

February 13, 2014

**Curriculum vitae**  
**Ottar Nordal Bjørnstad**

Departments of Entomology and Biology,  
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**EDUCATION**

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

**PROFESSIONAL POSITIONS**

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-)
2004-present	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**

2011	Visiting fellow, Wolfson College, Oxford University.
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**

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

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- 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
- 2013 Invited participant in the Isaac Newton Institute for Mathematical Sciences programme on 'Infectious Disease Dynamics'. August 19-24, 2012
- 2008-12 Advisory Board member (2008-2012), National Center for Ecological Analysis and Synthesis
- 2011 Invited participant in the NCEAS symposium 'Trends in Ecological Analysis and Synthesis. March 21-23, 2012
- 2009-13 Permanent member of NIH/DHS program on 'Research and Policy in Infectious Disease Dynamics (RAPIDD)'
- 2002, '07 Invited for the *Distinguished Visiting Scientist Programme* at the Centre for Population Biology, Imperial College at Silwood Park.
- 2005-06 Chair ('06) vice-chair ('05) *Theoretical Section* of the Ecological Society of America
- 2002 Distinguished Visiting Scientist Programme at the Centre for Population Biology, Imperial College at Silwood Park.

## EDITORIAL BOARDS

- Ad hoc Editor *Proceedings of the National Academy of Sciences* (2011-2013)
- 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

- 2014-2016 '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 (01/15/2014 – 01/14/2017) \$330,000
- 2013-2015 'Models to support decision-making for Measles and Rubella vaccination planning' Bill and Melinda Gates Foundation; PI: Matthew Ferrari; co-Investigator: Ottar Bjornstad . (10/18/2013 - 9/15/2015) \$1,024,879
- 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 – 03/31/13) \$762,912
- 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

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	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 McPherson; 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
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. 2001-2013. NCF: A package for analyzing spatial (cross-)covariance. <http://cran.r-project.org/web/packages/index.html>

Bjørnstad, O. N. 2001-2013. NLT: A package for nonlinear and nonparametric time series <http://cran.r-project.org/web/packages/index.html>

## PUBLICATIONS (International journals with peer-review):

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*, in press.
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., Bjørnstad, 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 Bjørnstad, O.N. 2013. Immune boosting explains regime-shifts in prevaccine-era pertussis dynamics. *PLoS ONE* 8(8): e72086. doi:10.1371/journal.pone.0072086.
127. Jandarov, R., Haran, M., Bjørnstad, O.N. and Grenfell, B.T. 2013. Emulating a gravity model to infer the spatiotemporal dynamics of an infectious disease. *Journal of the Royal Statistical Society Series C*, in press.
126. Haynes, K.J., Bjørnstad, O.N., Allstadt, A. and Liebhold, A.M. 2013. Geographical variation in the spatial synchrony of a forest-defoliating insect: isolation of environmental and spatial drivers. *Proceedings of the Royal Society of London Series B* 280 no: 20122373. doi:10.1098/rspb.2012.2373.
125. Metcalf, C.J.E, Lessler, J., Cohen, C., McAnerney, J., Ntshoe, G., Puren, A., Tatem, A., Klepac, P., Grenfell, B.T. and Bjørnstad, O.N. 2012. Implications of spatially heterogeneous vaccination coverage for the risk of Congenital Rubella Syndrome in South Africa. *Journal of the Royal Society Interface* 10: doi: 10.1098/rsif.2012.0756

