SCOTT HOTALING

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EDUCATION and TRAINING

Updated: September 2020

2017-present	**Postdoctoral Research Associate**, School of Biological Sciences, Washington State University, Pullman, WA Advisor: Joanna L. Kelley
2017	**Ph.D.**, Department of Biology, University of Kentucky, Lexington, KY Advisor: David W. Weisrock
2010	**B.S.**, Zoology, North Carolina State University, Raleigh, NC Advisor: Nicholas M. Haddad

GRANTS and FELLOWSHIPS

Summary: 30 awards; **Total as PI:** $150,777 (**Overall:** $975,991)

Significant funding: (>$7,500)

2020-2021	Seattle City Light Research Grant ($44,683)
2019-2022	NSF, Office of Polar Programs ($825,214); co-wrote/developed with PI J. Kelley
2018	Antarctic Science International Bursary Research Grant ($8,500)
2016	Wyoming Governor's Office Research Grant ($11,000)
2015-2020	University of Wyoming-National Park Service Research Grants ($30,000; spread over six awards)
2015	University of Kentucky Gertrude Flora Ribble Graduate Fellowship ($23,249)

Other funding:

2010-2020	19 smaller awards totaling $33,345.

PUBLICATIONS

Summary: 35 publications (21 as lead author); **Mean impact factor:** 5.2
Google Scholar: >425 total citations (145+ in 2019), *h*-index = 9

Published

35. **Hotaling S**[*,#], Shah AA[*,#], Dillon ME, Giersch JJ, Tronstad LM, Finn DS, Woods HA, Kelley JL. (In press) Cold tolerance of mountain stoneflies (Plecoptera: Nemouridae) from the high Rocky Mountains. *Western North American Naturalist*. *contributed equally; [#]corresponding author

34. Elser JJ, Wu C, Gonzalez AL, Shain DH, Smith HJ, Sommaruga R, Williamson CE, Brahney J, **Hotaling S**, Vanderwall J, Aizen E, Aizen V, Battin T, Camassa R, Dong Z, Feng X, Jiang H, Li J, Lu L, Qu JJ, Ren Z, Tan W, Wen J, Wen L, Woods HA, Xiong X, Xu J, Yu G, Yu, J, Harper JT, Saros JE. (In press) Rules of life and the fading alpine cryosphere: Impacts on mountain lakes and streams. *Global Change Biology.*

33. Tronstad LM*, **Hotaling S***, Giersch JJ, Wilmot OJ, Finn DS. Headwaters fed by subterranean ice: potential climate refugia for alpine stream communities? (In press) *Western North American Naturalist*. *contributed equally

32. **Hotaling S**[#], Kelley JL, Frandsen PB[#]. (2020) Aquatic insects are dramatically underrepresented in genomic research. *Insects*. DOI: 10.3390/insects11090601 [#]corresponding author

31. Birrell JH, Shah AA, **Hotaling S**, Giersch JJ, Williamson CE, Jacobsen D, Woods HA. (2020) Insects in high-elevation streams: life in extreme environments imperiled by climate change. *Global Change Biology.* DOI: 10.1111/gcb.15356

30. **Hotaling S**[*,#], Shah AA[*,#], McGowan KL, Tronstad LM, Giersch JJ, Finn DS, Woods HA, Dillon ME, Kelley JL. (2020) Mountain stoneflies may tolerate warming streams: evidence from organismal physiology and gene expression. *Global Change Biology.* DOI: 10.1111/gcb.15294; *contributed equally; [#]corresponding author

29. **Hotaling S**[#]. Simple rules for concise scientific writing. (2020) *Limnology & Oceanography Letters.* DOI: 10.1002/lol2.10165; [#]corresponding author

    **Highest Altmetric score (956) and most downloaded article of all-time for Limnology & Oceanography Letters (31,000+ downloads in the first month after publication).*

28. Tronstad LM, Wilmot OJ, Thornburgh D, **Hotaling S**. (2020) To composite or replicate: how sampling method and protocol differences alter stream bioassessment metrics. *Environmental Monitoring and Management.* 192, 1-15.

