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Colin Richard Morrison

Education

- 2017 – Present **The University of Texas at Austin** Austin, Texas
Program in Ecology, Evolution and Behavior
PhD Candidate, 6th year – Department of Integrative Biology
Major Advisor: Dr. Lawrence Gilbert
Committee Members: Dr. Amelia Wolf, Dr. Brian Sedio, Dr. John Smiley
- 2008 – 2012 **University of Nevada, Reno** Reno, Nevada
Bachelor of Science – Biology, *Minor* – Political Science

Research Experience

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

- Invasive Species Laboratory. Supervisors: Dr. Rob Plowes & Dr. Lawrence Gilbert
- Host quality and chemistry of TX native prickly pear cactus (*Opuntia* spp.)
 - Chemical ecology of *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. Allelopathic inhibition and resource competition in exclusion of native flora.
 - Invasive grass arthropod herbivore comparative ecology and integrated biocontrol.
 - August 2019 – present.

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.

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.

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.

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.
 - May 2012 – August 2012 (DHAB data analysis at Woods Hole Oceanographic Institution).

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

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

- Conservation, maintenance of Whittel Forest and Wildlife Area (Carson Range, NV).
- June 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.

Research Assistant, 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.

Teaching Experience

Teaching Assistant – The University of Texas at Austin

- Ecology (BIO 373), Spring 2022
 - Professor: Dr. Laura Gonzales
- Freshman Research Initiative - Biodiversity (BIO 206L/NSC 109), Spring 2018
 - Professor: Dr. Susan Cameron Devitt
- Introduction to Cell & Molecular Biology (BIO 311C), Fall 2017
 - Professor: Dr. Jennifer Frtitz

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

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

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

Talks and Presentations

Ecological Society of America – Contributed talk (August 2022)

Texas Master Naturalists, Balcones Canyonlands – Natural history of Texas passion vines (August 2021)

Native Plant Society of Texas – Natural history of Texas passion vine communities (December 2021)

Ecological Society of America – Late Breaking Poster (August 2020)

Entomological Society of America – Poster (November 2020)

Society for Integrative and Comparative Biology – Rising Star in Organismal Botany (January 2020)
Entomological Society of America – Ten Minute Paper Competition (November 2017, 2018, 2020, and 2021)
UT Science Under the Stars Public Lecture Series – Science education (March 2019, October 2020)
UT Ecology Seminar – Ecolunch Research Presentation (Spring 2018, Spring 2019, and Spring 2020)
UT Integrative Biology – Graduate Research Symposium (April 2018)
Smithsonian Tropical Research Institute – Fellows Symposium (February 2016)
Smithsonian Tropical Research Institute – Behavioral Discussion Group (October 2015)

Peer Review and Professional Service

Coleopterists Bulletin (2019 – present)
Entomological Extension Consultations (2018 – present)
Environmental Entomology (2018 – 2020)
UT Austin Ecolunch Seminar Facilitator (2018 – 2020)
Symposium Moderator, 10 TMP Pollinator Health – Entomology Joint Annual Meeting (November 2018)
Symposium Moderator, Annual Fellows Symposium – Smithsonian Tropical Research Institute (February 2016)
National Geographic Society (2016)
Annals of the Entomological Society (2014)

Fellowship, Scholarships and Awards Received

Over \$156,000 in grants, scholarships and fellowships awarded over career. Over \$123,000 awarded as a graduate student.

Ari Blattstein Fellowship, The University of Texas at Austin, Austin, TX, USA

- January 2023 (\$3,000)

Graduate School Professional Development Award, The University of Texas at Austin, Austin, TX, USA

- June 2022 (\$845)

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

- Spring 2021 (\$2,450)

- Fall 2021 (\$2500)

- Fall 2022 (\$2500)

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

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

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

- May 2020 (\$2,000)

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

- Summer 2020 (\$6,600)

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

- January 2020 (\$450)

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

- April 2019 (\$1,960)

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

- Summer 2019 (\$3,600)

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

- Fall 2018 – Summer 2019 (\$27,000)

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

- Summer 2018 (\$6,600)

NSF Graduate Research Fellowship Program, National Science Foundation USA

- Spring 2018 (Honorable Mention)

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)

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

- February 2017 (\$1,500)
- STRI Pre-doctoral Fellowship**, Smithsonian Tropical Research Institute, Panama City, Panama
- December 2015 – November 2017 (\$22,000)
- STRI Short-Term Fellowship**, Smithsonian Tropical Research Institute, Panama City, Panama
- June 2015 – November 2015 (\$4,800)
- Pack Pride Scholarship**, University of Nevada, Reno, NV, USA
- 2008 to 2010 (\$3,000)
- Millennium Scholar**, University of Nevada, Reno, NV USA
- 2008 to 2012 (\$7,680)
- Eagle Scout Award**, Boy Scouts of America, Las Vegas, NV USA
- 2008

Public Service and Outreach

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

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

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

Gamboa Discovery School – Why are insects ubiquitous and important?

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

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.

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

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.

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

Boys and Girls Club - College of Science outreach events.

