Christopher A. Hamm

School of Veterinary Medicine
University of California, Davis
One Shields Avenue
Davis, California 95616
cahamm@ucdavis.edu

ACADEMIC HISTORY

University of California, Davis, 2016 - Present
Postdoctoral Scholar, Center for Population and Animal Health
Postdoctoral Scholar, Department of Evolution and Ecology 2012 – 2014

University of Kansas, 2014 – 2016
Postdoctoral Researcher, Department of Ecology and Evolutionary Biology

Michigan State University, 2007 - 2012
Ph.D. Entomology
Ph.D. Ecology, Evolutionary Biology & Behavior

California State University, Fresno, 2004-2008
M.S. Biology, with Distinction.

California State University, Fresno, 1999-2004
B.S. Biology, emphasis in Organismic and General Biology
Magna Cum Laude

PUBLICATIONS

Hamm, C.A. Chromosome Number of the Monarch Butterfly, *Danaus plexippus* (Linnaeus 1758) and the Danainae. BioRxiv pre-print.

Hamm, C.A., C.M. Penz and P.J. DeVries. Wing shape evolution in *Hamadryas* butterflies corresponds to vertical microhabitat use and species range size. In revision.

Bell, K.L., **C.A. Hamm**, A.M. Shapiro and C.C. Nice. Sympatric, temporally isolated populations of the Pine White butterfly *Neophasia menapia*, are morphologically and genetically differentiated. In review.

Marion, Z.H. and **C.A. Hamm**. A hierarchical Bayesian approach to estimate endosymbiont infection rates. Accepted pending revisions, Frontiers in Microbiology [invited manuscript].

Hamm, C.A. and J.A. Fordyce. 2016.Greater host breadth still not associated with increased diversification rate in the Nymphalidae – a reply to Janz et al. Evolution 70: 1156-1160.

Hamm C.A and J.A. Fordyce**.** *Selaginella* and the satyr: *Euptychia westwoodi* oviposition preference and performance. Journal of Insect Science 16: 39; 1-4.

Fordyce J.A., C.C. Nice, **C.A. Hamm** and M.L. Forister. Quantifying diet breadth through ordination of host associations. Ecology 97: 842-849.

DeVries, P.J., **C.A. Hamm**, and J.A. Fordyce. 2016. Fruit-feeding butterflies (Nymphalidae) - standardized butterfly sampling protocol. In Larson, T.H. (ed.).

Core Standardized Methods for Rapid Biological Assessment. Conservation International, Arlington, VA.

Hamm C.A. and J.A. Fordyce. 2015. Patterns of diversification and host plant utilization in the brush footed butterflies. Evolution 63: 589-601 [cover article].

Hamm C.A., D.J. Begun, A. Vo, C.C.R. Smith, P. Saelao, A.O. Shaver, J. Jaenike, and M. Turelli. 2014. *Wolbachia* do not live by reproductive manipulation alone: infection polymorphism in *Drosophila suzukii* and *D. subpulchrella*. Molecular Ecology 23: 4871-4885.

Tochen S., D.T. Dalton, N. Wiman, **C.A. Hamm**, P.W. Shearer and V.M. Walton. 2014. Temperature-related development and population parameters for *Drosophila suzukii* (Diptera: Drosophilidae) on cherry and blueberry. Environmental Entomology 42: 501-510.

Hamm C.A., C.A. Handley, A. Pike, M.L. Forister, J.A. Fordyce and C.C. Nice. 2014. *Wolbachia* infection and Lepidoptera of conservation concern. Journal of Insect Science 14:6.

Hamm C.A., V. Rademacher, D.A. Landis and B.L. Williams. 2014. Conservation genetics and the implication for recovery of the endangered Mitchell's satyr butterfly. Journal of Heredity 105: 19-27.

Chiu J.C., X. Jiang, L. Zhao, **C.A. Hamm**, J.M. Cridland, P. Saelao, K.A. Hamby, E.K. Lee, R.S. Kwok, G. Zhang, F.G. Zalom, V.M. Walton and D. J. Begun. 2013. Genome of *Drosophila suzukii*, the Spotted Wing *Drosophila*. G3: Genes | Genomes | Genetics 3: 2257-2271.

Hamm C.A. 2013. Estimating abundance of the federally endangered Mitchell's satyr butterfly using hierarchical distance sampling. Insect Conservation and Diversity 6: 619-626.

Hamm C.A., B.L. Williams and D.A. Landis. 2013. Natural history and conservation status of the endangered Mitchell's Satyr butterfly: an update and expansion of our knowledge regarding *Neonympha mitchellii mitchellii* French 1889. Journal of the Lepidopterist's Society 67: 15-28.