27. Muhlfeld CC*, Cline TJ*, Giersch JJ*, Peitzsch E, Florentine C, Jacobsen D, **Hotaling S**. (2020) Specialized meltwater biodiversity persists despite widespread deglaciation. *PNAS.* 117, 12208-12214. *contributed equally

26. **Hotaling S**, Bartholomaus TC, Gilbert SG. (2020) Rolling stones gather moss: Movement and longevity of moss balls on an Alaskan glacier. *Polar Biology.* 43, 735-744.

    **Highest Almetric score (941) of all-time for Polar Biology. Featured on NPR's "Morning Edition" national radio show.*

25. Shah AA, Dillon ME, **Hotaling S**, Woods HA. (2020) High elevation insect communities face shifting ecological and evolutionary landscapes. *Current Opinion in Insect Science.* 41, 1-6.

24. Stibal M, Bradley JA, Edwards A, **Hotaling S**, Zawierucha K, Cameron KA, Kohler TJ, Mikucki JA, Lutz S, Šabacká M, Anesio AM, Rosvold J. (2020) Glacial ecosystems are essential to understanding biodiversity responses to glacier retreat. *Nature Ecology & Evolution.* 4, 686-687.

23. Poulson-Ellestad K, **Hotaling S**, Falkenberg L, Soranno P. (2020) Illuminating a black box of the peer review system: demographics, experiences, and career benefits of associate editors. *Limnology and Oceanography Bulletin.* 29, 11-17.

22. **Hotaling S**[#], Wimberger PH, Kelley JL, Watts HE. (2020) Macroinvertebrates on glaciers: a key resource for terrestrial food webs? *Ecology.* 101, e02947. [#]corresponding author

21. Jordan S, Hand BK, **Hotaling S**, DelVecchia A, Malison R, Nissley C, Stanford J, Luikart G. (2020) Genomic data reveal similar genetic differentiation in aquifer species with different dispersal capacities and life histories. *Biological Journal of the Linnean Society*. 129, 315-322.

20. Ren Ze*, Martyniuk N*, Oleksy IA*, Swain A*, **Hotaling S**[#]. (2019) Ecological stoichiometry of the mountain cryosphere. *Frontiers in Ecology & Evolution.* 7, 360. *contributed equally and all early career researchers; [#]corresponding author

19. **Hotaling S**[#], Shain DS, Lang SA, Bagley RK, Tronstad LM, Weisrock DW, Kelley JL. (2019) Long-distance dispersal, ice sheet dynamics, and mountaintop isolation underlie the genetic structure of glacier ice worms. *Proceedings of the Royal Society B*. 286. [#]corresponding author

18. **Hotaling S**[#], Kelley JL, Weisrock DW. (2019) Nuclear and mitochondrial genomic resources for the meltwater stonefly, *Lednia tumana* (Ricker 1952). *Aquatic Insects.* 40, 362-369. [#]corresponding author

17. **Hotaling S**[#], Foley ME, Zeglin L, Finn DS, Tronstad LM, Giersch JJ, Muhlfeld CC, Weisrock DW. (2019) Microbial assemblages reflect environmental heterogeneity in alpine streams. *Global Change Biology*. 8, 2576-2590. [#]corresponding author

16. **Hotaling S**, Kelley JL**.** (2019) The rising tide of high-quality genomic resources. *Molecular Ecology Resources.* 19, 567-569.

15. **Hotaling S**[#], Giersch JJ, Finn DS, Tronstad LM, Jordan SP, Serpa LE, Call RG, Muhlfeld CC, Weisrock DW. (2019) Congruent population genetic patterns but differing depths of divergence for three alpine stoneflies with similar ecology, geographic distributions, and climate change threats. *Freshwater Biology.* 64, 335-347. [#]corresponding author

14. **Hotaling S**, Quackenbush CR, Bennett-Ponsford J[1], New DD, Rodriguez LA, Tobler M, Kelley JL (2019) Bacterial diversity in replicated hydrogen-sulfide rich springs. *Microbial Ecology*. 77, 559-573.

