

# Sonya K. Auer

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Department of Biology  
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## CV HIGHLIGHTS

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- Authored 37 peer-reviewed publications (20 as first author)
- *Google Scholar* metrics: 1465 total citations, h-index = 18, i10-index = 24
- Independently obtained > US \$230,000 in research grants and fellowships
- British Ecological Society Young Investigator Award (2012)
- Society for Experimental Biology President's Medal Runner Up (2018)
- Instructor for courses in ecology, evolution, physiological ecology, and conservation biology
- Associate Editor for Ecology Letters
- Supervisor for undergraduate and graduate students in laboratory and field research
- Outreach coordinator and volunteer for research, education, and conservation groups

## EDUCATION

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### **Ph.D. University of California-Riverside, Riverside, CA**

Ph.D. in Evolution, Ecology, and Organismal Biology

Dissertation: *The long-term effects of juvenile food availability on adult reproductive decisions and success in Trinidadian guppies*

Committee: Drs. David Reznick (advisor), Derek Roff, and Kimberly Hammond

### **B.A. Prescott College, Prescott, AZ**

B.A. in Environmental Studies with an emphasis in Ecology and Natural History

Honors Project: *Effects of nest site selection and parental activity on the nest predation rates of songbirds*

Advisors: Drs. Mark Riegner and Thomas Martin

## PROFESSIONAL EXPERIENCE

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- Visiting Assistant Professor, Williams College, MA USA, July 2018-present
- Postdoctoral Research Associate, University of Glasgow, Glasgow UK, 2013-2018
- Research Fellow, University of Massachusetts-Amherst, MA USA, 2012-2013
- Postdoctoral Researcher, Montana Cooperative Wildlife Research Unit, MT USA, 2011-2012
- Field Research Assistant, University of Nevada, Reno, NV USA, 2005
- Field Research Assistant, Colorado State University, CO USA, 2005
- Field Research Intern, Smithsonian Tropical Research Institute, Panama City, Panama, 2004
- Research Associate, Montana Cooperative Wildlife Research Unit, MT USA, 2001-2004
- Field Research Assistant, Montana Cooperative Wildlife Research Unit, MT USA, 1999-2001

## AWARDS

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- Society for Experimental Biology President's Medal Runner Up, 2018
- British Ecological Society Young Investigator Award, 2012
- University of California Outstanding Teaching Award, 2010

## RESEARCH GRANTS AND FELLOWSHIPS

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- Lister Bellahouston Traveling Fellowship for International Collaboration, *The pace of life in Trinidadian guppies (Poecilia reticulata): Do changes in organ mass and energy metabolism facilitate shifts in life history traits?* 2016, UK £1,000
- American Physiological Society Travel Award, 2016, UK £200
- Northeast Climate Science Center Grant, *Modeling effects of climate change on spruce-fir forest ecosystems and associated priority bird populations*, 2013, US \$148,828
- British Ecological Society Parkyn Legacy Travel Award, 2013, US \$450
- American Ornithologist's Union Postdoctoral Travel Award, 2012, US \$400
- University of California Dissertation Year Fellowship, 2010, US \$11,800
- University of California Chancellor's Fellowship, 2010, US \$8,500
- University of California Chancellor's Distinguished Fellowship, 2009, US \$25,600
- National Science Foundation and Research Council of Norway Nordic Research Opportunity Award, *How are adult life history decisions impacted by early environmental conditions? A state-dependent modeling approach*, 2009, US \$22,600
- University of California Dean's Dissertation Research Award, 2009, US \$1,000
- University of California-Riverside Newell Award, 2008, US \$1,000
- National Science Foundation Travel Award, 2008, US \$1,000
- National Science Foundation Graduate Research Fellowship, 2006-2009, US \$121,500
- Department of Education Graduate Assistance in Areas of National Need Fellowship, 2005, US \$37,890
- National Science Foundation Research Experience for Undergraduates Award, *Effects of nest site selection and parental activity on the nest predation rates of songbirds*, 2001, US \$4,500.

