

# Daniel S. Karp

Wildlife, Fish, and Conservation Biology  
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## CURRENT POSITION

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Assistant Professor, University of California Davis  
Department of Wildlife, Fish, & Conservation Biology

## PREVIOUS POSITION

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Killam Postdoctoral Fellow, The University of British Columbia  
Institute for Resources, Environment, and Sustainability  
Advisor: Kai Chan

NatureNet Science Fellow, The Nature Conservancy & UC Berkeley  
Department of Environmental Science, Policy, and Management  
Advisors: Claire Kremen, Mary Ruckelshaus, and Peter Kareiva

## EDUCATION

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2009-2013      PhD, Biology- Ecology and Evolution, Stanford University  
GPA 4.25/4.00  
Advisor: Gretchen Daily

2005—2009      BS, Biology- Ecology and Evolution Track, Stanford University  
BS, Earth Systems- Biosphere Concentration, Stanford University  
GPA 4.03/4.00  
Advisors: Terry Root and Rodolfo Dirzo

## CURRENT RESEARCH

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Earth is experiencing more rapid changes now than at any time in the past ten thousand years. I am investigating the resulting trajectories of change in biodiversity and Earth's life-support systems. Looking forward, a key challenge for humanity is to increase food production, while at the same time securing other vital societal benefits from rural landscapes. Meeting this challenge requires improved understanding of how agricultural practices affect yields, biodiversity, and ecosystem services. My research thus focuses on developing methods for reconciling conservation activities with food production practices. My research program has four aspects. First, I develop and apply ecological theory to understanding and managing biodiversity in working landscapes. Second, I quantify the effects of alternative agricultural practices on biodiversity-mediated ecosystem services. Third, I investigate how identifying tradeoffs among biodiversity and ecosystem services can inform development of multifunctional landscapes. Finally, I work with international experts to synthesize science and guide policy.

## TEACHING EXPERIENCE

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2010      Teaching Assistant, Human Evolution and the Environment (Bio 1).  
2010      Teaching Assistant, Core Experimental Biological Laboratory (Bio 44Y).

- 2010 Teaching Assistant, Conservation Biology (Bio 144).  
2009 Teaching Assistant, Biology of Birds (Bio 139).

### **MENTORING EXPERIENCE**

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- 2015-present Alejandra Echeverri Ochoa, PhD student (committee member).  
2014 Sara Winesemias, field assistant.  
2014 Mia Waters, field assistant.  
2012-2013 Sarah Kaewert, undergraduate.  
2012 Zoe Dubrow, undergraduate.  
2012 Seth Judson, undergraduate.  
2011-2012 Maesen Churchill, undergraduate.  
2011-2012 Florence Rutsch, undergraduate.  
2010-2011 Steve Scheele, undergraduate.

### **SYNERGISTIC ACTIVITIES**

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- 2014-present **Pest Control Working Group Co-Lead**, National Socio-Environmental Synthesis Center (SESYNC). With Rebecca Chaplin-Kramer, organized international working group of ecologists, entomologists, economists, and sociologists to develop the first general, spatial model for biological control. Responsible for all team leadership activities, including securing funding and coordinating bi-annual meetings, research activities, syntheses of pest control data, dissemination of findings, and outreach.
- 2010-present **Ecosystem Services Working Group Member**, Group on Earth Observations—Biodiversity Observation Network (GEO BON). Member of a working group designed to monitor and report changes in ecosystem services from local to global scales. Attended meetings in Monterey, Rome, Paris, and Potsdam. Helped write manuscripts and designed research aimed at reporting ecosystem services at national scales.
- 2012-2013 **Rising Environmental Leaders Program**, Woods Institute for the Environment. Trained in environmental leadership including crafting policy-informative research, communication skills, and strategies for integrating research into policy with a cohort of 24 students. Attended meetings in California and in Washington, DC.
- 2012 **Graduate Student Representative of Faculty Search Committee**, Stanford University. Organized meetings and solicited graduate student feedback concerning applicants for an ecology/evolution faculty position.

