

Eric R. Sokol

Freshwater Ecologist, Quantitative Ecologist
Institute of Arctic and Alpine Research (INSTAAR)
University of Colorado Boulder
Campus Box 450, Boulder, CO 80309-0450
Email: eric.r.sokol@colorado.edu
Phone: 303-735-4435

Professional experience

Instructor, Applied Stream Ecology, University of Colorado, Boulder, CO (Fall 2016)

Postdoc, Institute of Arctic and Alpine Research, University of Colorado, Boulder, CO (2015 – present), McMurdo Dry Valleys and Niwot Ridge Long Term Ecological Research sites

Postdoc, Virginia Tech, Blacksburg, VA (2011 – 2015, Advisor: J. E. Barrett)

Postdoc, Southeast Environmental Research Center, Florida International University, Miami, FL (2009 – 2011, Advisor: J. C. Trexler)

Academic training

Virginia Tech, Blacksburg, VA

Ph.D. (December 2009), *Ecology and Evolutionary Biology*

Future Professoriate Graduate Certification (pedagogical training)

Major Advisor: E. F. Benfield

University of Michigan, Ann Arbor, MI

B.Sc. (April 2002) *General Biology and Resource Ecology and Management*

Advisor: J. D. Allan

Extramural grants (*dollar amounts represent my portion of the budget*)

Brown, B. L., K. Anderson, E. R. Sokol and C. Swan. (DEB-1655593 *recommended for funding*, 2017 – 2020). COLLABORATIVE RESEARCH: Temporal stability of riverine communities in dendritic networks at multiple spatial scales. DEB NSF. \$70,528

Sokol, E. R., C. M. Swan, and N. I. Wisnoski. 2016 – 2018. A synthesis to identify how metacommunity dynamics mediate community responses to disturbance across the ecosystems represented in the LTER network. A synthesis working group funded by the National Communications Office for the LTER. \$76,000
<https://www.nceas.ucsb.edu/featured/sokol>

Sokol, E. R., J. E. Barrett, and B. L. Brown. 2013. A synthesis of LTER community data to test metacommunity theory under different ecological conditions. Funded by the Long Term Ecological Research (LTER) Network Office. \$30,000

Competitive intramural grants

Sokol, E. R., J. E. Barrett, M. Strickland, and B. L. Brown. 2013. Purchase of a small instrument to assess microbial diversity patterns across different ecosystems. Funded by the Fralin Life Science Institute, Ecology and Organismal Biology Small Grants Program. \$2,296

Extramural proposals (*dollar amounts represent my portion of the budget*)

Barrett, J. E., E. R. Sokol, K. Coyne, S. C. Cary. 2017 – 2020. COLLABORATIVE RESEARCH: The role of biological hotspots in shaping regional biodiversity in the Transantarctic Mountains. Submitted May 2016 to PLR NSF. *In review*. \$90,326

Publications

*Darling, J. P., D. D. Garland, L. F. Stanish, R. M. M. Esposito, E. R. Sokol, and D. M. McKnight. *In review*. Thermal autecology describes the occurrence patterns of four benthic diatoms in McMurdo Dry Valley streams. *Polar Biology*.

NOTE: I acted as Darling's REU advisor on this project

*Singley, J. G., A. Bergstrom, P. J. Hendrickson, C. Jaros, E. R. Sokol, C. L. Torrens, C. E. Wilson, A. N. Wlostowski, and M. N. Gooseff. *In review*. use of long-term, high-frequency electrical conductivity-discharge relationships to examine hyporheic-channel interactions across multiple timescales in Antarctic streams. *Water Resources Research*.

Hughey, M. C., E. R. Sokol, J. B. Walke, M. H. Becker, and L. K. Belden. *In review*. Pathogen prevalence may drive large-scale variability in the amphibian skin microbiome. *Environmental Microbiology*.