## PUBLICATIONS

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\* Student author

### Peer reviewed

- 37) **Auer, SK**, CA Dick\*, NB Metcalfe and DN Reznick. 2018. Metabolic rate evolves rapidly and in parallel with the pace of life history. *Nature Communications* 9(14).
- 36) **Auer, SK**, GJ Anderson, S McKelvey, RD Bassar, D McLennan\*, JD Armstrong, KH Nislow, HK Downie, L McKelvey, TAJ Morgan, K Salin, DL Orrell\*, A Gauthey\*, TC Reid\*, and NB Metcalfe. 2018. Nutrients from salmon parents alter selection pressures on their offspring. *Ecology Letters* 21: 686-690.

- 35) Salin, K, E Villasevil, GJ Anderson, **SK Auer**, C Selman, R Hartley, B Mullen, C Chinopoulos, and NB Metcalfe. 2018. Decreased mitochondrial metabolic requirements in fasting animals carry an oxidative cost. *Functional Ecology* 32: 2149-2157.
- 34) **Auer, SK**, K Salin, GJ Anderson, and NB Metcalfe. 2018. Individuals exhibit consistent differences in their metabolic rates across changing thermal conditions. *Comparative Biochemistry and Physiology: Part A* 217: 1-6.
- 33) Jacobs, A, C Doran, DS Murray, J Duffill Telsnig, KL Laskowski, NAR Jones, **SK Auer**, and K Præbel. 2018. On the challenges and opportunities facing fish biology: a discussion at the 50th anniversary of the Fisheries Society of the British Isles. *Journal of Fish Biology* 92:690-698.
- 32) Dalton\*, CS, RW El-Sabaawi, DC Honeyfield, **SK Auer**, DN Reznick, and AS Flecker. 2017. The influence of dietary and whole-body nutrients on the excretion of a vertebrate consumer. *PLoS ONE* 12(11): e0187931.
- 31) **Auer, SK**, and TE Martin. 2017. Parental care mitigates carry-over effects of poor early conditions on offspring growth. *Behavioral Ecology* 28: 1176–1182.
- 30) **Auer, SK**, SS Killen and EL Rezende. 2017. Resting versus active: a meta-analysis of the intra- and inter-specific associations between minimum, sustained, and maximum metabolic rates in vertebrates. *Functional Ecology* 31: 1728-1738.
- 29) Salin, K, **SK Auer**, E Villasevil, GJ Anderson, AG Cairns, W Mullen, RC Hartley, and NB Metcalfe. 2017. Using the MitoB method to assess levels of reactive oxygen species in ecological studies of oxidative stress. *Scientific Reports* 7: 41228.
- 28) **Auer, SK**, K Salin, A Rudolf\*, GJ Anderson and NB Metcalfe. 2016. Differential effects of food availability on minimum and maximum rates of metabolism. *Biology Letters* 12: 20160586.
- 27) Salin, K, **SK Auer**, A Rudolf\*, GJ Anderson and NB Metcalfe. 2016. Variation in metabolic rate among individuals is linked to mitochondrial properties in separate tissues. *Physiological and Biochemical Zoology* 89: 511-523.
- 26) Salin, K, E Villasevil, **SK Auer**, GJ Anderson, C Selman, NB Metcalfe and C Chinopoulos. 2016. Simultaneous measurement of mitochondrial respiration and ATP production in tissue homogenates and calculation of effective P/O ratios. *Physiological Reports* 4: e13007.
- 25) **Auer, SK**, K Salin, GJ Anderson and NB Metcalfe. 2016. Flexibility in metabolic rate and activity level determines individual variation in overwinter performance. *Oecologia* 182: 703-712.

