

Robin Elizabeth Snyder

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Positions Held

- 6/2018–present: Professor of Biology, Case Western Reserve University
- 6/2010–6/2018: Assoc. Professor of Biology, Case Western Reserve University
- 1/2004–6/2010: Asst. Professor of Biology, Case Western Reserve University
- 7/2001–12/31/03: Postdoctoral Researcher with Peter Chesson at University of California, Davis.

Education

- Ph.D. in statistical physics, U.C. Santa Barbara, June 2001. Dissertation title: “The Effects of Spatial Correlations and Demographic Stochasticity on Population Dynamics.” Advisor: Roger Nisbet.
- Certificate of Postgraduate Study in physics, 1993, Cambridge University.
- B.A. “with high honors” in physics, 1992, Oberlin College.

Honors and Awards

- American Society of Naturalists Presidential Award for best paper published in *The American Naturalist* in 2016
- UCSB Louis and Winifred Lancaster Award for the Best Dissertation in the Biological Sciences, 1999-2001
- Churchill Scholar—one year graduate fellowship at Cambridge University, 1992.
- Phi Beta Kappa, 1991.

Grants

- (NSF) Collaborative Research: A general approach to partitioning contributions from multiple drivers affecting individuals, populations, and communities. 3/1/20, \$148,711 for CWRU, PI for CWRU.

- (NSF) Collaborative Research: Integral Projection Models for Populations in Varying Environments: Construction and Analysis. 6/1/14, \$102,847 for CWRU, PI for CWRU.
- (NSF) ATB: Revealing structure via dynamics: biological networks from protein folding to food webs, 9/1/10, \$660,000, PI.
- (NSF) UBM: Undergraduate research at the interface of mathematics and biology, 9/2/06, \$239,995, PI.

Refereed journal publications

- Ellner, Stephen P., **Snyder, Robin E.**, Adler, Peter B., Hooker, Giles, Schreiber S.J.. Technical Comment on Pande et al. (2020): Why invasion analysis is important for understanding coexistence. *Ecology Letters*, 2020.
- Ellner, Stephen P., **Snyder, Robin E.**, Adler, Peter B., Hooker, Giles. An expanded modern coexistence theory for empirical applications. *Ecology Letters*, 2019, **22**(1), 3-18.
- **Snyder, Robin E.**, Ellner, Stephen P. Pluck or luck: does trait variation or chance drive variation in lifetime reproductive success? *the American Naturalist*, 2018, **191**(4), E90–E107.
- Burgess, Scott, **Snyder, Robin E.**, Rountree, Barry L. Collective dispersal leads to variance in fitness and maintains offspring size variation within marine populations. *The American Naturalist*, 2018, **191**(3), 318–332.
- **Snyder, Robin E.** A navigational guide to variable fitness: common methods of analysis, where they break down, and what you can do instead. *Theoretical Ecology*, 2017, **10**(4), 375–389.
- Ellner, Stephen P., **Snyder, Robin E.**, Adler, Peter B. How to quantify the temporal storage effect using simulations instead of math. *Ecology Letters*, 2016, **19**(11), 1333–1342.
- **Snyder, Robin E.**; Ellner, Stephen P. We happy few: using structured population models to identify the decisive events in the lives of exceptional individuals, *the American Naturalist*, 2016, **188**(2), E28–E45. **American Society of Naturalists Presidential Award for best paper published in *The American Naturalist* in 2016.**
- Williams, Jennifer L.; **Snyder, Robin E.**; Levine, Jonathan M. The influence of evolution on population spread through patchy landscapes, *the American Naturalist*, 2016, **188**(1), 15–26.
- **Snyder, Robin E.**; Paris, Claire B.; and Vaz, Ana C. How much do marine connectivity fluctuations matter? *the American Naturalist*, 2014, **184**(4), 523–530.
- **Snyder, Robin E.**; Adler, Peter B. Coexistence and coevolution in fluctuating environments: Can the storage effect evolve? *the American Naturalist*, 2011, **178**(4), E76–84.