Brown, B. L., E. R. Sokol, J. Skelton, and B. Tornwall. 2016. Making sense of metacommunities: dispelling the mythology of a metacommunity typology. *Oecologia*. doi:10.1007/s00442-016-3792-1

NOTE: Brown and Sokol contributed equally to this work

Sokol, E. R., B. L. Brown, and J. E. Barrett. 2016. A simulation-based approach to understand how metacommunity characteristics influence emergent biodiversity patterns. *Oikos*. doi:10.1111/oik.03690

*Sakaeva, A., E. R. Sokol, T. J. Kohler, L. F. Stanish, S. A. Spaulding, A. Howkins, K. A. Welch, W. B. Lyons, J. E. Barrett, and D. M. McKnight. 2016. Evidence for dispersal and habitat controls on pond diatom communities in the McMurdo Sound Region of Antarctica. *Polar Biology*. doi:10.1007/s00300-016-1901-6

Hoch, J. M., E. R. Sokol, A. D. Parker, and J. C. Trexler. 2015. Dispersal strategies among members of the small-fish metacommunity of the Everglades. *Copeia* 103:157–169.

*Tornwall, B., E. R. Sokol, J. Skelton, and B. L. Brown. 2015. Trends in stream biodiversity research since the River Continuum Concept. *Diversity* 7:16–35.

NOTE: All authors contributed equally to this work

- Sokol, E. R., B. L. Brown, C. C. Carey, B. Tornwall, C. M. Swan., and J. E. Barrett. 2015. Linking management to biodiversity in built ponds using metacommunity simulations. *Ecological Modelling*. 296:36-45.
- Sokol, E. R., J. M. Hoch, E. Gaiser, and J. C. Trexler. 2014. Metacommunity structure along resource and disturbance gradients in Everglades wetlands. *Wetlands* 34:135–146.
- Sokol, E. R., C. Herbold, C. K. Lee, S. C. Cary, and J. E. Barrett. 2013. Local and regional influences over soil microbial metacommunities in the Transantarctic Mountains. *Ecosphere*. 4(11):art136.
- Belicka, L. L., E. R. Sokol, J. M. Hoch, R. Jaffé, and J. C. Trexler. 2012. A Molecular and stable isotopic approach to investigate algal and detrital energy pathways in a freshwater marsh. *Wetlands*. 32(3):531-542.
- Sokol, E. R., E. F. Benfield, L. K. Belden, and H. M. Valett. 2011. The assembly of ecological communities inferred from taxonomic and functional composition. *American Naturalist*. 177(5):630-644.
- Northington, R. M., M. D. Keyse, S. R. Beaty, S. C. Whalen, E. R. Sokol, and A. E. Hershey. 2010. Benthic secondary production in eight oligotrophic arctic Alaskan lakes. *Journal of the North American Benthological Society* 29:465-479.
- Allan, J. D., A. S. Flecker, S. Segnini, D. C. Taphorn, E. R. Sokol, and G. W. Kling. 2006. Limnology of Andean Piedmont Rivers of Venezuela. *Journal of the North American Benthological Society* 25(1): 66-81.

**indicates student-authored publication*

Manuscripts submitted for peer review, in revision

- Gooseff, M. N., J. E. Barrett, B. J. Adams, P. T. Doran, A. G. Fountain, W. B. Lyons, D. M. McKnight, J. C. Prisco, E. R. Sokol, C. Takacs-Vesbach, M. Vandegehuchte, R. A. Virginia, and D. H. Wall. *In revision*. Antarctic terrestrial ecosystem response to climate variability. *Nature Ecology and Evolution*.
- Sokol, E. R., M. R. Bush, J. M. Hoch, and J. C. Trexler. *In revision*. Inter-specific variation of small-fish dispersal associated with artificial deep-water refuges. *Wetlands*.

Other products

- Sokol, E. R. 2016. MCSim: a metacommunity simulation package for the R statistical environment. v0.4.2. doi.org/10.5281/zenodo.153999.
(also see <https://github.com/sokole/MCSim>)
- Sokol, E. R., C. M. Swan, and N. I. Wisnoski. 2016. Long Term Ecological Research (LTER) metacommunity synthesis working group project.
<https://github.com/sokole/ltermetacommunities>
- Sokol, E. R. 2016. A tutorial on Metacommunity Simulations (MCSim) for R.
<http://rpubs.com/sokole/159425>

