

DANIEL C. REUMAN

University of Kansas
Department of Ecology and Evolutionary Biology
Kansas Biological Survey
Higuchi Hall
Date of Birth: 5 Sept. 1974

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Citizenship: U.S.A.

Research Positions

Professor, University of Kansas, Lawrence, KS: March 2018 –
Senior Scientist, Kansas Biological Survey, Lawrence, KS: March 2018 –
Associate Professor, University of Kansas, Lawrence, KS: August 2014 – March 2018
Associate Scientist, Kansas Biological Survey, Lawrence, KS: August 2014 – March 2018
Visiting Research Scientist, Rockefeller University, New York, NY: August 2015 - present
Visiting Associate Professor, Rockefeller University, New York, NY: August 2014 – August 2015
Visiting Assistant Professor, Rockefeller University, New York, NY: June 2008 – August 2014
Senior Lecturer, Imperial College London, UK: June 2012 – August 2014
Lecturer, Imperial College London, UK: September 2007 – May 2012
Equivalent to a tenure-track Assistant Professor in the U.S.A.; tenured September 2010.
Research Associate, Laboratory of Populations, Rockefeller University, New York, NY: August 2006 – August 2007
Post-doctoral Associate, Laboratory of Populations, Rockefeller University, New York, NY: September 2002 – July 2006

Education

Ph.D., Mathematics, University of Chicago, Chicago, IL: July 1998 – August 2002
M.S., Mathematics, University of Chicago, Chicago, IL: September 1997 – June 1998
B.A., Mathematics, Harvard University, Cambridge, MA: September 1992 – June 1996
Magna Cum Laude.

Publications

*Corresponding author, when journal practice included corresponding author identification.

- 56) L.W. Sheppard*, E.J. Defriez, P.C. Reid, **D.C. Reuman***. 2019. Synchrony is more than its top-down and climatic parts: interacting Moran effects on phytoplankton in British seas. *PloS Computational Biology*, 15, e1006744. doi: 10.1371/journal.pcbi.1006744.
- 55) L. Zhao*, L.W. Sheppard, P.C. Reid, J.A. Walter, **D.C. Reuman***. 2019. Proximate determinants of Taylor's law slopes. *Journal of Animal Ecology* 88, 484-494. doi: 10.1111/1365-2656.12931.
- 54) T.L. Anderson*, L.W. Sheppard, J.A. Walter, S.P. Hendricks, T.L. Levine, D.S. White, **D.C. Reuman***. 2019. The dependence of synchrony on timescale and geography in freshwater plankton. *Limnology and Oceanography* 64, 483-502. doi: 10.1002/lno.11054.
- 53) R.A. Desharnais*, D.C. Reuman, R.F. Costantino, J.E. Cohen. 2018. Temporal scale of environmental correlations affects ecological synchrony. *Ecology Letters* 21, 1800-1811. doi: 10.1111/ele.13155.
- 52) T.L. Anderson*, J.A. Walter, T.D. Levine, S.P. Hendricks, K.L. Johnston, D.S. White, **D.C. Reuman***. 2018. Using geography to infer the importance of dispersal for the synchrony of freshwater plankton. *Oikos* 127, 403-414. doi: 10.1111/oik.04705.

- 51) E.J. O’Gorman*, L. Zhao, D.E. Pichler, G. Adams, N. Friberg, B.C. Rall, A. Seehey, H. Zhang, **D.C. Reuman***, G. Woodward*. 2017. Unexpected changes in community size structure in a natural warming experiment. *Nature Climate Change* 7, 659-663. doi: 10.1038/nclimate3368.
- 50) **D.C. Reuman***, L. Zhao, L.W. Sheppard, P.C. Reid, J.E. Cohen*. 2017. Synchrony affects Taylor’s law in theory and data. *Proceedings of the National Academy of Sciences* 114, 6788-6793. doi: 10.1073/pnas.1703593114
The subject of a commentary published concurrently in *PNAS*.
Featured on the cover of the journal issue.
- 49) J.A. Walter*, L.W. Sheppard, T.L. Anderson, J.H. Kastens, O.N. Bjørnstad, A.M. Liebhold, **D.C. Reuman***. 2017. The geography of spatial synchrony. *Ecology Letters* 20, 801-814. doi: 10.1111/ele.12782
- 48) E.J. Defriez, **D.C. Reuman***. 2017. A global geography of synchrony for terrestrial vegetation. *Global Ecology and Biogeography* 26, 878-888. doi: 10.1111/geb.12595
- 47) E.J. Defriez, **D.C. Reuman***. 2017. A global geography of synchrony for marine phytoplankton. *Global Ecology and Biogeography* 26, 867-877. doi: 10.1111/geb.12594
- 46) L.W. Sheppard*, P.C. Reid, **D.C. Reuman**. 2017. Rapid surrogate testing of wavelet coherences. *European Physical Journal, Nonlinear and Biomedical Physics* 5, 1. doi: 10.1051/epjnbp/2017000
- 45) R.E. Bowes, J.H. Thorp*, **D.C. Reuman**. 2017. Multivariate metrics of niche space for use with diverse analytical techniques. *Scientific Reports* 7, 41599. doi: 10.1038/srep41599
- 44) G.L. Adams, S. Jennings, **D.C. Reuman***. 2017. Community management indicators can conflate divergent phenomena: two challenges and a decomposition-based solution. *Journal of Applied Ecology* 54, 883-893. doi: 10.1111/1365-2664.12787
- 43) E. Defriez, L.W. Sheppard, P.C. Reid, **D.C. Reuman***. 2016. Climate-change-related regime shifts have altered spatial synchrony of plankton dynamics in the North Sea. *Global Change Biology* 22, 2069-2080. doi: 10.1111/gcb.13229
- 42) A.L. Signorile*, **D.C. Reuman**, P.W.W. Lurz, S. Bertolino, C. Carbone, J. Wang. 2016. Using DNA profiling to investigate human-mediated translocations of invasive species. *Biological Conservation* 195, 97-105. doi: 10.1016/j.biocon.2015.12.026
- 41) A.L. Signorile*, P.W.W. Lurz, J. Wang, **D.C. Reuman**, C. Carbone. 2016. Mixture or mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism. *Diversity and Distributions* 22, 566-577. doi: 10.1111/ddi.12424
- 40) L.W. Sheppard*, J. Bell, R. Harrington, **D.C. Reuman***. 2016. Changes in large-scale climate alter spatial synchrony of aphid pests. *Nature Climate Change* 6, 610-613. doi: 10.1038/nclimate2881.
Cover image of the journal issue.
- 39) G. Yvon-Durocher*, A.P. Allen, M. Cellamare, M. Dossena, K.J. Gaston, M. Leitao, J.M. Montoya, **D.C. Reuman**, G. Woodward, M. Trimmer. 2015. Five years of experimental warming increases the biodiversity and productivity of phytoplankton communities. *PLoS Biology* 13, e1002324. doi: 10.1371/journal.pbio.1002324. Available open access.
The subject of a commentary published concurrently in *PloS Biology*.
- 38) V.-P. Friman*, L.M. Guzman, **D.C. Reuman**, T. Bell. 2015. Bacterial adaptation to sublethal antibiotic gradients can change the ecological properties of multitrophic microbial communities. *Proceedings of the Royal Society B* 282, 20142920. doi: 10.1098/rspb.2014.2920.
- 37) A.L. Signorile, J. Wang, **D.C. Reuman**, S. Bertolino, P.W.W. Lurz. 2015. How population genetics can contribute to the management of grey squirrel invasions. In: C.M. Shuttleworth, P.W.W. Lurz, M. Hayward (Eds). *Red Squirrels: Ecology, Conservation & Management in Europe*. European Squirrel Initiative. England, UK.

