

LEE A. DYER

174 Hereford Way, Reno, NV 89521

Professor, Biology Department

University of Nevada Reno

ldyer@unr.edu

EDUCATION

- B.A. Biochemistry; B.A. English; University of California, Santa Barbara; 1983-1987
- Ph.D. Ecology; University of Colorado, Boulder; 1991-1994

ADMINISTRATIVE EXPERIENCE

- Director, Ecology, Evolution, Conservation Biology program. 78 faculty, 82 graduate students (in 2022), 2013 - 2022
- Scientific co-director, Center for Chemical Ecology, University of Nevada Reno. 20 faculty, ~\$1M annual budget, collaborators in 12 countries across the Americas; 2013 – present
- Founder and director, Western Colorado Center for Tropical Research 1995-2000

RESEARCH

- Current research program focused on tritrophic interactions, chemical ecology, biodiversity, tropical ecology, climate change, and conservation in natural and managed ecosystems
- Postdoctoral Fellow, University of California, Santa Cruz, 6/94-9/95

MENTORING

- Advised or trained - 11 postdoctoral research associates, 42 graduate students, 45 undergraduates, 3 Costa Rican field technicians, 5 Ecuadorian field technicians, 1 Peruvian field researcher, 6 Brazilian field researchers, 1 Argentinian field leader.
- Postdoctoral research associates advised: Grant Gentry, John Stireman, Jim Miller, Cintia Lepesqueur, Tara Massad, Harold Greeney, Lora Richards, Oren Shelef, Andre Rangel, Geraldo Freire, Behanz Balmaki
- Graduate students advised (as major advisor or co-advisor): Malia Fincher, Iris Rodden, Clark Pearson, Stephanie Short, John Carlson, Genoveva Rodríguez, Michael Olson, Kathleen Burke, Angela Smilanich, Tara Massad, Heidi Connahs, Mark Fox, Rebecca Hazen, Patricia Guambi Dahuas, Emilia Perez, Laura Braga, Ricardo Mattos, Geraldo Freire, Sheila Sherrer, Raiane Serejo, Vince Salerno, Pornsawan Poopat, Andrea Glassmire, Nick Pardikes, Jane Dell, Will Lumpkin, Heather Slinn, Diego Campos, Danielle Salcido, Chanchanock Sudta, Masoud Rostami, Santiago Villamarin, Ericka Kay, Lydia Doan, Tara Christensen, Jasy Trujillo, Chloe Collier, Abigail Jarrett, Joselyn Atuhairwe, Christian Conners, Cindy Flautero, Emily Brewer, Samantha Romines

TEACHING

Professor, University of Nevada Reno, 7/08 – present; (Assoc. Prof, 7/08 – 6/10)

Professor, Tulane University, 1/01 – 6/08; (Assoc. Prof, 1/01 – 1/05)

Associate Professor, Mesa State College, 8/95 - 12/00 (Assistant Prof, 8/95 – 1/00; taught 19 different courses, 12 credits/semester)

Visiting Professor, Colorado State University, Fort Collins, 8/98 - 12/98

Lecturer, University of California, Santa Cruz, 2/95 - 6/95

TALKS (selected, since 2004)