124. Klepac, P., Bjørnstad, O.N., Metcalf, C.J.E and Grenfell, B.T. 2012. Optimizing reactive responses to outbreaks of immunizing infections: balancing case management and vaccination. *PLoS ONE* 7(8): e41428. DOI: 10.1371/journal.pone.0041428
123. Metcalf, C.J.E, Long, G.H., Mideo, N., Forester, J.D., Bjørnstad, O.N. and Graham, A.L. 2012. Revealing mechanisms underlying variation in malaria virulence: effective propagation and host control of uninfected red blood cell supply. *Journal of the Royal Society Interface* 9: 2804-2813.
122. Metcalf, C.J.E, Lessler, J., Klepac, P., Morice, A., Grenfell, B.T. and Bjørnstad, O.N. 2012. Structured models of infectious disease: inference with discrete data. *Theoretical Population Biology* 82: 275-282.
121. Luis, A.D., Douglass, R.J., Hudson, P.J., Mills, J.N. and Bjørnstad, O.N. 2012. Sin nombre hantavirus decreases survival of male deer mice. *Oecologia* 169: 431-439.
120. Lavine, J., Bjornstad, O.N., Freiesleben de Blasio, B., and Storsaeter, J. 2012. Short-lived immunity against pertussis, age-specific routes of transmission, and the utility of a teenage booster vaccine. *Vaccine* 30: 544-551.
119. Glorvigen, P., Bjørnstad, O.N., Andreassen, H.P. and Ims, R.A. 2012. Settlement in empty vs. occupied habitats: An experimental study on bank voles. *Population Ecology* 54: 55-63.
118. Yamanaka, T., Nelson, W.A., Uchimura, K. and Bjørnstad, O.N. 2012. Generation separation in simple structured life-cycles: models and 48 years of field data on a tea tortrix moth. *American Naturalist* 179: 95-109.
117. Rauschert, E.S.J., Shea, K. and Bjornstad, O.N. 2012. Coexistence patterns of two invasive thistle species, *Carduus nutans* and *C. acanthoides*, at three spatial scales. *Biological Invasions* 14: 151-164.
116. Metcalf, C.J.E., Graham, A.L., Huijben, S., Barclay, V.C., Long, G.H., Grenfell, B.T., Read, A.F. and Bjørnstad, O.N. 2011. Partitioning regulatory mechanisms of within-host malaria dynamics using the effective propagation number. *Science* 333: 984-988.
115. Ferrari, M.J., Perkins, S., Pomeroy, L., and Bjornstad, O.N. 2011. Pathogens, social networks and the paradox of transmission scaling. 2011. *Interdisciplinary Perspectives on Infectious Diseases* vol. 2011, Article ID 267049. doi:10.1155/2011/267049
114. Lavine, J., King, A.A. and Bjornstad, O.N. 2011. Natural immune boosting in pertussis dynamics and the potential for long-term vaccine failure. *Proceedings of the National Academy of Science USA* 108: 7259-7264.
113. Metcalf, C.J.E, Bjornstad, O.N., Ferrari, M., Klepac, P., Bharti, N., Lopez-Gatell, H. and Grenfell, B.T. 2011. The epidemiology of rubella in Mexico: seasonality, stochasticity and regional variation. *Epidemiology and Infection* 139: 1029-1038.
112. Metcalf, C.J.E, Munayco, C.V., Chowell, G., Grenfell, B.T. and Bjornstad, O.N. 2011. Rubella meta-population dynamics and importance of spatial coupling to the risk of Congenital Rubella Syndrome in Peru. *Journal of the Royal Society Interface* 8:369-376.
111. Long, G.H, Sinha, D., Read, A.F., Pritt, S., Kline, B., Harvill, E.T., Hudson, P.J and Bjørnstad, O.N. 2010. Identifying the Age Cohort responsible for *Bordetella bronchiseptica* Transmission in a Natural Rabbit Outbreak. *PLoS Pathogens* 6(12): e1001224. doi:10.1371/journal.ppat.1001224.