- 24) **Auer, SK**, RD Bassar, K Salin, and NB Metcalfe. 2016. Repeatability of metabolic rate is lower for animals living under field versus laboratory conditions. *Journal of Experimental Biology* 219: 631-634.
- 23) Salin, K, **SK Auer**, GJ Anderson and NB Metcalfe. 2016. Inadequate food intake at high temperatures is related to depressed mitochondrial respiratory capacity. *Journal of Experimental Biology* 219: 1356-1362.
- 22) **Auer, SK**, K Salin, GJ Anderson and NB Metcalfe. 2015. Aerobic scope explains individual variation in feeding capacity. *Biology Letters* 11: 20150793.
- 21) Salin, K, **SK Auer**, AM Rudolf\*, GJ Anderson, AG Cairns, W Mullen, RC Hartley, C Selman, and NB Metcalfe. 2015. Individuals with higher metabolic rates have lower levels of reactive oxygen species hydrogen peroxide in vivo. *Biology Letters* 11: 20150538.
- 20) **Auer, SK**, K Salin, A Rudolf\*, GJ Anderson and NB Metcalfe. 2015. Flexibility in metabolic rate confers a growth advantage under changing food availability. *Journal of Animal Ecology* 84: 1405-1411.
- 19) Salin, K, **SK Auer**, B Rey, C Selman and NB Metcalfe. 2015. Variation in the link between oxygen consumption and ATP production and its relevance for animal performance. *Proceedings of the Royal Society B: Biological Sciences* 282: 20151028.
- 18) Zandonà, E, **SK Auer**, S Kilham, and DN Reznick. 2015. Contrasting population and diet influences on gut length of an omnivorous tropical fish, the Trinidadian guppy (*Poecilia reticulata*). *PLOS One* 10(9): e0136079.
- 17) **Auer, SK**, K Salin, A Rudolf\*, GJ Anderson and NB Metcalfe. 2015. The optimal combination of standard metabolic rate and aerobic scope for somatic growth depends on food availability. *Functional Ecology* 29: 479-486.
- 16) **Auer, SK** and DI King. 2014. Ecological and life-history traits explain recent boundary shifts in elevation and latitude among North American songbirds. *Global Ecology and Biogeography* 23: 867-875.
- 15) Bassar, RD, **SK Auer**, and DN Reznick. 2014. Why do placentas evolve? A test of the life history facilitation hypothesis in two clades in the genus *Poeciliopsis* representing two independent origins of placentas. *Functional Ecology* 28: 999-1010.
- 14) **Auer, SK** and TE Martin. 2013. Climate change has indirect effects on resource use and overlap among coexisting bird species with negative consequences for their reproductive success. *Global Change Biology* 19: 411-419. Featured with cover photo.
- 13) **Auer, SK**, A Lopez-Sepulcre, T Heatherly II, TJ Kohler, RD Bassar, SA Thomas, and DN Reznick. 2012. Life histories have a history: Effects of past and present conditions on

somatic growth in wild Trinidadian guppies. *Journal of Animal Ecology* 81: 818-826.  
Winner of British Ecological Society's 2012 Young Investigator Award.

- 12) Dowdall, JT, CA Handelsman, **SK Auer**, DN Reznick and CK Ghalambor. 2012. Fine-scale local adaptation in life histories along a continuous environmental gradient in Trinidadian guppies. *Functional Ecology* 26: 616-627.
- 11) Zandonà, E, **SK Auer**, S Kilham, J Howard, A López-Sepulcre, M O'Connor, RD Bassar, A Osorio\*, C Pringle, and DN Reznick. 2011. Diet quality and prey selectivity correlate with life histories and predation regime in Trinidadian guppies. *Functional Ecology* 25: 964-973. Featured with cover photo.
- 10) Jørgensen, C, **SK Auer**, and DN Reznick. 2011. A model for optimal offspring size in fish, including live-bearing and parental effects. *American Naturalist* 177: E119-E135.
- 9) **Auer, SK**. 2010. Phenotypic plasticity in adult life-history strategies compensates for a poor start in life in Trinidadian guppies. *American Naturalist* 146: 818-827.
- 8) **Auer, SK**, JD Arendt, R Chandramouli\*, and DN Reznick. 2010. Juvenile compensatory growth has negative consequences for reproduction in Trinidadian guppies (*Poecilia reticulata*). *Ecology Letters* 13: 998-1007.
- 7) Bassar, RD, MC Marshall, A López-Sepulcre, E Zandonà\*, **SK Auer**, J Travis, CM Pringle, AS Flecker, SA Thomas, DF Fraser and DN Reznick. 2010. Local adaptation in Trinidadian guppies alters ecosystem processes. *Proceedings of the National Academy of Sciences* 107: 3616-3621. Winner of Society for the Study of Freshwater Science 2012 Young Investigator Award.
- 6) Martin, TE, **SK Auer**, RD Bassar, A Niklison, and P Lloyd. 2007. Geographic variation in avian incubation periods and parental influences on embryonic temperature. *Evolution* 61: 2558-2569.
- 5) **Auer, SK**, RD Bassar, JJ Fontaine, and TE Martin. 2007. Breeding biology of passerines in a subtropical montane forest in northwestern Argentina. *The Condor* 109: 321-333.
- 4) **Auer, SK**, RD Bassar and TE Martin. 2007. Biparental incubation in the Chestnut-vented Titbabbler: mates devote equal time, but males keep eggs warmer. *Journal of Avian Biology* 38: 278-283.
- 3) **Auer, SK**, DM Logue, RD Bassar, and DE Gammon. 2007. Nesting biology of the Black-bellied Wren (*Thryothorus fasciatoventris*) in central Panama. *Wilson Journal of Ornithology* 119: 71-76.
- 2) Martin, TE, RD Bassar, **SK Auer**, JJ Fontaine, P Lloyd, HA Mathewson, AM Niklison, and A Chalfoun. 2006. Life-history and ecological correlates of geographic variation in egg and clutch mass among passerine species. *Evolution* 60: 390-398.