Invited seminars/colloquia/symposia 2004-2024

Southwest Research Station, 2004; Oklahoma University, 2004; Indiana University, 2005; Organization for Tropical Studies, Costa Rica, 1997; yearly, 1999-2008; University of California Davis, 2005; Bodega Marine Laboratory, 2005; Mesa State College, 2005; Rice University, 2005; University of Kentucky, *Graduate Student Select Lecture*, 2005; Louisiana State University, 2005; University of Texas, Austin, 2006; University of Maryland, 2006; Wright State University, 2006; Southeastern Louisiana University, 2006; University of Missouri St. Louis, 2007; University of Nevada Reno 2007; Southwest Research Station, 2008; Wesleyan University, 2008; CUNY Staten Island, 2008; University of Missouri Colombia, 2008; University of Illinois, 2009; Chico State, 2009; University of Brasilia, Brazil, 2009 (3 talks); University of Campinas, Brazil, 2009; Organization for Tropical Studies, 2010; Occidental University, 2010; UNR College of Science, *Distinguished Faculty Lecture*, 2010; Pittsburgh University, 2011; UC Davis, 2011; University of Washington, *Graduate Student Select Lecture*, 2011; University of California Berkeley, 2012; International conference on biodiversity, Guayaquil Ecuador, keynote speaker, 2012; University of Sao Paulo, Brazil, 2012; Gordon Research Conference – Plant Herbivore Interactions, 2013 (invited speaker); University of Georgia, Athens, *Graduate Student Select Lecture*, 2013; University of Brasilia, Brazil, 2014; ECOSUR, Mexico, 2014; University of Utah, 2015; University of Brasilia, Brazil, 2015; University of Campinas, Sao Paulo, Brazil, 2015; University of Brasilia, Brazil, 2016; Tyson Research Center, Washington University, St. Louis, 2016; Texas A&M, 2017; UNICAMP, Brazil, 2018; USP, Brazil, 2018; MSU 2018; Instituto Nacional de Biodiversidad, Quito, Ecuador, 2019; Charles Darwin Center, Galapagos, 2019; University of Cincinnati, 2019; McGuire Butterfly Center, UFL, 2020; Earthwatch online symposium talk, 2020; Universidad Nacional Intercultural de la Selva Central Juan Santos Atahualpa online symposium talk, 2020; University of Guelph, 2021; University of Brasilia, 2021; University of Pittsburgh, 2021; Kent State University, 2022; Biblioteca Nacional, Quito Ecuador, 2023; Centro de Ecología, Caracas, Venezuela, 2023; ELEN, Tena, Ecuador, 2024; Vaupes, Colombia, 2025; USP, Brazil, 2025

Contributed papers and symposia

El I Congreso Colombiano de Lepidopterología, invited lecture, 2023
Ecological Society of America, Annual Meetings, 1996-2010, 2013-2019, 2021-2024
Rocky Mountain Population Biologists, Annual Meeting, 1999
Entomological Society of America, Annual Meetings, 1999, 2001, 2003, 2007-2019; 2021-24
International Entomophagous Insects Meeting, 2003, 2016
International Caterpillar Biodiversity and Conservation Meeting, 2003
Association of Tropical Biologists, Annual Meetings, 2007; 2021; 2022
International Congress of Entomology, 2008, 2016; 2022
Gordon Research Conference 2013 (lecture, posters)
European Lepidoptera Society, Keynote lecture, 2015
International Insect-Plant Interactions meeting, Tours France, Plenary Lecture, 2017

OTHER SKILLS AND INTERESTS

Fluent in Spanish
Proficient in Portuguese and French
Expert technical rock climber with over 50 first ascents
Active in environmental and political issues; consultant for applied statistics; Poet

PEER REVIEW, EDITORIAL, AND PANEL SERVICE 2005 - 2025

Guest Editor, Current Opinions in Insect Science (2023)
Editor, Ecology (2012-present)
Editor, Frontiers in Chemical Ecology (2022-present)
Editor, Annals of the Entomological Society of America (2008 - 2023)
Editorial Board, Food Webs (2014-2017)
Editor, Biotropica (2005 – 2010)
National Institute of Health (2 panels; most recent panel: 2004)
National Science Foundation (10 panels; most recent panels: 2 in 2018)
National Science Foundation (112 proposals)
United States Department of Agriculture (1 panel)
United States Department of Agriculture (16 proposals)
Czech Academy of Sciences (5 proposals)
DOE (5 proposals)
Reviewer for 28 journals, mean of 6 papers reviewed per journal

PROFESSIONAL ORGANIZATIONS

Ecological Society of America, 1995-present
Entomological Society of America, 1999-present
Association for Tropical Biology and Conservation, 1995-2008
American Association for the Advancement of Science, 2014-present

AWARDS

1999 – Mesa State College Distinguished Faculty Award
2000 – Mesa County Colorado, Leader for the New Millennium Award
2002 – New Orleans 40 under 40, young people making remarkable contributions locally and globally
2004 – University of Pittsburgh, Distinguished Ecologist Award
2005, 2011, 2013 – University of Kentucky, University of Washington, University of Georgia, Graduate Student Select speaker
2011 – University of Nevada, Hyung K. Shin Outstanding Research Award
2014 – University of Nevada, Foundation Professor
2023 – AAAS fellow