110. Lavine, J., Broutin, H., Harvill, E.T. and Bjornstad, O.N. 2010. Imperfect vaccine-induced immunity and whooping cough transmission to infants. *Vaccine* 29:11-16.
109. Ferrari, M.J., Djibo, A., Grais, R.F., Bharti, N., Grenfell, B.T. and Bjornstad, O.N. 2010. Rural-urban gradient in seasonal forcing of measles transmission in Niger. *Proceedings of the Royal Society of London Series B* 277: 2775-2782.
108. Bharti, N., Djibo, A., Ferrari, M.J., Grais, R.F., Tatem, A.J., McCabe, C.A., Bjornstad, O.N. and Grenfell, B.T. 2010. Measles hotspots and epidemiological connectivity in Niger. *Epidemiology and Infection* 138: 1308-1316.
107. Luis, A.D., Douglass, R.J., Mills, J.N. and Bjørnstad, O.N. 2010. The effect of seasonality, density and climate on the population dynamics of Montana deer mice, important reservoir hosts for Sin Nombre hantavirus. *Journal of Animal Ecology* 79: 462-470.
106. Mantilla-Beniers, N.B., Bjornstad, O.N. Grenfell, B.T. and Rohani, P. 2010. Decreasing stochasticity through enhanced seasonality in measles epidemics. *Journal of the Royal Society Interface* 7:727-739.
105. Ferrari, M.J., Djibo, A., Grais, R.F., Grenfell, B.T. and Bjornstad, O.N. 2010. Episodic outbreaks bias estimates of age-specific force of infection: a corrected method using measles as an example. *Epidemiology and Infection* 138: 108-116.
104. Bjørnstad, O.N., Robinet, C. and Liebhold, A.M. 2010. Geographic variation in north american gypsy moth cycles: subharmonics, generalist predators and spatial coupling. *Ecology* 91:106-118.
103. Rauschert, E.S.J., Mortensen, D.A., Bjørnstad, O.N., Nord, A. and Peskin, N. 2010. Slow spread of the aggressive invader, *Microstegium vimineum* (Japanese stiltgrass). *Biological Invasions* 12: 563-579.
102. Roy, S., Lavine, J., Chiaromonte, F., Terwee, J., VandeWoude, S., Bjornstad, O. and Poss, M. 2009. Multivariate statistical analyses demonstrate unique host immune responses to single and dual lentiviral infection. *PLoS ONE* 4(10): e7359. doi:10.1371/journal.pone.0007359.
101. Metcalf, C.J.E, Bjornstad, O.N., Grenfell, B.T. and Andreasen, V. 2009. Seasonality and comparative dynamics of six childhood infections in pre-vaccination Copenhagen. *Proceedings of the Royal Society of London Series* 276:4111-4118.
100. Klepac, P., Pomeroy, L.W., Bjørnstad, O.N., Kuiken, T., Osterhaus, A.D.M.E. and Rijks, J.M. 2009. Stage-Structured Transmission of Phocine Distemper Virus in the Dutch 2002 Outbreak. *Proceedings of the Royal Society of London Series B* 276: 2469 - 2476. doi:10.1098/rspb.2009.0175
99. Tobin, P.C., Robinet, C., Johnson, D.M., Whitmire, S.L., Bjørnstad, O.N. and Liebhold, A.M. 2009. The role of Allee effects in gypsy moth, *Lymantria dispar* (L.), invasions. *Population Ecology* 51: 373-384. doi:10.1007/s10144-009-0144-6
98. King, A.A., Shrestha, S., Harvill, E.T. and Bjørnstad, O.N. 2009 Evolution of acute infections and the invasion-persistence trade-off. *American Naturalist* 173:446-455.
97. Bjørnstad, O.N., Liebhold, A.M. and Johnson, D.M. 2008. Transient synchronization following invasion: revisiting Moran's model and a case study. *Population Ecology* 50: 379-389. doi: 10.1007/s10144-008-0105-5

