

Allison J. Shultz

Curriculum Vitae

Natural History Museum of Los Angeles County
Ornithology Department
900 Exposition Blvd
Los Angeles, CA 90007

(213) 763-3378
ashultz@nhm.org
www.allisonshultz.com
twitter: @ajshultz622

PROFESSIONAL APPOINTMENTS

2018 - Present	Natural History Museum of Los Angeles County Assistant Curator of Ornithology
2019 – Present	University of Southern California Scholar-in-Residence
2017 - 2018	Harvard University Bioinformatics Scientist, Informatics Group
2017	Harvard University Postdoctoral Fellow, Mentor: Scott Edwards
2011 – 2017	Harvard University PhD Candidate, Mentor: Scott Edwards
2008 – 2011	San Diego State University MS Candidate, Mentor: Kevin Burns
2007-2008	Museum of Vertebrate Zoology Centennial Coordinator

EDUCATION

PhD	Harvard University Organismic and Evolutionary Biology, May 2017 Advisor: Dr. Scott Edwards Dissertation: Comparative and population genomics of host-pathogen co-evolution in birds
MSc	San Diego State University Biology, emphasis in Evolutionary Biology, May 2011 Advisor: Dr. Kevin J. Burns Thesis: Using an avian visual model to assess the evolution of sexual dichromatism in tanagers
BA	University of California, Berkeley Integrative Biology, May 2007, Honors. Honors Thesis Advisor: Dr. Rauri C.K. Bowie Honors Thesis: A Ninety-three year study of the effects of moderate urbanization on an avian community

AWARDS, HONORS AND FELLOWSHIPS

2019	American Ornithological Society Elective Member
2016	Harvard Graduate School in the Arts and Sciences Merit Fellowship
2013	American Ornithologists' Union Student Presentation Award
2013	American Ornithologists' Union Travel Award
2013	Rosemary Grant Graduate Student Research Award
2009	American Ornithologists' Union Research Grant
2008	National Science Foundation Graduate Research Fellowship
2008	San Diego State University Tuition Scholarship
2007	Joseph LeConte Award
	Awarded to one Integrative Biology graduate for outstanding work in Natural History
2003 – 2007	Alumni Scholarship Leadership Award
2004	Class of 1951 Briggs Alumni Scholar

GRANTS AND FUNDING HISTORY

2015	Sigma Delta Epsilon/Graduate Women in Science Fellowship (\$7,683)
2015	NSF Dissertation Improvement Grant (\$21,940)
2014	Putnam Expedition Grant (\$3,920)
2013	Frank M. Chapman Memorial Fund (\$2000)
2013	American Ornithologists' Union Research Grant (2125)
2009	Los Angeles Audubon Society Schreiber Award (\$1500)

PROFESSIONAL SERVICE

2019 - present	Member , American Ornithology Society Collections Committee
2018 - present	Member , American Ornithology Society Meeting Coordination Committee
2018 - present	Editorial Review Board , Journal of Biogeography
2014 - 2018	Chair , Graduate Women in Science Technology Committee
2012 – 2017	Mentor , Harvard University Women in Science, Technology, Engineering and Mathematics
2010	Chair, Evolutionary Biology and Ecology Seminar Series Student Committee , San Diego State University
2010-2011	Assistant Event Captain , Science Olympiad, Ornithology test
2009	Mentor , Expanding Your Horizons in Science and Mathematics Conference
2007 - 2008	Senior Manager , University of California Marching Band
2007-2008	Public Programs Committee , Berkeley Natural History Museums, University of California
2006-2007	Member , Cal Performances Board of Trustees

PUBLICATIONS

2019	16. Alfaro, M.E., Karan, E., Schwartz, S.T., Shultz, A.J. , 2019. The evolution of color pattern in butterflyfishes (Chaetodontidae). Integrative and Comparative Biology 59(3): 604-615.
	15. Shultz, A.J. and Sackton, T.B. 2019. Immune genes are hotspots of shared positive selection across birds and mammals. eLife 8:e41815
2018	14. Drury, J.P., Tobias, J.A., Burns, K.J., Mason, N.A., Shultz, A.J. , Morlon, H. 2018. Contrasting impacts of competition on ecological and social trait evolution in songbirds. PLoS Biology 16 (1), e2003563
2017	13. Termigioni-Garcia, F., Jaramillo-Correa, J.P., Chable-Santos, J., Liu, M., Shultz, A.J. , Edwards, S.V., Escalante Pliego, P. 2017. Genomic footprints of adaptation in a cooperatively breeding tropical bird across a vegetation gradient. Molecular Ecology 26:4483-4496

