

JUSTIN C. HAVIRD

Curriculum Vitae

Colorado State University
Dept. of Biology
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Professional training

2014-current **NIH Postdoctoral Fellow, Colorado State University, Fort Collins, CO**
Department of Biology
Research focus: Cytonuclear coevolution and genome evolution
Advisor: Daniel B. Sloan

Education

2009-2014 **Ph. D., Auburn University, Auburn, AL**
Department of Biological Sciences
Committee: **Scott R. Santos**, Mark R. Liles, Raymond P. Henry, Alan E. Wilson

2006-2008 **M.S., University of Florida, Gainesville, FL**
Department of Zoology
Committee: **David H. Evans**, Michael M. Miyamoto, Martin J. Cohn

2002-2006 **B.S. (summa cum laude), University of Florida, Gainesville, FL**
Department of Zoology
Advisor: David H. Evans

Publications

Underlined names indicate undergraduate authors throughout

30. **Havird JC**, Trapp P, Miller C, Bazos I, Sloan DB. Positive, not relaxed, selection drives the accelerated evolution of nuclear-encoded genes targeted to the mitochondria in a plant lineage with rapidly evolving mtDNA. Under review at *Genome Biology and Evolution*.
29. Hoffman SK, Seitz KW, **Havird JC**, Weese DA, Santos SR. Compositional differences and the environmental factors driving spatial variation among *Bacteria* and micro-*Eukarya* communities of the Hawaiian anchialine ecosystem. Under review at *Hydrobiologia*.
28. Sloan DB, **Havird JC**, Sharborough J. The on-again, off-again relationship between mitochondrial genomes and species boundaries. In press at *Molecular Ecology*.

27. Rockenbach K, **Havird JC**, Monroe JG, Triant DA, Taylor DR, Sloan DB. 2016. Positive selection in rapidly evolving plastid-nuclear enzyme complexes. *Genetics* 204:1507-1522.
26. **Havird JC**, Santos SR. 2016. Here we are, but where do we go? A systematic review of crustacean transcriptomic studies from 2014-2015. *Integrative and Comparative Biology* 56:1055-1066.
25. **Havird JC**, Santos SR. 2016. Developmental transcriptomics of the Hawaiian anchialine shrimp *Halocaridina rubra* Holthuis, 1963 (Crustacea: Atyidae). *Integrative and Comparative Biology* 56:1170-1182. ***Featured cover article.**
24. **Havird JC**, Sloan DB. 2016. The roles of mutation, selection, and expression in determining relative rates of evolution in mitochondrial vs. nuclear genomes. *Molecular Biology and Evolution* 33:3042-3053.
23. **Havird JC**, Mitchell RT, Henry RP, Santos SR. 2016. Salinity-induced changes in gene expression from anterior and posterior gills of *Callinectes sapidus* (Crustacea: Decapoda) with implications for crustacean ecological genomics. *Comparative Biochemistry and Physiology Part D: Genomics and Proteomics* 19:34-44.
22. **Havird JC**, Fitzpatrick SW, Kronenberger JA, Angeloni LM, Funk WC, Sloan DB. 2016. Sex, mitochondria, and genetic rescue. *Trends in Ecology and Evolution* 31:96-99.
21. **Havird JC**, Whitehill NS, Snow CD, Sloan DB. 2015. Conservative and compensatory evolution in oxidative phosphorylation complexes of angiosperms with highly divergent rates of mitochondrial genome evolution. *Evolution* 69:3069-3081. ***Commentary in [Science](#).**
20. **Havird JC**, Vaught RC, Weese DA, Santos SR. 2015. Reproduction and development in *Halocaridina rubra* (Crustacea: Atyidae) clarifies larval ecology in the Hawaiian anchialine ecosystem. *Biological Bulletin* 229:134-142.
19. Sloan DB, Fields PD, **Havird JC**. 2015. Mitonuclear linkage disequilibrium in human populations. *Proceedings of the Royal Society B* 282:20151704.
18. **Havird JC**, Hall M, Dowling DK. 2015. The evolution of sex: A new hypothesis based on mitochondrial mutational erosion. *BioEssays* 37:951-958. ***Commentary in [Science](#), [BioEssays](#), [New Scientist](#), and [Nautilus](#).**
17. **Havird JC**, Kocot KM, Brannock PM, Cannon JT, Waits DS, Weese DA, Santos SR, Halanych KM. 2015. Reconstruction of cyclooxygenase evolution in animals suggests variable, lineage-specific duplications and homologs with low sequence identity. *Journal of Molecular Evolution* 80:193-208.
16. **Havird JC**, Vaught RC, Weeks JR, Fujita Y, Hidaka M, Santos SR, Henry RP. 2014. Taking their breath away: Metabolic adaptations to low-oxygen levels in anchialine shrimps (Crustacea: Atyidae and Alpheidae). *Comparative Biochemistry and Physiology Part A: Molecular and Integrative Physiology* 178:109-120.
15. Genomic Resources Development Consortium, **Havird JC**, Santos SR. 2014. Transcriptomic resources for five shrimp (Crustacea: Atyidae and Alpheidae) species from the anchialine ecosystem. *Molecular Ecology Resources* 14:1322.