- 36) A.L. Signorile*, J. Wang, P.W.W. Lurz, S. Bertolino, C. Carbone, **D.C. Reuman***. 2014. Do founder size, genetic diversity and structure influence rates of expansion of North American grey squirrels in Europe? *Diversity and Distributions* 20, 918-930. doi: 10.1111/ddi.12222. Available open access.
- 35) A.L. Signorile*, D. Paoloni, **D.C. Reuman***. 2014. Grey squirrels in central Italy: a new threat for endemic red squirrel subspecies. *Biological Invasions* 16, 2339-2350. doi: 10.1007/s10530-014-0668-3. Available open access.
- 34) **D.C. Reuman***, H. Gislason, C. Barnes, F. Mélin, S. Jennings. 2014. The marine diversity spectrum. *Journal of Animal Ecology* 83, 963-979. doi: 10.1111/1365-2656.12194. Available open access.
- The subject of a commentary published concurrently in *J Anim Ecol*.
- 33) **D.C. Reuman***, R.D. Holt, G. Yvon-Durocher. A metabolic perspective on competition and body-size reductions with warming. 2014. *Journal of Animal Ecology* 83, 59-69. doi: 10.1111/1365-2656.12064. Available open access.
- 32) G.L. Adams, D.E. Pichler, E.J. Cox, E.J. O’Gorman, A. Seeney, G. Woodward, **D.C. Reuman***. 2013. Diatoms can be an important exception to temperature-size rules at species and community levels of organization. *Global Change Biology* 19, 3540-3552. doi: 10.1111/gcb.12285. Available open access.
- Cover image of the journal issue.
- 31) R.M. Ewers*, R.K. Didham, W.D. Pearse, V. Lefebvre, I.M.D. Rosa, J.M.B. Carreiras, R.M. Lucas, **D.C. Reuman***. 2013. Using landscape history to predict biodiversity patterns in fragmented landscapes. *Ecology Letters* 16, 1221-1233. doi: 10.1111/ele.12160. Available open access.
- 30) L.N. Hudson*, **D.C. Reuman***. A cure for the plague of parameters: constraining models of complex population dynamics with allometries. 2013. *Proceedings of the Royal Society B* 280, 20131901. doi: 10.1098/rspb.2013.1901. Available open access.
- 29) B. García-Carreras*, **D.C. Reuman***. 2013. Are changes in the mean or variability of climate signals more important for long-term stochastic growth rate? *PLoS One* 8, e63974. doi: 10.1371/journal.pone.0063974. Available open access.
- 28) L.N. Hudson*, N.J.B. Isaac, **D.C. Reuman***. 2013. The relationship between body mass and field metabolic rate among individual birds and mammals. *Journal of Animal Ecology* 82, 1009-1020. doi: 10.1111/1365-2656.12086. Available open access.
- 27) O.R. Wearn, **D.C. Reuman**, R.M. Ewers*. 2013. Response to Halley *et al.* comment on 'Extinction debt and windows of conservation opportunity in the Brazilian Amazon.' *Science* 339, 271.
- 26) W.J. Sutherland*, R.P. Freckleton, H.C.J. Godfray, S.R. Beissinger, T. Benton, D.D. Cameron, Y. Carmel, D.A. Coomes, T. Coulson, M.C. Emmerson, R.S. Hails, G.C. Hays, D.J. Hodgson, M.J. Hutchings, D. Johnson, J.P.G. Jones, M.J. Keeling, H. Kokko, W.E. Kunin, X. Lambin, O.T. Lewis, Y. Mahli, N. Mieszkowska, E.J. Milner-Gulland, K. Norris, A.B. Phillimore, D.W. Purves, J.M. Reid, **D.C. Reuman**, K. Thompson, J.M.J. Travis, L.A. Turnbull, D.A. Wardle, T. Wiegand. 2013. Identification of 100 fundamental ecological questions. *Journal of Ecology* 101, 58-67. doi: 10.1111/1365-2745.12025. Available open access.
- 25) L.N. Hudson*, R. Emmerson, G. Jenkins, K. Layer, M.E. Ledger, D. Pichler, M. Thompson, E. O’Gorman, G. Woodward, **D.C. Reuman**. 2013. Cheddar – analysis and visualization of ecological communities in R. *Methods in Ecology and Evolution* 4, 99-104. doi: 10.1111/2041-210X.12005. Available open access.
- Cover image of the journal issue.
- 24) E.J. O’Gorman, D.E. Pichler, G. Adams, J.P. Benstead, H. Cohen, N. Craig, W.F. Cross, B.O.L. Demars, N. Friberg, G.M. Gíslason, R. Gudmundsdóttir, A. Hawczak, J.M. Hood, L.N. Hudson, L. Johansson, M. Johansson, J.R. Junker, A. Laurila, J.R. Manson, E. Mavromati, D. Nelson, J.S. Ólafsson, D.M. Perkins, O.L. Petchey, M. Plebani, **D.C.**

- Reuman**, B.C. Rall, R. Stewart, M.S.A. Thompson, G. Woodward. 2012. Impacts of warming on the structure and functioning of aquatic communities: individual- to ecosystem-level responses. *Advances in Ecological Research* 47, 81-176. doi: 10.1016/B978-0-12-398315-2.00002-8.
- 23) O.R. Wearn, **D.C. Reuman**, R.M. Ewers*. 2012. Extinction debt and windows of conservation opportunity in the Brazilian Amazon. *Science* 327, 228-232. doi: 10.1126/science.1219013.
The subject of a commentary published concurrently in *Science*.
Covered in *Nature News*, 12 July 2012, as well as numerous popular-press venues including *The Guardian* and the *Huffington Post*.
- 22) G. Woodward*, L.E. Brown, F. Edwards, L.N. Hudson, A.M. Milner, **D.C. Reuman**, M.E. Ledger*. 2012. Climate change impacts in multispecies systems: Drought alters food web size structure in a field experiment. *Philosophical Transactions of the Royal Society B* 367, 2990-2997. doi: 10.1098/rstb.2012.0245.
- 21) N. Bunnefeld*, **D.C. Reuman**, D. Baines, E.J. Milner-Gulland. 2011. Impact of unintentional selective harvesting on the population dynamics of red grouse. *Journal of Animal Ecology* 80, 1258-1268. doi: 10.1111/j.1365-2656.2011.01862.x.
- 20) B. García-Carreras, **D.C. Reuman***. 2011. An empirical link between the spectral colour of climate and the spectral colour of field populations in the context of climate change. *Journal of Animal Ecology* 80, 1042-1048. doi: 10.1111/j.1365-2656.2011.01833.x.
Covered in Nature Research Highlights, *Nature* 472, 138-139, as well as numerous popular-press venues.
In the top 10 most read papers in *JAE* online, December 2010.
- 19) G. Yvon-Durocher, J. Reiss, J. Blanchard, B. Ebenman, D. Perkins, **D.C. Reuman**, A. Thierry, G. Woodward, O. Petchey. 2011. Across-ecosystem comparisons of size-structure: Methods, approaches, and prospects. *Oikos* 120, 550-563. doi: 10.1111/j.1600-0706.2010.18863.x.
- 18) G. Woodward, J.P. Benstead, O.S. Beveridge, J. Blanchard, T. Brey, L. Brown, W.F. Cross, N. Friberg, T.C. Ings, U. Jacob, S. Jennings, M.E. Ledger, A.M. Milner, J.M. Montoya, E. O’Gorman, J.M. Olesen, O.L. Petchey, D.E. Pichler, **D.C. Reuman**, M.S. Thompson, F.J.F. van Veen, G. Yvon-Durocher. 2010. Ecological networks in a changing climate. *Advances in Ecological Research* 42, 71-138. doi: 10.1016/S0065-2504(10)42002-4.
- 17) U. Görtz, T.J. Haines, R.E. Kottwitz, **D.C. Reuman**. 2010. Affine Deligne-Lusztig varieties in affine flag varieties. *Compositio Mathematica* 146, 1339-1382. doi: 10.1112/S0010437X10004823.
- 16) C. Barnes*, D. Maxwell, **D.C. Reuman**, S. Jennings. 2010. Global patterns in predator-prey size relationships reveal size-dependency of trophic transfer efficiency. *Ecology* 91, 222-232. doi: 10.1890/08-2061.1.
- 15) J.E. Cohen*, D.N. Schittler, D. Raffaelli, **D.C. Reuman***. 2009. Food webs are more than the sum of their tri-trophic parts. *Proceedings of the National Academy of Sciences* 106, 22335-22340. doi: 10.1073/pnas.0910582106.
- 14) E. Nicholson*, G.M. Mace, P.R. Armsworth, G. Atkinson, S. Buckle, T. Clements, R.M. Ewers, J.E. Fa, T.A. Gardner, J. Gibbons, R. Grenyer, R. Metcalfe, S. Mourato, M. Muûls, D. Osborn, L. Peck, **D.C. Reuman**, C. Watson, E.J. Milner-Gulland*. 2009. Priority research areas for ecosystem services in a changing world. *Journal of Applied Ecology* 46, 1139-1144. doi: 10.1111/j.1365-2664.2009.01716.x.
- 13) M. Boots*, D. Childs, **D.C. Reuman**, M. Meador. 2009. Local interactions lead to pathogen driven change to host population dynamics. *Current Biology* 19, 1660-1664. doi: 10.1016/j.cub.2009.07.070.
- 12) **D.C. Reuman**, C. Mulder, C. Banašek-Richter, M.-F. Cattin Blandenier, A.M. Breure, H.A. Den Hollander, J.M. Kneitel, D. Raffaelli, G. Woodward, J.E. Cohen. 2009.