13. **Hotaling S**[#] (2018) Publishing papers while keeping everything in balance: Practical advice for a productive graduate school experience. *Ideas in Ecology & Evolution*. 11, 35-46. [#]corresponding author

12. Weisrock DW, Hime PM, Nunziata SO, Jones KS, Murphy MO, **Hotaling S**, Kratovil JD (2018) Surmounting the large-genome problem for genomic data generation in salamanders. In: Population Genomics: Wildlife, Editors: Hohenlohe P, Rajora O. Springer, New York

11. **Hotaling S**[#], Muhlfeld CC, Giersch JJ, Miller MR, Ali OA, Jordan SP, Luikart G, Weisrock DW (2018) Demographic modeling reveals a history of divergence with gene flow for a glacially-tied stonefly in a changing post-Pleistocene landscape. *Journal of Biogeography*. 45, 304-317. [#]corresponding author

10. **Hotaling S**, Tronstad LM, Bish JC (2017) Macroinvertebrate diversity is lower in high-elevation lakes versus nearby streams: evidence from Grand Teton National Park, Wyoming. *Journal of Natural History*. 51, 1657-1669.

9. **Hotaling S***, Slabach BS*, Weisrock DW (2017) Next-generation teaching: a template for bringing genomic and bioinformatic tools into the classroom. *Journal of Biological Education*. 1, 1-13. *contributed equally

8. Tronstad LM, **Hotaling S** (2017) Long-term trends in aquatic insect bioassessment metrics are not influenced by sampling method: empirical evidence from the Niobrara River. *Knowledge and Management of Aquatic Ecosystems*. 418, 12.

7. **Hotaling S**, Hood E, Hamilton TL (2017) Microbial ecology of mountain glacier ecosystems: biodiversity, ecological connections, and implications of a warming climate. *Environmental Microbiology.* Invited. 19, 2935-2948.

6. **Hotaling S***[,#], Finn DS*, Giersch JJ, Weisrock DW, Jacobsen D. (2017) Climate change and alpine stream biology: progress, challenges, and opportunities for the future. *Biological Reviews*. 92, 2024-2045. *contributed equally; [#]corresponding author

5. Giersch JJ, **Hotaling S**, Kovach RP, Jones LA, Muhlfeld CC (2017) Climate-induced glacier and snow loss imperils alpine stream insects. *Global Change Biology*. 23, 2577-2589.

4. Hime PM*, **Hotaling S***, Grewalle RE, O'Neill EM, Voss SR, Shaffer HB, Weisrock DW (2016) The influence of locus number and information content on species delimitation: an empirical test case in an endangered Mexican salamander. *Molecular Ecology.* 25, 5959-5974. *contributed equally

3. **Hotaling S**, Foley M, Lawrence NM, Bocanegra J, Kappeler P, Yoder A, Weisrock DW (2016) Species discovery and validation in a cryptic radiation of endangered primates: coalescent-based species delimitation in Madagascar's mouse lemurs. *Molecular Ecology*, 25, 2029-2045.

**5th highest Altmetric score (248) of all-time for Molecular Ecology.*

2. Tronstad LM, **Hotaling S**, Bish JC (2016) Longitudinal change in stream invertebrate assemblages of Grand Teton National Park, Wyoming. *Insect Conservation and Diversity*. 9, 320-331.

1. Jordan S, Giersch JJ, Muhlfeld CC, **Hotaling S**, Fanning L, Luikart G (2016) Low genetic diversity and strong subdivision in an endemic alpine stonefly threatened by climate change. *PLOS ONE.* 11, e0157386.