- Sokol, E. R. 2016. Metacommunity dynamics simulations for diatoms in Antarctic ponds. McMurdo Dry Valleys LTER:Data set ID:8006.
- Sokol, E. R., and C. M. Swan. 2015. Report to the LTER Network Office on using the metacommunity concept to synthesize biodiversity patterns across LTER sites. A working group at the 2015 Long Term Ecological Research (LTER) All Scientists Meeting (ASM). <http://asm2015.lternet.edu/sites/default/files/Final%20report-ASM2015%20metacommunity%20working%20group.pdf>
- Sokol, E. R. and J. E. Barrett. 2013. A report to the LTER Network Office on A synthesis of LTER community data to test metacommunity theory under different ecological conditions. LTER Network Office. <http://intranet2.lternet.edu/working-groups>
- Bramburger, A. J., E. E. Gaiser, J. H. Richards, J. M. Hoch, E. R. Sokol, J. C. Trexler and L. J. Scinto. Water Quality, Soils and Ecological Effects of Pilot Spreader Swales along the Tamiami Trail in Everglades National Park: Baseline Monitoring Report. Department of the Interior National Park Service; South Florida Natural Resources Center and South Florida/Caribbean Cooperative Ecosystem Studies Unit. 75 pages. 17 May 2011.

Recent invited presentations

- Sokol, E. R., D. Preston, K. Loria, D. M. McKnight, P. Johnson. 2016. Climate and UV effects on aquatic community structure. Fall 2016 Niwot Ridge LTER site meeting. University of Colorado, Boulder, CO.
- Sokol, E. R., T. J. Kohler, A. Sakaeva, A Howkins, D. M. McKnight. 2016. Long-term ecology: What modern-day ecologists can learn about Antarctic biodiversity from heroic-age exploration. Spring 2016 Antarctic Lecture Series. Colorado State Univ., Fort Collins, CO.
- Sokol, E. R., A. Sakaeva, A Howkins, D. McKnight. 2015. The Diatoms of Cape Royds: from the heroic age to today. Science Lecture at Crary Lab, McMurdo, Antarctica.
- Sokol, E. R, B. M. Tornwall, C. C. Carey, C. M. Swan, and B. L. Brown. 2014. Linking management to biodiversity in built ponds by coupling field surveys with metacommunity simulations. Joint Aquatic Sciences Meeting. Portland, OR.
- Sokol, E. R. and J. E. Barrett. 2014. Metacommunity dynamics in the McMurdo Dry Valleys and beyond. MCM Long Term Ecological Research midterm site review, McMurdo Station, Antarctica.
- Sokol, E. R. 2012. From subtropical wetlands to polar deserts: how ecological context influences metacommunity dynamics. Ecology and Evolutionary Biology seminar series, Biological Sciences, Virginia Tech.
- Sokol, E. R., L. Belicka, J. M. Hoch, J. Trexler. 2011. Using theoretical community ecology to assess restoration in the Everglades. Invited speaker. 59th Annual Meeting of the North American Benthological Society, Providence, RI.

Recent contributed presentations

- Sokol, E. R., T. J. Kohler, A. Sakaeva, A. Howkins, D. M. McKnight. 2016. Long-term ecology: using historic records and the metacommunity concept to understand present day diatom biodiversity in ponds in the McMurdo Sound Region. XXXIV Scientific Committee on Antarctic Research Open Science Meeting. Kuala Lumpur, Malaysia.
- Sokol, E. R. and J. E. Barrett. 2015. Synthesizing biodiversity across the LTER network: application of the metacommunity concept using a simulation-based approach. Long Term Ecological Research All Scientists Meeting, Estes Park, CO.
- Sokol, E. R. and J. E. Barrett. 2015. Using the metacommunity concept to understand biodiversity patterns in the McMurdo Dry Valleys, Antarctica. Interdisciplinary Antarctic Earth Science Conference, Loveland, CO.
- Sokol, E. R., J. E. Barrett, and B. L. Brown. 2015. A simulation based approach to understand how metacommunity characteristics influence emergent biodiversity patterns. 100th Annual Meeting of the Ecological Society of America, Baltimore, MD.
- McKnight, D, A. Howkins, A. Fountain, W. B. Lyons, T. J. Kohler, and E. R. Sokol. 2015. The uses of history for ecological research: A scientist's perspective on contributions from the heroic age of Antarctic exploration. 100th Annual Meeting of the Ecological Society of America, Baltimore, MD.
- Gooseff, M. N., B. J. Adams, P. T. Doran, A. Fountain, W. B. Lyons, D. M. McKnight, J. Prisco, E. R. Sokol, C. Takacs-Vesbach, M. Vandegehuchte, R. A. Virginia, and D. H. Wall. 2015. Antarctic terrestrial ecosystems abide: Changes in soils, lakes and streams of the McMurdo Dry Valleys as the cooling trend ends. 100th Annual Meeting of the Ecological Society of America, Baltimore, MD.
- Sokol, E. R., J. C. Trexler, and J. M. Hoch. 2015. Influences of changing hydrologic conditions on food web patterns near the boundaries of Everglades National Park. Greater Everglades Ecosystem Restoration, Coral Springs, FL.
- Sokol, E. R, and J. E. Barrett. 2014. A synthesis of metacommunity dynamics in the McMurdo Dry Valleys, Antarctica. XXXIII Scientific Committee on Antarctic Research Open Science Meeting. Auckland, NZ.
- Sokol, E. R, B. M. Tornwall, C. C. Carey, C. M. Swan, and B. L. Brown. 2013. Linking management to metacommunity dynamics in ponds. Baltimore Ecosystem Study Annual Meeting. Baltimore, MD.
- Sokol, E. R, C. Herbold, C. K. Lee, S. C. Cary, and J. E. Barrett. 2013. Local and regional influences over soil microbial metacommunities in the Transantarctic Mountains. 1st Annual Transantarctic Science Meeting, Minneapolis, MN.
- Sokol, E. R., J. E. Barrett, B. L. Brown, and J. C. Trexler. 2013. Linking local and regional metacommunity dynamics to diversity outcomes. 98th Annual Meeting of the Ecological Society of America, Minneapolis, MN.