- Allometry of body size and abundance in 166 food webs. *Advances in Ecological Research* 41, 1-44. doi: 10.1016/S0065-2504(09)00401-2.
- 11) **D.C. Reuman**, J.E. Cohen, C. Mulder. 2009. Human and environmental factors influence soil food webs' abundance-mass allometry and structure. *Advances in Ecological Research* 41, 45-85. doi: 10.1016/S0065-2504(09)00402-4.
 - 10) J.E. Cohen*, M. Roig, **D.C. Reuman**, C. GoGwilt. 2008. International migration beyond gravity: a statistical model for use in population projections. *Proceedings of the National Academy of Sciences* 105:40, 15269-15274. doi: 10.1073/pnas.0808185105.
 - 9) **D.C. Reuman***, C. Mulder, D. Raffaelli, J.E. Cohen. 2008. Three allometric relations of population density to body mass: Theoretical integration and empirical tests in 149 food webs. *Ecology Letters* 11, 1216-1228. doi: 10.1111/j.1461-0248.2008.01236.x.
 - 8) **D.C. Reuman***, R.F. Costantino, R.A. Desharnais, J.E. Cohen. 2008. Colour of environmental noise affects the nonlinear dynamics of cycling, stage-structured populations. *Ecology Letters* 11, 820-830. doi: 10.1111/j.1461-0248.2008.01194.x.
 - 7) **D.C. Reuman***, R.A. Desharnais, R.F. Costantino, O. Ahmad, J.E. Cohen*. 2006. Power spectra reveal the influence of stochasticity on nonlinear population dynamics. *Proceedings of the National Academy of Sciences* 103:49, 18860-18865. doi: 10.1073/pnas.0608571103.
 The subject of a commentary published concurrently in *PNAS*.
 In the top 20 most read papers in *PNAS* online, December 2006.
 - 6) U. Brose*, T. Jonsson, E.L. Berlow, P. Warren, C. Banašek-Richter, L.-F. Bersier, J.L. Blanchard, T. Brey, S.R. Carpenter, M.-F. Cattin Blandenier, L. Cushing, H.A. Dawah, T. Dell, F. Edwards, S. Harper-Smith, U. Jacob, M.E. Ledger, N.D. Martinez, J. Memmott, K. Mintenbeck, J.K. Pinnegar, B. C. Rall, T. Rayner, **D.C. Reuman**, L. Ruess, W. Ulrich, R.J. Williams, G. Woodward, J.E. Cohen. 2006. Consumer-resource body-size relationships in natural food webs. *Ecology* 87:10, 2411-2417. doi: 10.1890/0012-9658(2006)87[2411:CBRINF]2.0.CO;2.
 - 5) U. Görtz, T.J. Haines, R.E. Kottwitz, **D.C. Reuman**. 2006. Dimensions of some affine Deligne-Lusztig varieties. *Annales Scientifiques de l'Ecole Normale Supérieure* 39:3, 467-511. doi : 10.1016/j.ansens.2005.12.004.
 - 4) **D.C. Reuman**, J. E. Cohen. 2005. Estimating relative energy fluxes using the food web, species abundance, and body size. *Advances in Ecological Research* 36, 137-182.
 - 3) **D.C. Reuman**, J.E. Cohen*. 2004. Trophic links' length and slope in the Tuesday Lake food web with species' body mass and numerical abundance. *Journal of Animal Ecology* 73, 852-866. doi: 10.1111/j.0021-8790.2004.00856.x.
 - 2) **D.C. Reuman**. 2004. Formulas for the dimensions of some affine Deligne-Lusztig varieties. *Michigan Mathematical Journal* 52:2, 435-451. doi: 10.1307/mmj/1091112084.
 - 1) **D.C. Reuman**. 2002. Determining whether certain affine Deligne-Lusztig sets are empty. [arXiv:math.RT/0211434](https://arxiv.org/abs/math/0211434)

Publicly Released Software

wsyn: Wavelet approaches to synchrony

A package for the R programming language, available from the Comprehensive R Archive Network (CRAN). Development version at <https://github.com/reumandc/wsyn>. Code was peer-reviewed by a CRAN reviewer.

Contributors: L.W. Sheppard, L. Zhao, T.L. Anderson, J.A. Walter, D.C. Reuman
 Maintainer: D.C. Reuman

tsvr: Timescale-specific variance ratio

A package for the R programming language, available from the Comprehensive R Archive Network (CRAN). Development version at <https://github.com/reumandc/tsvr>. Code was peer-reviewed by a CRAN reviewer.

Contributors: S. Wang, L. Zhao, D.C. Reuman

Maintainer: D.C. Reuman

mms: Model selection for matrix models

A package for the R programming language, available from

<https://github.com/reumanc/mms>

Contributors: J.A. Walter, T.L. Anderson, L. Zhao, D.C. Reuman

Maintainer: D.C. Reuman

Template for reproducible science

A template and compilation tools for using R, R markdown, and latex to carry out reproducible and transparent publishable analyses from data to paper, all steps automated and linked.

Available from <https://github.com/reumanc/ReproducibleScienceTemplate>

Contributors: D. Orme, D.C. Reuman

Maintainer: D.C. Reuman

pomp: Statistical inference for partially observed Markov processes

A package for the R programming language, available as “pomp” from the Comprehensive R Archive Network, and see <http://pomp.r-forge.r-project.org/> Code was peer-reviewed by a CRAN reviewer.

Contributors: A.A. King, C. Breto, S. Ellner, M.J. Ferrari, E.L. Ionides, B. Kendall, M. Lavine, D.C. Reuman, H. Wearing

Maintainer: A.A. King

cheddar: Analysis and visualization of ecological communities in R

A package for the R programming language, available as “cheddar” from the Comprehensive R Archive Network, and see <http://quicklizard99.github.com/cheddar/> Code was peer-reviewed by a CRAN reviewer.

Contributors: L.H. Hudson, D.C. Reuman, R. Emmerson

Maintainer: L.H. Hudson

gruyere: Multi-species population dynamics in the style of Yodzis & Innes 1992 (American Naturalist) in R

A package for the R programming language, available from

<http://quicklizard99.github.com/gruyere/>

Contributors: L.H. Hudson, D.C. Reuman

Maintainer: L.H. Hudson

Current and Past Funding

California Department of Fish and Wildlife Delta Science Program: 2019-2021

\$750,000 awarded, \$105,000 to the Reuman lab plus \$12,000 to cover Reuman travel, PI Andrew Rypel, co-PI Reuman.

Project title *Synchrony of native fish movements: synthesis science towards adaptive water management in the Central Valley*

National Science Foundation, standard grant: 2017-2020

\$450,000 awarded, \$426,000 to the Reuman lab, PI Reuman.

Project title *Collaborative research: Modelling and inference for spatiotemporal climate impacts on complex ecosystems.*

Long Term Ecological Research Network Communications Office of the National Center for Ecological Analysis and Synthesis: 2017-2019

\$106,000 awarded, PI Lauren Hallett, co-PI Reuman.