Hamm C.A. 2012. What pollinates *Lantana camara* (Verbenaceae) in the mountains of Costa Rica? Journal of Tropical Ecology 28: 313-315.

Yanoviak S.P., S. Silveri, **C.A. Hamm** and M. Solis. 2012. Stem characteristics and ant body size in a Costa. Journal of Tropical Ecology 28: 199-204.

Hamm C.A. 2012. Development of Polymorphic Anonymous nuclear DNA markers for the endangered Mitchell's satyr butterfly, *Neonympha mitchellii mitchellii* (Lepidoptera: Nymphalidae). Conservation Genetics Resources 4: 127-128.

Landis D.A., A.K. Fiedler, **C.A. Hamm**, D.L. Cuthrell, E.H. Schools, D.R. Pearsall, M.E. Herbert and P.J. Doran. 2011. Insect conservation in Michigan prairie fen: addressing the challenge of global change. Journal of Insect Conservation 16: 131-142

Hamm C.A. 2010. Multivariate discrimination and description of a new species of *Tapinoma* from the Western United States. Annals of the Entomological Society of America 103: 20-29.

Hamm C.A., D. Aggarwal and D.A. Landis. 2010. Evaluating the impact of non-lethal DNA sampling on two butterflies, *Vanessa cardui* and *Satyrodes eurydice*. Journal of Insect Conservation 14: 11-18.

Hamm C.A. and B. Kamansky. 2009. New record of *Messor chicoensis* from the San Joaquin Valley of California. Sociobiology 53 (2B): 543-547.

Hamm C.A. 2008. Designation of a neotype for Mitchell's satyr. Great Lakes Entomologist 40: 201-202.

GRANTS

Loewy Family Foundation Fellowship ($10,000). Award to conduct standardized butterfly monitoring of fruit-feeding butterflies at the Mohonk Preserve. 2016.

Scriber Scholars Award in Butterfly Conservation ($1,000). Award to conduct line-transect distance sampling of the Mitchell's satyr butterfly. 2011/2012.

Great Lakes Restoration Initiative Program Endangered Species Grant ($215,000). Award # PSGP-07-11 to CA Hamm (author) and DA Landis (PI), to study the population genetics and reproductive parasite status of *Neonympha mitchellii mitchellii* and the reproductive parasite status of *Somatochlora hineana*. 2010

Graduate Research Enhancement Grant ($1,300). The Graduate School, Michigan State University. 2010.

Post-Course Research Award, Organization for Tropical Studies ($670). Award to conduct research on butterfly pollination of *Lantana camera* and *L. trifolia* at the Las Cruces Biological Station. 2010.

Scriber Scholars Award in Butterfly Conservation ($1000). Award to assay Lepidoptera of conservation concern for the bacterium *Wolbachia.* 2009/2010.

Preventing Extinction Funding Request, United States Fish and Wild Service ($50,000). Award to CA Hamm (author) and DA Landis (PI) to conduct research on the status of the bacterium *Wolbachia* in the Mitchell's satyr butterfly. 2009.

Theodore Roosevelt Memorial Fund, American Museum of Natural History (*$*1,500). Award to investigate phylogenetic relationships in the butterfly genus *Neonympha*, 2009.

G.H. Lauff Research Scholar Award. Kellogg Biological Station ($1,500). Research grant to conduct genetic sampling of the Mitchell's satyr butterfly. 2009.

Council of Graduate Students Conference Grant ($300). Michigan State University. 2009.

Graduate Research Enhancement Grant ($2,400). The Graduate School, Michigan State University. 2008.

INVITED PRESENTATIONS

"Why are there so many butterflies?" Monsanto Corporation, December 2016.

"Host breadth, host shifts, and herbivore diversification." XXV International Congress of Entomology "From diet breadth to diversification: understanding host shifts in phytophagous insects" symposium. September 2016.

"Why are there so many butterflies?" University of Texas at Tyler, June 2016.

"Teaching computational skills to researchers." SEARCH Symposium (Scientists Exploring non-Academic caReer CHoices). University of Kansas, April 2016.

“Detecting sex-linked dosage compensation using RNASeq.” Next Generation Sequencing Summer Course 2015, Michigan State University, August, 2015.

“The 150-million-year hangover: side-effects of sexual reproduction in the Lepidoptera.” Texas State University. April, 2015.

“The 150-million-year hangover: side-effects of sexual reproduction in the Lepidoptera.” University of Nebraska, Lincoln. February, 2015.

“Butterflies, flies, and bacteria.” University of Kansas. March, 2014.