96. Yamanaka, T., Tanaka, K., Hamasaki, K., Nakatani, Y., Iwasaki, N., Sprague, D.S. and Bjørnstad, O.N. 2009. Evaluating the relative importance of patch quality and connectivity in a damselfly metapopulation from a one-season survey. *Oikos* 118:67-76.
95. Bharti, N., Xia, Y., Bjornstad, O.N. and Grenfell, B.T. 2008. Measles on the Edge: Coastal Heterogeneities and Infection Dynamics. *PLoS ONE* 3(4): e1941 doi:10.1371/journal.pone.0001941.
94. Restif, O., Wolfe, D.N., Goebel, E.M., Bjornstad, O.N., and Harvill, E.T. 2008. Of mice and men: asymmetric interactions between *Bordetella* pathogen species. *Parasitology* 135:1517-1529. doi:10.1017/S0031182008000279.
93. Bjørnstad, O.N. and Grenfell, B.T. 2008. Hazards, spatial transmission and timing of outbreaks in epidemic metapopulations. *Environmental and Ecological Statistics* 15: 265-277. doi:10.1007/s10651-007-0059-3
92. Cornell, S.J., Bjornstad, O.N., Cattadori, I.M., Boag, B. and Hudson, P.J. 2008. Seasonality, cohort-dependence and the development of immunity in a natural host-nematode system. *Proceedings of the Royal Society of London Series B* 275: 511-518.
91. Ferrari, M.J., Grais, R.F., Conlan, A.J.K., Bharti, N., Bjornstad, O.N., Wolfson, L.J., Guerin, P.J., Djibo, A. and Grenfell, B.T. 2008. Seasonality, stochasticity and the dynamics of measles in sub-Saharan Africa. *Nature* 451: 679-684. (Full length article)
90. Pomeroy, L.W., Bjornstad, O.N. and Holmes, E.C. 2008. The evolutionary and epidemiological dynamics of the Paramyxoviridae. *Journal of Molecular Evolution* 66:98-106.
89. Satake, A. and Bjørnstad, O.N. 2008. A resource budget model to explain intraspecific variation in mast reproductive dynamics. *Ecological research* 23: 3-10. 2009 Recipient of the 'Ecological Research Award' from the Ecological Society of Japan.
88. Grais, R.F., Conlan, A.J.K., Ferrari, M.J., Djibo, A., Le Menach, A., Bjørnstad, O.N. and Grenfell, B.T., 2008. Time is of the essence: Exploring a measles outbreak response vaccination in Niamey, Niger. *Journal of the Royal Society Interface* 5:67-74.
87. Wolfe, D.N., Goebel, E.M., Bjornstad, O.N., Restif, O. and Harvill, E.T. 2007. O-antigen enables *Bordetella parapertussis* to avoid *Bordetella pertussis*-Induced Immunity. *Infection and Immunity* 75: 4972-4979.
86. Graham, A.L., Cattadori, I.M., Lloyd-Smith, J.O, Ferrari, M.J. and Bjørnstad, O.N. 2007. Transmission consequences of coinfection: cytokines writ large? *Trends in Parasitology* 23: 284-291.
85. Yamanaka, T., Tanaka, K. Otuka, A. and Bjørnstad, O.N. 2007. Detecting spatial structures and interactions in the ragweed (*Ambrosia artemissifolia* L.) and the ragweed beetle (*Ophraella communa* LeSage) populations. *Ecological research* 22: 185-196. 2008 Recipient of the 'Ecological Research Award' from the Ecological Society of Japan.
84. Tobin, P.C., Whitmire, S., Johnson, D.M., Bjørnstad, O.N. and Liebhold, A.M. 2007. Invasion speed is affected by geographic variation in the strength of Allee effects. *Ecology Letters* 10:36-43. doi: 10.1111/j.1461-0248.2006.00991.x
83. Viboud, C., Miller, M.A., Grenfell, B.T., Bjørnstad, O.N. and Simonsen, L. 2006. Air Travel and the Spread of Influenza: Important Caveats. *PloS Medicine* 3: 2159-2960.

