

Andrew Berdahl

CONTACT INFORMATION

Santa Fe Institute
1399 Hyde Park Road
Santa Fe, New Mexico
87501 USA

berdahl@santafe.edu
(505) 946-3653

CURRENT POSITION **Omidyar Fellow**, Santa Fe Institute

September 2014 - present

EDUCATION

Ph.D. Ecology & Evolutionary Biology, Princeton University September 2009 - August 2014

- PhD Thesis Topic: Collective navigation
- Advisors: Prof. S. Levin & Prof. I. Couzin

M.Sc. Physics, University of Calgary

January 2007 - April 2009

- Masters Thesis Topic: Criticality in random Boolean networks and genetic regulatory systems
- Advisors: Prof. M. Paczuski & Prof. J. Davidsen

B.Sc. Honours Physics, University of Waterloo

September 2000 - April 2005

- Senior Thesis Topic: Cryogenic high-frequency tunable capacitor using SrTiO₃
- Advisor: Prof. J. Kycia

RESEARCH INTERESTS

- Collective navigation, sensing and decision making; evolution of collective behaviour.
- Population and community dynamics; animal spatial use patterns; salmonids; caribou.
- Self-organized criticality; pattern formation; scale-free behaviour; phase transitions.

PUBLICATIONS

1. **A. Berdahl**, P. Westley, I. Couzin, S. Levin and T. Quinn. *A collective navigation hypothesis for homeward migration in anadromous salmonids*. Fish and Fisheries (Early online).
2. **A. Berdahl** C. Torney, C. Ioannou, J. Faria, and I. Couzin. *Emergent Sensing of Complex Environments by Mobile Animal Groups*. Science. 339, 574-576. (2013).
3. C. Torney, **A. Berdahl** and I. Couzin. *Signalling and the evolution of cooperative foraging in dynamic environments*. PLoS Computational Biology. 7, e1002194. (2011).
4. A. Shreim, **A. Berdahl**, F. Greil, J. Davidsen and M. Paczuski. *Attractor and Basin Entropies of Random Boolean Networks Under Asynchronous Stochastic Update*. Physical Review E. 82, 035102. (2010).
5. **A. Berdahl**, A. Shreim, V. Sood, M. Paczuski. and J. Davidsen. *Random Sampling vs. Exact Enumeration of Attractors in Random Boolean Networks*. New J. Phys. 11, 043024. (2009).
6. **A. Berdahl**, A. Shreim, V. Sood, J. Davidsen and M. Paczuski. *Avalanches, branching ratios, and clustering of attractors in random Boolean networks and in the segment polarity network of Drosophila*. New J. Phys. 10, 063002. (2008).
7. A. Shreim, **A. Berdahl**, V. Sood, P. Grassberger and M. Paczuski. *Complex network analysis of state spaces for random Boolean networks*. New J. Phys. 10, 013028. (2008).
8. **A. Berdahl**, C. Torney, E. Schertzer and S. Levin. *On the evolutionary interplay between dispersal and local adaptation in heterogeneous environments*. (Submitted).

GRANTS AND SCHOLARSHIPS	• Yukon Foundation Grant	2009 – 2013
	• NSERC Postgraduate Scholarship D	2009 – 2012
	• NSERC Canada Graduate Scholarship D3 (Declined)	2009
	• Alberta Graduate Research Scholarship	2009
	• University of Calgary Graduate Research Scholarship	2008 & 2009
	• Queen Elizabeth II Scholarship	2008
	• Cornell University Travel Grant	2008

SELECTED TALKS, PUBLIC OUTREACH AND ACADEMIC SERVICE	• <i>Joint evolution of dispersal and local adaptation</i> University of Aberdeen, Scotland	November 12, 2013
	• <i>Emergent sensing in mobile animal groups</i> University of Washington, Seattle	April 22, 2013
	• Science Fair Judge Hopewell Elementary	2009 – 2013
	• Undergraduate Mentor for USRA-NSERC summer student Complexity Science Group	Summer 2008
	• <i>What is Complexity Science?</i> Dept. of Physics and Astronomy Undergraduate Open House	January 11, 2008
	• <i>Modeling parties using random Boolean networks</i> Dept. of Physics and Astronomy International Undergraduate Recruitment Event	April 4, 2007

CONFERENCES AND SUMMER SCHOOLS	• First International Movement and Dispersal Conference University of Aberdeen, Scotland	November 2013
	• MIT Workshop on Modeling & Analysis of Collective Behavior	January 2013
	• Nicols Cabrera XVII International Summer School Self-organization Patterns in Nature: From Molecules to Humans.	September 2010
	• Social Behavior Symposium at Georgia Tech Microbes to Metazoans: Regulation, Dynamics, and Evolution of Social Behavior.	December 2009
	• Santa Fe Institute Complex Systems Summer School Complex behavior in mathematical, physical, living, and social systems.	June - July 2009
	• 4 th Cornell University Probability Summer School Probabilistic problems that arise from ecology.	June - July 2008

TEACHING EXPERIENCE	Assistant in Instruction	Princeton University	Princeton, NJ, USA
	• <i>Theoretical Ecology</i>	EEB 424	Spring semester 2012
	• <i>Animal Behavior</i>	EEB 311	Fall semester 2009
	Teaching Assistant	University of Calgary	Calgary, Alberta, Canada
	• <i>Electricity & Magnetism</i>	PHYS 259	Winter semester 2007 & 2009
	• <i>Acoustics, Optics & Radiation</i>	PHYS 369	Fall semester 2007 & 2008
	Physics Tutor	University of Waterloo	Waterloo, Ontario, Canada
	• <i>Physics Help Centre</i>		September 2002 - April 2005
	Instructor	Dept. of Education Summer School	Whitehorse, Yukon, Canada
	• <i>Mathematics</i>	Grade 11	July 2003
	• <i>Mathematics</i>	Grade 10	July 2004