GRANT/FELLOWSHIP SUPPORT, 2006-2026

CNPQ, Brazil, Impactos da urbanização na montagem de comunidades e conservação da entomofauna no Cerrado brasileiro: uma abordagem multi-taxa envolvendo Inteligência Artificial. \$250,000 (funds go to UnB); Awarded 06/01/2025; ends 5/30/2027; PI: Geraldo Freire; co-PIs Dyer et al.
CNPQ and Fapesp, Brazil, INCT de Interações Bióticas; ~4M (funds go to USP); awarded 1/1/2025 ends 12/31/2028; PI: Massuo Kato; co-PIs: Dyer, Jeffrey, Richards, et al.
National Science Foundation (NSF), coPI (M. Matocq, 1st PI), NRT-URoL: Chemically-mediated biotic interactions in the age of metabolomics, genomics and enhanced macroecological data. \$3M, 08/23-07/28
NSF, coPI (L. Richards, 1st PI), Quantifying the phytochemical landscape through Indigenous Knowledge, interaction diversity, genomics, and network dynamics, \$3M, 12/21-12/26
USFS, An experimental and collaborative approach to fire research and management in Ecuador. \$350K, 12/21-12/24
NSF, EAGER: Quantifying Great Basin butterfly-pollen networks across spatial and temporal disturbance gradients. \$280K, 3/21 – 2/23

GRANT/FELLOWSHIP SUPPORT, 2005-2025 (continued)

NSF, coPI (M. Forister 1st PI), LTREB: Predicting the success of montane species in an era of climatic upheaval. \$410K, 6/21-5/25
NSF, coPI (A.M. Smilanich 1st PI), Collaborative Research: Novel trophic interactions determined by phytochemistry, pathogen infection, and parasitoids, \$1M combined budget, 8/19 - 7/22
NSF and FAPESP (Brazilian funding agency), Dimensions of Biodiversity, \$4M combined budgets, 11/14-10/19
NSF, Dissertation Improvement Grant (DIG; A. Glassmire), \$19K
Department of Defense (SERDP), Biodiversity, ~\$2.4M (J. O'Brien 1st PI) 4/12-3/17
NSF, Systematics, ~\$400K (A. Smilanich 1st PI), 1/12-12/14
NSF, Biotic Surveys and Inventories (BSI, collaborative budget), ~\$1.2M, 9/10 – 8/13
NSF, Chemistry, 8/07 – 7/10, \$298K (collaborative budget)
NSF, BSI, 9/07 – 8/10, ~\$600K (collaborative budget)
Tulane University Research Enhancement, 5/07-6/08, \$85K
National Institute for Climate Change Research (NICCR), 6/07-5/12, \$1.3M (CoPI with Tornquist and Chambers)
NSF, Ecology, 8/06 – 7/09, \$293K (D. Bowers 1st PI)
NSF, Ecology (SGER), 2/06 – 2/07, \$60K
NSF, Dissertation Improvement, 5/05 – 5/07, (for graduate student, M. Fincher) \$10K
National Geographic, 9/05 – 10/06, \$25K (awarded directly to PI)
NSF, BSI, 8/04 – 7/07, \$415K (collaborative budget, includes supplements)
NSF, Ecology 5/04 – 4/07, \$345,000 (collaborative budget, includes supplements)
NICCR, 9/04 – 8/07, \$320,000 (with supplements)
USDA, 9/02 – 5/05, \$79,000
Louisiana BOR (equipment grant with T. Bianchi), 1/02 – 1/05, \$101,000
Louisiana BOR (graduate student fellowship grant with D. Heins) 9/04 – 5/08, \$80,000
NSF, Ecology, 9/00 - 8/05, \$183,000
OTS, 10/98, 6/03, 6/08 \$25,000
Earthwatch Institute, 8/96 - 12/25, (6 renewals) ~\$6 M

SELECTED PUBLICATIONS

*Hirsch index: 55; i10 index: 141; 37 publications in high impact journals: **Nature** (2 papers in *Nature* + 4 papers in *Nature* journals); **Science** (1 paper in *Science* + 1 in *Science Advances*); **PNAS** (7 papers); **Ecology Letters** (5 papers); **Ecology** (17 papers)*

186. Connors, C.J., M.L. Forister, A.M. Smilanich, J.O. Stireman, and L.A. Dyer. 2026. Host morphology structures trophic interactions in a hyperdiverse lineage of parasitoid flies. **Ecology Letters**, in review.
185. xxx, L.A. Dyer, xxx. 2026. Global patterns in plant–pollinator specialisation. **Nature Ecology & Evolution**, in press.
184. Balmaki, B. and L.A. Dyer. 2026. Reorganizing Butterfly–Plant Interaction Networks Under Environmental Change: Conservation and Ecological Sustainability. **Ecologies**, in press.
183. Balmaki, B., M. Rostami, and L.A. Dyer. 2026. Historical restructuring of butterfly–pollen networks: plant-resource shifts and implications for pollination resilience. **Scientific Reports**, in review.
182. Kay, E.R., K. Lunaria, L.A. Richards, L.A. Dyer, and M.L. Forister. 2026. Bugs in the bud:

An entomological road trip through Cannabis fields of the West. *Journal of Applied Entomology*, in press.

