	2005-2006
Dr Petra Klepac (postdoctoral co-advisor)	2007-2009
Dr Jessica Metcalf (postdoctoral co-advisor)	2008-2009
Dr Tomas de-Camino-Beck (postdoctoral advisor)	2008-2010
Dr Samit Bhattacharyya (postdoctoral co-advisor)	2011-2015
Dr Shouli Li (postdoctoral co-advisor)	2015-2019

Graduate students

Carrie Schwarz (co-supervisor: PhD Ecology)	2001-2006
Matthew Ferrari (supervisor: PhD Ecology)	2002-2006
Laura Pomeroy (supervisor: PhD Biology)	2003-2008
Angie Luis (co-supervisor: PhD Ecology)	2006-2010
Jennie Lavine (supervisor: PhD Biology)	2006-2010
Lindsay Beck-Johnson (supervisor: PhD Biology)	2008-2013
Megan Greischar (co-supervisor: PhD Entomology)	2009-2014
Damie Pak (PhD Biology)	2015-
Cathrine Herzog (PhD Biology)	2015-

Honors students

Erica Foley	2006
Adam L Moyer	2007

Riley Mummah	2015
Wilton Smith	2015

TEACHING

Massive Online Open Courses (MOOC)
2013 "Epidemics - the Dynamics of Infectious Diseases" *Coursera* October 15th – December 8th https://www.coursera.org/course/epidemics , https://twitter.com/epidemicsMOOC, https://www.facebook.com/epidemicsMOOC. Registered students: 35,561.
2014 "Epidemics - the Dynamics of Infectious Diseases" *Coursera* September 20th – November 19h, 2014. Registered students: 19,909.
2015- "Epidemics - the Dynamics of Infectious Diseases" *Coursera on-demand:* 55,000 (by March, 21)

Workshops
2005 "Application of disease models to long-term population data". 3rd Annual Ecology and Evolution of Infectious Disease Conference, Colorado State University, May 16-18 (with Mike Antolin, Ben Bolker, Dave Smith and Karen Garrett).

2007 "Workshop on Environmental Drivers of Infectious Disease". 5th Annual Ecology and Evolution of Infectious Disease Conference, Cornell University, May 29-30 (with Steve Ellner and Mike Antolin).

2008 "Measuring Spatial Heterogeneities". 6th Annual Ecology and Evolution of Infectious Disease Conference, Colorado State University, June 1-4 (with Mike Antolin, Ben Bolker, and Aaron King).

2008 "Introduction to infectious disease modeling: concepts and applications". Centre for Biostatistical Modelling in the Medical Sciences, Faculty of Medicine, University of Oslo, Norway. November 12-14 (with Birgitte Freiesleben de Blasio).

2009 "Infectious Disease Modelling--concepts and application". Centre for Biostatistical Modelling in the Medical Sciences, Faculty of Medicine, University of Oslo, Norway. November 18-20 (with Birgitte Freiesleben de Blasio).

2014 "An introduction to computational ecology" Depto Entomologia e Acarologia - ESALQ – University of Sao Paolo, Brazil. May 12 – 16.

2016 "Seasonal Dynamics Workshop" DST-NRF Centre of Excellence in Mathematical and Statistical Sciences. University of Cape Town, South Africa. August 29 – September 2.

2017 "Infectious Disease Modeling Workshop" Norwegian National Veterinary Institute. November 7 – 15.

2019 "Construction and maintenance of immune memory" Centre for Infectious Disease Dynamics, April 20-24.

2020 "Susceptible-Infected-Recovered (SIR) Modeling" National Institute of Statistical Sciences / American Statistical Association, June 30. https://www.niss.org/susceptible-infected-recovered-sir-modeling-focus-nissasa-tutorial

Courses

BIO 220 Ecology of Populations and Communities – Honors (3 cr) Spring 2012, ’13, ’14, ’15, ’16, ’19, 19’20
ENT 420 Introduction to Population Dynamics (3 cr) Fall 2002, ‘03, ‘05, ‘07, ‘09, ‘11, ’13
ENT 597A Critical Thinking and Professional Development (6cr; team) Spring 2007, ’08, ‘09
ENT 597D Ecological models and data (3 cr) Fall 2006.
BIOL 597D Evolutionary Ecology (1 cr) Spring 2004.
BIO 412 Ecology of infectious diseases (3cr) Fall 2004, ‘05, ‘06, ‘07.
BIO/ENT597A (3cr) Spring ’16. ‘18, ’19, ‘20

EXTERNAL PHD EXAMINER ('OPPONENT')