14. Vaught RC, **Havird JC**, Santos SR. 2014. Genetic lineage and environmental conditions as drivers of chromosome variation in the anchialine shrimp *Halocaridina rubra* Holthuis 1963 (Atyidae: Decapoda). *Journal of Crustacean Biology* 34:647-657.
13. **Havird JC**, Santos SR, Henry RP. 2014. Osmoregulatory adaptations in the Hawaiian anchialine shrimp *Halocaridina rubra* (Crustacea: Atyidae): expression of ion transporters, mitochondria-rich cell proliferation, and hemolymph osmolality during salinity transfers. *Journal of Experimental Biology* 217:2309-2320.
12. **Havird JC**, Santos SR. 2014. Performance of single and concatenated sets of mitochondrial genes at inferring metazoan relationships relative to full mitogenome data. *PLoS One* 9:e84080.
11. **Havird JC**, Weeks JR, Hau S, Santos SR. 2013. Invasive species in the Hawaiian anchialine ecosystem: investigating potential predation on endemic organisms. *Hydrobiologia* 716:189-201. ***Featured cover article**
10. **Havird JC**, Henry RP, Wilson AE. 2013. Altered expression of Na⁺/K⁺-ATPase and other osmoregulatory genes in the gills of euryhaline animals in response to salinity transfer: A meta-analysis of 59 quantitative PCR studies over 10 years. *Comparative Biochemistry and Physiology Part D: Genomics and Proteomics* 8:131-140.
9. Parker JK, **Havird JC**, De La Fuente L. 2012. Differentiation of *Xylella fastidiosa* strains via multi-locus sequence analysis of environmentally-mediated genes (MLSA-E). *Applied and Environmental Microbiology* 76:1385–1396.
8. **Havird JC**, Parker JK, Connery B. 2011. Fishes of the Streams of Acadia National Park, Maine. *Northeastern Naturalist* 18:217–228.
7. **Havird JC**, Tangjitjaroen W, Vidthayanon C, Grudpan C, Udduang S, Page LM. 2010. A new species of *Lepidocephalichthys* with a highly distinctive lamina circularis and comments on sexual dimorphism and relationships in southern lineages of Cobitidae. *Zootaxa* 2557:1–18. ***Most accessed Zootaxa** paper during August 2010.
6. **Havird JC**, Miyamoto MM. 2010. The importance of taxon sampling in genomic studies: An example from the cyclooxygenases of teleost fishes. *Molecular Phylogenetics and Evolution* 56:451–455.
5. **Havird JC**, Page LM. 2010. A revision of *Lepidocephalichthys* (Teleostei: Cobitidae) with descriptions of two new species from Thailand and Myanmar. *Copeia* 2010(1):137–159.
4. **Havird JC**, Miyamoto MM, Choe KP, Evans DH. 2008. Gene duplications and losses within the cyclooxygenase family of teleosts and other chordates. *Molecular Biology and Evolution* 25:2349–59.
3. Claiborne JB, Choe KP, Morrison–Shetlar AI, Weakley JC, **Havird J**, Freiji A, Evans DH, Edwards SL. 2008. Molecular detection and immunological localization of gill Na⁺/H⁺ exchanger in the dogfish (*Squalus acanthias*). *American Journal of Physiology* 294:R1092–R1102.

