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Colin Richard Morrison

Education

2008 – 2012 **University of Nevada, Reno** Reno, Nevada
Bachelor of Science – Biology, *Minor* – Political Science

2017 – Present **The University of Texas at Austin** Austin, Texas
Program in Ecology, Evolution and Behavior
PhD Candidate, 5th year – Department of Integrative Biology
Major Advisor: Dr. Lawrence Gilbert
Committee Members: Dr. Amelia Wolf, Dr. Brian Sedio, Dr. John Smiley

Research Experience

Laboratory Technician, Department of Biology, University of Nevada, Reno

Chemical Ecology, Tropical Entomology & Biodiversity Laboratory. Supervisor: Dr. Lee Dyer

- N.S.F./Earthwatch/D.O.D. funded research on ecology and evolution of plant insect chemical ecology, biodiversity, and tropical entomology.
- Curation of the laboratory research Lepidoptera and parasitoid collections.
- March 2011 – June 2015.

Laboratory Technician, Department of Biology, University of Nevada, Reno

Marine Ecosystems Analysis Laboratory. Supervisor: Dr. Jeffrey Baguley

- B.P./N.O.A.A. funded research on effects of Deepwater Horizon Oil Spill on benthic community of the Gulf of Mexico.
- E.P.A. funded research on ecotoxicology of anthropogenic chemical flow into marine ecosystems.
- US Fish and Wildlife Service funded research on benthic community ecology of Gulf of Alaska.
- January 2011 – June 2015.

Forestry Technician, Department of Biology, University of Nevada, Reno

Whittell Forest and Wildlife Area – Little Valley Field Station (UNR). Supervisor: Dr. Stephen Vander Wall

- Conservation, maintenance of Whittell Forest and Wildlife Area (Carson Range, NV).
- June 2011 – June 2015.

Guest Student, Department of Geology and Geophysics, Woods Hole Oceanographic Institution

Bernhard Laboratory and Edgcomb Laboratory. Advisors: Dr. Joan Bernhard, Dr. Virginia Edgcomb

- N.S.F. funded research on biodiversity of deep hypersaline anoxic brines (DHABs).
- Science Party, R/V *Atlantis* Research Cruise AT 18-14, 11/25/11 – 12/8/2012, Piraeus, Greece to Piraeus, Greece.
- May 2012 – August 2012 (DHAB data analysis at Woods Hole Oceanographic Institution).

Curatorial Assistant, Department of Biology, University of Nevada, Reno

UNR, Museum of Natural History. Supervisors: Dr. Elizabeth Leger & Dr. Chris Feldman

- Curation of museum insect collection, collections database management.
- Exhibit setup and publish outreach.
- November 2013 – December 2015

Short-Term Fellow, Smithsonian Tropical Research Institute, Panama City

Gamboa, Panama. Advisor: Dr. Donald Windsor

- Herbivore diet breadth, host plant defensive chemistry and natural enemy interactions.
- Preference and performance of the specialist herbivore: *Chelymorpha alternans*
- Sexual selective patterns amongst disparate phenotypes and genotypes of *Chelymorpha alternans*.
- June 2015 – December 2015

Predoctoral Fellow, Smithsonian Tropical Research Institute, Panama City

Gamboa, Panama. Advisor: Dr. William Owen McMillan

- Chemical ecology of mate choice in *Heliconius* butterflies.
- *Heliconius* phenotypic evolution following CRISPR/Cas9 genome editing procedures.
- Preference, performance, chemistry, and trophic natural enemy interactions of specialist herbivores.
- December 2015 – November 2016.

Research Assistant, Integrative Biology Department, The University of Texas at Austin

Invasive Species Laboratory. Supervisors: Dr. Rob Plowes and Dr. Lawrence Gilbert

- Host quality and chemistry of TX native prickly pear cactus (*Opuntia* spp.)
- Chemical ecology of feeding performance *Cactoblastis cactorum* and TX native cactus moth species.
- Integrated pest management of invasive cactus moth (*Cactoblastis cactorum*).
- Invasion ecology of Guinea grass (*Megathyrus maximus*) in South Texas. Importance of allelopathic inhibition versus shading competition in Guinea grass competitive exclusion of natives.
- August 2019 – Present

Teaching Experience

Teaching Assistant – University of Nevada, Reno

- Entomology (Biology 437), Spring 2013 & 2014
 - Professors: Dr. Lee Dyer

Teaching Assistant – University of Nevada, Las Vegas

- Aikido (PEX 115), Fall 2016 & Spring 2017
 - Professor: Sensei Don Bannai

Teaching Assistant – The University of Texas at Austin

- Introduction to Cell & Molecular Biology (BIO 311C), Fall 2017
 - Professor: Dr. Jennifer Frtitz
- Freshman Research Initiative - Biodiversity (BIO 206L/NSC 109), Spring 2018
 - Professor: Dr. Susan Cameron Devitt