2014: University of Calgary, Department of Biological Sciences (R. Richard: ' Consumer life history and demography in dynamic environments')
2008: University of Oslo, Department of Mathematics, Section for Statistics (I. Scheel ‘Influence of incomplete knowledge in inference: cases in the life sciences’)
2006: Norwegian University of Science and Technology, Department of Biology (V. Grøtan ‘Temporal and spatial effects of climate fluctuations on population dynamics of vertebrates’)
2005: L'ecole Nationale Superieure Agronomique De Rennes (F. Royer 'Contribution à l'étude de la dynamique du thon rouge Atlantique --Approches écologiques et océanographiques')
2004: University of Aberdeen, Department of Mathematical Sciences (S. Bierman: 'Spatio-temporal models in animal population dynamics')
2004: University of Calgary, Department of Biological Sciences (W.A. Nelson: 'Competition in Structured Zooplankton Population: coupling population genetics and dynamics using theoretical and experimental approaches')

SERVICE

Grant panels
2005 NSF EPE panel (2005)
2010 USDA/NIFA Pest and Beneficial Insects in Plant Systems Panel (2010)

College and University
Institute for Computational Science (ICS) Advisory Board (2004 - 2006)
Task Force on Advanced Scientific Computing (TFASC) (2002)
Inter-college Graduate Program in Ecology: Admissions Committee (2007 - 2010)
Inter-college Graduate Program in Ecology: Program Committee (2003 - 2007)
CAS's Pest Prediction and Response strategic initiative team (2009-2010)
Center for Infectious Disease Dynamics: Co-Director (2004 - 2009)
Chair and architerctural sign-off member for the computational group for the life-science wing of the 275,600-square-foot, $215,000,000 Millennium Science Complex Building (2008)
Alex and Jessie C. Black Award selection committee (2010)
University task force on Cyber-infrastructure (2010)
CAS's task force on Advanced Ag and Food Systems (2013-14)
Huck Institutes Biostar governance committee (2014)
Search committee for the Vice President for Research (2015)

Selection panel member for the Faculty Scholar Medal program (2016-2018)

Departmental
Entomology: Social Committee (2001 - 2003)
Entomology: Ad Hoc Computer Committee (2001 - 2003)
Entomology: Population Geneticist Search Committee (2002)
Entomology: Instruction Committee (2003 - 06, chair: 2005/06)
Entomology: Candidacy Committee (2006 - 09, chair: 2008/09)
Entomology: Promotion and Tenure (2008 - 11, 2018-20, chair: 2009/10, 2018/19)
Entomology: Seminar Committee (2010 - 12, chair: 2011/12)
Biology: Graduate Committee (2001 - 2010, chair: 2006-2010)
Biology: Senior Ecologist Search Committee (2002)
Biology: Graduate Recruitment Committee (Chair: 2003 - 2004)
Biology: Marker Lecture committee (2004-2005)
Statistics: Computer Committee (2001 - 2006)

Graduate student committee:

Alicia Ellis (committee: MSc Biology)	2001-2002
Patrick Tobin (committee: PhD Entomology)	2001-2002
Amy Griffin (committee: PhD Geography)	2001-2004
David Bell (committee: PhD Entomology)	2003-2005
Dietmar Schwarz (committee: PhD Entomology)	2001-2005
Tiffany Bogich (committee: MSc Ecology)	2005-2006
Sharon DeWitte (committee: PhD Anthropology)	2002-2006
Tom Raffell (committee: PhD Biology)	2002-2006
Emily Rauschert (committee: PhD Ecology)	2003-2006
Joseph Dauer (committee: MSc & PhD Ecology)	2003-2007
Angela Anders (committee: PhD Biology)	2003-2007
Elizabeth Goebel (committee: PhD Vet Sci)	2007-2008
Kurt Vandegrift (committee: PhD Biology)	2006-2008
Nita Barthi (committee chair: PhD Biology)	2008-2010
Ruscena Wiederholt (committee: PhD Ecology)	2007-2010
Shi Chen (committee: PhD Entomology)	2007-2011
Rui Zhang (committee: PhD Biology)	2007-2011
Roman Jandarov (committee: PhD Statistics)	2009-2012
Wanyi Zhu (committee: PhD Biology)	2007-2012
Conrad Stack (committee chair: PhD Biology)	2008-2012
Laura Russo (committee: PhD Ecology)	2009-2013
Brittany J. Teller (committee: PhD Ecology)	2009-2014
Amalie McKee (committee: PhD Ecology)	2011-2016
Christy Miller (committee: PhD Ecology)	2012-
Daniel Parker (committee: PhD Anthropology)	2012-2014
Kezia Manlove (committee: PhD Biology)	2012-2016
Spencer Carran (committee: PhD Ecology)	2012-2017
Nina Wale (committee chair: PhD Biology)	2013-2015
Monica Acosta (committee: PhD Biology)	2015-2016
Shelley A. Whitehead (committee: PhD Entomology)	2006-

Petra Klepac (committee: PhD Woods Hole Oceanographic Institute)	2008
Sourya Shrestaa (committee co-chair: PhD U. Mich, Applied Maths)	2009