In review (submitted, in review, or in revision as noted; PDFs available upon request)

Hotaling S[#], Lutz S, Dial RJ, Anesio AM, Benning LG, Fountain AG, Kelley JL, McCutcheon J, Skiles SM, Takeuchi N, Hamilton TL[#]. Biological albedo reduction on ice sheets, glaciers, and snowfields. In revision, *Nature Reviews Earth & Environment.* [#]corresponding author

Everson KM*, Gray LN*, Jones AG, Lawrence NM, Foley ME, Sovacool KL, Kratovil JD, **Hotaling S**, Hime PM, Storfer A, Parra-Olea G, Aguilar-Miguel X, O'Neill EM, Zambrano L, Shaffer HB, Weisrock DW. Life history strategy does not reflect genetic differentiation in the tiger salamander species complex. In revision, *PNAS*. *contributed equally

Brighenti S*, **Hotaling S***[,#], Finn DS, Fountain AG, Hayashi M, Herbst D, Saros JE, Tronstad LM, Millar CI. Rock glaciers and related landforms: climate refugia for mountain biodiversity. In review, *Frontiers in Ecology and the Environment.* *contributed equally; [#]corresponding author

Deemer BR, **Hotaling S**, Poulson-Ellestad K, Falkenberg LJ, Cloern JE. Virtual networking between editors and early career researchers: benefits, silver linings, and lessons learned. In review, *Limnology and Oceanography Bulletin.*

POPULAR PRESS

ARTICLES AUTHORED

2019 **Hotaling S.** A Sea of Red in a World of Ice. *Out There Magazine*.

2018 **Hotaling S.** Glacier Ice Worms: An Alpine Enigma. *Out There Magazine*.

2016 **Hotaling S.** Melting Mountains: Glaciers, Climate Change, and Biodiversity in the Teton Range. *Drive: The Magazine from Subaru.*

2013 **Hotaling S.** This Is Our Mountain. *Drive: The Magazine from Subaru.*

RADIO INTERVIEWS

2019 Live interview, "On The Island with Gregor Craigie". CBC Radio Victoria. 19 June 2019.

2018 "Scientists race to research stonefly species threatened by climate change." Wyoming Public Radio.

2017 "Why study stoneflies? Climate change biologist Scott Hotaling explains." 89.3 WFPL Louisville.

PHOTOGRAPHY CREDITS

2007-present 75+ photograph credits in regional, national, and international publications including 10 cover images. See my online portfolio at www.lightofthewild.com.

AWARDS and HONORS

2019 WoodStoich4 Invitation and Travel Award

2019 Joint China-USA Fading Cryosphere Working Group Invitation and Travel Award

2018 Best Poster, Washington State University Postdoctoral Showcase

2018	Association for the Sciences of Limnology and Oceanography Early Career Travel Award
2017, 2018	Travel Awards, NSF Polar Genomics Workshop (both years)
2016	Runner-up, Best Oral Presentation in Applied Research, Society for Freshwater Science Annual Meeting
2013	U. of Kentucky College of Arts & Sciences Outstanding TA Award
2013	3rd Place Oral Presentation, Kentucky Academy of Sciences Meeting
2012-2017	U. of Kentucky Graduate School Travel Awards
2012-2017	U. of Kentucky Department of Biology Ribble Travel Awards
2012	People's Choice Award, Appalachian Mountain Photography Competition
2010	Sigma Xi Outstanding Undergraduate Research Award
2010	Dean's List, North Carolina State University
2007- 2012	Multiple 1st place awards, NC Wildlife Nature Photography Competition