Course Facilitator – The University of Texas at Austin

- Fundamentals of Ecology (BIO 390E), Fall 2018
 - <https://eco-fundamentals.weebly.com/>
 - Designed the course
 - Facilitated course with N. Ivers and W. Behr under supervision of Dr. Tim Keitt

Guest Lecturer – Smithsonian Tropical Research Institute

- Introductory Tropical Field Biology (aka Gigante Course), Fall 2015
 - Professors: Dr. Sabrina Amador & Dr. James Coronado Riviera
- Yale Tropical Biology Course, Entomology Section, Spring 2016
 - Professor: Dr. Eliza Comita

Talks and Presentations

Smithsonian Tropical Research Institute – Behavioral Discussion Group, October 2015

Smithsonian Tropical Research Institute – Fellows Symposium, February 2016

UT Integrative Biology – Graduate Research Symposium, April 2018

UT Ecology Seminar – Ecolunch Research Presentation, Spring 2018, Spring 2019, and Spring 2020

UT Science Under the Stars Public Lecture Series – Science Education, March 2019

Entomological Society of America – Ten Minute Paper Competition, November 2017, 2018, and 2020

Entomological Society of America – Poster, November 2020

Society for Integrative and Comparative Biology – Rising Star in Organismal Botany, January 2020

Ecological Society of America – Late Breaking Poster, August 2020

Texas Master Naturalists, Balcones Canyonlands – Natural history of Texas passion vines insect associates, August 2021

Native Plant Society of Texas – The passion vines of Texas and their connections with animals, December 2021

Peer Review and Professional Service

Annals of the Entomological Society (2014)

National Geographic Society (2016)

Environmental Entomology (2018 – present)

Coleopterists Bulletin (2019 – present)

UT Austin Ecolunch Seminar Facilitator (2018 – 2020)

Symposium Moderator, Annual Fellows Symposium – Smithsonian Tropical Research Institute (February 2016)

Symposium Moderator, 10 TMP Pollinator Health – Entomology Joint Annual Meeting (November 2018)

Entomological Extension Consultations (2018 – present)

Fellowship, Scholarships and Awards Received

Over \$150,000 in grants, scholarships and fellowships awarded over career. Over \$117,000 awarded as a graduate student.

Eagle Scout Award, Boy Scouts of America, Las Vegas, NV USA

- 2008

Millennium Scholar, University of Nevada, Reno, NV USA

- 2008 to 2012 (\$7,680)

Pack Pride Scholarship, University of Nevada, Reno, NV, USA

- 2008 to 2010 (\$3,000)

STRI Short-Term Fellowship, Smithsonian Tropical Research Institute, Panama City, Panama

- June 2015 – November 2015 (\$4,800)

STRI Pre-doctoral Fellowship, Smithsonian Tropical Research Institute, Panama City, Panama

- December 2015 – November 2017 (\$22,000)

Linda Escobar Award, UT Austin, Austin, TX, USA

- February 2017 (\$1,500)

Texas Ecolab Research Grant, Braun & Gresham Associates, Dripping Springs, TX, USA

- Spring 2018 – Fall 2018 (\$11,000)

- Spring 2019 – Fall 2019 (\$8,975)

- Spring 2020 – Fall 2020 (\$8,900)

NSF Graduate Research Fellowship Program, National Science Foundation USA

- Spring 2018 (Honorable Mention)

UT Summer Research Fellowship, The University of Texas at Austin, Austin, TX, USA

- Summer 2018 (\$6,600)

UT Departmental Recruitment Fellowship, The University of Texas at Austin, Austin, TX, USA

- Fall 2018 – Summer 2019 (\$27,000)

NSF LSAMP – REU Mentor Program, National Science Foundation USA & Organization for Tropical Studies, Costa Rica

- Summer 2019 (\$3,600)

UT Integrative Biology Start Up Grant, The University of Texas at Austin, Austin, TX, USA

- April 2019 (\$1,960)

Sigma Xi Grant in Aid of Research, Sigma Xi: The Scientific Research Honor Society, Research Triangle, NC, USA

- January 2020 (\$450)

Jean Andrews Intern Summer Fellowship, The University of Texas at Austin, Austin, TX, USA

- Summer 2020 (\$6,600)

Coleopterists Society Graduate Student Research Enhancement Award, Coleopterists Society, USA

- May 2020 (\$2,000)

Stengl-Wyer College of Natural Science Fellowship, The University of Texas at Austin, Austin, TX, USA

- September 2020 – August 2021 (\$34,000)

UT Integrative Biology Research Award, The University of Texas at Austin, Austin, TX, USA

- Spring 2021 (\$2,450)

- Fall 2021 (\$2500)

Public Service and Outreach

Earthwatch Institute – “Climate Change and Caterpillars”: Arizona USA, California USA, Florida, USA, Costa Rica, Ecuador: supervising citizen scientist involvement in research projects, data and collection in field and laboratory settings.