181. Villamarin-Cortez S, Obando-Tello B, Román-RR R, Noriega JA, Yáñez Coronel WJ, Dyer L.A. 2026. Agroforestry benefits on dung beetle diversity of the Andean-Chocó region in Ecuador. *PeerJ* 14:e21163 <https://doi.org/10.7717/peerj.21163>
180. de Brito Freire Jr, G., I. P. dos Santos Ribeiro, A. C. L. de Matos, S. C. Schirmer, E. G. Santos, F. V. da Costa, F. M. Gawryszewski, L. A. Dyer, O. J. Marini-Filho, and P. Togni. 2026. Concrete jungle: habitat heterogeneity acts as environmental filter on multidimensional diversity of fruit-feeding butterflies in urban savannahs of Cerrado biome. *Urban Ecosystems* 29:110. <https://doi.org/10.1007/s11252-026-01951-3>
179. Uckele, K. A., C. S. Philbin, L. A. Richards, L. A. Dyer, J. P. Jahner, and T. L. Parchman. 2026. Admixture and environment shape population genetic and phytochemical variation across a conifer hybrid zone (*Juniperus*, Cupressaceae). *Journal of Heredity* esag004.
178. Chambers, J. Q., A. J. N. Lima, G. Pastorello, B. O. Gimenez, L. Meng, L. A. Dyer, Y. Feng, C. S. da Silva, R. C. de Oliveira, A. Weber, C. Koven, R. Negrón-Juárez, G. C. Spanner, T. D. Gai, C. G. Fontes, A. C. de Araújo, N. McDowell, R. Leung, D. M. Marra, J. Warren, D. C. Souza, C. Wright, K. Jardine, M. Longo, C. Xu, P. V. A. Fine, R. A. Fisher, J. Tomasella, J. dos Santos, and N. Higuchi. 2025. Hot droughts in the Amazon: a window to a future hypertropical climate. *Nature* <https://doi.org/10.1038/s41586-025-09728-y> [supporting data and code: Dyer, L.A., J.Q. Chambers, G. Pastorello, and A. Weber. 2025. Hot droughts and forest tree dynamics in the Amazon—statistical models, scripts, data, and outputs. Environmental System Science Data Infrastructure for a Virtual Ecosystem (ESS-DIVE), United States; Next-Generation Ecosystem Experiments (NGEE) Tropics.]
177. Christensen, T., L.A. Dyer, C. Halsch, A. Shapiro, A.M. Smilanich, and M.L. Forister. 2025. Specialized flower visitation in montane butterflies is associated with positive population trajectories over time. *Ecology* 106: e70236. <https://doi.org/10.1002/ecy.70236>.
176. Philbin, C.S., Burroughs, M., Richards, L.A., Faske, T.M., Dyer, L.A., Parchman, T.L. and Jeffrey, C.S., 2025. Leveraging phytochemical variation in *Piper scintillans* Trel. to discover novel flavanone meroterpenes. *Phytochemistry Letters*, 69, p.103134.
175. Oliveira, C.R.; Burroughs, M.J.; Richards, L.A.; Dyer, L.A.; Urbano-Muñoz, F.; Lee, C.; Warner, M.; Dodson, C.D.; Wallace, I.S.; Jeffrey, C.S. 2025. ¹H-NMR Guided Isolation of Bioactive Compounds from Species of the Genus *Piper*. *Molecules* 30:2020. <https://doi.org/10.3390/molecules30092020>.
174. Christensen, T., L.A. Dyer, M.L. Forister, M.D. Bowers, A. Carper, M.B. Teglas, P. Hurtado, V. Peechatt, and A.M. Smilanich. 2025. Disease from leaves to landscapes: Viral hotspots are determined by spatial arrangement and phytochemistry of host plants in specialist caterpillars. *Proceedings of the Royal Society B*, 292:20242753. <https://doi.org/10.1098/rspb.2024.2753>
173. Kay, E.R., C.S. Philbin, L.A. Richards, M.L. Forister, C. Jeffrey and L.A. Dyer. 2025. Effects of water and wind stress on phytochemical diversity, cannabinoid composition, and arthropod diversity in hemp. *Plants* 14:474. <https://doi.org/10.3390/plants14030474>.
172. Rostami, M., L. Kydd, B. Balmaki, L.A. Dyer and J.M. Allen. 2025. Deep Learning for Accurate Classification of Conifer Pollen Grains: Enhancing Species Identification in Palynology. *Frontiers in Big Data*, 8, x. doi: 10.3389/fdata.2025.1507036.
171. Dyer, L.A., Smilanich, A.M., Gompert, Z. and Forister, M.L. 2024. Insect conservation,