12. Burns, K.J.*, McGraw, K.J.*, **Shultz, A.J.***, Stoddard, M.C.*, and Thomas, D.B.*. 2017. Advanced Methods for Studying Pigments and Coloration using Avian Specimens. *in* M. S. Webster, ed. Studies in Avian Biology: The Extended Specimen: Emerging Frontiers in Collections-based Ornithological Research. CRC Press. *These authors contributed equally to this paper
11. **Shultz, A.J.** and Burns, K.J. 2017. The role of sexual and natural selection in shaping patterns of sexual dichromatism in the largest family of songbirds (Aves: Thraupidae). *Evolution* 71:1061-1074.
10. Tigano, A., **Shultz, A.J.**, Edwards, S.V., Robertson, G.J., Friesen, V.L. 2017. Outlier analyses to test for local adaptation to breeding grounds in a migratory arctic seabird. *Ecology and Evolution*. Doi:10.1002/ece3.2819
- 2016 9. **Shultz, A.J.**, Baker, A.J., Hill, G.E., Nolan, P.M. and Edwards, S.V. 2016. SNPs across time and space: population genomic signatures of founder events and epizootics in the House Finch (*Haemorrhous mexicanus*). *Ecology and Evolution*. doi:10.1002/ece3.2444
- 2015 8. Edwards, S.V., **Shultz, A.J.**, Campbell-Staton, S.C. 2015. Next-generation sequencing and the expanding domain of phylogeography. *Folia Zoologica* 3: 187-206
7. Dierickx*, E.G. **Shultz*, A.J.**, Sato, F. Hiraoka, T. Edwards, S.V. 2015. Morphological and genomic comparisons of Hawaiian and Japanese black-footed albatrosses *Phoebastria nigripes* using double digest RADseq: implications for conservation. *Evolutionary Applications* 8: 662-678.
*These authors contributed equally to this paper
- 2014 6. Mason, N. A., **Shultz, A. J.**, and K. J. Burns. 2014. Elaborate visual and acoustic signals evolve independently in a large, phenotypically diverse radiation of songbirds. *Proceedings of the Royal Society B, Biological Sciences* 281: (1788) 20140967
5. K.J. Burns, **A.J. Shultz**, P.O. Title, N.A. Mason, F.K. Barker, J. Klicka, S.M. Lanyon, I.J. Lovette. 2014. Phylogenetics and diversification of tanagers (Passeriformes:Thraupidae), the largest radiation of Neotropical songbirds. *Molecular Phylogenetics and Evolution* 75: 41-77
- 2013 4. **Shultz, A.J.** and Burns, K.J., 2013. Plumage evolution in relation to light environment in a novel clade of Neotropical tanagers. *Molecular Phylogenetics and Evolution* 66: 112-125
- 2012 3. Burns, K.J., and **A.J. Shultz**. 2012. Widespread cryptic dichromatism and ultraviolet reflectance in the largest radiation of Neotropical songbirds: implications of accounting for avian vision in the study of plumage evolution. *The Auk* 129(2): 211-221 □ □
2. H.K. Snyder, R. Maia, L. D'Alba, **A.J. Shultz**, K.M.C. Rowe, K.C. Rowe, M.D. Shawkey. 2012. Iridescent colour production in hairs of blind golden moles (Chrysochloridae). *Biology Letters* 8(3) 393-396
1. **Shultz, A.J.**, M.W. Tingley, and R.C.K. Bowie. 2012. A century of avian community turnover in an urban green space in Northern California. *The Condor* 114(2): 258-267

INVITED PRESENTATIONS AND PUBLIC EVENTS

- 2019 California State University San Bernardino Biology Department Colloquium, San Bernardino, California.
- 2019 Occidental College Biology Department Seminar Series. Pasadena, California.
- 2019 California State University Northridge Biology Department Colloquium, Northridge, California.
- 2019 Cal Poly Pomona Biology Department Seminar Series. Pomona, California.
- 2019 University of California, Riverside, Ecological, Evolutionary and Organismal Biology Seminar Series, Riverside, California.