82. Johnson, D.M., Liebhold, A.M., Tobin, P.C and Bjørnstad, O.N. 2006. Allee effects and pulsed invasion by the gypsy moth. *Nature* 444: 361-363. doi:10.1038/nature05242
81. Ferrari, M.J., Bansal, S., Myers, L.A. and Bjørnstad, O.N. 2006. Network frailty and the geometry of herd immunity. *Proceedings of the Royal Society of London Series B* 273:2743-2748.
80. Ferrari, M., Bjørnstad, O.N., Partain, J. and Antonovics, J. 2006. A gravity model for the spread of a pollinator-borne plant pathogen. *American Naturalist* 168: 294-303.
79. Viboud, C., Bjørnstad, O.N., Smith, D.L., Simonsen, L., Miller, M.A. and Grenfell, B.T. 2006. Synchrony, waves and spatial hierarchies in the spread of influenza. *Science* 312: 447-451.
78. Johnson, D.M., Liebhold, A.M. and Bjørnstad, O.N. 2006. Geographical variation in the periodicity of gypsy moth outbreaks. *Ecography* 29:367-374. doi:10.1111/j.2006.0906-7590.04448.x
77. Grenfell, B.T., Williams, C.S., Bjørnstad, O.N. and Banavar, J.R. 2006. Simplifying biological complexity. *Nature Physics* 2: 212-214.
76. Grais, R.F., Ferrari, M.J., Dubray, C., Bjørnstad, O.N., Grenfell, B.T., Djibo, A., Fermon, F. and Guerin, P.J. 2006. Estimating transmission intensity for a measles epidemic in Niamey, Niger: lessons for intervention. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 100: 867-873.
75. Johnson, D.M., Bjørnstad, O.N. and Liebhold, A.M. 2006. Landscape mosaic induces traveling waves of insect outbreaks. *Oecologia* 148: 51-60.
74. Liebhold, A.M, Johnson, D.M. and Bjørnstad, O.N. 2006. Geographic variation in density-dependent dynamics impacts the synchronizing effect of dispersal and regional stochasticity. *Population Ecology* 48:131-138. doi:10.1007/s10144-005-0248-6
73. Økland, B., and Bjørnstad, O.N. 2005. A resource depletion model of forest insect outbreaks. *Ecology* 87: 283-290.
72. Kirimanjeswara, G.S., Agosto, L.M., Kennett, M.J., Bjørnstad, O.N. and Harvill, E.T. 2005. Pertussis toxin inhibits neutrophil recruitment to delay antibody-mediated clearance of *Bordetella pertussis*. *Journal of Clinical Investigation* 115: 3594-3601.
71. Ferrari, M.J. Bjørnstad, O.N. and Dobson, A.P. 2005. Estimation and inference for R0 of an infectious pathogen using a removal method. *Mathematical Bioscience* 198: 14-26.
70. Bjørnstad, O.N. and Harvill, E.T. 2005. Evolution and emergence of *Bordetella* in humans. *Trends in Microbiology* 13: 355-359.
69. Tobin, P.C. and Bjørnstad, O.N. 2005. Roles of dispersal, stochasticity, and nonlinear dynamics in the spatial structuring of seasonal natural enemy-victim populations. *Population Ecology* 47: 221-227.
68. Økland, B., Liebhold, A.M, Bjørnstad, O.N., Erbilgin, N. and Krokene, P. 2005. Are bark beetle outbreaks less synchronous than forest Lepidoptera outbreaks? *Oecologia* 146: 365-372.
67. Humston, R., Mortensen, D.A. and Bjørnstad, O.N. 2005. Anthropogenic forcing on the spatial dynamics of an agricultural weed: the case of the common sunflower. *Journal of Applied Ecology* 42: 863-872.