2. Hyndman KA, Choe KP, **Havird JC**, Rose RE, Piermarini PM, Evans DH. 2006. Neuronal nitric oxide synthase in the gill of the killifish, *Fundulus heteroclitus*. *Comparative Biochemistry and Physiology* 144B:510–9.
1. Choe KP, **Havird J**, Rose RE, Hyndman KH, Piermarini P, Evans DH. 2006. COX2 in a euryhaline teleost, *Fundulus heteroclitus*: primary sequence, distribution, localization, and potential function in gills during salinity acclimation. *Journal of Experimental Biology* 209(9):1696–708.

Drafted manuscripts undergoing editing (*drafts available upon request*)

1. **Havird JC**, Henry RP, Fujita Y, Meyer E, Santos SR. The evolution of alternative osmoregulatory strategies in crustaceans. To be submitted Winter 2016. Target journal: *Molecular Ecology*.

Short communications & popular press publications

11. **Havird JC**. 2017. Orchids mimic human BO to attract mosquitoes. *Newswise Press Release for Society for Integrative and Comparative Biology*
10. **Havird JC**. 2016. Zombified caterpillars forced to carb-load by parasitoid wasps. *Newswise Press Release for Society for Integrative and Comparative Biology*
<http://www.newswise.com/articles/zombified-caterpillars-forced-to-carb-load-by-parasitoid-wasps>
9. **Havird JC**. 2015. It takes two... but why? Blame an ancient hook-up. *New Scientist* 19 September 2015: 28-29. <https://www.newscientist.com/article/mg22730393-100-why-did-sex-evolve-blame-an-ancient-hook-up/>
8. **Havird JC**. 2015. Being a couch potato could have led to marital bliss in mantis shrimps. *Newswise Press Release for Society for Integrative and Comparative Biology*
<http://www.newswise.com/articles/view/627854/>
7. **Havird JC**. 2014. Vertebrate reproductive evolution is laid bare by the ever-erect, spring-loaded alligator penis. *Society for Integrative and Comparative Biology: Science News* (journalism piece; <http://www.sicb.org/students/havirdj.php>).
6. **Havird JC**. 2008. Freshwater fishes of Sumatra: from rivers to research. *Tropical Fish Hobbyist*. April 2008:104–110 (not peer reviewed).
5. **Havird JC**, Choe KP, Evans DH. 2007. Expression of cyclooxygenase in the killifish (*Fundulus heteroclitus*) and longhorn sculpin (*Myoxocephalus octodecemspinosus*). *Bulletin Mount Desert Island Biological Laboratory* 46:45–46.
4. **Havird JC**, Choe KP, Evans DH. 2007. Phylogenetic analysis reveals at least 3 duplications of cyclooxygenase in the chordates. *Bulletin Mount Desert Island Biological Laboratory* 46:43–44.

3. **Havird JC**, Choe KP, Evans DH. 2006. The evolution of cyclooxygenase in ancestral chordates. *Bulletin Mount Desert Island Biological Laboratory* 45:33–34.
2. **Havird JC**, Galardi-Este O, Kreh RL, Choe KP, Evans DH. 2006. The gill of the killifish, *Fundulus heteroclitus*, expresses two different EP1 receptors. *Bulletin Mount Desert Island Biological Laboratory* 45:35–36.
1. Choe KP, **Havird JC**, Claiborne JB, Evans DH. 2005. Branchial expression of COX–2, nNOS and transporters following rapid transfer of *Fundulus heteroclitus* from fresh water to seawater. *Bulletin Mount Desert Island Biological Laboratory* 44:57–58.