Working group proposal.

Project title *Synthesizing population and community synchrony to understand drivers of ecological stability across LTER sites.*

University of Kansas General Research Fund: 2016-2017

\$14,988.80 awarded, PI Reuman.

Project title *A foundation for the biogeography of synchrony.*

National Science Foundation, large grant: 2016 - 2019

>\$4M awarded, University of Kansas portion >\$2M, PI Jim Thorp, Reuman is co-I.
From the NSF Macrosystem Biology program.

Project title *Collaborative research: Hierarchical functioning of river macrosystems in temperate steppes - from continental to hydrogeomorphic patch scales.*

James S McDonnell Foundation Scholar Award in Complex Systems: 2016-2021

\$450,000 awarded total, all to the Reuman lab, PI Reuman.

Project title *Spatio-temporal climate impacts on complex ecosystems.*

Natural Environment Research Council of the United Kingdom, Large Grant: 2015-2019

>£2M awarded total, PI Guy Woodward, Reuman is visiting researcher.

Project title *Impacts of global warming in sentinel systems: from genes to ecosystems.*

University of Kansas, Tier II Strategic Funding: 2015

\$15,330, plus \$4,000 in complementary funding from the Departments of Ecology and Evolutionary Biology, Geography, and Mathematics and the Kansas Biological Survey, for a workshop, PI Reuman.

Project title *Spatio-temporal climate impacts on the ecosystems that support agriculture and fisheries.*

Natural Environment Research Council of the United Kingdom, Standard Grant: 2014 – 2017

>£1M awarded total, PI Samraat Pawar, co-Is include Reuman.

Project title *Can metabolic traits limit species invasions under climate change?*

National Science Foundation, standard grant: 2012 – 2017

\$600,000 from the Division of Mathematical Sciences Mathematical Biology Program, PI Robert A. Desharnais. Reuman was a visiting researcher. This grant supported the US half a collaborative project, Reuman led the UK half, funded separately.

Project title *Synchrony in metapopulations at multiple time scales: theory, experiments, and field data.*

Natural Environment Research Council of the United Kingdom, Quota Studentship: 2012 – 2015

£60,000 + tuition funding to support a PhD student. PI Reuman.

Project title *Are complex ecosystems under global change inherently less predictable at population, species, structural, and functional levels?*

Natural Environment Research Council of the United Kingdom, Standard Grant: 2011 – 2015

£505,308 award, PI Reuman.

Project title *Synchrony in metapopulations at multiple time scales: theory, experiments, and field data.*

Tied PhD student also funded for the project *Synchrony in marine plankton metapopulations and the effects of climate.*

Natural Environment Research Council of the United Kingdom, Standard Grant: 2011 – 2014

£726,552 award total, PI Guy Woodward and other researchers at the Queen Mary University of London received £626,478, co-I Reuman received £100,074 for the theoretical component of the work, plus tuition and support for a tied PhD studentship.

Project title *Using individual metabolism and body size to predict climate warming impacts on aquatic food webs.*

Tied PhD student project *Biogeography of marine communities: Beyond food webs and the abundance spectrum.*

Natural Environment Research Council of the United Kingdom, Standard Grant: 2010 – 2013

£516,000 award total, PI Mark Trimmer and other researchers at the Queen Mary

University of London received £468,000, co-I Reuman received £48,000 for the theoretical component of the work.

Project title *Predictable feedbacks between warming, community structure and ecosystem functioning: a combined experimental and theoretical approach.*

Natural Environment Research Council of the United Kingdom, CASE award: 2009 – 2012

£67,000 + tuition competitive award to support a PhD student. PI Reuman.

Project title *Ecological and genetic determinants of the expansion of grey squirrel populations in Italy and Britain.*

CASE partner Institute of Zoology provides additional funding.

Microsoft Research: 2009 – 2012

£69,000 + tuition and computing equipment from a competitive award to support a PhD student. PI Reuman.

Project title *Unifying food web structure and dynamics with metabolic theory: a general and modular computational approach.*

Natural Environment Research Council of the United Kingdom, Quota Studentship: 2008 – 2011

£55,000 + tuition funding to support a PhD student. PI Reuman.

Project title *The global effects of climate change on population dynamics.*

Natural Environment Research Council of the United Kingdom, Working Group: 2007

Participant in a NERC-funded working group on predicting the effects of climate change on natural populations and communities, led by David Hodgson and Frank van Veen.

National Center for Ecological Analysis and Synthesis, Working Group: 2006 – 2009

Participant in an NCEAS-funded working group on unifying approaches to statistical inference in ecology, led by Aaron A. King and Pejman Rohani.

National Science Foundation, standard grant: 2005 – 2010

\$1,400,000 from the Division of Mathematical Sciences and the Directorate for Biological Sciences, PI Joel E. Cohen, co-PIs Robert A. Desharnais and Robert F. Costantino. Reuman, as a postdoc, played a substantial role in formulating ideas and helping write the grant, and his salary was funded by it.

Department of Mathematics, University of Chicago: September 1997 – August 2002

Full graduate tuition fellowship and stipend.

American Rewards for College Scientists: 2000, 2001

Two \$5000 merit-based rewards for excellence in graduate studies.

National Science Foundation: 1996

Honorable mention for graduate fellowship.

Awards and Honors

James S McDonnell Foundation Complex Systems Scholar: 2015-2021

American Rewards for College Scientists, Chicago, IL: 2000, 2001

Two annual merit-based \$5000 rewards for excellence in graduate studies.

CUE Award for excellent teaching, Harvard University, Boston, MA: June 1996

John Harvard Scholarship for Academic Excellence, Harvard University, Boston, MA: June 1996

Prize for an excellent lecture, Undergraduate Math Table, Harvard University, Boston, MA: 1995

Dividing a Square into Triangles.

Research Supervision

Postdoctoral Researcher Supervision

Shyamolina Ghosh, University of Kansas, October 2017 - present

Lawrence Sheppard, Imperial College London and University of Kansas: September

2011 - present

Tom Anderson, University of Kansas, May 2016 – January 2018

Tom went on to a postdoc position supported by a multi-million-dollar grant he helped write as a co-PI.

Lei Zhao, University of Kansas, January 2016 – May 2018

Lei went on to a permanent job as Associate Professor at China Agricultural University, in Beijing.

Jonathan Walter, University of Kansas, December 2015 – May 2017

Jon went on to an independent fellowship at the Nature Conservancy and the University of Virginia.

Brandon Mechtley, University of Kansas, August 2014 – July 2015

Brandon transitioned to a postdoc at Arizona State University on aspects of computing related to art and acoustic science.

PhD Supervision

Drew Wilson, Imperial College London, UK: Started October 2013

A laboratory model of habitat fragmentation and terrageny.

Second supervisor Tom Bell of Imperial College London, transferred to being fully supervised by Bell upon Reuman's departure from Imperial College.

Emma Defriez, Imperial College London, UK: September 2011 – May 2016

Synchrony in marine plankton metapopulations and the effects of climate.

Second supervisor Chris Reid of the Sir Alister Hardy Foundation for Ocean Science. Emma completed May 2016.

Georgina Adams, Imperial College London, UK: October 2011 – December 2015

Biogeography of marine communities: Beyond food webs and the abundance spectrum.

Second supervisor Simon Jennings of the Centre for Environment, Fisheries and Aquaculture Science.

Georgina completed December 2015 and went on to a postdoc with Tim Newbold and Ben Collen, University College London.

Julieta Decarre, Imperial College London, UK: January 2011 – June 2015

Effects of agricultural intensification on bird and mammal biodiversity in Chaco, Argentina.

Primary supervisor Chris Carbone of the Institute of Zoology.

Julieta completed June 2015 and went immediately to a research job at the Institute of Agricultural Technology, Argentina.

Lisa Signorile, Imperial College London, UK: October 2009 – January 2014

Ecological and genetic determinants of the expansion of grey squirrel populations in Italy and Britain.

Second supervisors Chris Carbone, Jinliang Wang, and Tony Sainsbury of the Institute of Zoology.

Lisa completed January 2014.