INVITED SEMINARS

2020 University of British Columbia, Comparative Physiology Group, Vancouver, BC, Canada. Virtual.

2020 University of Wyoming, Department of Zoology and Physiology, Laramie, WY, USA. *Canceled due to Covid-19.*

2020 Western Kentucky University, Department of Biology, Bowling Green, KY, USA. *Canceled due to Covid-19.*

2019 University of Montana, Division of Biological Sciences, Missoula, MT, USA.

2019 Washington State University, College of Veterinary Medicine, Pullman, WA, USA.

2019 Pacific Biosciences Webinar.

2019 University of Puget Sound, Department of Biology, Tacoma, WA, USA.

2019 Washington State University, School of Biological Sciences, Pullman, WA, USA.

2018 Western Washington University, Department of Biology, Bellingham, WA, USA.

2018 Oregon State University, Dept. of Integrative Biology, Corvallis, OR, USA. *Research-focused

2018 Oregon State University, Dept. of Integrative Biology, Corvallis, OR, USA. *Teaching-focused

2018 Palouse Ecology, Evolutionary, and Systematics Group, Moscow, ID, USA.

2017 Washington State University, Department of Entomology, Pullman, WA, USA.

2017 IdeaFestival. Louisville, KY, USA. Online: https://www.ket.org/episode/KSTAM%20000210/

2017 University of Kentucky, Department of Entomology, Lexington, KY, USA.

2017 Wildlands Social Club, Lexington, KY, USA.

2017 Missouri State University, Department of Biology, Springfield, MO, USA.

2016 U. of Kentucky Department of Biology Doctoral Candidate Symposium, Lexington, KY, USA.

2014 EcoLunch, University of Kentucky, Department of Biology, Lexington, KY, USA.

2013 Glacier National Park 'Brown Bag' Series, Glacier National Park, West Glacier, MT, USA.

2013 Paradise Inn, Mount Rainier National Park, WA, USA.

2013 Cougar Rock Campground, Mount Rainier National Park, WA, USA.

2013 Freshman Honors College Speaker Series, North Carolina State University, Raleigh, NC, USA.

INVITED CONFERENCE TALKS

2020 Plant & Animal Genome XXVIII. San Diego, CA, USA.

2019 Society for Freshwater Science Annual Meeting. Salt Lake City, UT, USA.

2019 China-USA Fading Cryosphere Meeting. Flathead Lake Biological Station, Polson, MT, USA.

2018 MtnClim Bi-Annual Meeting. Gothic, CO, USA.

2018 Palouse STEAM Summit, Pullman, WA, USA.

2018 Assoc. for the Sciences of Limnology & Oceanography Annual Meeting, Victoria, BC, Canada.

2016 Society for Freshwater Science Annual Meeting, Milwaukee, WI, USA

CONTRIBUTED PRESENTATIONS

Oral

2013-2020 I have given 10 oral presentations at local, regional, and international conferences.

2013-2020 I have been a co-author on 12 oral presentations at local, regional, and international conferences.

Poster

2010-2018 I have presented 4 posters at local and regional conferences.

2013-2019 I have been a co-author on 8 at posters at local, regional, and international conferences.

GRADUATE COMMITTEES

Karen L. Jorgenson	M.S.	University of Wyoming, Dept. of Zoology & Physiology

STUDENTS MENTORED

In addition to leading an undergraduate research course (BIO 199, see below) and developing teaching tools designed to give students research experience, I have closely mentored a number of undergraduate and graduate students. I have published 4 manuscripts with 7 undergraduate co-authors.

2018-present **Jordan Boersma**. I have mentored Jordan, a graduate student at WSU, in a variety of ways, primarily relating to his professional development. Specifically, I guided Jordan through preparation and revision of his first lead-author publication (now published in *Behavioral Ecology*) and in preparing postdoctoral position applications.

2015-2017 **Angela Jones.** I helped teach Angela a variety of computational and laboratory skills. We have a co-authored manuscript in preparation. Angela is currently an undergraduate at the University of Kentucky and received a Barry M. Goldwater scholarship.

2015 **Kelly Sovacool**. I mentored Kelly in modern species delimitation and computational techniques. Kelly is currently a PhD student at the University of Michigan. We have a co-authored manuscript in preparation.

2015-2016 **Nicolette Lawrence.** I advised Nicolette in a variety of molecular skills including PCR. We have co-authored one manuscript together.

2014-2015 **Richard Grewalle.** I helped Richard learn how to collect multi-locus genetic data in the laboratory and advised him in computational tools relating to genome assembly and species delimitation. Richard and I co-authored one manuscript together. Richard is current a PhD student at Stanford University.

2012-2015 **Mary Foley.** I mentored Mary in a variety of molecular tools relating to both systematic and microbiological research. Mary and I have co-authored two manuscripts together. Mary is currently a PhD student at the University of Kentucky.

TEACHING EXPERIENCE and INNOVATION

Innovation: In collaboration with Drs. David Weisrock and Brittany Slabach, I led an effort to develop a course-based undergraduate research experience ("CURE") in microbial ecology, genomics, and bioinformatics. We implemented this CURE in 2014 and it has remained in use annually since. Complete details are reported in Hotaling *et al.*, (2017) *Journal of Biological Education*.