- technological traps, and the fading arts of natural history and field ecology. *Current Opinion in Insect Science*, p.101261.
170. Forister, M.L., Dyer, L.A., Gompert, Z. and Smilanich, A.M. 2024. Editorial overview: Global change biology: Novel perspectives on futures, mechanisms, and the human element of insect conservation in the Anthropocene. *Current Opinion in Insect Science*, 62(C).
 169. Christensen, T., M.L. Forister, A.M. Smilanich, L.A. Dyer. 2024. Host plant-mediation of viral transmission and its consequences for a native butterfly. *Ecology*. 105: e4282. <https://doi.org/10.1002/ecy.4282>.
 168. Vaudo, A. Dyer, L.A., and A. Leonard. 2024. Pollen nutrition structures bee and plant community interactions. *Proceedings of the National Academy of Sciences, USA*. 121 (3) e2317228120, <https://doi.org/10.1073/pnas.2317228120>
 167. Rostami, M., Balmaki, B., Allen, J., and L.A. Dyer. 2024. Transforming Palynology: Deep Learning Approaches to inform Climate, Ecological, and Environmental Studies. *Applications in Plant Sciences*.
 166. Baguley, J.G., M.A. Rostami, E. Baldrighi, H.W. Bang, L.A. Dyer, and P.A. Montagna. 2024. Harpacticoid copepods expand the scope and provide family-level indicators of the Deepwater Horizon oil spill deep-sea impacts. *Ecological Indicators* 202:116343 <https://doi.org/10.1016/j.marpolbul.2024.116343>.
 165. Doan, L.M., Miller, J.S., Brown, J.W., Forister, M.L., and L.A. Dyer. 2024. Two new species of the hyperdiverse geometrid moth genus *Eois* (Lepidoptera; Geometridae; Larentiinae) from Ecuador, with descriptions of early stages. *Zookeys*. <https://doi.org/10.3897/zookeys.1192.111275>.
 164. Fernando Campos-Moreno, D., L.A. Alberto Lara-Perez, L.A. Dyer, J.B. Whitfield, and C. Pozo. 2025. A new species of *Enicospilus* Stephens, 1835 (Ichneumonidae, Ophioninae) from southern Mexico, parasitic on *Zanola verago* Cramer, 1777 (Lepidoptera, Apatelodidae) feeding on *Piper neesianum* C. DC. (Piperaceae). *Diversity* 17:466.
 163. Freire, G., Salcido, D., Dyer, L.A., and I. Diniz. 2024. Habitat heterogeneity shapes multiple diversity dimensions of fruit-feeding butterflies in an environmental gradient in the Brazilian Cerrado. *Forest Ecology and Management*. <https://doi.org/10.1016/j.foreco.2024.121747>.
 162. Balmaki, B., Rostami, M., Allen, J., and L.A. Dyer. 2024. Effects of climate change on Lepidoptera pollen loads and pollination services in space and time. *Oecologia* <https://doi.org/10.1007/s00442-024-05533-y>.
 161. Grele, A., Massad, T.J., Uckele, K.A., Dyer, L.A., Antonini, Y., Braga, L., Forister, M.L., Sulca-Garro, L., Kato, M., Lopez, H.G., Nascimento, A.R., and L.R. Richards. 2024. Intra and interspecific diversity in a tropical plant clade alter herbivory and ecosystem resilience. *Elife* <https://elifesciences.org/articles/86988>.
 160. Halsch, C., Shapiro, A., Dyer, L.A., Smilanich, A.M., Parra, A., Gompert, Z., and M.L. Forister. 2023. Thirty-six years of butterfly monitoring, snow cover, and plant productivity reveal negative impacts of warmer winters and increased productivity on montane species. *Global Change Biology* e17044.
 159. Dyer, L.A. 2023. Book Review: Essential Entomology. *American Entomologist* 69:53-54.
 158. 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, et al. , and W.C. Wetzal. 2023. Plant size, latitude, and phylogeny explain within-population variability in herbivory. *Science*. 382:679-683.
 157. Jin S, KS Parks, DH Janzen, W Hallwachs, LA Dyer, & JB Whitfield. 2023. The Wing