Lawrence Hudson, Imperial College London, UK: October 2009 – August 2012

Unifying food web structure and dynamics with metabolic theory: a general and modular computational approach.

Lawrence completed August 2012 and went immediately on to a postdoc in the Andy Purvis lab, Imperial College London.

Bernardo Garcia Carreras, Imperial College London, UK: October 2008 – Sept 2012

The global effects of climate change on population dynamics.

Bernardo completed September 2012 and went immediately to a research job at the Centre for Environment, Fisheries, and Aquaculture Science.

Masters Supervision

James Chris Terry, Imperial College London, UK, April 2014 – September 2014

- Detecting signatures of physiology in dynamics: direct tests of allometrically parameterized food web models.*
Became a PhD student at Oxford University.
- Simon Mills, Imperial College London, UK, April 2014 – September 2014
Measuring histories of habitat fragmentation using terrageny metrics offers fresh insight into fragmented landscapes
Became a PhD student at the University of Sheffield.
- Yaodong Yang, Imperial College London, UK, April 2014 - September 2014
Became a PhD student at the University of Southampton.
Primary supervisor James Rosindell.
- Laura Nunes, Imperial College London, UK, November 2012 – April 2013
Potential trends in the sensitivity of long term growth rate to changes in the mean and standard deviation of environmental conditions.
Became a PhD student at University College London.
- Melissa Guzman, Imperial College London, UK, November 2012 – April 2013
The inflationary effects of temporal autocorrelation provide persistence in multi-trophic sink metacommunities.
Became a PhD student at McGill University.
- Paul Russell, Imperial College London, UK, April 2012 – September 2012
Replicability of ecological community dynamics and the measures which characterize them: a study of innate variability in real and simulated communities.
Became a PhD student at Imperial College London.
- Shiyu Li, Imperial College London, UK, April 2012 – September 2012
On the relative importance of changes in the mean and variability of climatic signals for the long-term stochastic growth rate of an age-structured population.
- Rosemary Moorhouse-Gann, Imperial College London, UK, November 2011 – April 2011
An American invasion: the origins, genetic diversity, and population structure of the American grey squirrel in Cumbria.
Became a PhD student at the University of Cardiff.
- Harkiran Bhogal, Imperial College London, UK, November 2011 – April 2012
Temperature and optimal swimming speed in fish.
- Sean Webber, Imperial College London, UK, April 2011 – September 2011
Reconstructing the rise and demise of two squirrel species in Great Britain: Testing the role of forest cover.
- Dimitrios Nerantzis, Imperial College London, UK, April 2011 – September 2011
Predicting imposed chaos in the population dynamics of an insect species.
Became a PhD student at Imperial College London.
- Guo Heng Chin, Imperial College London, UK, April 2011 – September 2011
Abundance-occupancy relationships in deep-sea fish species.
Primary supervisor Julia Blanchard.
- Lavrentis Sidiropoulos, Imperial College London, UK, November 2011 – September 2011
Primary supervisor Alex Lord.
- Georgina Adams, Imperial College London, UK, May 2011 – September 2011
Body size and species composition of diatoms in Icelandic streams.
Became a PhD student at Imperial College London.
Secondary supervisors Guy Woodwad and Eileen Cox.
- Yangchen Lin, Imperial College London, UK, April 2010 – September 2010
The link between maximum likelihood and the forecast accuracy of mechanistic population models.
Became a PhD student at Cambridge University.

Yangchen won the Gerald Durrell award for best thesis in his MSc in his year.
 Yesim Dodlani, Imperial College London, UK, April 2010 – September 2010
Spatial and temporal scaling of the abundance spectrum.

Carmen Surriel-Melchor, Imperial College London, UK, April 2010 – June 2010
The effects of climate change on bird population dynamics in North America.

Marco Lusquinos, Imperial College London volunteer, UK, January 2010 – January 2011
 Volunteer student, MSc level.

Silvia Antonelli, Imperial College London, UK, April 2010 – September 2010
Modeling the eco-evolutionary dynamics of a temperature-dependent consumer-resource system.
 Primary supervisor Tim Barraclough.

Oliver Wearn, Imperial College London, UK, April 2009 – September 2009
Extinction debt in the Brazilian Amazon.
 Became a PhD student at Imperial College London.
 Primary supervisor Robert Ewers.

Lawrence Hudson, Imperial College London, UK: April 2009 – September 2009
Dynamics of complex food webs: Empirical verification of models.
 Became a PhD student at Imperial College London.

Yajun Sun, Imperial College London, UK: April 2008 – September 2008
Distributions of average species body masses in local community food webs.
 Became a PhD student at the University of Toronto.

Research Mentoring for Undergraduates

Thomas Gartman, University of Kansas, September 2018 - present

Madeleine Muller, University of Kansas, September 2018 – February 2019

Carter Pilch, University of Kansas, August 2016 – December 2016
Synchrony of five common amphibian species in Minnesota

Goma Karki, University of Kansas, June 2016 – July 2016
 The primary supervisor of this undergraduate summer research was my postdoc Jon Walter, I played a supporting role.

Jacob Peterson, University of Kansas, May 2015 – July 2015
Relationships between patterns of synchrony in taxonomically and ecologically similar species in the North Sea.

Emilie Tarouilly, Imperial College London, UK, March 2014 – June 2014
Environmental drivers of global synchrony in phytoplankton.

Sharmila Rana, Imperial College London, UK, March 2014 – June 2014
Is change in the mean or the variability of a climate variable more important for extinction risk in a density dependent population model?

Richard Clifton, Imperial college London, UK, March 2014 – June 2014
Can extinctions be predicted after anthropogenic perturbations to ecosystems?

Jonathan Chan, Imperial College London, UK: June 2013 – August 2013
Competition and the effects of temperature.

Sean Jordan, Imperial College London, UK: March 2013 – May 2013
Competition and the effects of temperature.

Alexander Kazhdan, Imperial College London, UK: March 2013 – May 2013
Predicting extinctions in food webs.

Lucy Li, Imperial College London, UK: March 2012 – May 2012
The predictive power of R^ in a two-predator one-prey Lotka-Volterra model.*

Timothy Saunders, Imperial College London, UK: March 2012 – May 2012
What are the most important questions in ecology for the 21st century?

Ryota Nakamura, Imperial College London, UK: April 2011 – June 2011
Murder rates are higher when the weather is warmer.

Andrew Brockman, Imperial College London, UK: April 2010 – June 2010

Are top predators really on top?
 Feng Wang, Imperial College London, UK: April 2010 – June 2010
Confidence intervals for population viability analysis.

Thomas Britton, Imperial College London, UK: April 2010 – June 2010
Latitudinal biodiversity gradients.

Edward Stephens, Imperial College London, UK: April 2009 – June 2009
An unwritten future: defining the global water shortage and the multidimensional crisis facing China's national security.

Cai GoGwilt, Rockefeller University, New York, NY: June 2007 – July 2007
Population models with mechanistic stochasticity.

Daniella Schittler, Rockefeller University, New York, NY: September 2006 – February 2007
Emergent properties of tri-trophic interactions and food chains in food webs with abundances and body masses.