### **PRIOR RESEARCH EXPERIENCE**

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- 2006-2008 Ecology Research Assistant, Professor Terry Root's lab.  
2006-2007 Bird Banding Volunteer, San Francisco Bay Bird Observatory.  
2006 Bird Banding Intern, Klamath Bird Observatory.  
2006 Ecology Research Assistant, Professor Gretchen Daily's lab.  
2000-2004 Shift Supervisor and Interpretive Guide, Lindsay Wildlife Museum.

### **HONORS AND FELLOWSHIPS**

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- 2015 Killam Postdoctoral Research Fellowship, Killam Trusts Office.  
2014 Hann Endowed Lecture of Ornithology, University of Michigan.  
2014 Faculty of 1000, Nomination of 2012 Ecology Letters paper.  
2014 Early Career Scientist Symposium, University of Michigan.  
2013 Davidson-Cristoph Award, Organization for Tropical Studies  
2013 NatureNet Science Fellowship, Inaugural class

2012 Best Talk Award, North American Congress for Conservation Biology  
 2010 Graduate Research Fellowship, NSF  
 2010 Excellence in Teaching Award, Biology Department-Stanford University  
 2009 JE Sterling Award for Scholastic Achievement, Stanford University  
 2009 Firestone Medal for Undergraduate Research, Stanford University  
 2009 Miller-Marsden Prize for Environmental Research, Stanford University  
 2009 Dean's Award for Academic Achievement, School of Earth Sciences  
 2009 Honorable Mention Graduate Research Fellowship, NSF  
 2007 Award for Excellence in Biological Laboratory, Stanford University  
 2006 President's Award for Academic Excellence, Stanford University  
 2004 Achievement in Environmental Change, Lindsay Wildlife Museum

## GRANTS

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2015-2016 Killam Postdoctoral Research Fellowship (\$100,000)  
 2013-2014 NatureNet Science Fellow, The Nature Conservancy (\$200,000)  
 2013 Stanford BioSciences Travel Grant (\$500)  
 2013 Stanford Biology Department Travel Grant (\$600)  
 2012 NSF Doctoral Dissertation Improvement Grant (\$15,000)  
 2012 Stanford Biology Department Travel Grant (\$750)  
 2012 Organization for Tropical Studies Research Fellowship Program (\$3,650)  
 2012 Bat Conservation International Student Scholarship (\$3,600)  
 2012 SciFund Challenge (\$1,100)  
 2011-2013 NSF Graduate Research Fellowship (\$180,000)  
 2011 Vice Provost of Graduate Education SCORE grant (\$2,000)  
 2008 Tambopata Experienced Researcher Fellowship (\$5,000)  
 2008 Stanford University Major Grant (\$5,200)  
 2007 Tambopata Research Fellowship (\$5,000)  
 2007 Monica Miller Walsh Internship Grant (\$2,150)  
 2007 Stanford University Quarterly Grant (\$1,500)

## PUBLICATIONS (\* = shared first authorship)

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**Karp, D.S.**, R. Moses, S. Gennet, M. Jones, S. Joseph, L.K. M'Gonigle, L.C. Ponisio, W.E. Snyder, and C. Kremen. (2016) Agricultural practices for food safety threaten pest-control services to fresh produce. *Journal of Applied Ecology* **53**: 1402-1412.

Turcotte, M.M., Araki, H., **Karp, D.S.**, Poveda, K., and Whitehead, S.R. The evolutionary impacts of domestication and agricultural practices on wild species. (2006) *Philosophical Transactions of the Royal Society B* **372**: 20160033.

Balvanera, P., S. Quijas, **D.S. Karp**, N. Ash, E. Bennett, R. Boumans, C. Brown, K. Chan, R. Chaplin-Kramer, B.S. Halpern, J. Honey-Roses, C.K. Kim, W. Cramer, M.J. Martinez-Harms, H. Mooney, T. Mwampamba, J. Nel, S. Polasky, B. Reyers, J. Roman, W. Turner, R.J. Scholes, H. Tallis, K. Thonicke, F. Villa, M. Walpole, and A. Walz. (2016) Ecosystem Services. In: GEO Handbook on Biodiversity Observation Networks. Springer pp. 39-78.