66. Grenfell, B.T. and Bjørnstad, O.N. 2005. Sexually transmitted diseases: Epidemic cycling and immunity. *Nature* 433: 366-367.
65. Zhou, G., Sirichaisinthop, J., Sattabongkot, J., Jones, J., Bjørnstad, O. N., Yan, G. and Cui, L. 2005. Spatio-temporal distribution of falciparum and vivax malaria in Thailand. *American Journal of Tropical Medicine and Hygiene* 72: 256-262.
64. Johnson, D.M., Liebhold, A.M., Bjørnstad, O.N. and McManus, M.L. 2005. Circumpolar variation in periodicity and synchrony among gypsy moth populations. *Journal of Animal Ecology* 74: 882-892.
63. Cattadori, I.M., Boag, B., Bjørnstad, O.N., Cornell, S.J. and Hudson, P.J. 2005. Peak shift and epidemiology in a seasonal host-nematode system. *Proceedings of the Royal Society of London Series B* 272: 1163-1169.
62. Seabloom, E.W., Bjørnstad, O. N., Bolker, B.M and Reichman, O.J. 2005. The spatial signature of environmental heterogeneity, dispersal, and competition in successional grasslands. *Ecological Monographs* 75: 199-214.
61. Johnson, D.M., Bjørnstad, O.N. and Liebhold, A.M. 2004. Landscape geometry and traveling waves in the larch budmoth. *Ecology Letters* 7: 967-974. doi:10.1111/j.1461-0248.2004.00659.x
60. Bjørnstad, O. N., R. M. Nisbet, and J.-M. Fromentin. 2004. Trends and cohort resonant effects in age-structured populations. *Journal of Animal Ecology* 73: 1157–1167.
59. Xia, Y., Bjørnstad, O.N. and Grenfell, B.T. 2004. Measles metapopulation dynamics: a gravity model for pre-vaccination epidemiological coupling and dynamics. *American Naturalist* 164: 267-281.
58. Clark, J. S. and Bjørnstad, O. N. 2004. Population inference from messy data: errors, missing and hidden states, and lagged responses. *Ecology* 85: 3140–3150. doi:10.1890/03-0520
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54. Liebhold, A., Sork, V., Peltonen, M., Koenig, W., Bjørnstad, O.N., Westfall, R., Elkinton, J., & Knops, J.M.H. 2004. Within-population spatial synchrony in mast seeding of North American oaks. *Oikos* 104: 156-164. doi:10.1111/j.0030-1299.2004.12722.x
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52. Økland, B. and Bjørnstad, O. N. 2003. Synchrony and geographical variation of the spruce bark beetle (*Ips typographus*) during a non-epidemic period. *Population Ecology* 45:213-219.

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48. Fromentin, J.-M., Bjørnstad, O.N., Stenseth, N.C. and Gjøsæter, J. 2002. Dynamics of the Norwegian Skagerrak cod: intuition vs inference. *Marine Ecological Progress Series* 241: 231-234.
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46. Finkenstädt, B., Bjørnstad, O.N. & Grenfell, B.T. 2002 A stochastic model for extinction and recurrence of epidemics: estimation and inference for measles outbreaks. *Biostatistics* 3: 493-510.
45. Keitt, T.H., Bjørnstad, O.N., Dixon, P. & Citron-Pousty, S. 2002. Accounting for spatial pattern when modeling organism-environment interactions. *Ecography* 25: 616-625.
44. Rees, M., Kelly, D. & Bjørnstad, O.N. 2002. Snow tussocks, chaos and the evolution of mast seeding. *American Naturalist* 160: 44-59.
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42. Bjørnstad, O.N. & Grenfell, B.T. 2001. Noisy clockwork: time series analysis of population fluctuations in animals. *Science* 293: 638-643. (invited review article).
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39. Bjørnstad, O. N. and Falck, W. 2001. Nonparametric spatial covariance functions: estimation and testing. *Environmental and Ecological Statistics* 8: 53-70.
38. Bjørnstad, O.N. 2001. Chitty cycles - at last! *Trends in Ecology and Evolution* 16:72.
37. Bjørnstad, O.N. 2001. Trading space for time in population dynamics. *Trends in Ecology and Evolution* 16:124.
36. Bjørnstad, O.N. 2001. Solving seasonal puzzles. *Trends in Ecology and Evolution* 16:485-486
35. Grenfell, B.T., Bjørnstad, O.N., & Kappey, J. 2001. Travelling waves and spatial hierarchies in measles epidemics. *Nature* 414: 716-723. (Full length article)
34. Fromentin, J.-M., Myers, R. A., Bjørnstad, O. N., Stenseth, N. C., Gjøsæter, J. & Christie, H. 2001. Effects of density-dependent and stochastic processes on the regulation of cod populations. *Ecology* 82: 567-579.