PhD Examining and Panel Membership

Research Advisory Committee, Laura Podzikowski, University of Kansas Department of Ecology and Evolutionary Biology: January 2019 – present

Research Advisory Committee, Ligia Souza, University of Kansas Department of Ecology and Evolutionary Biology: October 2018 – present

Preliminary Advisory Meeting, Mayowa Ojo, University of Kansas Department of Ecology and Evolutionary Biology: February 2018

Research Advisory Committee, Laura Jimenez, University of Kansas Department of Ecology and Evolutionary Biology: January 2017 – present

Preliminary Advisory Meeting, Ligia Souza, University of Kansas Department of Ecology and Evolutionary Biology: 28 August 2017

Preliminary Advisory Committee, Theo Michaels, University of Kansas Department of Ecology and Evolutionary Biology: August 2015 – August 2016

Internal Examiner, Matthew Robb, Imperial College Department of Mathematics, UK: November 2013

External Examiner, Tak Ching Fung, Queen's University Belfast, UK: August 2013

Internal Examiner, Thomas Ezard, Imperial College London, UK: 13 December 2007

Internal Examiner, Edwin van Leeuwen, Royal Holloway University of London, UK: 17 July 2008

Progress Review Panel: Tin-Yu Hui, Imperial College London, UK, 2013-2016

Progress Review Panel: Aliénor Chauvenet, Imperial College London, UK, 2009-2012

Progress Review Panel: Matthew Robb, Imperial College Department of Mathematics, UK, 2009-2012

Progress Review Panel: Ana Bento, Imperial College London, UK, 2007 - 2011

Progress Review Panel: Sophie Bell, Imperial College London, UK, 2010 - 2014

Progress Review Panel: Jacques Deere, Imperial College London, UK, 2010 - 2013

Progress Review Panel: Diane Lawrence, Imperial College London, UK, 2009 - 2012

Progress Review Panel: Martina DiFonzo, Imperial College London, UK, 2008 – 2011

Progress Review Panel: Maren Rebke, Imperial College London, UK, 2007 – 2010

Teaching Experience

University of Kansas, Lawrence, KS: August 2014 – present
 Co-taught Biology 414, Principles of Ecology, Fall 2015, 2018
 Developed new Data Carpentry/Environmental Informatics course for Spring 2018, joint with Terry Loecke
 Developed new graduate Ecology course for Fall 2016, joint with Sharon Billings
 Co-taught Biology 499, Honors Research, Spring 2015

Imperial College London, UK: September 2007 – August 2014

Course Director for an MRes in Biodiversity Informatics and Genomics: October 2013 – September 2014

Responsible for running this one-year full time MRes course.

Teach modules on Computing in Biology and other materials as needed.

Supervised research students.

Course Director for an MSc in Quantitative Biology: October 2010 – September 2014

Designed and founded the course, with co-directors.

Responsible for running this one-year full time MSc course.

Taught modules on Maximum Likelihood; Inference for Mechanistic Models;

Complex Communities; Computing in Biology; and other materials as needed.

Supervise research students.

Designed and delivered lectures and practicals and wrote examination questions in:

Ecology, Behavior and Evolution: For first-year undergraduates. 2008-2013.

Population and Community Ecology: For third-year undergraduates. 2008-2014.

An MSc course in Conservation Science. 2008-2011.

An MSc course in Ecology, Evolution, and Conservation. 2008-2014.

Advances in Population and Community Ecology: For PhD students. 2008-2010.

Personal Tutor for several undergraduate students.

Meet periodically with each student.

First point of contact for academic and personal issues.

Volunteer Tutor, DOME project, New York, NY: December 2004 – June 2006

Served as a one-on-one, long term mentor and mathematics tutor.

Lecturer in Mathematics, University of Chicago, Chicago, IL: October 1999 – June 2002

Fully responsible for teaching seven undergraduate mathematics courses:

Elementary Calculus I, II: Basic calculus.

Calculus II, III: Introduction to calculus. Taught II twice.

Multivariable Calculus and Linear Algebra: For economics students.

Designed and delivered about 30 lectures over 10 weeks for each course, wrote exams, and supervised teaching assistants.

Math Reasoning Instructor, Johns Hopkins University Center for Talented Youth,

Clinton, NY: June 2000 – July 2000

Created and taught an intensive three week course in logic and mathematical reasoning for students of ages 13-15 years. Instructional time was 7 hours daily.

Teaching Fellow in Mathematics, University of Chicago, Chicago, IL: October 1998 – June 1999

Assessed students using homework, taught weekly review, lectured on special topics, and assisted students individually in an Honors Analysis course.

High School Teaching Intern, Casablanca American School, Casablanca, Morocco:

August 1996 – June 1997

Fully responsible for teaching high school mathematics and computer science courses:

International Baccalaureate Math Methods (calculus and other topics).

Several computer programming courses for 7-8th grade students.

Created and taught interactive units on Newtonian mechanics, philosophy of math, and electric motor construction, and assisted with instruction of 10-12th grade students.

Teaching Fellow in Mathematics, Harvard University, Cambridge, MA: January 1996 – June 1996, September 1993 – January 1993

Multivariable calculus; Elementary number theory.

Conferences organized

International Congress of Ecology Symposium organizer, Beijing, China, August 2017

Successfully proposed the Symposium in a competitive process

Symposia are the scientific centerpiece of an Intecol meeting.

Title *Modern synthetic approaches to Taylor's law and mean variance scaling, and applications in pure and applied ecology.*

National Center for Ecological Analysis and Synthesis Long Term Ecological Research Network Communications Office, Santa Barbara, CA, 2017

Working group proposal, PI Lauren Hallett, co-PIs Reuman and Katie Suding

Title *Synthesizing population and community synchrony to understand drivers of ecological stability across LTER sites*

Ecological Society of America Symposium organizer, Ft Lauderdale, FL, August 2016

Successfully proposed the Symposium in a competitive process, served as Moderator and was one of six speakers.

Symposia are the scientific centerpiece of an ESA meeting.

Title *What approaches to spatial synchrony are needed to understand human impacts on populations?*

Title of my talk *The biogeography of synchrony for primary production.*

Working-conference meeting organizer, University of Kansas, 29 June – 3 July 2015

Obtained funding, organized, and led the meeting.

Title *Spatio-temporal climate impacts on the ecosystems that support agriculture and fisheries.*

Environmental outreach

An invitation to action on climate change, Plymouth Congregational Church, Lawrence, Kansas, 2018

A six-week class on climate science and what citizens can do to combat climate change.

About 25-30 participants.

Climate change and what you can do about it, in a nutshell, Plymouth Congregational Church, Lawrence, Kansas, 2019

A three-week class on climate science, renewable energy certificates, and climate offsets.

Information was presented and participants were shown concretely how they can make their households net carbon neutral with offsets and renewable energy certificates.

A roadmap to carbon neutrality for households and small organizations, EcoRadioKC, KKFI, Kansas City, Kansas, 17 June 2019

I was interviewed for one hour on community radio.

Other professional service

Recommender/editor, Peer Community in Ecology, 2018 – present

Founding Chair of the University of Kansas EEB Department Sustainability Committee, 2019-present

Member of the University of Kansas College Academic Council, 2017-present

Member of the University of Kansas EEB Department Executive Committee, 2017-2019

Chair of the University of Kansas EEB Department Graduate Admissions Committee, 2017-2019

Member of the University of Kansas EEB Department Graduate Admissions Committee, 2014-2019

Member of University of Kansas EEB Department Infrastructure Committee, 2015-2016

Designed, founded and directed a new MSc degree stream in Quantitative Biology, October 2010 – September 2014

Member of the Imperial College Department of Life Sciences Research Strategy Committee, 2012 – 2014