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

Languages

1st Language – **English** (native)

2nd language – **Spanish** (fluent)

Professional Memberships

Ecological Society of America (current)

Entomological Society of America (current)

Coleopterists Society

American Society of Naturalists

Society for Integrative and Comparative Biology

Mentoring

Undergraduate Mentoring at Home Institutions

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

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

Smithsonian Tropical Research Institute, Gamboa Panama

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

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 estuarine meiofaunal communities.

National Science Foundation REU Program

Summer 2022 (InSTInCT), The University of Texas at Austin, Austin TX, USA

- Allison Morales Palomino – biodiversity collections

Summer 2019 (LSAMP), 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.

Summer 2016 (Site Grant), Smithsonian Tropical Research Institute, Gamboa Panama

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

Publications

- Morrison, C. R.,** Smiley, J. T., MacNeill, F., Salazar, G., Sedio, B. A., and L. E. Gilbert. *In prep.* Secondary metabolites and ant attendance drive the diverse assemblage structure of a coevolved passion vine specialist insect community.
- Morrison, C. R.,** Armstrong, W.A., and L. E. Gilbert. *In prep.* Egg cannibalism by passion vine specialist *Disonycha* Chevrolat flea beetles (Coleoptera: Chrysomelidae). <https://www.biorxiv.org/content/10.1101/2020.04.15.005611v1>
- Morrison, C. R.,** Bowman, E. A., Plowes, R. M., and L. E. Gilbert. *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.,** Hart, L., Wolf, A., Sedio, B. E., Armstrong, W.A., and L. E. Gilbert. *Submitted* Higher soil nutrient availability provides plants with survival bonuses, not trade-offs: correlated growth traits, chemical defenses, and metabolomic expression of a tropical passion vine.
- Moskowitz, N. A., Alvarez-Buylla, A., **Morrison, C. R.,** Chamba, A., Rentería, J., Tapia, E. A., Coloma, L. A., Donoso, D. A., and L. A. O’Connell. *In review.* Poison frog diet and chemical defense are influenced by availability and selectivity for ants
- Robinson, M.L., P.G. Hahn, B.D. Inouye, N. Underwood, S.R. Whitehead, K.C. Abbott, E.M. Bruna, N.I. Cacho, L.A. Dyer, ... **C.R. Morrison,** ... and W.C. Wetzel. *In review.* Plant size, latitude, and phylogeny explain variability in global herbivory.
- Morrison, C.R.,** Nguyen, C., and L. E. Gilbert. 2023. The role of host plant usage and the accumulation of toxic secondary chemical compounds across the life cycle of a passion vine specialist butterfly. *Ecological Entomology*. <https://doi.org/10.1111/een.13229>
- Morrison C. R.,** Rhodes, A. R., Bowman, E. A., Sedio, B. E., Plowes, R. M., and L. E. Gilbert. 2023. Adding insult to injury: Light competition and novel weapons interact to facilitate Guinea grass invasion. *Ecosphere* 14:e4438. <https://doi.org/10.1002/ecs2.4438>
- *Press Coverage by* [UT Austin News](#).
- Morrison, C. R.,** Plowes, R. M., Jones, N. T., and L. E. Gilbert. 2020. Host quality does not matter to native or invasive cactus moth larvae: grave implications for North American prickly pears. *Ecological Entomology* 46:319–333. <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., and C. D. Jiggins. 2020. Species specificity and intraspecific variation in the chemical profiles of *Heliconius* butterflies across a large geographic range. *Ecology and Evolution* 10:3895–3918. <https://doi.org/10.1101/573469>.

- Smiley, J. and **C. R. Morrison**. 2020. Using a portable hydrogen cyanide gas meter to uncover a dynamic phytochemical landscape. *Applications in Plant Sciences* 8: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., and W. O. McMillan. 2019. Interplay between developmental flexibility and determinism in the evolution of mimetic *Heliconius* wing patterns. *Current Biology* 29:3996–4009. <https://doi.org/10.1016/j.cub.2019.10.010>
- Morrison, C. R.**, Aubert, C., and D. M. Windsor. 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* 48:382–394. <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.**, and D. M. Windsor. 2017. The life history of the neotropical Tortoise Beetles *Chelymorpha alternans* from the Republic of Panama. *Annals of the Entomological Society of America* 111:31–41. <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., and C. D. Jiggins. 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., and L. A. Dyer. 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., and V. P. Edgcomb. 2015. Metazoans of redoxcline sediments in Mediterranean deep-sea hypersaline anoxic basins. *BMC Biology* 13. <https://doi.org/10.1186/s12915-015-0213-6>.
- Bernhard, J. M., Kormas K., Pachiadaki, M. G., Rocke, E., Beaudoin, D. J., **Morrison, C. R.**, Visscher, P. T., Cobban, A., Starczak, V. R., and V. P. Edgcomb. 2014. Benthic protists and fungi of Mediterranean deep hypersaline anoxic basin redoxcline sediments. *Extreme Microbiology* 5. <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. R.**, Saiyo, G., Parsons, E., Herdener, M., and M. Ricci. 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>.