Grants and Fellowships

2015-2018 \$162,642	National Institutes of Health (NIH) Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (F32GM116361): “Mitochondrial-nuclear genomic interactions in a plant lineage with quickly-evolving mtDNA”
2013-2014 \$11,044	NSF Doctoral Dissertation Improvement Grant (DDIG; DEB #1311500): “Assessing evolution of euryhalinity in anchialine shrimps”
2013 \$10,000+	NSF East Asia and Pacific Summer Institutes (EAPSI; IIA#1309694) – Japan: “Molecular mechanisms of salt balance in unusual Japanese shrimps”
2010, 2011, 2012 \$75,000	Alabama Experimental Program to Stimulate Competitive Research program (EPSCoR) Doctoral Graduate Research Fellowship (competitively awarded three years)
2009 \$18,000	Cellular and Molecular Biosciences Doctoral Graduate Research Fellowship
2009 \$5,000	L.L. Bean Acadia Research Fellowship: “Freshwater fishes of Acadia National Park”
2008 \$10,000+	NSF East Asia and Pacific Summer Institutes (EAPSI; IIA#0812785) – Singapore: “Taxonomic diversity of the teleost family Cobitidae in Southeast Asia”
2006-2014 \$6,300	Grants in aid of research from professional societies (Sigma Xi, Society for Integrative and Comparative Biology, The Crustacean Society, Professional Association of Diving Instructors)
2005-2013 \$5,050	Institutional Travel and Research Grants (awarded from the University of Florida and Auburn University)

Awards

- 2015 Auburn University Graduate School Distinguished Dissertation Award in the Biological/Life Sciences – awarded to three graduates every two years
- 2014 Kenneth Ottis Distinguished Graduate Fellowship for Outstanding Achievement in Physiology/Molecular Biosciences presented by the Department of Biological Sciences at Auburn University – awarded yearly to one student
- 2014 Auburn University College of Sciences and Mathematics Dean’s Research Award for Ph.D. students – awarded yearly to two students
- 2013 Second place presentation in Graduate Ecology and Evolution Section, Sigma Xi Student Research Showcase
- 2012, 2013 Auburn Graduate Scholars Symposium: First Place (2012) and Second Place (2013) Oral Science Presentation
- 2013 The Crustacean Society Best Student Oral Presentation Award at SICB
- 2012 Travel Award to attend the Pan-Pacific Advanced Studies Institute (PacASI) on Genomic Applications to Marine Science and Resource Management in South East Asia
- 2010 Best oral presentation, Southeastern Ecology and Evolution Conference

Workshops and professional development

- 2016 Software Carpentry and Best Practices for Scientific Computing – Colorado State University
- 2015 Python for Genomic Data Science – Online course through Coursera and John Hopkins University on the Python programming language
- 2014 Auburn University Bioinformatic Bootcamp – Lead Teaching Assistant
- 2013 Symposium and Workshop on New Methods for Phylogenomics and Metagenomics – The University of Texas at Austin
- 2012 1st Pan-Pacific Advanced Studies Institute (PacASI) on Genomic Applications to Marine Science and Resource Management in South East Asia – Silliman University, Dumaguete, Philippines

Teaching experience

- 2016 **Guest Lecturer, Genome Evolution**
Colorado State University, Instructor: Daniel Sloan
- 2014 **Organismal Biology Laboratory**
Auburn University – Graduate Teaching Assistant, 1 semester
- 2013-2014 **Preparing Future Faculty Program**
Biggio Center at Auburn University, 2 semesters

- 2013 **Guest Lecturer, Animal Physiology**
Auburn University, Instructor: Raymond P. Henry
- 2013 **Introduction to Biology Laboratory**
Auburn University – Graduate Teaching Assistant, 1 semester
- 2012-2013 **Graduate Teaching Assistant Fellows Program**
Biggio Center at Auburn University, 3 semesters
- 2006-2008 **Physiology and Molecular Biology of Animals**
University of Florida – Graduate Teaching Assistant, 5 semesters

Memberships

- 2015-current *Society for the Study of Evolution*
- 2012-current *The Crustacean Society*
- 2011-current *American Association for the Advancement of Science*
- 2011-current *Society of Systematic Biologists*
- 2011-current *American Society for Microbiology*
- 2008-current *American Society of Ichthyologists and Herpetologists*
- 2007-current *Sigma Xi*
- 2006-current *Phi Beta Kappa*
- 2006-current *Society for Integrative and Comparative Biology*