- 1) Kofoed, E and **SK Auer**. 2004. First description of the nest, eggs, young and breeding behavior of the Great Antpitta. *Wilson Journal of Ornithology* 116: 105-108.

### In review

**Auer, SK**, G Anderson, S McKelvey, JD Armstrong, KH Nislow, HK Downie, TAJ Morgan, D McLennan, and NB Metcalfe. *In review*. Metabolic rate interacts with intra-specific resource competition to determine individual variation in microhabitat use in the wild. *Journal of Animal Ecology*.

### In preparation

Reid, TC\*, KH Nislow, G Anderson, RD Bassar, S McKelvey, NB Metcalfe, and **SK Auer**. Marine-derived nutrients increase macroinvertebrate abundance and biomass but not diversity in Atlantic salmon streams.

**Auer, SK**, D McLennan, G Anderson, S McKelvey, KH Nislow, JD Armstrong, RD Bassar, TC Reid\*, and NB Metcalfe. 2018. Ecological impacts of marine-derived nutrients on juvenile Atlantic salmon (*Salmo salar*).

### Popular press

**Auer, S.K.** “Why Elk Are Robbing Birds”. Live Science Expert Voices Op-ed and Insights. April 26, 2013. [<http://www.livescience.com/29105-birds-climate.html>].

## **TEACHING AND STUDENT SUPERVISION**

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### **TEACHING**

- Visiting Assistant Professor, Williams College, Williamstown, MA USA, 2018-present
  - Conservation Biology (1x, lecture, discussion and lab sections, 16 students)
  - Global Change Ecology (lecture and discussion-based)
- Invited Lecturer, University of Glasgow, UK, 2015-2016
  - Ecophysiology of fishes, Level 3 Honors degree Physiology, 40 students
- Teaching Assistant, University of California – Riverside, CA USA, 2010-2011
  - Intro to Ecology and Evolution (2x, lecture and lab-based instruction, 120 students)
  - Evolution (1x, discussion-based, 76 students)
  - Ecology and Conservation Biology (1x, discussion-based, 60 students)
- Assistant Instructor, University of California – Riverside, CA USA, 2005
  - Mathematical Achievement and Collaboration for Teachers and Students (lab based, 20 students)

### **STUDENT SUPERVISION**

- Tomos Potter, PhD student, University of Oxford, 2016-present
- Thomas Reid, Masters student, University of Glasgow, 2016-2017
- Radhika Chandramouli, undergraduate student, 2008-2010
- Arthela Osorio, undergraduate student, 2009-2011
- Stephanie Arnold, undergraduate student, 2010-2011

## **PROFESSIONAL SERVICE**

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### **EDITORIAL BOARDS**

- Assistant Editor, Ecology Letters, 2016-present

### **JOURNAL REFEREE**

Trends in Ecology and Evolution, Nature Communications, PNAS, Global Change Biology, Ecology Letters, Proceedings of the Royal Society B, Nature Ecology and Evolution, Journal of Animal Ecology, Functional Ecology, American Naturalist, Journal of Biogeography, Biology Letters, Ecology, Evolution, Evolutionary Biology, Evolutionary Ecology, BMC Evolutionary Biology, Oecologia, Oikos, Journal of Experimental Biology, Journal of Comparative Biochemistry and Physiology, Marine Ecology Progress Series, Conservation Physiology, PLoS One, Biological Invasions, The Auk, Journal of Fish Biology, Journal of Avian Biology, Journal of Ornithology, Journal of Field Ornithology, Wilson Journal of Ornithology, Ibis, Environmental Biology of Fishes, Nature Communications Biology