"What is a Mitchell's satyr Butterfly? Species concepts and conservation genetics of the federally endangered Mitchell’s satyr butterfly, *Neonympha mitchellii mitchellii*." Invited seminar, University of New Orleans. November 2011.

"What is a Mitchell's satyr Butterfly? Species concepts and conservation genetics of the federally endangered Mitchell’s satyr butterfly, *Neonympha mitchellii mitchellii*." Program in Ecology, Evolutionary Biology & Behavior Graduate Colloquium, Michigan State University. April, 2011.

“Conservation of the Mitchell’s satyr butterfly” 2009 Annual Meeting of the Entomological Society of America. December, 2009.

CONTRIBUTED PRESENTATIONS

“Assembling transcriptomes for *Heliconius melpomene*, *H. cydno*, and *H. erato.*” University of Cambridge. October 2015.

“What is the Mitchell’s satyr butterfly? Contemporary approaches to an old question.” 7th International Conference on the Biology of Butterflies, University of Turku, Finland. August 2014.

“The Mitchell’s satyr butterfly: what is it and how many are there?” Mitchell’s satyr Recovery Team Annual meeting. March 2012.

“Molecular Ecology of the Endangered Mitchell’s Satyr Butterfly.” Colorado State University. February 2011.

“Population Genetics of the Endangered Mitchell’s Satyr Butterfly.” 2010 Annual Meeting of the Entomological Society of America. December 2010.

“Population Genetics and Reproductive Parasites in the Mitchell’s Satyr Butterfly” Mitchell’s satyr Recovery Team Annual Meeting. March 2010.

“Multivariate Discrimination and Description of a new species of *Tapinoma* from the Western United States” 2009 Annual Meeting of the Entomological Society of America. December 2009.

“Disruption of historic metapopulation dynamics and the endangered Mitchell’s satyr butterfly”. Seminar. Conférence Universitaire de Suisse Occidental workshop “Evolution in Metapopulations”. September 2009.

“Update on the *N. mitchellii* Genetics Study”. Seminar. Mitchell’s satyr Recovery Team Annual Meeting. March 2009.

"Genetics, Conservation, and Mitchell's Satyr". Seminar. Mitchell's satyr Recovery Team Annual Meeting. March 2008.

"The Impact of Non-Lethal Sampling on Two Species of Butterfly". Poster. 2008 Stewardship Network Conference. January 2008.

"The Impact of Non-Lethal Sampling on Two Species of Butterfly". Poster. 2007 Annual Meeting of the Entomological Society of America. December 2007.

RESEARCH EXPERIENCE

Postdoctoral Researcher – University of Kansas. *de novo* transcriptome assembly and comparative genomic analysis in the context of sex chromosome evolution in the Lepidoptera; advised by James Walters.

Postdoctoral Scholar – University of California, Davis. Genomics and *Wolbachia* infection effects on *Drosophila suzukii*; advised by David Begun and Michael Turelli.

Graduate Student PhD – Michigan State University. Conservation genetics and biogeography of the federally endangered Mitchell's satyr butterfly, *Neonympha mitchellii*; advised by Douglas Landis and Barry Williams.

Graduate Student MS – California State University, Fresno. Phenotypic and genetic variation of the ant *Tapinoma sessile*; advised by Paul Crosbie.

OTHER EXPERIENCE

Instructor – Software/Data Carpentry Foundation, an organization whose volunteer members teach researchers basic software and computational skills. Instructed courses: National Center for Atmospheric Research, April 2015; Michigan State University, August 2015; Kellogg Biological Station, August 2015; University of California San Francisco, November 2015; University of Notre Dame, March 2016; University of Connecticut, March 2016; Federal Reserve Board of Washington D.C., June 2016; Stony Brook University, August 2016; Federal Reserve Board of Washington D.C., August 2016; Purdue University, October 2016; Federal Reserve Bank of Kansas City, February 2017 [scheduled].

Co-Organizer "Conservation of Butterflies" Symposium at the 2009 Annual Meeting of the Entomological Society of America. This symposium brought together researchers to explore the significant challenges facing butterflies in North America and strategies for overcoming these challenges. A formal agreement was made with the journal American Midlands Naturalist to publish three papers from this symposium.

President, Graduate-Undergraduate Entomology Student Society (GUESS). 2008-2009. As president of GUESS I sought to transform the group from a social club to an organization dedicated to outreach and social engagement. As a result, GUESS has made annual commitments to donate funds for 1) a student scholarship for Bug Camp (an MSU Entomology outreach program aimed to expose young people to the wonders of insects), 2) donate proceeds from a fundraiser to purchase malaria preventing bed-nets for people in Africa, and 3) sponsor a scholarship for an undergraduate to attend the Annual Meeting of the Entomological Society of America.