Outreach, service, and mentoring

- 2016 Co-organized SSE Symposium: “Co-evolving genomes: Cooperation and conflict in cytonuclear interactions” at Evolution Meeting 2016, ***Highlighted in [Science](#)**
- 2015-2016 Judge, CMB/MCIN/BMB poster symposium, CSU
- 2015 Bridges to Baccalaureate program at Front Range Community College
- 2015 Judge, Celebrate Undergraduate Research and Creativity, CSU
- 2014 SICB Student Journalist
- 2013 Biological Sciences Graduate Student Rep. – Ecology Hire Search Committee
- 2013 SICB Student Photographer
- 2012-2013 Biological Sciences Graduate Student Rep. – Strategic Planning Committee
- 2010-2012 Biological Sciences Graduate Student Association President
- 2010-2011 2011 Southeastern Ecology and Evolution Conference organization co-chair
- 2010-2011 Alabama Science in Motion
- 2010-2012 BioLunch coordinator
- 2010-2013 AU-Explore presenter (<http://www.auexplore.auburn.edu>)
- 2012-2013 Judge, South's BEST Regional Robotics Championship, Auburn, AL, USA
- 2009 Judge, Columbia County Regional Science Fair, Lake City, FL, USA
- 2009 Judge, Alachua County Regional Science Fair, Gainesville, FL, USA
- 2009 Judge, Westwood Middle School Science Fair, Gainesville, FL, USA
- 2008 Zoology Department social coordinator, UF, Gainesville, FL, USA

2008 Judge, Columbia County Regional Science Fair, Lake City, FL, USA

Invited reviewer for the following journals:

Evolution, Molecular Biology and Evolution, Molecular Ecology, BioEssays, Heredity, Molecular Phylogenetics and Evolution, Physiological and Biochemical Zoology, Hydrobiologia, Conservation Physiology, Systematics and Biodiversity, Zootaxa, Journal of Marine Science: Research and Development, International Journal of Molecular Sciences, Journal of Threatened Taxa

Ad-hoc reviewer for:

NSF Division of Ocean Sciences, Biological Oceanography Program
NSF Division of Environmental Biology, Dimensions of Biodiversity Program
Binational Agricultural Research and Development Fund US-Israel (BARD)

Undergraduates mentored:

2016-current Greg R. Noe, Colorado State University
2016 Diana K. Gerardo, Colorado State University
2016 Jerrell E. Mock, Colorado State University
2015-2016 Paul S. Trapp, Colorado State University
2014-2015 Cody J. Kalous, Colorado State University
2014-2015 Nicholas S. Whitehill, Colorado State University
2013-2014 Katelyn M. Hatfield, Auburn University
2012-2014 Rebecca C. Vaught, Auburn University (now in graduate school)
2010-2012 Kiley W. Seitz, Auburn University (now in graduate school)
2010-2011 Jeffrey R. Weeks, Auburn University (now in medical school)
2009-2010 Jennifer Heim, Auburn University (now in graduate school)
2007 Patrick Dempsey, University of Florida (now in medical school)
2006 Oriana Galardi-Este, Mount Desert Island Biological Laboratory

Invited seminars and presentations

8. **Havird JC.** 2016. Causes and consequences of mitonuclear coevolution. *University of Texas Dept. of Integrative Biology Seminar*, Austin, TX, USA.
7. **Havird JC.** 2016. Causes and consequences of mitonuclear coevolution. *Virginia Tech Dept. of Biological Sciences Seminar*, Blacksburg, VA, USA.
6. **Havird JC, Sloan DB.** 2016. Expression, selection, and co-evolution in mitonuclear genes. Invited contribution to the symposium "Co-evolving genomes: Cooperation and conflict in cytonuclear interactions" held at *Evolution 2016*, Austin, TX, USA. ***Highlighted in [Science](#).**
5. **Havird JC, Mitchell RT, Henry RP.** 2016. Gill-specific salinity response in the blue crab and developing a comprehensive multi-species gill transcriptome. Invited contribution to the symposium "*Tapping the Power of Crustacean Transcriptomics to Address Grand*

Challenges in Comparative Biology” held at the *Society for Integrative and Comparative Biology Annual Meeting*, Portland, OR, USA.

