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# Colin Richard Morrison

## Education

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- 2008 – 2012      **University of Nevada, Reno**                      Reno, Nevada  
*Bachelor of Science – Biology, Minor: Political Science - Foreign Affairs*
- 2017 – Present    **The University of Texas at Austin**                      Austin, Texas  
*Program in Ecology, Evolution and Behavior*  
*PhD Candidate, 3<sup>rd</sup> year – Department of Integrative Biology*  
*Major Advisor: Dr. Lawrence Gilbert*  
*Committee Members: Dr. Amelia Wolf, Dr. Brian Sedio, Dr. John Smiley*

## Research Experience

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### 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.

### 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).

### 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.

### 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*).
- August 2019 – Present

## Teaching Experience

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### **Teaching Assistant** – University of Nevada, Reno

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

### **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

### **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 Fritztz
- 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

## Talks

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**Smithsonian Tropical Research Institute** – Behavioral Discussion Group October 5<sup>th</sup>, 2015

**Smithsonian Tropical Research Institute** – Fellows Symposium February 19<sup>th</sup>, 2016

**UT Ecolunch Seminar Series** – November 2<sup>nd</sup>, 2017

**Entomological Society of America** – 10 Minute Paper Graduate Student Competition November 6<sup>th</sup>, 2017

**UT Integrative Biology** – Graduate Research Symposium April 7<sup>th</sup>, 2018

**UT Ecology Seminar** – Spring 2018, Spring 2019, Spring 2020

**UT Science Under the Stars Public Lecture Series** – “Chemistry is the Language of Life”, November 8<sup>th</sup>, 2018

**Entomological Society of America** – November 2018 and 2017

**Society for Integrative and Comparative Biology** – Rising Star in Organismal Botany, January 5<sup>th</sup>, 2020

**Ecological Society of America** – Late Breaking Poster, August 4<sup>th</sup>, 2020

## Peer Review and Professional Service

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**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)  
**Public Entomological Extension Consultations** (2019 – present)

## Fellowship, Scholarships and Awards Received

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**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)

**Stengl-Wyer College of Natural Science Fellowship**, The University of Texas at Austin, Austin, TX, USA  
- September 2020 – August 2021 (\$34,000)

## Public Service and Outreach

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**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.

## Languages

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1st Language – **English** (native)

2nd language – **Spanish** (proficient – as in I conduct business with the tool)

## Professional Memberships

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American Society of Naturalists

Entomological Society of America (current)

Society for Integrative and Comparative Biology (current)

Coleopterists Society (current)

## Mentoring

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### 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.
- David Tian & Sylvia Durkin (STRI REU Students) – CRISPR/Cas9 mutagenesis of *Heliconius* wing traits

#### 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.

### **National Science Foundation LSAMP REU Program, Organization for Tropical Studies, La Selva BS, Costa Rica** Summer 2019

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

## Publications

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**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. (*in press*). Texas *Opuntia* host quality and usage by native and invasive cactus specialist moth larvae (Lepidoptera: Pyralidae): Implications for the future of North American prickly pear cactus flora.

Darragh, K., Montejó-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*. <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-Díaz, 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*. <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-Díaz 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 redoxcline 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., Rocke 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>.