- Sokol, E. R., J. E. Barrett, J. M. Hoch, and J. C. Trexler. 2012. The influence of ecological context over community assembly processes and diversity patterns. 97th Annual Meeting of the Ecological Society of America, Portland, OR.
- Sokol, E. R., E. F. Benfield, L. K. Belden, and H. M. Valett. 2010. The assembly of ecological communities inferred from taxonomic and functional composition. 95th Annual Meeting of the Ecological Society of America, Pittsburgh, PA.
- Sokol, E. R., J. C. Trexler, and J. M. Hoch. 2010. Inter-annual variation in hydroperiod affects periphyton standing crop and the associated macroinvertebrate community in the Everglades. Poster presentation. Greater Everglades Ecosystem Restoration, Naples, FL.
- Hoch, J. M., E. R. Sokol, J. C. Trexler. 2010. Monitoring fish communities and populations on the eastern boundary of Everglades National Park. Poster presentation. Greater Everglades Ecosystem Restoration, Naples, FL.
- L. L. Belicka, J. C. Trexler, E. R. Sokol, J. M. Hoch, and R. Jaffe. 2010. Biochemical markers of the effects of canal-induced nutrient gradients on food-webs in Taylor Slough freshwater marsh. Poster presentation. Greater Everglades Ecosystem Restoration, Naples, FL.

Teaching and mentoring

- Instructor. Fall 2016. Applied Stream Ecology (CVEN 5323), University of Colorado, Boulder.
- Thesis committee member for Brik Zivkovich (PhD, expected 2020) at the University of Colorado, Denver.
- Thesis committee member for Davis Lamar (undergraduate honors thesis, expected graduation 2017) at University of Colorado, Boulder.
- Mentor to Research Experience for Undergraduate (REU) student at University of Colorado, Boulder: Josh Darling (Spring 2016).
- Guest lecturer. Fall 2015. Applied Stream Ecology, University of Colorado, Boulder. Trends in stream biodiversity: research since the River Continuum Concept.
- Lesson development and lecturer. 2011 – 2015. Population and Community Ecology, Virginia Tech, Department of Biological Sciences. Designed and now teach a graduate level introduction (3 labs) to the R statistical language, multivariate statistics, and an introduction to path analysis.
- Mentor to undergraduate research students, Virginia Tech: Priyanka Gunduboina (2015), Payton Scott (2015), Gabriela Horn (2015), Katrina Buccella (2015), Natalie Calcagni (2014), Crystal Maier (2006), Julie Frank (2005).
- Guest lecturer. Spring 2015. Global Change, Virginia Tech, Department of Biological Sciences. Introduction to medium term climate forcing factors, ENSO cycles, and extreme events (2 lecture series).
- Guest lecturer. Spring 2011. Advanced Ecology, Florida International University, Department of Biological Sciences. Introduction to metacommunity ecology.