4. **Havird JC.** 2015. Consequences of mitochondria: Nuclear genomic compensation, genetic rescue, and the evolution of sex. *University of Northern Colorado School of Biological Sciences Seminar*, Greeley, CO, USA.
3. **Havird JC.** 2015. Ecophysiology and mito-nuclear evolution in the next generation. *Oregon State University Dept. of Integrative Biology Seminar*, Corvallis, OR, USA.
2. **Havird JC.** 2014. Ecophysiology of anchialine shrimp and mitonuclear conflict. *Colorado State University Dept. of Biology Seminar*, Fort Collins, CO, USA.
1. **Havird JC.** 2012. Die Hard: Responses of anchialine organisms to natural and anthropogenic disturbances. *National University of Singapore Dept. of Biological Sciences Seminar*, Singapore.

Other oral presentations

27. **Havird JC, Sloan DB.** 2016. Do mitochondria create species boundaries or ignore them? Evidence from a plant lineage with fast-evolving mtDNA. *Guild of Rocky Mountain Ecologists and Evolutionary Biologists Annual Meeting*, Gothic, CO, USA.
26. **Havird JC.** 2016. Selection on the mitochondrial and nuclear genomes during domestication. *Genomics of Adaptation to Human Contexts Symposium*, Fort Collins, CO, USA.
25. **Havird JC, Sloan DB.** 2016. Coevolution between nuclear and mitochondrial genomes. *Society for Integrative and Comparative Biology Annual Meeting*, Portland, OR, USA.
24. **Havird JC.** 2015. Mitochondria and the origins of sex and speciation. *Guild of Rocky Mountain Ecologists and Evolutionary Biologists Annual Meeting*, Nederland, CO, USA.
23. **Havird JC, Mitchell RT, Henry RP, Santos SR.** 2015. The evolution of alternative osmoregulatory responses in the Crustacea. *Society for Integrative and Comparative Biology Annual Meeting*, West Palm Beach, FL, USA.
22. **Havird JC, Henry RP, Santos SR.** 2014. A functional trade-off between osmoregulation and respiration in the gills of the anchialine shrimp *Halocaridina rubra* (Crustacea: Atyidae). *Benthic Ecology Meeting*, Jacksonville, FL, USA.
21. **Havird JC, Santos SR.** 2014. From zero to “model” organism in < 1 Ph.D.: An example using next-gen data to address the biology of an obscure shrimp species. *Southeastern Ecology and Evolution Conference*, Statesboro, GA, USA.
20. **Havird JC, Henry RP, Santos SR.** 2014. Taking their breath away: Metabolic adaptations to low-oxygen levels and salinity transfer in anchialine shrimps (Crustacea: Atyidae). *Society for Integrative and Comparative Biology Annual Meeting*, Austin, TX, USA.