Frishkoff, L.O., **D.S. Karp**, J.R. Flanders, J. Zook, E.A. Hadly, G.C. Daily, and L.K. M'Gonigle. (2016) Climate and land-use change interact synergistically by favoring the same species. *Ecology Letters* **19**: 1081-1090.

Maas, B., **D.S. Karp**, J. S. Bumrungsri, K. Darras, C. Huang, C. Lindell, J. Maine, L. Mestre, N. Michel, E. Morrison, I. Perfecto, S. Philpott, C.H. Sekercioglu, R.M. Silva, T. Tschamtkke, S. Van Bael, C.J. Whelan, K. Williams-Guillen (2016) Bird and bat predation services in

tropical forests and agroforestry landscapes. *Biological Reviews*. 91: 1081-1101.

Baur, P., L. Driscoll, S. Gennet, and **D.S. Karp**. (2016) Inconsistent food safety pressures complicate environmental conservation for California produce growers. *California Agriculture* **70**: 142-151.

**Karp, D.S.\***, P. Baur\*, E.R. Atwill, K. DeMaster, S. Gennet, A. Iles, J. Nelson, A. Sciligo, and C. Kremen (2015) Unintended ecological and social impacts of food safety regulations in the California Central Coast. *BioScience* **65**: 1173-1183.

Wood, S., **D.S. Karp**, F. DeClerke, C. Kremen, S. Naeem, and C. Palm (2015) A functional trait approach for understanding the impacts of biodiversity in agriculture. *Trends in Ecology and Evolution* **30**: 531-539.

**Karp, D.S.**, H. Tallis, R. Sachse, B. Halpern, K. Thonicke, W. Cramer, B. Tietjen, H. Mooney, S. Polasky, B. Tietjen, K. Waha, A. Walz, and S. Wolny. (2015) National indicators for observing ecosystem service change. *Global Environmental Change* **35**: 12-21.

**Karp, D.S.**, S. Gennet, C. Kilonzo, M. Partyka, N. Chaumont, E.R. Atwill, and C. Kremen. (2015) Co-managing agriculture for nature conservation and food safety. *Proceedings of the National Academy of Sciences* **112**: 11126-11131.

**Karp, D.S.**, C.D. Mendenhall, E. Callaway, L. Frishkoff, P.M. Kareiva, P.R. Ehrlich and G.C. Daily (2015) Confronting and resolving competing values behind conservation objectives. *Proceedings of the National Academy of Sciences* **112**: 11132-11137.

**Karp, D.S.**, C.D. Mendenhall, E. Callaway, L. Frishkoff, P.M. Kareiva, P.R. Ehrlich and G.C. Daily (2015) Reply to Kirchhoff: Homogenous and mutually exclusive conservation typologies are neither possible nor desirable. *Proceedings of the National Academy of Sciences* **112**: e5906.

Daily, G.C. and **D.S. Karp** (2015) Nature's bounties: reliance on pollinators for health *The Lancet* **386**: 1925-1927.

Tallis, H, J. Lubchenco,...**D.S. Karp**..., et al. (2014) A call for inclusive conservation. *Nature* **515**: 27-28.

**Karp, D.S.**, S. Judsen, E. Hadly, and G. Daily (2014) Molecular diagnosis of bird-mediated pest control across tropical countryside. *SpringerPlus* **3**: 630.

Frishkoff, L.\* , **D.S. Karp\***, C.D. Mendenhall, L. M'Gonigle, J. Zook, C. Kremen, E.A. Hadly, and G.C. Daily. (2014) Loss of avian phylogenetic diversity in Neotropical agricultural systems. *Science* **345**: 1343-1346.

Mendenhall, C.D., **D.S. Karp**, C.F.J. Meyer, E.A. Hadly, and G.C. Daily. (2014) Predicting biodiversity change and averting collapse in agricultural landscapes. *Nature* **509**: 213-217.

