Christopher A. Hamm

(As of 2024-04-09)

CONTACT
INFORMATION

Carmichael, CA 95608 USA
Contact me via email
 butterflyology
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EMPLOYMENT

Lead Data Scientist, Nestlé-Purina
Carmichael, CA, 2022-Present.

Lead Data Scientist, Bayer
Carmichael, CA, 2018-2022.

Data Scientist, Monsanto Company
Woodland, CA, 2017-2018.

EDUCATION

University of California, Davis; Brown Lab (postdoc)
Population Health & Reproduction; 2016-2017.

University of Kansas; Walters Lab (postdoc)
Ecology & Evolutionary Biology; 2014-2016

University of California, Davis; Begun & Turelli Labs (postdoc)
Evolution & Ecology; 2012-2014

Michigan State University; Landis & Williams Labs (graduate student)

- Entomology; PhD., 2012
- Ecology, Evolutionary Biology & Behavior; PhD., 2012

California State University, Fresno; Crosbie Lab (graduate student)

- Biology; M.S., 2008 *with distinction*

California State University, Fresno

- Biology; B.S., 2004 *Magna Cum Laude*

PUBLICATIONS

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.*

Hamm, C.A. 2017. Chromosome Number of the Monarch Butterfly, *Danaus plexippus* (Linnaeus 1758) and the Danainae. BioRχiv.

Marion, Z.H. and **C.A. Hamm**. 2017. A hierarchical Bayesian approach to estimate endosymbiont infection rates. BioRχiv.

Bell, K.L., **C.A. Hamm**, A.M. Shapiro and C.C. Nice. 2017. Sympatric, temporally isolated populations of the Pine White butterfly *Neophasia menapia*, are morphologically and genetically differentiated. *PLoS ONE* 12(5): e0176989.

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. 2016. 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. 2016. 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. 2013. 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.

DATA & SOFTWARE   Bell, K.L., **C.A. Hamm**, A.M. Shapiro and C.C. Nice. Data and code from Sympatric, temporally isolated populations of the Pine White butterfly *Neophasia menapia*, are morphologically and genetically differentiated. Zenodo DOI.

Hamm, C.A. spaceMovie: a Star Wars color palette generator for R. Zenodo DOI.

Marion, Z.H. and **Hamm, C.A.** 2016. Release 1.0 of data and code from BioRχiv preprint. Zenodo DOI.

Hamm, C.A. and J.A. Fordyce. 2016. Data and code from *Evolution* 70: 1156-1160. Data Dryad.

Hamm, C.A. and J.A. Fordyce. 2016. Data and code from *Journal of Insect Science* 16: 39; 1-4. FigShare.

Fordyce J.A., C.C. Nice, **C.A. Hamm** and M.L. Forister. 2016. ordiBreadth: an R package to calculate Ordinated Diet Breadth.

Hamm, C.A. and J.A. Fordyce. 2015. Data and code from *Evolution* 63: 589-601. Data Dryad.

Hamm C.A., D.J. Begun, A. Vo, C.C.R. Smith, P. Saelao, A.O. Shaver, J. Jaenike, and M. Turelli. 2014. Data cand code from *Molecular Ecology* 23: 4871-4885. Data Dryad.

Hamm C.A., V. Rademacher, D.A. Landis and B.L. Williams. 2013. Data and code from *Journal of Heredity* 105: 19-27. Data Dryad

Hamm, C.A. 2013. Data and code from *Insect Conservation and Diversity* 6: 619-626. Data Dryad.

Hamm, C.A. 2010. Data and code from *Annals of the Entomological Society of America* 103: 20-29. FigShare.

Hamm C.A., D. Aggarwal and D.A. Landis. 2010. Data and code from *Journal of Insect Conservation* 14: 11-18. FigShare.

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

Scriber Scholars Award in Butterfly Conservation ($1,000) Michigan State University. 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) United States Fish and Wild Service. Award #PSGP-07-11 to **C.A. Hamm** (author) and D.A. 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) Michigan State University, 2010.

Post-Course Research Award ($670) Organization for Tropical Studies. 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) Michigan State University. Award to assay Lepidoptera of conservation concern for the bacterium *Wolbachia*, 2009/2010.

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

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

G.H. Lauff Research Scholar Award ($1,500) Michigan State University. 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) Michigan State University, 2008.