19. **Havird JC**, Santos SR. 2013. Are some mitochondrial loci better at recreating metazoan mitogenome phylogenies and how many loci are necessary? *Benthic Ecology Meeting*, Savannah, GA, USA.
18. **Havird JC**, Wilson AE, Santos SR. 2013. The effects of shrimp grazing on the microbial communities of Hawaiian anchialine habitats. *Sigma Xi Student Research Showcase: A Competition for Virtual Research Presentations*, online conference. ***Awarded 2nd place in Graduate Ecology and Evolution section.**
17. **Havird JC**, Henry RP, Wilson AE, Santos SR. 2013. A meta-analysis of salinity-induced changes in gene expression with new data from *Halocaridina rubra* (Crustacea: Atyidae). *Southeastern Ecology and Evolution Conference*, Orlando, FL, USA.
16. **Havird JC**, Henry RP, Santos SR. 2013. Using RNA-Seq and gene-specific methods to examine salinity-induced gene expression changes in an anchialine shrimp. *Society for Integrative and Comparative Biology Annual Meeting*, San Francisco, CA, USA. ***Awarded best oral presentation by The Crustacean Society**
15. **Havird JC**, Henry RP, Santos SR. 2012. Using RNA-Seq to examine salinity mediated gene expression in anchialine shrimp. *Pan-Pacific Advanced Studies Institute (PacASI) on Genomic Applications to Marine Science and Resource Management in South East Asia*, Dumaguete, Philippines.
14. **Havird JC**. 2012. 2012. Microbes in the guts of anchialine shrimp: Selective grazing or symbiosis? *Symbiofest*, Athens, GA, USA.
13. **Havird JC**, Irvin SK, Seitz KW, Santos SR. 2012. Microbiome profiling of Hawaiian anchialine habitats reveals spatial heterogeneity, invertebrate-microbe interactions, and impacts of invasive species. *Benthic Ecology Meeting*, Norfolk, VA, USA.
12. **Havird JC**, Henry RP, Santos SR. 2012. Feats of physiological bewilderment from the amazing Hawaiian micro-lobster (Crustacea: Atyidae). *Southeastern Ecology and Evolution Conference*, Clemson, SC, USA.
11. **Havird JC**, Santos SR. 2011. Phylogenetic signals in metazoan mitochondrial genomes: Is 13 the lucky number? *Southeastern Ecology and Evolution Conference*, Auburn, AL, USA.
10. **Havird JC**, Seitz KW, Santos SR. 2011. Crusty ponds and rusty shrimp: Selective grazing and benthic microbial ecology in the Hawaiian anchialine ecosystem. *Benthic Ecology Meeting*, Mobile, AL, USA.
9. **Havird JC**, Heim JL, Santos SR, Fielman KT. 2010. Bacterial genetic diversity in the Hawaiian anchialine ecosystem. *Hawaii Conservation Conference*, Honolulu, HI, USA.
8. **Havird JC**, Page LM. 2010. A new species of *Lepidocephalichthys* (Teleostei: Cobitidae) with unique sexual dimorphism and relationships in southern lineages of Cobitidae. *Joint Meeting of Ichthyologists and Herpetologists*, Providence, RI, USA.
7. **Havird JC**, Heim JL, Santos SR, Fielman KT. 2010. Bacterial genetic diversity of a unique Hawaiian ecosystem. *Southeastern Ecology and Evolution Conference*, Atlanta, GA, USA. ***Awarded best oral presentation.**

6. **Havird JC**. 2009. Loach hunters: Describing new fishes (Cobitidae) from Asia based on morphology, field work, and molecules. *Southeastern Ecology and Evolution Conference*, Gainesville, FL, USA.
5. **Havird JC**. 2008. Taxonomic diversity of the teleost family Cobitidae in SE Asia. *Singapore EAPSI Research Symposium*, Singapore.
4. **Havird JC**, Page LM. 2008. Systematics of the *Lepidocephalichthys* complex and evolution of sexual dimorphism in loaches. *Southeastern Ecology and Evolution Conference*, Tallahassee, FL, USA.
3. **Havird JC**, Evans DH. 2008. The evolution of cyclooxygenase in the chordates. *Southeastern Ecology and Evolution Conference*, Tallahassee, FL, USA.
2. **Havird JC**, Page LM. 2007. Taxonomic diversity of the cobitid genus *Lepidocephalichthys*. *Cypriniformes Tree of Life Initiative*, Chiang Rai, Chiang Rai Province, Thailand.
1. **Havird JC**, Choe KP, Evans DH. 2007. The evolution and possible function of cyclooxygenase in the chordates. *Society for Integrative and Comparative Biology Annual Meeting*, Phoenix, AZ, USA.