- 2019 University of Southern California, Molecular and Computational Biology Seminar Series, Los Angeles, California.
- 2015 Nuttall Ornithology Club Meeting, Cambridge, Massachusetts.
- 2015 Menotomy Bird Club, Cambridge, Massachusetts.
- 2015 Stonehill College Biology Seminar Series, Easton, Massachusetts.
- 2014 Museum of Vertebrate Zoology Lunch Seminar, Berkeley, California.
- 2014 Lund University. Minisymposium in genomics and adaptation, Lund, Sweden.
- 2014 Queens University Biology Graduate Research Day, Kingston, Ontario, Canada.
- 2010 San Diego Field Ornithologists, San Diego, California
- 2008 MVZ Centennial History Symposium, Berkeley, California.
- 2007 Museum of Vertebrate Zoology Lunch Seminar, Berkeley, California.

CONFERENCE PRESENTATIONS

- 2019 **Shultz, A.J.**, Pathogen-mediated genotypes to colorful phenotypes: integrating research across organizational levels to study biodiversity. Early Professional Symposium. American Ornithology Society, Anchorage, Alaska
- 2019 **Shultz, A.J.**, The Ornithology Collection of the Natural History Museum of Los Angeles County (LACM). American Ornithology Society, Anchorage, Alaska (poster)
- 2019 **Shultz, A.J.**, Arnold, B.A., Wuitchik, S., Sackton, T.B., The long and the short of it: linking genome-wide signatures of selection across evolutionary timescales in birds. American Ornithology Society, Anchorage, Alaska
- 2019 Price-Waldman, R.M., Demery, A.J.C., Mason, N.M, **Shultz, A.J.**, Burns, K.J., The relative roles of natural selection and sexual selection in speciation in the tanagers. American Ornithology Society, Anchorage, Alaska
- 2019 Demery, A.J.C., Edwards, S.V., **Shultz, A.J.**, Population Genomics of Hawaiian House Finches (*Haemorrhous mexicanus*): investigating genetic variation of an introduced population. American Ornithology Society, Anchorage, Alaska
- 2018 **Shultz, A.J.**, Sackton, T.B. Immune genes are hotspots of convergent positive selection in birds. Population, Evolutionary and Quantitative Genetics, Madison, Wisconsin (poster)
- 2017 **Shultz, A.J.**, Zhang, Q., Backstrom, N., Baker, A.J., Hill, G., Nolan, P.M., Edwards, S.V. Demographic consequences of a novel pathogen in native and introduced populations of a songbird. Contagion Symposium, Radcliffe Institute, Cambridge, Massachusetts (poster)
- 2017 **Shultz, A.J.**, Yu, J., Sackton, T.B. Genomic signatures of pathogen-mediated selection across the bird tree of life. Evolution Conference, Portland, Oregon (poster)
- 2017 **Shultz, A.J.**, Yu, J., Sackton, T.B. Genomic signatures of pathogen-mediated selection across the bird tree of life. Host-pathogen co-evolution in the genomics area GoCAS workshop, Gothenburg, Sweden
- 2016 **Shultz, A.J.** Rapid evolution in response to a novel pathogen in the House Finch. Boston Evolutionary Genomics Supergroup Annual Retreat. Cambridge, MA
- 2016 **Shultz, A.J.** Yu, J., Sackton, T. Evolution of the innate immune system across the bird tree of life. North American Ornithological Congress, Washington D.C.