- Interference Patterns (WIPs) of Parapanteles (Braconidae: Microgastrinae): demonstrating a powerful and accessible tool for species-level identification of small winged insects. *Journal of Hymenoptera Research*. 96:967-982. doi: 10.3897/jhr.96.111382.
156. Rostami, M.A., Balmaki, B., Dyer, L.A., Allen, J.M., Sallam, M.F., and F. Frontalini, 2023. Efficient Pollen Grain Classification using pre-trained Convolutional Neural Networks: A Comprehensive Study. *Journal of Big Data* 10:151.
 155. Massad, T., Nascimento, A.R., Campos, D., Simbaña, W., Lopez, H.G., Garro, L.S., Lepesqueur, C., Richards, L., Forister, M., Stireman, J.O., Tepe, E., and L.A. Dyer. 2023. Variation in the strength of local and regional determinants of herbivory across the Neotropics. *Oikos* e10218, <https://doi.org/10.1111/oik.10218>
 154. Glassmire, A.E., Carson, W.P., Smilanich, A.M. ... and L.A. Dyer. 2023. Multiple and contrasting pressures determine intraspecific phytochemical variation in a tropical shrub. *Oecologia* 201, 991–1003 (2023). <https://doi.org/10.1007/s00442-023-05364-3>
 153. Rabelo RS, Dyer LA, Yamaguchi LF, Diniz I, Simbaña W, Kussano AJM, Kato MJ and Massad TJ (2023) Plasticity in plant defense and the role of phytochemical dissimilarity in limiting specialist herbivory. *Front. Ecol. Evol.* 11:1175590. doi: 10.3389/fevo.2023.1175590
 152. Flores, S., Forister, M.L., Sulbaran, H., Díaz, R. and Dyer, L.A., 2023. Extreme drought disrupts plant phenology: Insights from 35 years of cloud forest data in Venezuela. *Ecology*, p.e4012. <https://doi.org/10.1002/ecy.4012>
 151. Carrington-Hoekstra, P., Fernandez-Triana, J., Dyer, L.A., and J. Whitfield. 2023. *Larissimus nigricans* n. sp. (Hymenoptera, Braconidae), a new reared species of a rare neotropical genus recovered through biodiversity inventory in Ecuador. *Zookeys* 1156:15–24, doi: 10.3897/zookeys.1156.101396
 150. Rostami M, Frontalini F, Armynot du Châtelet E, Francescangeli F, Alves Martins MV, De Marco R, Dinelli E, Tramontana M, Dyer LA, Abraham R, Bout-Roumazeilles V, Delattre M, Spagnoli F. 2023. Understanding the Distributions of Benthic Foraminifera in the Adriatic Sea with Gradient Forest and Structural Equation Models. *Applied Sciences*; 13(2):794. <https://doi.org/10.3390/app13020794>
 149. Balmaki, Masoud A Rostami, Tara Christensen, Elizabeth A Leger, Julie M Allen, Chris R Feldman, Matthew L Forister, Lee A Dyer. 2022. Modern Approaches for Leveraging Biodiversity Collections to Understand Change in Plant-Insect Interactions. *Frontiers in Ecology and Evolution*, <https://doi.org/10.3389/fevo.2022.924941>.
 148. Massad, T.J., Richards, L. A., Philbin, Yamaguchi, L., Kato, M.J., Jeffrey, C. S., Oliveira, C., Ochsenrider, K., de Moraes, M., Tepe, E.J., Cebrian Torrejon, G., Sandivo, M., and L.A. Dyer. 2022. The chemical ecology of tropical forest diversity: Environmental variation, chemical similarity, herbivory, and richness. *Ecology* <https://doi.org/10.1002/ecy.3762>.
 147. Harvey, J. L.A. Dyer, et al. 2023. Scientists' warning on climate change and insects. *Ecological Monographs* <https://doi.org/10.1002/ecm.1553>.
 146. Balmaki, B., Christensen, T. and Dyer, L.A., 2022. Reconstructing Butterfly-Pollen Interaction Networks through Periods of Anthropogenic Drought in the Great Basin (USA) over the Past Century. *Anthropocene*, p.100325.
 145. Sudta, C., Salcido, D.M., Forister, M.L., Walla, T., Villamarín-Cortez, S. and Dyer, L.A., 2022. Jack-of-all-trades paradigm meets long-term data: generalist herbivores are more widespread and locally less abundant. *Ecology Letters*

<https://doi.org/10.1111/ele.13972>.