- "Transformers for Time Series Analysis" World Conference on Data Science & Statistics, June 2024.
- "Adventure thru Sponsor Space - The Legacy of Monsanto and Disney" Pixar, September 2019.
- "Upskilling the Community - Data Fluency at Scale" 2019 Disney Data & Analytics Conference, August 2019.
- "Building Data Fluency at Monsanto" Software Carpentry Mini-Symposium at Technical Community Monsanto, 2018 Annual Meeting, June 2018.
- "How to design a good experiment." UC Davis Data Intensive Biology Summer Institute, June 2017.
- "Why are there so many butterflies?" Monsanto Company, 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 (**S**cientists **E**xploring non-**A**cademic ca**R**eer **CH**oices). University of Kansas, April 2016.
- "The Most Common Infection in the World." Nerd Night Lawrence , January 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*." 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

- "Software Carpentry at Monsanto" at **T**echnical **C**ommunity **M**onsanto, 2018 Annual Meeting, June 2018.
- "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." 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." Annual Meeting of the Entomological Society of America. December 2009.
- "Disruption of historic metapopulation dynamics and the endangered Mitchell's satyr butterfly." Confrence Universitaire de Suisse Occidental workshop "Evolution in Metapopulations". September 2009.
- "Update on the *Neonympha 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." Stewardship Network Conference. January 2008.

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

Certified Instructor Trainer: Software Carpentry Foundation.
Workshops taught:
- The Pennsylvania State University, April 2024.
- Columbia University, January 2020.
- Software Carpentry Foundation, December 2018.
- Georgia Institute of Technology, November 2018.
- The Jackson Laboratory, June 2018.
- Monsanto Company, May 2018.
- Monsanto Company, October 2017.
- Berkeley Institute for Data Science & Lawrence Berkeley Laboratories, August 2017.

Certified Instructor: Software/Data Carpentry Foundation, an organization whose volunteer members teach researchers basic software and computational skills.
Workshops taught:
- Library Carpentry, `bash` Georgia Tech. May 2023.
- Data Carpentry, `python`, Carnegie Mellon University. March 2019.
- Data Carpentry, `R`, University of Southern California. January 2019.
- Software Carpentry , `Python`, Stanford University. August 2018.
- Data Carpentry, `Genomics`, Tucson Plant Breeding Institute. January 2018.
- Data Carpentry, `R`, Grand Valley State University. December 2017.
- Software Carpentry, `R`, Monsanto Company. December 2017.
- Data Carpentry, `Genomics`, Rutgers University. December 2017.
- Data Carpentry, `R`, Federal Reserve Board of Washington D.C. June 2017.
- Data Carpentry, `Genomics`, California State University Monterey Bay. March 2017.
- Software Carpentry, `R`, Federal Reserve Bank of Kansas City. February 2017.
- Software Carpentry, `R`, Purdue University. October 2016.
- Software Carpentry, `R`, Federal Reserve Board of Washington D.C. August 2016.
- Data Carpentry, `R`, Stony Brook University. August 2016.
- Software Carpentry, `R`, Federal Reserve Board of Washington D.C. June 2016.
- Software Carpentry, `R`, University of Connecticut. March 2016.
- Data Carpentry, `R`, University of Notre Dame. March 2016.
- Software Carpentry, `R`, University of California San Francisco. November 2015.
- Data Carpentry, `Genomics`, Kellogg Biological Station. August 2015.
- Software Carpentry, `R`, Michigan State University. August 2015.
- Software Carpentry, `Python`, National Center for Atmospheric Research. April 2015.

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

Software Carpentry Instructor Training Workshop. Required course to become a certified instructor for the Software Carpentry Foundation and Data Carpentry Foundation, non-profit organizations whose mission is to teach researchers basic software skills. University of California, Davis. January 2015.

Teaching Associate California State University, Fresno.
Laboratories taught:
- Biological Sciences 1B - Introductory Biology for Science Majors.
  - Spring 2006
  - Fall 2005
  - Spring 2005
  - Fall 2005
  - Spring 2005
  - Fall 2004
- Biology 10 - Introductory Biology for non-science majors.
  - Fall 2005
  - Spring 2005
- Zoology 10 - Introductory Zoology for non-science majors.
  - Spring 2006

SPECIALIZED
TRAINING

Amazon Web Services Machine Learning Pipeline. Four-day workshop on Machine Learning using AWS and SageMaker resources.

Software Carpentry Instructor Trainer. Certification procedure to train and certify instructors for Software Carpentry. February 2017.

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

Work with Data Institute. One-week workshop focusing on working with geospatial and remote sensing data. **N**ational **E**arth **O**bservation **N**etwork. 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. **S**cottish **C**entre for **E**cology and the **N**atural **E**nvironment. October 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.

Genome Assembly Masterclass. One week workshop on the finer points of genome and metagenome assembly. University of California, Davis. December 2013.

Analysis of Organismal Form. Semester-long class on the methods of geometric morphometrics and examples of their application in various biological disciplines. Online course, 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 modeling. 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. University of Bern, Switzerland. September 2011.

Analyzing Next-Generation Sequencing Data. Two-week workshop hosted by the Department of Computer Science and Engineering. 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.

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

Tropical Biology: An Ecological Approach: Organization for Tropical Studies Graduate Course. 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 modeling. Confrence 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. January 2009.

Scientific Research Diver NAUI certified Master SCUBA diver and certified by the American Association of Underwater Scientists as a Scientific Research Diver. Spring 2006.

EXTERNAL
REVIEWER

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