Guest lecturer. Spring 2009. General Ecology, Virginia Tech, Department of Biological Sciences. Introduction to terrestrial biomes and aquatic ecosystems.

Guest lecturer. Fall 2006 and Fall 2008. Population and Community Ecology, Virginia Tech, Department of Biological Sciences. Introduction to Path Analysis in Ecology.

Guest lecturer. Fall 2008. Freshwater Ecology, Virginia Tech, Department of Biological Sciences. Lectures included an introduction to the ecology of stream ecosystems and hydrology, and an introduction to aquatic macroinvertebrates.

Guest lecturer. Fall 2006. Stream Ecology, Virginia Tech, Department of Biological Sciences. Lecture on herbivory in freshwater ecosystems.

Graduate instructor. Spring 2006. Honors General Biology Lab (Biol 1206H), Virginia Tech, Department of Biology. Laboratory instruction including course design, brief lectures, field trips, and grading.

Teaching assistant. Fall 2005, 2006 and 2008. Freshwater Ecology Lab (Biol 4004), Virginia Tech, Department of Biological Sciences. Laboratory instruction including brief lectures, directing field trips, writing and administering quizzes, and grading.

Graduate instructor. Spring 2004. Plant Taxonomy Lab (Biol 3204), Virginia Tech, Department of Biology. Laboratory instruction including brief lectures, directing field trips, writing and administering quizzes and exams, and grading.

Graduate instructor. Fall 2003. General Biology Lab (Biol 1125), Virginia Tech, Department of Biology. Laboratory instruction including brief lectures, writing and administering quizzes and exams, and grading.

Professional activities

Lead organizer of organized oral session (#12754) “Advancing Ecological Theory Through Synthesis of Long-Term Ecological Research” accepted for 2017 Ecological Society of America Annual Meeting, Portland, OR.

Lead PI for the LTER metacommunity synthesis working group (2016 – 2018), supported by the Long Term Ecological Research (LTER) National Communications Office (NCO) at the National Center for Ecological Analysis and Synthesis (NCEAS), Santa Barbara, CA.

Invited participant to workshop for the Antarctic Near-shore and Terrestrial Observing System (ANTOS) at the 2016 SCAR Open Science Conference in Kuala Lumpur, Malaysia.

Lead organizer of workshop on “Synthesizing metacommunity ecology across the Long Term Ecological Research (LTER) Network”. WK-7 at 2016 Ecological Society of America Annual Meeting, Fort Lauderdale, FL.
<https://eco.confex.com/eco/2016/webprogrampreliminary/Session11862.html>

Lead organizer of working group on “Using the metacommunity concept to synthesize biodiversity patterns across LTER sites” at LTER All Scientists Meeting 2015, Estes Park, CO. <http://asm2015.lternet.edu/working-groups/using-metacommunity-concept-synthesize-biodiversity-patterns-across-lter-sites>.

Invited workshop participant at “A toolbox for analysis of long-term ecological dynamics using the Kepler Workflow System”. Feb. 2014 and Sept 2015 at the National Center for Ecological Analysis and Synthesis (NCEAS).

Participant representing biological sciences at the Transantarctic Mountain (TAM) Science meeting. 2012 (Indianapolis, IN), 2013 (Minneapolis, MN), and 2015 (Loveland, CO). NSF funded workshops to plan and develop collaborative deep field research in Antarctica.

Invited participant to the State of the Antarctic Ecosystem workshop on biodiversity. Aug. 2014. Auckland, NZ.

Organizer of an “Introduction to analysis of metacommunity data using simulations: an MCSim workshop”. Oct. 2013. Florida International University, funded by the LTER Network Office.

Participant in Data Management for Ecologists workshop. 2012. Hosted by the Long Term Ecological Research (LTER) Network Office in Albuquerque, NM.

Visiting Researcher at the Thermophile Research Unit. 2012. University of Waikato, Hamilton, New Zealand.