**Karp, D.S.** and G. Daily (2014) Cascading effects of insectivorous birds and bats in tropical coffee plantations. *Ecology* **95**: 1065-1074.

Garbach, K., J.C. Milder, M. Montenegro, **D.S. Karp**, and F. DeClerke. (2014) Ecosystem Services in Agricultural Lands. In: The Encyclopedia of Agriculture.

**Karp, D.S.**, C.D. Mendenhall, R.F. Sandí, P.R. Ehrlich, E.A. Hadly, and G.C. Daily (2013) Forest bolsters bird abundance, pest control, and coffee yield. *Ecology Letters* **16**: 1339-1347.

Pereira, H., S. Ferrier, M. Walters, G. Geller, R. Jongman, R. Scholes, M. Bruford, N. Brummit, S. Butchart, A. Cardoso, N. Coops, E. Dulloo, D. Faith, J. Freyhof, R. Gregory, C. Heip, R. Hoft, G. Hurtt, W. Jetz, **D.S. Karp**, M. McGeoch, D. Obura, Y. Onoda, N. Pettorelli, B. Reyers, R. Sayre, J. Scharlemann, S. Stuart, E. Turak, M. Walpole, and M. Wegmann. (2013) Essential biodiversity variables for global earth observation. *Science* **339**: 277-278.

**Karp, D.S.**, H. Moeller, and L. Frishkoff (2013) Nonrandom extinction patterns can modulate pest-control service decline. *Ecological Applications* **23**: 840-849.

Anderegg, W.R.L, L. Anderegg, C. Sherman, and **D.S. Karp** (2012) Effects of widespread drought-induced aspen mortality on understory plants. *Conservation Biology* **26**: 1082-1090.

Tallis, H., H. Mooney, S. Andelman, P. Balvanera, W. Cramer, **D.S. Karp**, S. Polasky, B. Reyers, T. Ricketts, S. Running, K. Thonicke, B. Tietjen, and A. Walz (2012) A global system for monitoring ecosystem service change. *BioScience* **62**: 977-986.

**Karp, D.S.**, A.J. Rominger, J. Zook, J. Ranganathan, P.R. Ehrlich, and G.C. Daily (2012) Intensive agriculture erodes  $\beta$ -diversity at large scales. *Ecology Letters* **15**: 963-970. **Faculty of 1000.**

**Karp, D.S.**, G. Ziv, J. Zook, P.R. Ehrlich, and G.C. Daily (2011) Resilience and stability in bird guilds across tropical countryside. *Proceedings of the National Academy of Sciences* **108**: 21134-21139.

**Karp, D.S.** and R. Guevara (2011) Conversational noise reduction as a win-win for ecotourists and rainforest birds. *Biotropica* **43**: 122-130

**Karp, D.S.** and T. Root (2009) Sound the stressor: how hoatzins (*Opisthocomus hoazin*) react to ecotourist conversation. *Biodiversity and Conservation* **18**: 3733-3742.

## **IN-PRESS PUBLICATIONS**

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Tscharntke, T., **D.S. Karp**, R. Chaplin-Kramer, P. Batary, F. DeClerk, C. Gratton, L. Hunt, A. Ives, M. Jonsson, A. Larsen, E.A. Martin, A. Martınez-Salinas, T.D. Meehan, M. O'Rourke, K. Poveda, J.A. Rosenheim, A. Rusch, N. Schellhorn, T.C. Wanger, S. Wratten, and W. Zhang (In Press) When natural habitat fails to enhance biological pest control- five hypotheses. *Biological Conservation*.