2020	Guest Lecture, Course: Climate Change Biology, Roosevelt College. *Canceled due to Covid-19.*
2020	Guest Lecture, Course: Professional Communication in Biology, Washington State University.
2018, 2019	Guest Lectures (x2), Course: Ecology, University of Iowa.
2017	Evolution (TA: spring semester). University of Kentucky. My role was to revise existing course materials and develop new lessons for the course recitation under the supervision of the course coordinator (Dr. Madhu Srinivisan).
2016	Honors Introductory Biology (TA: fall semester). University of Kentucky.
2016	Scholars Biology Research (co-instructor). University of Kentucky. I guided 11 students in an undergraduate research experience studying stream microbial.
2015	Principles of Genetics (TA: spring semester). University of Kentucky.
2014	Honors Introductory Biology (TA: fall semester). University of Kentucky.
2014	Principles of Genetics (TA: spring semester). University of Kentucky.
2013	Principles of Genetics (TA: fall semester). University of Kentucky.
2013	Introduction to Biology (TA: spring semester). University of Kentucky.
2012	Introduction to Biology (TA: fall semester). University of Kentucky.
2012	Introduction to Biology (TA: spring semester). University of Kentucky.
2011	Introduction to Biology (TA: fall semester). University of Kentucky.
2009-2016	Led nature photography tours which included extensive backcountry travel in harsh conditions with natural history and photo instruction.

OUTREACH and SERVICE

2019-present	In 2019, I created the *Limnology & Oceanography Letters* Early Career Publication Honor to provide a means for early career researchers, and particularly those from underrepresented groups, to publish their work in an open access journal. We solicited applications in summer 2020 and 13 honorees were awarded in September 2020. If their manuscripts are accepted for publication in *Limnology & Oceanography Letters*, their open-access fees will be covered by the award (a $2500 value per honoree). We have plans for a 2nd call for applications in 2021.
2020	External Referee, The Rufford Foundation
2020	External Grant Reviewer, Swiss National Science Foundation, Division of Biology and Medicine

2019-present	Member, Early Career Development Committee, Society for Freshwater Science
2019	External Grant Reviewer, Universidad de Las Américas, Direccion de Investigacion
2019	Session Organizer & Chair, “Climate change in high-gradient mountain streams,” Society for Freshwater Science Annual Meeting, Salt Lake City, UT.
2018-present	Founder, Evolutionary Education in the Inland Northwest (“EvoEd-IN”), a network to connect high school teachers with biologists to broaden exposure to evolutionary research in rural communities.
2018	Expert contributor, Ask Dr. Universe blog, Washington State University.
2017-present	External manuscript reviewer, U.S. Geological Survey
2017-present	Founder/Coordinator, Palouse Science Happy Hour
2016	President, University of Kentucky Biology Graduate Student Association.
2016	Member, U. of Kentucky Dept. of Biology Chair Re-Appointment Committee.
2016	Session Organizer, Society for Freshwater Science Annual Meeting.
2015	Session Chair, Society for Freshwater Science Annual Meeting.
2014-2017	Founder/Coordinator, University of Kentucky Science Happy Hour
2014-present	**Reviewer:** *Arctic, Antarctic, and Alpine Research; Biological Journal of the Linnean Society*; *Diversity and Distributions*; *Ecology*; *Freshwater Biology*; *Freshwater Science*; *GigaScience*; *Global Change Biology; Insects; iScience; Journal of Biogeography*; *Journal of Biological Education*; *Limnology & Oceanography*; *Limnology & Oceanography Letters*; *Molecular Ecology; Molecular Ecology Resources*; *PLOS ONE*; *River Research and Applications; Royal Society Open Science*; *Science of the Total Environment*; *Systematic Biology*
2007-present	Many photographs donated to conservation and outreach causes.
2007-2013	Gave 14 lectures on landscape photography, natural history, and global change biology to audiences across the United States.