144. Campos-Moreno, D.F., Gates, M.W., Zhang, Y.M., Pérez-Lachaud, G., Dyer, L.A., Whitfield, J.B., and C. Pozo. 2022. *Aximopsis gabriellae* sp. nov.: a new gregarious parasitoid (Hymenoptera: Eurytomidae) of the skipper *Quadrus cerialis* Stoll (Lepidoptera: Hesperiiidae) feeding on *Piper amalago* L. in southern Mexico. **Journal of Natural History** <https://doi.org/10.1080/00222933.2022.2025940>.
143. Wagner, D.; Fox, R., Salcido, D.M., and L.A. Dyer. 2021. A window to the world of global insect declines: moth biodiversity trends are complex and heterogeneous. **Proceedings of the National Academy of Sciences USA** 118 (2) e2002549117; <https://doi.org/10.1073/pnas.2002549117>.
142. Uckele, K.A., Jahner, J.P., Tepe, E.J., Richards, L.A., Dyer, L.A., Ochsenrider, K.M., Philbin, C.S., Kato, M.J., Yamaguchi, L.F., Forister, M.L. and Smilanich, A.M., 2021. Phytochemistry reflects different evolutionary history in traditional classes versus specialized structural motifs. **Scientific Reports** 11, 17247 (2021). <https://doi.org/10.1038/s41598-021-96431-3>
141. Philbin, C.S., Dyer, L.A., Jeffrey, C.S., Glassmire, A.E. and Richards, L.A., 2022. Structural and compositional dimensions of phytochemical diversity in the genus *Piper* reflect distinct ecological modes of action. **Journal of Ecology** 2021;00: 1– 11. <https://doi.org/10.1111/1365-2745.13691>
140. Freire, G.B., Silva, T., Oliveira, H., Collier, C., Rodrigues, H.P., Dias, J.P., Santos, J.P., Marini-Filho, O.J., Freitas, A.V., Smilanich, A.M. and Dyer, L.A., 2021. Good Things Come in Larger Packages: Size Matters for Adult Fruit-Feeding Butterfly Dispersal and Larval Diet Breadth. **Diversity**, 13:664. doi: 10.3390/d13120664
139. Salcido, D.M., Sudta, C., and L.A. Dyer. 2022. Plant-caterpillar-parasitoid natural history studies over decades and across large geographic gradients provide insight into specialization, interaction diversity, and global change. Chapter 19 in: Marquis, R.J. and S. Koptur (editors), **Caterpillars in the middle**. Springer Nature.
138. Serejo Rabelo, R., Dyer, L.A., Lepesqueur, C., Salcido, D.M., da Silva, T.P., Rodrigues, H.P., Trindade, T.P., Diniz, I.R., Rangel Nascimento, A., Tepe, E.J., and T.J. Massad. 2021. Tritrophic interaction diversity in gallery forests—a biologically rich and understudied component of the Brazilian cerrado. **Plant-Arthropod Interactions** <https://doi.org/10.1007/s11829-021-09856-y>
137. Campos-Moreno, D.F., Dyer, L.A., Salcido, D., Massad, T.J., Pérez-Lachaud, G., Tepe, E.J., Whitfield, J.B. and Pozo, C., 2021. Importance of interaction rewiring in determining spatial and temporal turnover of tritrophic (Piper-caterpillar-parasitoid) metanetworks in the Yucatán Península, México. **Biotropica** 53:1071-1081. <https://doi.org/10.1111/btp.12946>
136. Rostami, M.A., Frontalini, F., Giordano, P., Alves Martins, M.V., Dyer, L.A., and F. Sgpanoli. 2021. Testing the applicability of random forest modeling to examine benthic foraminiferal responses to multiple environmental parameters. **Marine Environmental Research** 172: <https://doi.org/10.1016/j.marenvres.2021.105502>.
135. Dyer, L.A. and Jeffrey, C.S., 2021. Chemically Mediated Multi-trophic Interactions. In **Plant-Animal Interactions** (pp. 17-38). Springer, Cham.
134. Maynard, L.; H. Slinn, A. Glassmire, B. Matarrita-Carranza, C. Dodson, T. Nguyen, M. Burroughs, L.A. Dyer, C. Jeffrey, S. Whitehead. 2020. Secondary metabolites in a neotropical shrub: spatiotemporal allocation and role in fruit defense and dispersal. **Ecology** 101: e03192. [10.1002/ecy.3192](https://doi.org/10.1002/ecy.3192).
133. Parks, K. S., D. H. Janzen, W. Hallwachs, J. Fernández-Triana, L. A. Dyer, J. J. Rodriguez, D.