Boy Scouts of America – Eagle Scouts: numerous public service projects and community progress events.

STEM Night, Veterans Elementary School – K-12 science outreach events.

Boys and Girls Club - College of Science outreach events.

UNR, Museum of Natural History – community science/natural history outreach events.

Make a Wish Foundation –Smithsonian Tropical Research Institute sponsored experiential learning for those children with debilitating ailments that intend to embark upon careers as entomologists.

Gamboa Discovery School – Why are insects ubiquitous and important?

CHISPA - Smithsonian Tropical Research Institute sponsored experiential learning for at-risk children from Panama.

UT Science Under the Stars – Public outreach series established to expose local Austinites to ongoing graduate research.

Texas Master Naturalists – Project development consultant. I work with volunteers in designing ecological studies.

UT Austin Development – Fundraising, scientific communication, and research presentations with potential donors.

Languages

1st Language – **English** (native)
2nd language – **Spanish** (fluent)

Professional Memberships

American Society of Naturalists
Society for Integrative and Comparative Biology
Entomological Society of America (current)
Coleopterists Society (current)

Mentoring

Undergraduate Mentoring

University of Nevada Reno, Reno, NV

- Morgan Ricci (Senior Thesis) – Invasive clam removal operation effects on Lake Tahoe meiofauna.
- Kira Espinoza (Senior Thesis) – Effect of industrial Triclosan on meiofauna communities.

Smithsonian Tropical Research Institute, Gamboa Panama

- Clement Aubert (Research Assistant) – Host plant driven variation in tortoise beetle performance.

The University of Texas at Austin, Austin, TX, USA

- Chloe Nguyen (Senior Thesis) – Variable *Heliconius* sequestration on different host plants.
- Amelia Nelson (Senior Capstone) – *Heliconius* trade-offs between immune response and sequestration.
- Richard Freeman (Senior Capstone) – Performance of *Heliconius* caterpillars on different host plants.
- Wyatt Armstrong (Research Assistant) – *Passiflora* flea beetle performance, behavior and sequestration.
- Marshall Cahill (Research Assistant) – Performance and immune response of *Heliconius* caterpillars.
- Lauren Hart (Research Assistant) – Nutrient availability and resource allocation by *Passiflora*.

National Science Foundation LSAMP REU Program

Summer 2016, Smithsonian Tropical Research Institute, Gamboa Panama

- David Tian & Sylvia Durkin – CRISPR/Cas9 mutagenesis of *Heliconius* wing traits

Summer 2019, Organization for Tropical Studies, La Selva BS, Costa Rica

- Ashlyn Nest – nitrogen fertilization effect on *Passiflora* leaf cyanide production.
- Alana Gipson – *Passiflora* flea beetle and *Heliconius* larvae parasitoid immune response.