### **INVITED GRANT AND THESIS REVIEWER**

Monash University, Icelandic Centre for Research, Czech Science Foundation, University of Lyon

### **OUTREACH**

- University of Glasgow Institute Research Committee member, 2016-2017
- Volunteer for Clyde River Foundation, 2013-2017
- Coordinator for University of Glasgow Fish Biology Shared Interest Group, 2013-2017
- Coordinator for University of Glasgow Physiology and Life Histories Group, 2013-2017
- Invited graduate student presentation, American Livebearer Association Meeting, 2010
- Science fair judge, consultant at science fair expos, and high school science mentor for schools in Riverside, CA USA, 2005-2011
- Mentor for 17 undergraduates from diverse socioeconomic and ethnic backgrounds in methods of scientific research at University of California-Riverside, CA USA, 2005-2009
- Graduate student mentor in the Accelerated Literacy Integrating Algebra and Science program for K-12 teachers and students in Riverside, CA USA, 2005

### **INVITED SEMINARS**

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- Department of Biology, McGill University, Canada, 2019
- Department of Biology, Case Western University, USA, 2019
- Department of Biology, Bard College, USA, 2019
- Department of Biology, Williams College, USA, 2018
- Freshwater Fish Laboratory, Marine Scotland, UK, 2017
- Freshwater Fish Laboratory, Marine Scotland, UK, 2016
- University of Oxford Guppy Project, Trinidad and Tobago, 2016
- Department of Ecology and Evolutionary Biology, University of Michigan, 2015
- Polish Hydrobiological Society, University of Warsaw, Poland, 2014
- Inst. Biodiversity, Animal Health and Comp. Medicine, University of Glasgow, UK, 2013

- Netherlands Institute of Ecology, The Netherlands, 2013
- Department of Environmental Conservation, UMASS-Amherst, USA, 2013
- Center for the Study of Human Health, Emory University, USA, 2012
- Department of Biology, University of California-Riverside, USA, 2011
- Department of Biology, University of Bergen, Norway, 2009

## **CONTRIBUTED ORAL PRESENTATIONS AND SYMPOSIA ORGANIZATION**

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### **SYMPOSIA**

- Society for Experimental Biology, 2019, *Clocks for the city: How urban environments shape the rhythms of animals*, Organizer, Spain, 2019
- Canadian Zoological Society, *Competing theories on metabolic scaling*, Canada, 2019
- Ecology and Evolutionary Ethology of Fishes, *Eco-evo dynamics*, Canada, 2018
- British Ecological Society, *The ecology-physiology-life-history nexus: integrating ecophysiology in evolving life history syndromes*, Belgium, 2017
- Society for Experimental Biology, *How does energy constrain ecology?* UK, 2016
- International Congress of Comparative Physiology and Biochemistry, *Climate change and associated challenges: How will fish cope?* Poland, 2015
- Society for Experimental Biology, *Oxygen and capacity limited thermal tolerance*, Czech Republic, 2015.
- International Congress of the Biology of Fishes, *The effects of environmental change on links between physiology and behavior*, UK, 2014
- Society for Experimental Biology, *The metabolic dimension in animal fitness and conservation*, UK, 2014

### **GENERAL SESSIONS**

- British Ecological Society, 2016
- Joint British Ecological Society/Societe Francaise d'Ecologie, 2014
- British Ecological Society, 2013
- North American Ornithological Congress, 2012
- North American Benthological Society, 2010
- Society for the Study of Evolution, 2010
- American Livebearers Association Convention, MI USA, 2010
- Society for the Study of Evolution, 2009
- Society for the Study of Evolution, 2006

### **SOCIETY MEMBERSHIPS**

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- Society for Experimental Biology, 2013-present
- British Ecological Society, 2013-present
- American Association of Naturalists, 2016-present
- Fisheries Society of the British Isles, 2016-present