Subject Editor, Oikos: 2010 – 2013

Selected Press Coverage

- Novel methodological tool helps detect synergistic phenomena in phytoplankton growth. 28 March 2019. PLOS press release. Coverage of Sheppard *et al.*, Synchrony is more than its top-down and climatic parts: interacting Moran effects on phytoplankton in British seas. Researcher studies importance of synchrony in ecological systems such as food webs. 14 May 2018. *KU News*.
- L'écureuil gris supplante le roux en Europe à cause... de l'homme. 31 January 2016. *Sciences et Avenir*. Coverage of Signorile *et al.*, Mixture or Mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism *and* Using DNA profiling to investigate human-mediated translocations of invasive species. Don't blame grey squirrels for invading the UK! Humans helped them spread, triggering a decline in the animal's red cousins. 27 January 2016. *Daily Mail*. Coverage of Signorile *et al.*, Mixture or Mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism *and* Using DNA profiling to investigate human-mediated translocations of invasive species.
- 11th Duke of Bedford blamed for unstoppable grey squirrel invasion. 26 January 2016. *The Telegraph*. Coverage of Signorile *et al.*, Mixture or Mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism *and* Using DNA profiling to investigate human-mediated translocations of invasive species.
- Bedford duke blamed for spread of grey squirrel in UK. 27 January 2016. *BBC News*. Coverage of Signorile *et al.*, Mixture or Mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism *and* Using DNA profiling to investigate human-mediated translocations of invasive species.
- Il “superscoiattolo” e i regali del Lord. 28 January 2016. *National Geographic Italy*. Coverage of Signorile *et al.*, Mixture or Mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism.
- There was extensive additional coverage online, in print, and on radio, of Signorile *et al.*, Mixture or Mosaic? Genetic patterns in UK grey squirrels support a human-mediated “long jump” invasion mechanism *and* Using DNA profiling to investigate human-mediated translocations of invasive species. Additional venues included ITV News, Scottish Express, Western Daily Press, Imperial College Press Office, Daily News Digest Email, @ImperialSpark, Imperial Today, Financial Times Magazine, Yorkshire Post, Milton Keynes Citizen, Market Business News, The Scotsman, Science 2.0, Bedford Today, Leighton Buzzard Observer, BT.com, Phys.org, Western Morning News, and Wildlife Articles.
- Climate change governs a crop pest, even when populations are far-flung. 7 December 2015. *KU News*. Coverage of Sheppard *et al.*, Changes in large-scale climate alter spatial synchrony of aphid pests.
- Climate change governs a crop pest, even when populations are far-flung. 10 December 2015. *Science News*. Coverage of Sheppard *et al.*, Changes in large-scale climate alter spatial synchrony of aphid pests.
- Climate change governs a crop pest, even when populations are far-flung. 7 January 2016. *News Wise*. Coverage of Sheppard *et al.*, Changes in large-scale climate alter spatial synchrony of aphid pests.
- Climate change governs a crop pest, even when populations are far-flung. 16 December 2015. *EnvironmentalResearchWeb*. Coverage of Sheppard *et al.*, Changes in large-scale climate alter spatial synchrony of aphid pests.

- Climate change governs a crop pest, even when populations are far-flung. 10 December 2015. *Technology.org*. Coverage of Sheppard *et al.*, Changes in large-scale climate alter spatial synchrony of aphid pests.
- Climate change governs a crop pest, even when populations are far-flung. 7 December 2015. *Phys.org*. Coverage of Sheppard *et al.*, Changes in large-scale climate alter spatial synchrony of aphid pests.
- Cell phones and cicadas: How KU researchers are learning more about the noisy insects. 18 June 2015. *6 News*. Coverage of field sampling program.
- KU scientists seek volunteers with smartphones to capture cicada call data. 16 June 2015. *KU News*. Coverage of field sampling program.
- Volunteers and cellphones needed to record cicadas. 16 June 2015. *41 KSHB Kansas City*. Coverage of field sampling program.
- Protecting mainland Europe from an invasion of grey squirrels. 5 June 2014. *ScienceDaily*. Coverage of Signorile *et al.*, Do founder size, genetic diversity and structure influence rates of expansion of North American grey squirrels in Europe?
- Protecting mainland Europe from an invasion of grey squirrels. 5 June 2014. *myScience*. Coverage of Signorile *et al.*, Do founder size, genetic diversity and structure influence rates of expansion of North American grey squirrels in Europe?
- Protecting mainland Europe from an invasion of grey squirrels. 5 June 2014. Imperial College press release by Gail Wilson. Coverage of Signorile *et al.*, Do founder size, genetic diversity and structure influence rates of expansion of North American grey squirrels in Europe?
- Amazon's extinction debt still to be paid. 12 July 2012. *Nature News*. Coverage of Wearn, Reuman & Ewers, Extinction debt and windows of conservation opportunity in the Brazilian Amazon.
- Amazon's doomed species set to pay deforestation's 'extinction debt'. 12 July 2012. *The Guardian*. Coverage of Wearn, Reuman & Ewers, Extinction debt and windows of conservation opportunity in the Brazilian Amazon.
- Amazon's endangered species face 'extinction debt'. 12 July 2012. *Huffington Post*. Coverage of Wearn, Reuman & Ewers, Extinction debt and windows of conservation opportunity in the Brazilian Amazon.
- Amazon due for numerous species extinctions. 12 July 2012. *LiveScience*. Coverage of Wearn, Reuman & Ewers, Extinction debt and windows of conservation opportunity in the Brazilian Amazon.
- Animals go "blue" with temperature. 14 April 2011. Nature Research Highlights, *Nature* 472 138-139. Coverage of García-Carreras & Reuman, An empirical link between the spectra colour of climate and the spectral colour of field populations in the context of climate change.
- Live radio interview of Bernardo García-Carreras by Jose Antonio Ponseti on the "Efectos Secundarios" program, Radio Caracol 1260, Miami, 26 April 2011. Coverage of García-Carreras & Reuman, An empirical link between the spectra colour of climate and the spectral colour of field populations in the context of climate change.
- L. Heredero. El cambio climático vuelve al entorno más "azul". 13 April 2011. *BBC Mundo*. Coverage of García-Carreras & Reuman, An empirical link between the spectra colour of climate and the spectral colour of field populations in the context of climate change.
- S. Pappas. Climate change linked to rapid species fluctuations. 6 April 2011. *LiveScience.com*. Coverage of García-Carreras & Reuman, An empirical link between the spectra colour of climate and the spectral colour of field populations in the context of climate change.
- B. Allen. Climate change is making our environment "bluer". 6 April 2011. British Ecological Society press release, appeared on *Science Newsline*. Coverage of García-

- Carreras & Reuman, An empirical link between the spectra colour of climate and the spectral colour of field populations in the context of climate change.
- J. Palmer. Slimming odds for emperor penguins. 26 January 2009. *BBC News online*. Asked for comments on Jenouvrier *et al.*, Demographic models and IPCC climate projections predict the decline of an emperor penguin population. *Proceedings of the National Academy of Sciences*.
- J. Berman. Scientists develop model for predicting international population migrations. 30 September 2008. *Voice of America Online*. Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.
- J. Marshall. Human Migration Patterns Get Global Forecast. 29 September 2008. *Discovery News*. Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.
- R. Twombly. New formula predicts how people will migrate in coming decades. 29 September 2008. *Rockefeller University Newswire*. Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.
- W. Dunham. New formula helps predict immigration patterns. 29 September 2008. *Reuters.com*. Coverage of Cohen *et al.*, International migration beyond gravity: a statistical model for use in population projections.
- R. Twombly. New means of predicting populations more accurately accounts for random influences. 11 December 2006. *Rockefeller University Newswire*. Coverage of Reuman *et al.*, Power spectra reveal the influence of stochasticity on nonlinear population dynamics.
- T.G. Benton. Revealing the ghost in the machine: Using spectral analysis to understand the influence of noise on population dynamics. 2006. *Proceedings of the National Academy of Sciences* 103:49, 18387-18388. Commentary on Reuman *et al.*, Power spectra reveal the influence of stochasticity on nonlinear population dynamics.

Additional Professional Training

Certificate of Advanced Study in Learning and Teaching, Imperial College London, UK: September 2008 – January 2011.

Conferences and Lectures

- Lecture, Ecological Society of America annual meeting, New Orleans, LA, August 2018
Moran effects cause major cycles in total deer populations and deer-vehicle collisions across Wisconsin.
- Invited lecture, Department of Biology, University of Florida, 27 February 2018
Studies of synchrony as examples of mathematics as biology's next microscope.
- Invited lecture, Department of Mathematics, University of Kansas, 29 November 2017
Connections between Taylor's power law of fluctuation scaling and population synchrony
- Lecture, Ecology and Evolutionary Biology department seminar, University of Kansas, 12 September 2017
Studies of synchrony as examples of mathematics as biology's next microscope.
- Invited lecture, Institute of Zoology, Chinese Academy of Sciences, Beijing, 22 August 2017
The geography of synchrony.
- Lecture, International Congress of Ecology, Beijing, August 2017
Effects of synchrony on Taylor's law.
- Invited lecture, Departmental Seminar, University of Texas, Austin, 23 January 2017
Structure and changes in metapopulation synchrony and their causes and consequences.
- Lecture, Ecological Society of America annual meeting, Ft. Lauderdale, FL, August 2016
The biogeography of synchrony for primary production.
Part of a Symposium entitled *What approaches to spatial synchrony are needed to understand human impacts on populations?*