Publications

- Morrison C. R.**, MacNeill F., Salazar G., Smiley J., Sedio B. A., & Gilbert L. E. (*in prep*). The structure of a passion vine specialist insect community: Phylogenetic and metabolomic similarity drive parallel structured herbivore assemblages.
- Morrison C. R.**, Bowman E. A., Plowes R. M., & Gilbert L. E. (*in prep*). Prickly pear cactus (*Opuntia engelmanni*) chemical profiles are induced by specialist insect and microbial natural enemies with functionally distinct feeding habits.
- Morrison C. R.**, Armstrong W.A., & Gilbert L.E. (*in prep*). Egg cannibalism by passion vine specialist *Disonycha* Chevrolat flea beetles (Coleoptera: Chrysomelidae: Galerucinae: Alticini).
- Morrison C. R.**, Plowes R. M., Jones N. T., & Gilbert L. E. (2020) Host quality does not matter to native or invasive cactus moth larvae: grave implications for North American prickly pears. *Ecological Entomology*. <https://doi.org/10.1111/een.12964>
- *Press Coverage by* [KUT](#) (Austin NPR affiliate), [UT Austin News](#), and [KXAN](#) (Austin NBC affiliate),
- Darragh K., Montejo-Kovacevich G., Kozak K. M., **Morrison C. R.**, Figueiredo C., Ready J., Salazar C., Linares M., Byers K. J. R., Merrill R. M., McMillan W. O., Schulz S., & Jiggins C. D. (2020). Species specificity and intraspecific variation in the chemical profiles of *Heliconius* butterflies across a large geographic range. *Ecology and Evolution*. 10(9), 3895-3918. <https://doi.org/10.1101/573469>.
- Smiley J. & **Morrison C. R.** (2020). Using a portable hydrogen cyanide gas meter to uncover a dynamic phytochemical landscape. *Applications in Plant Sciences*. (8)4, e11336. <https://doi.org/10.1002/aps3.11336>
- Concha C., Wallbank R. W. R., Hanly J. J., Fenner J., Livraghi L., Rivera E. S., Paulo D. F., Arias C., Vargas M., Sanjeev M., **Morrison C. R.**, Tian D., Aguirre P., Ferrara S., Foley J., Pardo-Diaz C., Salazar C., Linares M., Massardo D., Counterman B. A., Scott M. J., Jiggins C. D., Papa R., Martin A., & McMillan W. O. (2019). Interplay between developmental flexibility and determinism in the evolution of mimetic *Heliconius* wing patterns. *Current Biology*. 29(23), 3996-4009. <https://doi.org/10.1016/j.cub.2019.10.010>
- Morrison C. R.**, Aubert C., & Windsor D. M. (2019). Variation in Host Plant Usage and Diet Breadth Predict Sibling Preference and Performance in the Neotropical Tortoise Beetle *Chelymorpha alternans* (Coleoptera: Chrysomelidae: Cassidinae). *Environmental Entomology*. 48(2), 382-394. <https://doi.org/10.1093/ee/nvy194>.
- Morrison C. R.** (2018). Predation of top predators: cane toad consumption of bullet ants in a Panamanian lowland wet forest. *The Journal of Tropical Ecology*. 0, 1-5, <https://doi.org/10.1017/S0266467418000342>.
- Morrison C. R.**, & Windsor D. M. (2017). The life history of the neotropical Tortoise Beetles *Chelymorpha alternans* from the Republic of Panama. *Annals of the Entomological Society of America*, 111(1), 31-41. <https://doi.org/10.1093/aesa/sax075>.
- Darragh K., Vanjari S., Mann F., Gonzalez M. R., **Morrison C. R.**, Salazar C., Pardo-Diaz C., Merrill R. M., McMillan W. O., Schulz S., & Jiggins C. D. (2017). Male sex pheromone components in *Heliconius* butterflies released by the androconia affect female choice. *PeerJ*, e3953. <https://doi.org/10.7717/peerj.3953>.
- Glassmire A.E., Jeffrey C.S., Forister M.L., Parchman T., Nice C.C., Jahner J.P., Wilson J., Walla T., Robinson L., Smilanich A.M., **Morrison C.R.**, Simbaña W., Salgaje L.A., Dodson C., Miller J., Leonard M.D., & Dyer L.A. (2016) Intraspecific phytochemical variation drives population and community structure for specialist caterpillar. *New Phytologist*, 212: 208-219. <https://doi.org/10.1111/nph.14038>.
- *Special commentary from the editor:* Kessler A. (2016) The geographic mosaic of plant chemistry and its effects on community and population genetic diversity. *New Phytologist*, 212:8-10. <https://doi.org/10.1111/nph.14136>.
- Bernhard J.M., **Morrison C.R.**, Pape E., Beaudoin D.J., Todaro A., Pachiadaki M.G., Kormas K.A., & Edgcomb V.P. (2015) Metazoans of redoxocline sediments in Mediterranean deep-sea hypersaline anoxic basins. *BMC Biology*, 13: 105. <https://doi.org/10.1186/s12915-015-0213-6>.

Bernhard J.M., Kormas K., Pachiadaki M.G., Roche E., Beaudoin D.J., **Morrison C.**, Visscher P.T., Cobban A., Starczak V.R., & Edgcomb V.P. (2014) Benthic protists and fungi of Mediterranean deep hypersaline anoxic basin redoxcline sediments. *Extreme Microbiology*, 5: 605. <https://doi.org/10.3389/fmicb.2014.00605>.

Baguley J.G., Montagna P.A., Cooksey C., Hyland J.L., Bang H.W., Kamikawa A., Bennetts P., **Morrison C.**, Saiyo G., Parsons E., Herdener M., & Ricci M. (2014) Community response of deep-sea soft-sediment metazoan meiofauna to the Deepwater Horizon blow out and oil spill. *Marine Ecological Progress Series*, 528: 127-140. <https://doi.org/10.3354/meps11290>.