- 2014 **Shultz, A.J.**, Mason, N.A., Burns, K.J. The evolution of sexual dichromatism in tanagers: a mosaic of natural and sexual selection. Brazilian Ornithological Meeting of 2014, Rio de Janeiro, Brazil (*Invited speaker)
- 2015 **Shultz, A.J.**, Backstrom, N., Baker, A.J., Nolan, P.M., Hill, G., Edwards, S.V. Phylogeography and genomic signatures of pathogen-mediated selection using genome-wide diachronic comparisons in the House Finch (*Haemorbous mexicanus*). Joint meeting of the American Ornithologists' Union and Cooper Ornithological Society, Chicago, Illinois
- 2013 **Shultz, A.J.**, Backstrom, N., Baker, A.J., Nolan, P.M., Hill, G., Edwards, S.V. 2013. Signatures of pathogen-mediated selection using genome-wide diachronic comparisons in the House Finch (*Haemorbous mexicanus*). 2015. Ecological and Evolutionary Genomics, Gordon Research Conference, Biddeford, Maine (poster)
- 2013 **Shultz, A.J.**, Backstrom, N., Baker, A.J., Nolan, P.M., Hill, G., Edwards, S.V. 2013. Signatures of pathogen-mediated selection using genome-wide diachronic comparisons in the House Finch (*Haemorbous mexicanus*). 2014. "Infectious diseases as drivers of evolution: the challenges ahead", Conferences Jacques-Monod, Roscoff, France (poster)
- 2013 **Shultz, A.J.**, Backstrom, N., Baker, A.J., Nolan, P.M., Hill, G., Edwards, S.V. Phylogeography and genomic signatures of pathogen-mediated selection using genome-wide diachronic comparisons in the House Finch (*Haemorbous mexicanus*). Society for the Study of Evolution, Snowbird, Utah
- 2011 **Shultz, A.J.** and K.J. Burns. 2011. Male and female plumage evolution in the tanagers: a mosaic of natural and sexual selection. Society for the Study of Evolution, Norman, Oklahoma
- 2011 Mason, N.A., **A.J. Shultz** and K.J. Burns. 2011. Diversification rates and phenotypic evolution in the Neotropical seed-eaters (Genus *Sporophila*). Society for the Study of Evolution, Norman, Oklahoma
- 2010 **Shultz, A.J.** and K.J. Burns. 2010. Evolutionary patterns of male and female plumage in the tanagers. Society for the Study of Evolution, Portland, Oregon
- 2010 Mason, N.A., **A.J. Shultz** and K.J. Burns. 2010. Elucidating patterns of song evolution in a clade of lowland tanagers: The role of phylogenetic signal and plumage. Society for the Study of Evolution, Portland, Oregon
- 2010 **Shultz, A.J.** and K.J. Burns 2010. Different patterns of plumage evolution between sexes in a clade of lowland tanagers. American Ornithologists' Union, San Diego, California
- 2009 **Shultz, A.J.** and K.J. Burns. 2009. Sexual dichromatism in tanagers and cardinals: Evolution from an avian perspective. American Ornithologists' Union, Philadelphia, Pennsylvania
- 2007 **Shultz, A.J.**, and R.C.K. Bowie. 2007. A ninety-three year study of the effects of moderate urbanization on an avian community. American Ornithologists' Union, Laramie, Wyoming

TEACHING EXPERIENCE

Workshop Instructor (Developed and taught course)

- 2019 **Bioinformatics Nanocourse:** Introduction to R, Intermediate R, Data Visualization in R, *Harvard University*
- 2018 **Bioinformatics Nanocourse:** Introduction to R, Intermediate R, Data Visualization in R, Population Genetics in R, and Phylogenetics in R sessions, *Harvard University*

- 2017 **Informatics Workshop Series:** Introduction to R, Intermediate R, and Data Visualization in R workshop, *Harvard University*
- 2017 **3-day Workshop on Bioinformatics** in Iguazu, Argentina, (Co-instructor with Tim Sackton, Gustavo Bravo and Scott Edwards), *Society of Field Ornithologists*
- 2017 **Professional Development Series,** *Harvard University Department of Organismic and Evolutionary Biology* (Co-instructor with Glenna Clifton)
- 2010 **Comparative Analyses and Basics in R Workshop,** Evolutionary Biology graduate students and faculty, *San Diego State University*
- 2007 **IB 98/198: Insights into Vertebrate Evolutionary Research -- Historic and Present:** An Investigative Classroom Endeavor, *University of California, Berkeley*