Professional affiliations

Investigator, McMurdo Dry Valleys (MCM) Long Term Ecological Research program (2015 – present)

Collaborator, Florida Coastal Everglades (FCE) Long Term Ecological Research program (2016 – present)

Collaborator, International Center for Terrestrial Antarctic Research (ICTAR) (2016 – present)

Committee member of the Antarctic Near-shore and Terrestrial Observing System (ANTOS) Action Group, supported by The Scientific Committee on Antarctic Research (2016 – present)

Current member, Ecological Society of America

Current member, Society for Freshwater Science

Service and outreach

K-12 outreach, Antarctic research blog. 2010 – present. Biologists in Antarctica (www.biologistsinantarctica.blogspot.com, Biologists in Antarctica on Facebook). A forum for K-12 teachers to ask questions about science and life in the field in Antarctica.

Transantarctic Science conference planning committee. 2012 – 2014.

Reviewer for Diversity and Distributions, Ecography, Ecological Applications, Ecological Entomology, Ecology, Environmental Microbiology, Freshwater Science (formerly JNABS), Functional Ecology, Hydrobiologia, Journal of Animal Ecology, Journal of Biogeography, Limnology and Oceanography, Oecologia, PLoS One, and Scientific Reports.

North American Benthological Society
Web Committee. 2009 – 2010.

Graduate Resource Committee (GRC) of the North American Benthological Society
GRC representative to the NABS executive committee. 2008 – 2009.
GRC Chair. 2007 – 2008.
Active member. Spring 2004 – 2009.
Chair of the Book Auction Committee. 2006, 2007.
Merchandising Committee. 2006, 2007.

Biology Graduate Student Association
President. Spring 2006 – 07.
Vice President. 2005 – 06.
Active member. 2003 – 2009.

Honors and awards

AntEco travel support for early career scientists to attend the Scientific Committee on Antarctic Research (SCAR) Open Science Conference. 2016. (\$650.00)

ANTOS travel support for early career scientists to attend the Scientific Committee on Antarctic Research (SCAR) Open Science Conference. 2016. (\$1,928.00)

John Cairns Fellowship, Virginia Tech. 2003 – 2009.

President's Award, North American Benthological Society. 2006. (\$650.00)

Current collaborators

B. J. Adams (Brigham Young University); K. E. Anderson (University of California Riverside); J. E. Barrett (Virginia Tech); L. K. Belden (Virginia Tech); B. L. Brown (Virginia Tech); S. C. Cary (University of Waikato); E. Gaiser (Florida International University); M. Gooseff (University of Colorado); C. Herbold (University of Vienna); C. K. Lee (University of Waikato); D. M. McKnight (University of Colorado); M. Salvatore (Arizona State); K. Suding (University of Colorado); C. M. Swan (University of Maryland, Baltimore County); J. C. Trexler (Florida International University); R. Virginia (Dartmouth); D. Wall (Colorado State)

Reference list

Jeb Barrett (postdoc advisor)
Associate Professor of Biological Sciences
Department of Biological Sciences
Derring Hall
Virginia Tech
1405 Perry Street
Blacksburg, VA 24061-0406
Email: jebarre@vt.edu
Phone: 540-231-3827

Joel C. Trexler (postdoc advisor)
Professor of Biological Science and
Director of Marine Science
Department of Biological Sciences
361 Office Marine Science Bldg.
Florida International University
3000 NE 151 St
North Miami, FL 33181
Email: trexlerj@fiu.edu
Phone: 305-348-1966

E. Fred Benfield (Ph.D. advisor)
Professor and Associate Department Head
Department of Biological Sciences
Derring Hall
Virginia Tech
1405 Perry Street
Blacksburg, VA 24061-0406
Email: benfield@vt.edu
Phone: 540-231-5802

Bryan L. Brown (collaborator)
Assistant Professor
Department of Biological Sciences
Derring Hall
Virginia Tech
1405 Perry Street
Blacksburg, VA 24061-0406
Email: stonefly@vt.edu
Phone: 540-231 2065

Diane M. McKnight (collaborator)
Professor of Civil, Environmental and
Architectural Engineering
Institute of Arctic and Alpine Research
University of Colorado
1560 30th Street
Boulder, CO 80309
Email: diane.mcknight@colorado.edu
Phone: 303-492-4687

Michael Gooseff (current supervisor)
Associate Professor
Institute of Arctic and Alpine Research
Civil, Architectural, and Environmental
Engineering
University of Colorado
Boulder, CO 80309
Email: michael.gooseff@colorado.edu
Phone: 303-735-5333