- Invited lecture, Departmental Seminar, Kansas State University, 7 April 2016
A cure for the plague of parameters: Toward a mechanistic understanding of warming effects on whole communities.
- Lecture, Quantitative Lunch Seminar, University of Kansas, September 2015
A model exploring the effects of climate warming on competition in phytoplankton.
- Lecture, Ecological Society of America annual meeting, Baltimore, MD, August 2015
Ramification of spatial synchrony through a network of interactions in the North Sea
- Lecture, Red Hot Research lecture series, University of Kansas, 6 March 2015
Hierarchical systems and synchrony in biology and other fields.
- Invited lecture, Department of Mathematics, University of Kansas, 4 February 2015
Synchrony in populations and other dynamical systems.
- Lecture, Kansas Biological Survey, University of Kansas, 17 October 2014
The global biogeography of size-diversity relationships in coastal seas.
- Invited lecture, Ecology and Evolutionary Biology, University of Kansas, 29 January 2014
A cure for the plague of parameters: Toward a mechanistic understanding of warming effects on whole communities.
- Invited lecture, Department of Integrative Biology, Oklahoma State University, 5 November 2013
A cure for the plague of parameters: Toward a mechanistic understanding of warming effects on whole communities.
- Lecture, Intecol meeting, London, 21 August 2013
Competition and body size reductions with warming.
- Lecture, Section of Ecology and Evolution, Imperial College London, 19 November 2012
A more or less extemporaneous talk on effects of climate warming on competition.
- Invited lecture, Department of Mathematics, University of Surrey, 11 May 2012
How many species are in the sea and how big are they?
- Invited lecture, Department of Ecology and Evolution, University of Chicago, 29 April 2012
How many species are in the sea and how big are they?
- Invited lecture, Department of Ecology and Evolution, University of Chicago, 7 February 2012
A cure for the plague of parameters: constraining models of multi-species population dynamics with physiological and community allometries.
- Invited lecture, Department of Ecology and Evolution, University of Chicago, 6 February 2012
The marine diversity spectrum: How many species are in the sea and how big are they?
- Invited lecture, European Science Foundation workshop on Body-size and ecosystem dynamics, Institute for Hydrobiology and Fisheries Science, University of Hamburg, Hamburg, Germany: 13-15 April 2011.
The diversity spectrum.
- Lecture, Section of Ecology and Evolution, Imperial College London, 13 December 2010
How many species are in the sea and how big are they?
- Lecture, Mathematical biology seminar, Department of Mathematics, Imperial College London, 22 November 2010
How many species are in the sea and how big are they?
- Lecture, British Ecological Society annual meeting, University of Leeds, 7-9 September 2010
The marine diversity spectrum: Theory and empirical validation.
- Invited participant, workshop on Ecosystem-level effects of climate-change-induced phenological shifts, Durham University, 31 August – 2 September 2010
- Invited Lecture, Royal Entomological Society technology special interest group, Rothamsted Research, UK, 13 May 2010

- The blind men and the elephant: deciphering complex population dynamics using new tools for combining statistical perspectives.*
- Invited Lecture, Population Under Pressure Workshop, Imperial College London, UK: 26-28 May 2009
- Prediction is very difficult, especially about the future.*
- Invited Lecture, Institute for Mathematical Sciences, Complexity and Networks meeting, Imperial College London, UK: 20 May 2009
- Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?*
- Lecture, School of Biological Sciences, Royal Holloway University of London, UK: 18 February 2009
- The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.*
- Lecture, Institute of Zoology, Zoological Society of London, UK: 9 February, 2009
- Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?*
- Lectures, Department of Zoology, University of Florida, Gainesville, FL: 20, 22 January 2009
- Lecture 1: *Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?*
- Lecture 2: *The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.*
- Lecture, Center for Population Biology, Imperial College London, UK: 1 December 2008
- Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?*
- Lecture, Department of Biological Sciences, University of East Anglia, Norwich, UK: 10 September 2008
- Predicting abundance-body mass scaling in local community food webs: Big fierce animals are (usually) rare, but how rare?*
- Working group leader, European Science Foundation workshop on Body-size and ecosystem dynamics, Cambridge University, Cambridge, UK: 5-7 April 2008.
- Lecture, Center for Population Biology, Imperial College London, UK: 4 February 2008
- The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.*
- Invited lecture, Department of Animal and Plant Sciences, University of Sheffield, Sheffield, UK: 22 November 2007
- The blind men and the elephant: Deciphering population dynamics by combining statistical perspectives.*
- Invited participant, Natural Environment Research Council working group entitled Predicting the Effects of Climate Change on Natural Populations and Communities, Exeter, UK, April 2007, London, UK, November 2007
- Invited participant, National Center for Ecological Analysis and Synthesis working group entitled Unifying Approaches to Statistical Inference in Ecology, Santa Barbara, CA, March 2007, December 2007, June 2008, January 2009
- Invited lecture, 91st annual meeting of the Ecological Society of America, Memphis, TN: 6-11 August 2006
- Power spectra reveal the interactions among nonlinear population dynamics, stochasticity, and lattice effects.*
- Invited participant, Gordon Research Conference on the Metabolic Basis of Ecology, Lewiston, ME: 9-14 July 2006
- Poster: *Disturbance and fertilization shape diversity, abundance-body-mass relations, and biomass flux in 146 soil food webs.*

Invited lecture, Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ: 8 May 2006

Power spectra reveal the interactions among nonlinear population dynamics, stochasticity, and lattice effects.

Invited participant and lecturer, workshop on the analysis of entire networks of ecological interactions, Institute for Scientific Interchange Foundation, Turin, Italy: 11-13 January 2006

Food webs augmented with additional data: Structure and dynamics.

Invited lecture, Department of Biology at Bard College, Annandale-on-Hudson, NY: 17 October 2005

Food webs of the past, present and future: from static community description to predictive tool.

Lecture, International Association for Ecology Ninth International Congress of Ecology, Montreal, Canada: 9 August 2005

Estimating relative fluxes of energy in trophic links using the food web, species abundance, and body size.

Invited lecture, Center for Environmental Research and Conservation, Columbia University, New York, NY: 22 February 2005

Estimating relative fluxes of energy along trophic links using the food web, species abundance, and body size.

Lecture, Rockefeller Research Exchange, Rockefeller University, New York, NY: 17 February 2005

Frequency domain analysis of difference equation models of chaotic beetle population dynamics.

Invited participant and lecturer, International Advancement of Community Ecology Theory workshop in Cork, Ireland: 2-4 September 2004

Co-leader of the working group on trivariate patterns in food webs, and the estimation of energy fluxes.

Lecture: *Estimating relative flux along trophic links using trivariate data.*

Invited participant, Gordon Research Conference on the Metabolic Basis of Ecology, Lewiston, ME: 4-9 July 2004

Poster: *Length, slope and flux for trophic links in the Tuesday Lake food web with body mass and numerical abundance.*

Lecture, Biomathematics Lunchtime Seminar, Courant Institute of Mathematical Sciences, New York, NY: 2 March 2004

Frequency domain analysis of difference equation models of chaotic beetle population dynamics.

Invited participant and lecturer, Northeast Ecology and Evolution Conference, Rutgers University, New Brunswick, NJ: 11-13 April 2003

Lecture: *Testing stochastic models of population dynamics against data using the Fourier Transform.*

Poster: *Links in gourmet food webs: length and slope of links in food webs plotted on body mass versus numerical abundance coordinates.*

Invited participant, NSF/NIH Symposium on Accelerating Mathematical-Biological Linkages, Bethesda, MD: 12-13 February 2003

Invited participant, Santa Fe Institute workshop on Modeling and Simulating Biocomplexity for Mathematicians and Physicists, Santa Fe, NM: 4-9 August 2002

Attended American Mathematical Society Central Sectional Meeting, Ann Arbor, MI: 1-3 March 2002

Other Work Experience

Educational Development Consulting Intern, Khulisa Management Services,
Johannesburg, South Africa: June 2001 - December 2001

Undergraduate Researcher, Research Experience for Undergraduates, Mt. Holyoke College, South Hadley, MA: June 1995 – August 1995

Cryptographic Researcher, Director's Summer Program, National Security Agency, Ft. Meade, MD: June 1994 – August 1994