Poster presentations

3. **Havird JC**, Fujita Y, Hidaka M, Meyer E, Santos SR. 2013. Molecular mechanisms of salt balance in Japanese anchialine shrimps. *JSPS Summer Program 2013 Orientation*, Hayama-machi, Kanagawa, Japan.
2. **Havird JC**, Seitz KW, Santos SR. 2011. Convergence in microbial community phenotype and microbe-invertebrate interactions in the Hawaiian anchialine ecosystem. *American Society for Microbiology General Meeting*, New Orleans, LA, USA.
1. **Havird JC**, Choe KP, Evans DH. 2006. The evolution of cyclooxygenase in ancestral chordates. *Society for Integrative and Comparative Biology Annual Meeting*, Orlando, FL, USA.

Presentations by mentored students

8. Rockenbach K, Monroe JG, **Havird JC**, Triant DA, Taylor DR, Sloan DB. 2016. Plastid and nuclear coevolution in plastid metabolic complexes: CLP and heteromeric ACCase. *Evolution 2016*, Austin, TX, USA. (poster)
7. Whitehill NS, **Havird JC**, Sloan DB. 2015. Electron transport chain protein structures evolve in a conservative manner. *Colorado State University Celebrate Undergraduate Research and Creativity Showcase*, Fort Collins, CO, USA. (poster)
6. Hatfield KM, **Havird JC**, Henry RP. 2014. Impacts of aerial exposure on oxygen uptake in Fiddler crabs (*Uca pugilator*). *Auburn University Research Week*, Auburn, AL, USA. (oral presentation)

5. Vaught R, **Havird JC**, Santos SR. 2013. Nature vs. nurture as drivers of chromatosome morphology in an anchialine atyid shrimp. *Auburn University Undergraduate Scholars Symposium (part of AU Research Week)*, Auburn, AL, USA. (oral presentation)
4. Vaught R, **Havird JC**, Santos SR. 2013. Nature vs. nurture as drivers of chromatosome morphology in an anchialine atyid shrimp. *Southeastern Ecology and Evolution Conference*, Orlando, FL, USA. (oral presentation)
3. Seitz KW, **Havird JC**, Irvin SK, Santos SR. 2012. Fine-scale microbial community composition in the endemic orange cyanobacterial crusts of the Hawaiian anchialine ecosystem. *Southeastern Ecology and Evolution Conference*, Clemson, SC, USA. (poster)
2. Weeks JR, **Havird JC**, Santos SR. 2011. Predation by invasive fishes and altered distributions of an endemic shrimp (*Halocaridina rubra*) in a threatened Hawaiian ecosystem. *Southeastern Ecology and Evolution Conference*, Auburn, AL, USA. (oral presentation)
1. Seitz KW, **Havird JC**, Santos SR. 2011. The microbial composition of the Hawaiian anchialine ecosystem. *Southeastern Ecology and Evolution Conference*, Auburn, AL, USA. (poster)

Co-authored presentations

4. Sloan DB, **Havird JC**, Fields PD, Noe G. 2016. Mitonuclear epistasis and linkage disequilibrium in modern humans and related hominins. *Evolution 2016*, Austin, TX, USA. (oral presentation)
3. Mahon AR, **Havird JC**, Santos SR, Halanych KM. 2015. Thermal adaptation and differential gene expression in Antarctic sea spiders (Pycnogonida). *Society for Integrative and Comparative Biology Annual Meeting*, West Palm Beach, FL, USA. (oral presentation)
2. Mahon AR, **Havird J**, Roberts SP, Halanych KM. 2014. Thermal adaptation and gene expression in Antarctic sea spiders (Pycnogonida). *XXXIII Scientific Committee on Antarctic Research Biennial Meeting*. Auckland, New Zealand. (oral presentation)
1. Maden M, **Havird JC**, Seifert A. 2010. Cell lineage analysis of the endoderm during lung development using the *Shhgfpcr* mouse. *American Thoracic Society International Conference*, New Orleans, LA, USA. (poster)

References

Dr. Scott R. Santos

PhD Adviser

Associate Professor, Auburn University

101 Rouse Life Sciences Building, Auburn AL 36849

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Dr. Daniel B. Sloan

Postdoctoral Adviser

Assistant Professor, Colorado State University

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Dr. Damian K. Dowling

Collaborator

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School of Biological Sciences, Building 17, 4th Floor, Room 435, Melbourne, Australia

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