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20. Bjørnstad, O.N., Andreassen, H. P. and Ims, R. A. 1998b Effects of habitat patchiness and connectivity on the spatial ecology of the root vole (*Microtus oeconomus*). *Journal of Animal Ecology* 67:127-141.
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17. Kendall, B. E., Prendergast, J. and Bjørnstad, O. N. 1998. The macroecology of population dynamics: animal population cycles in the Northern hemisphere. *Ecology Letters* 1:160-164.
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15. Stenseth, N.C., Falck, W., Chan, K.-S., Bjørnstad, O.N., Tong, H., O'Donoghue, M., Boonstra, R., Boutin, S., Krebs, C. J. and Yoccoz, N. G. 1998b From pattern to process: phase- and density-dependence in the Canadian lynx cycle. *Proceedings of the National Academy of Science USA* 95:15430-15435. doi:10.1073/pnas.95.26.15430
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 dynamics 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.

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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**

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. Pogliayen, 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**

February 13, 2014

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 7 book-chapters and 132 journal articles including 4 in *Nature*, 6 in *Science*, and 5 in *PNAS*. Dr Bjornstad's work has been cited more than 8,250 times according to Google Scholar; H-factor: 52; i10-index:103. Bjornstad'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)

## **INVITED SEMINARS**

### 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

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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 Entomology, PennState, Pennsylvania. January 2000.

1999

Dept Biology, PennState, Pennsylvania. December 1999.

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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. 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)

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

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. Albuquerque, 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. Albuquerque, 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. Albuquerque, 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. Albuquerque, 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. Albuquerque, 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. Albuquerque, 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. Albuquerque, 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

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- 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.

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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-

### 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-

### Honors students

Erica Foley	2006
Adam L Moyer	2007

## TEACHING

### Massive Online Open Courses (MOOC)

2013 “Epidemics - the Dynamics of Infectious Diseases” *Coursera* October 15th – December 8<sup>th</sup>, 2013. <https://www.coursera.org/course/epidemics> , <https://twitter.com/epidemicsMOOC>, <https://www.facebook.com/epidemicsMOOC>. Registered students: 35,561.

### 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).

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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).

### Courses

BIO 220 Ecology of Populations and Communities – Honors (3 cr) Spring 2012, '13, '14  
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.

### **EXTERNAL PHD EXAMINER ('OPPONENT')**

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 Supérieure 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 architectural 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)

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University task force on Cyber-infrastructure (2010)

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, chair: 2009/10)  
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:

Angela Anders (committee: PhD Biology)	2003-2007
David Bell (committee: PhD Entomology)	2003-2005
Nita Barthi (committee chair: PhD Biology)	2008-2010
Tiffany Bogich (committee: MSc Ecology)	2005-2006
Shi Chen (committee: PhD Entomology)	2007-2011
Joseph Dauer (committee: MSc & PhD Ecology)	2003-2007
Sharon DeWitte (committee: PhD Anthropology)	2002-2006
Alicia Ellis (committee: MSc Biology)	2001-2002
Elizabeth Goebel (committee: PhD Vet Sci)	2007-2008
Amy Griffin (committee: PhD Geography)	2001-2004
Roman Jandarov (committee: PhD Statistics)	2009-
Laura Russo (committee: PhD Ecology)	2009-2013
Tom Raffell (committee: PhD Biology)	2002-2006
Emily Rauschert (committee: PhD Ecology)	2003-2006
Dietmar Schwarz (committee: PhD Entomology)	2001-2005
Conrad Stack (committee chair: PhD Biology)	2008-2012
Brittany J. Teller (committee: PhD Ecology)	2009-
Patrick Tobin (committee: PhD Entomology)	2001-2002
Kurt Vandegrift (committee: PhD Biology)	2006-2008
Ruscena Wiederholt (committee: PhD Ecology)	2007-2010
Rui Zhang (committee: PhD Biology)	2007-2011
Wanyi Zhu (committee: PhD Biology)	2007-2012
Petra Klepac (committee: PhD Woods Hole Oceanographic Institute)	2008
Sourya Shrestaa (committee co-chair: PhD U. Mich, Applied Maths)	2009