- **Snyder, Robin E.**; Leaving home ain't easy: non-local seed dispersal is only evolutionarily stable in highly unpredictable environments *Proceedings of the Royal Society B — Biological Sciences*, 2011, **278**(1706), 739–744.
- **Snyder, Robin E.**; What makes ecological systems reactive? *Theoretical Population Biology*, 2010, **7**(4), 243–249.
- **Snyder, Robin E.**; Transient dynamics in altered disturbance regimes: recovery may start quickly, then slow. *Theoretical Ecology*, 2009, **2**(2), 79–87.
- **Snyder, Robin E.**; When does environmental variation most influence species coexistence? *Theoretical Ecology*. 2008, **1**(3), 129–139. **A Faculty of 1000 paper** (“Must read,” <http://www.f1000biology.com/article/id/1104456>).
- **Snyder, R.E.**; Spatiotemporal population distributions and their implications for species coexistence in a variable environment, *Theoretical Population Biology*, 2007, **72**(1), 7–20.
- Schoolmaster, D. and **Snyder, R.E.**; Invasibility in a spatiotemporally fluctuating environment is determined by the periodicity of fluctuations and resident turnover rates, *Proceedings of the Royal Society B — Biological Sciences*, 2007, **274**(1616), 1429–1435. **A Faculty of 1000 paper** (“Recommended,” <http://www.f1000biology.com/article/id/1074745>)
- **Snyder, Robin E.** Multiple risk mechanisms: can dormancy substitute for dispersal? *Ecology Letters*, 2006, **9**, 1106–1114. **A Faculty of 1000 paper** (“Must read,” <http://www.f1000biology.com/article/id/1040881>)
- **Snyder, Robin E.**; Borer, Elizabeth T.; Chesson, Peter. Examining the relative importance of spatial and nonspatial coexistence mechanisms. *The American Naturalist*, 2005, **166**(4), E75–E94, <http://www.journals.uchicago.edu/cgi-bin/resolve?AN40838>. **A Faculty of 1000 paper** (“Recommended,” <http://www.f1000biology.com/article/id/1028960>).
- **Snyder, Robin E.**; Chesson, Peter L. How the spatial scales of dispersal, competition, and environmental heterogeneity interact to affect coexistence. *The American Naturalist*, 2004, **164**(5), 633–650.
- **Snyder, Robin E.**; Chesson, Peter L. Local dispersal can facilitate coexistence in the presence of permanent spatial heterogeneity. *Ecology Letters*, 2003, **6**(4), 301–309.
- **Snyder, Robin E.** How demographic stochasticity can slow biological invasions. *Ecology*, 2003, **84**(5), 1333–1339.
- **Snyder, Robin E.**; Nisbet, Roger M. Spatial structure and fluctuations in the contact process and related models. *Bulletin of Mathematical Biology*, 2000, **62**(5), 959–975.
- Nisbet, Roger M.; de Roos, Andre M.; Wilson, William G.; **Snyder, Robin E.** Discrete consumers, small scale resource heterogeneity, and population stability. *Ecology Letters*, 1998, **1**, 34–37.
- **Snyder, R.E.**; Ball, R.C. Self-organized criticality in computer models of settling

powders. *Physical Review E*, Jan. 1994, **49**(1), 104–9.

- **Snyder, R.**; Pergellis, A.N.; Graham, P.A.; Yurke, B. Light-transmission study of coarsening in a nematic liquid crystal. *Physical Review A*, 15 Feb. 1992, **45**(4), R2169–72.

Invited book chapters and reviews

- **Snyder, R.E.**; Storage effect. In *Encyclopedia of Theoretical Ecology*, eds Alan Hastings and Lou Gross, 2012, 722–725. Berkeley: University of California Press.
- **Snyder, R.E.**; Spatiotemporal variation can promote coexistence more strongly than temporal variation, in *Environmental fluctuation, temporal dynamics and ecological process*, eds. Colleen Kelly, Michael Bowler, and Gordon Fox, to be published by Cambridge University Press, *In press*.
- **Snyder, R.E.**; Invited book review of *Mathematics for Biological Scientists* for *The Quarterly Review of Biology*.

Non-refereed publications

- **Snyder, R.E.** Symposium 14: Transient Dynamics and their Implications for Ecological Theory, *Bulletin of the Ecological Society of America*, **90**(1), 138–141.
- **Snyder, R.E.** Spatial correlations in the contact process: a step toward better ecological models. *Unifying Themes in Complex Systems: Proceedings of the First International Conference on Complex Systems* (Edited by Yanee Bar-Yam), Sept. 1997, Nashua, New Hampshire, Perseus Books.

Teaching — CWRU

- Developed and teach Biology 304, Fitting Models to Data: Maximum Likelihood Methods and Model Selection
- Developed and teach Biology 306/MATH 376, Dynamics of Biological Systems II: Tools for Mathematical Biology
- Developed and taught Biology 384, Reading and Writing Like an Ecologist, a SAGES Departmental Seminar
- Taught the ecology portion of Biology 216, Organisms and Ecosystems, one of our introductory biology courses
- Developed and taught Biology 455, Coexistence in a Variable Environment

Teaching — Short courses

- Taught a one-day course as part of the Joint 2011 MBI-NIMBioS-CAMBAM Summer Graduate Workshop on Mathematical Ecology and Evolution, 2011.

- Developed and taught an intensive one-week summer course on theoretical population biology for the Enhancing Linkages between Mathematics and Ecology program at Kellogg Biological Station, 2005–2010.
- Taught a one-week course, “Species coexistence in a variable environment” to mathematics graduate students as part of the Helsinki Summer School on Mathematical Ecology and Evolution, 2008.

Professional and University Service

- On the editorial boards for *Ecology Letters* and *the American Naturalist*, 2017–present
- Served on NSF DEB grant review panels in 2016, 2014, 2010
- Served on the Biology Department’s Curriculum Committee (2008), Committee for Graduate Affairs (2005–2006, 2009–spring 2017), four search committees in Biology, and one in Physics. Faculty Senate sabbatical replacement (fall 2014). Serving on the Academic Integrity Board.
- Vice-chair/Chair of the Theory Section of the Ecological Society of America, 2009, 2010.
- Organized a symposium on transient dynamics for the 2008 annual meeting of the Ecological Society of America
- Serve as Academic Representative and Contact for First Year Students/Advisors for the Systems Biology degree program, a program I have helped to develop.
- Co-developed and co-administered Research at the Interface of the Biological and Mathematical Sciences (RIBMS), a program which supports teams of biology, mathematics, and statistics majors working on research problems at the intersections of their disciplines (<http://www.case.edu/artsci/ribms/ribms.html>).

Professional Society Memberships

- Ecological Society of America
- American Society of Naturalists