## **POPULAR PUBLICATIONS**

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**D.S. Karp**, S. Gennet, and R. Kelsey (2014) Can we grow safe produce and conserve nature at the same time? *Cool Green Science*. The Nature Conservancy. <http://blog.nature.org/science/2014/12/15/safe-produce-conservation-nature-wildlife-ecoli-habitat-foodborne>

L.O. Frishkoff and **D.S. Karp** (2014) Preserving evolutionary history alongside tropical agriculture. *Landscapes Blog for People, Food, and Nature*. EcoAgricultural Partners. <http://peoplefoodandnature.org/blog/preserving-evolutionary-history-alongside-tropical->

## [agriculture/](#)

**D.S. Karp** (2014) Discovering abundance in own backyard. *Field Notes*. Peninsula Open Space Trust. <http://blog.openspacetrust.org/2014/06/26/abundance-in-our-backyard/>

Keyes, S.M. and **D.S. Karp**. (2014) The Bard's Birds. *The Pacific Standard*. <http://www.psmag.com/navigation/nature-and-technology/shakespeare-fanatic-introduced-bards-birds-america-82279/>

**Karp, D.S.** (2012) Big farms, small farms, and biodiversity. *Landscapes Blog for People, Food, and Nature*. EcoAgricultural Partners. [http://blog.ecoagriculture.org/2012/09/19/ccb\\_birds/](http://blog.ecoagriculture.org/2012/09/19/ccb_birds/)

**Karp, D.S.** (2011) Birds, bats, and the berry borer: Conserving insectivores and pest control services in Costa Rican coffee plantations. *Amigos Newsletter N76*: 6-7.

**Karp, D.S.** (2011) Birds, bats, and la broca: valuing pest control in coffee plantations. *San Vito Bird Club Newsletter 5*: 6-9

## INVITED TALKS

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2016	Canada Wildlife Service, Environment and Climate Change Canada
2016	Institute for Resources, Environment, & Sustainability Seminar Series, University of British Columbia
2016	Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)
2016	Department of Food Science, Cornell University
2016	Way Cool Seminar Series, Biodiversity Research Centre, University of British Columbia
2015	Department of Wildlife, Fish, and Conservation Biology, UC Davis
2015	Department of Anthropology, UC Davis
2015	Department of Ecology and Evolutionary Biology, Princeton University
2014	Swedish University of Agricultural Sciences
2014	Center for Latin American Studies, Stanford University
2014	MARINE seminar series, Moss Landing Biological Labs
2014	Hann endowed lecture, University of Michigan, Biological Station
2014	Center for Tropical Research, University of California Los Angeles
2014	San Jose State University
2014	Essig Museum of Entomology, University of California Berkeley
2013	San Francisco State University
2009	Achauer Symposium, Stanford University

## CONFERENCE PRESENTATIONS

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2016	North American Ornithological Congress
2016	Ecological Society of America
2015	Natural Capital Symposium, Stanford University
2014	Ecological Society of America
2013	Association for Tropical Biodiversity and Conservation
2013	All Science Meeting, The Nature Conservancy
2012	Species Interactions Workshop, Stanford University/UC Santa Cruz
2012	Ecological Society of America
2012	North American Congress of the Society for Conservation Biology
2012	Species Interactions Workshop, Stanford University/UC Santa Cruz

2011 Ecological Society of America  
2011 Bay Area Conservation Biology Symposium

### **REVIEWS (PUBLICATIONS)**

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Annals of the New York Academy of Sciences	Applied Animal Behavior Science
Basic and Applied Ecology	Biodiversity and Conservation
Biological Control	BioScience
Biotropica	Ecology Letters
Ecological Applications	Functional Ecology
Global Ecology and Conservation	Int. J. Bio. Sci. Eco. Serv. Man.
Journal of Applied Ecology	Journal of Pest Science
Nature	Methods in Ecology and Evolution
PeerJ	PNAS
Proceedings of the Royal Society B	

### **REVIEWS (GRANTS)**

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National Environment Research Council of the United Kingdom  
National Science Foundation  
NRN-LEE

### **MEDIA AND OUTREACH**

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I strive to disseminate my research findings broadly. I have worked with the University of California and Stanford University press to develop press releases, and have been interviewed for print media, online news sources, television, and radio. Outlets include Nature News, PBS Newshour, and NPR. Articles have been published in English, Spanish, Dutch, and German.