Vice-President, Graduate-Undergraduate Entomology Student Society (GUESS), 2008. Responsibilities included organizing meetings and group activities

Plant Sciences Recruiting Committee, Michigan State University, 2007-2009. One of two student representatives that helped recruit high quality students with an interest in the plant sciences and related fields.

Scientific Research Diver, NAUI certified Master SCUBA diver and certified by the American Association of Underwater Scientists as a Scientific Research Diver.

Teaching Associate, California State University, Fresno, Fresno, CA. Biological Science 1B, Fall 2004 – Spring 2006, Biology 10, Spring 2005 – Fall 2005, Zoology 10, Spring 2006.

SPECIALIZED TRAINING

Data Carpentry Curriculum Development Meeting. Three-day workshop to develop and assess core curriculum for the reproducible research with Jupyter Notebooks. Berkeley Institute for Data Science, California. January 2017.

Work with Data Institute. One-week workshop focusing on working with geospatial and remote sensing data. National Earth Observation Network. June 2016.

Intermediate Bioinformatics Workshop. One week course on high-level genomic analysis. Bodega Marine Laboratory. February 2016.

Applied Bayesian Modeling in R. One-week advanced workshop on the theory and application of Bayesian statistics. Scottish Centre for Ecology and the Natural Environment. October 2015.

Next Generation Sequencing analysis workshop – invited instructor. One-week advanced workshop on the analysis of NGS data. Kellogg Biological Station, Michigan. August 2015.

Data Carpentry Curriculum Development Meeting. Three-day workshop to develop and assess core curriculum for the genomics teaching module. Cold Spring Harbor Laboratory, New York. March 2015.

Software Carpentry Instructor Training Workshop. Prerequisite course to become an instructor for the Software Carpentry Foundation, a non-profit organization to teach researchers basic software skills. University of California, Davis. January 2015.

Genome Assembly Masterclass. On week workshop on the finer points of genome and metagenome assembly. Taught by C. Titus Brown, Jared Simpson, Lex Negerbraght and Nick Lohman. University of California, Davis. December 2013

Analysis of Organismal Form. Semester course on the methods of geometric morphometrics and examples of their application in various biological disciplines. Online course taught by Christian Klingenberg, University of Manchester. Fall 2012.

Hierarchical models for abundance, distribution and species richness in spatially structured populations using unmarked/R and WinBUGS. One-week workshop on ecological modelling led by Marc Kéry, Richard Chandler, and Andy Royle. USGS Patuxent Wildlife Research Center. April 2012.

Introduction to Coalescent Theory. One-week workshop hosted by the Population Genomics Program and the Doctoral Program in Ecology and Evolution. Taught by Laurent Excoffier, Michael Blum, Matthieu Foll and John Novembre. University of Bern, Switzerland. September 2011.

Analyzing Next-Generation Sequencing Data. Two-week workshop hosted by the Department of Computer Science and Engineering. Taught by C. Titus Brown and Ian Dworkin. Michigan State University. June 2011.

Summer Institute in Statistical Genetics. Specialty workshops hosted by the Department of Biostatistics at the University of Washington. Modules attended: Statistical Computing, Population Genetic Data Analysis, Bayesian Inference, and Markov Chain Monte Carlo Simulations. June 2010.

Organization for Tropical Studies Graduate Course in Tropical Butterfly Ecology. An intensive, two-week field course in Costa Rica focusing on tropical butterfly morphology, ecology, systematics and behavior led by Phil DeVries and Bruce Walsh. May 2010.

Organization for Tropical Studies Graduate Course in Tropical Biology: An Ecological Approach. An intensive, mobile, eight-week field course in Costa Rica that exposed students to tropical ecosystems, research design and practice, and the fundamentals of tropical field biology. Spring 2010.

Evolution in Metapopulations workshop. A three-day workshop examining recent advances in metapopulations modelling. Taught by Ilkka Hanski, Sally Otto, Sergey Gavrilets, and Michael Whitlock. Conférence Universitaire de Suisse Occidental. August 2009.

Recent Advances in Conservation Genetics Workshop. Sponsored by the Laboratory of Genomic Diversity at the National Institutes of Health and the Smithsonian Topical Research Institute. Led by Stephen J. O'Brien and Eldridge Bermingham. January 2009.

EXTERNAL REVIEWER

Biological Invasions
BMC Genetics
Ecological Entomology
Evolution
Frontiers in Zoology
Insect Conservation and Diversity
Journal of Insect Physiology
Myrmecological News
BMC Evolutionary Biology
The Canadian Entomologist
Evolutionary Applications
Florida Entomologist
Gene
Insectes Sociaux
Journal of Insect Conservation