Teaching Fellow

- Spring 2016 OEB 190, **Biology and Diversity of Birds,** *Harvard University*
- Spring 2014 LS1b, Genetics, **Genomics and Evolution,** *Harvard University*
- Fall 2012 OEB 10, **Diversity of Life,** *Harvard University*
- Spring 2009 BIOL 212, **Instructor for Human Anatomy Lab,** *San Diego State University*
- Fall 2008 BIOL 212, **Instructor for Human Anatomy Lab,** *San Diego State University*
- Spring 2010 **Field Teaching Assistant for Ornithology,** *San Diego State University*
- Spring 2009 **Field Teaching Assistant for Ornithology,** *San Diego State University*

Guest Lecturer

- Spring 2019 Dinosaur Phylogenetics and Systematics, *University of Southern California*
- Spring 2018 OEB 190, Biology and Diversity of Birds, *Harvard University*
- Fall 2017 OEB 275r, Phylogeography and phylogenetics in the era of genomics, *Harvard University*
- Fall 2016 Introduction to R seminar series: phylogenetic comparative methods, *Harvard University*
- Spring 2016 OEB 190, Biology and Diversity of Birds, *Harvard University*
- Spring 2013 OEB 275rb, Evolutionary Genomics and the Museum, *Harvard University*
- Fall 2012 OEB 190, Biology and Diversity of Birds, *Harvard University*
- Fall 2010 BIOL 524, Ornithology (developed lab on plumage coloration), *San Diego State University*
- Fall 2010 Graduate Seminar: Comparative Methods of Trait Evolution, *San Diego State University*

Public Outreach Lectures

- 2016 Investigating the Science of Avian Coloration through Observational Drawing, Co-instructor with Erica Beade, Harvard Museum of Natural History
- 2015 Adult Class, Biodiversity in the Avian World, Harvard Museum of Natural History
- 2015 I Heart Science museum public museum festival, Harvard Museum of Natural History
- 2015 Museum Volunteer Orientation, Harvard Museum of Natural History
- 2014 Ursuline Academy A.P. Biology class, Harvard Museum of Natural History
- 2014 Adult Class, Avian Adaptation in a Changing World, Harvard Museum of Natural History
- 2012 Adult Class, Avian Evolution: Coloration in Bird Plumage, Harvard Museum of Natural History

Student/Postdoctoral Fellow Mentorship

- 2019 – present **Josephine Au**, undergraduate researcher at USC
- 2019 – present **Jacqueline Dall**, undergraduate intern (InternLA), Occidental College
- 2018 – present **Diego Fabian Beltran Segura**, MS thesis committee member, Universidad de Antioquia
- 2017 **Amelia Demery**, co-advisor with Scott Edwards, Sally Casanova Summer Research Student Internship, Harvard University
- 2015 - 2016 **Julia Yu**, co-advisor with Tim Sackton and Scott Edwards, Undergraduate Student, Harvard University
- 2014 - 2015 **Elisa Dierickx**, co-advisor with Scott Edwards, Post-undergraduate Intern, Harvard University

FIELD EXPEDITIONS

2016	Three weeks of House Finch targeted research in Massachusetts
2014	Three week expedition to Washington, US to collect House Finches
2014	Two week expedition to Arizona to collect House Finches
2012	Four week expedition to northern and eastern Mongolia to collect bird specimens
2006 – 2007	Grinnell Resurvey Project participant, collected bird specimens in and near Lassen Volcanic National Park, California

WORKSHOPS/COURSES ATTENDED

2015	Harvard Business School Credential of Readiness (HBX CORE) , Pass with high honors, Fall 2015
2015	Harvard miniMBA , Introduction to business
2013	Summer Institute in Statistical Genetics , University of Washington, Scholarship recipient for Population Genetics and Association Mapping, High-dimensional Omics Data, and Network and Pathway Analysis of Omics Data modules
2012	Sao Paulo School of Advanced Science – evolution , FAPESP and USP sponsored.
2010	Comparative Methods and Macroevolution in R Summer Short Course , NSF and NCEAS sponsored

PROFESSIONAL MEMBERSHIPS

American Ornithological Society
 Society for the Study of Evolution
 Graduate Women in Science
 Genetics Society of America