- C. Arias-Penna, and J. B. Whitfield. 2020. A five-gene molecular phylogeny reveals *Parapanteles* Ashmead (Hymenoptera: Braconidae) to be polyphyletic as currently composed. *Molecular Phylogenetics and Evolution* 150:106859. <https://doi.org/10.1016/j.ympev.2020.106859>
132. Lumpkin, Will P., Kincade R. Stirek, and L.A. Dyer. 2020. Macrophyte Diversity and Complexity Reduce Larval Mosquito Abundance. *Journal of Medical Entomology* 57:1041-1048.
 131. Harvey, J.A., Heinen, R., Armbrrecht, I., Dyer, L.A., et al. 2020. International scientists formulate a roadmap for insect conservation and recovery. *Nature Ecology and Evolution*. doi:10.1038/s41559-019-1079-8.
 130. Salcido, D.M., Forister, M.L., Lopez, H.G. and Dyer, L.A., 2020. Loss of dominant caterpillar genera in a protected tropical forest. *Scientific Reports* 10, 422. doi:10.1038/s41598-019-57226-9.
 129. Arias-Penna, D.C., J. B. Whitfield, D. H. Janzen, W. Hallwachs, L.A. Dyer, M.A. Smith, P.D.N. Hebert, J.L. Fernández-Triana. 2019. A species-level taxonomic review and host associations of *Glyptapanteles* (Hymenoptera, Braconidae, Microgastrinae) with an emphasis on 136 new reared species from Costa Rica and Ecuador. *Zookeys* 890:1-685. 10.3897/zookeys.890.35786
 128. Loudermilk, E.L., J.E. Dell, L.A. Richards, J.J. O'Brien, E.L. A.T. Hudak, S.M. Pokswinski, B.C. Bright, J.K. Hiers, B.W. Williams, and L.A. Dyer. 2019. Simulating Groundcover Community Assembly in a Frequently Burned Ecosystem Using a Simple Neutral Model. *Frontiers in Plant Science* 10:1107. doi: 10.3389/fpls.2019.01107.
 127. Brown, J.W., Dyer, L.A., Villamarín-Cortez, S., and D.M. Salcido. 2019. New larval host records for Tortricidae (Lepidoptera) from an Ecuadorian Andean cloud forest. *Insecta Mundi* 0720: 1–12.
 126. Dell, J.E., D.M. Salcido, L.A. Richards, J.J. O'Brien, E.L. Loudermilk, W. Lumpkin, S.M. Pokswinski, and L.A. Dyer. 2019. Interaction Diversity Maintains Resiliency in a Frequently Disturbed Ecosystem. *Frontiers in Ecology and Evolution* <https://doi.org/10.3389/fevo.2019.00145>.
 125. Dyer, L.A. and M.L. Forister. 2018. Challenges and advances in the study of latitudinal gradients in multitrophic interactions, with a focus on consumer specialization. *Current Opinion in Insect Science*. <https://doi.org/10.1016/j.cois.2018.11.008>.
 124. Glassmire, A.E., Philbin, C., Richards, L.A., Jeffrey, C.S., Snook, J.S., and Dyer, L.A. 2018. Proximity to canopy mediates changes in the defensive chemistry and herbivore loads of an understory tropical shrub, *Piper kelleyi*. *Ecology Letters* 22:332-341. DOI: 10.1111/ele.13194.
 123. Pardikes, N.A., M.L. Forister, and L.A. Dyer. 2018. Preference and performance of Lepidoptera varies with tree age in juniper woodlands. *Ecological Entomology* 44:140-150. DOI: 10.1111/een.12682.
 122. Lepesqueur, C., S. Scherrer, M.C. Vieira, M. Almeida-Neto, D.M. Salcido, L.A. Dyer, I. Rezende Diniz 2018. Changing interactions among persistent species as the major driver of seasonal turnover in plant-caterpillar interactions. *Plos ONE* 13(9): e0203164.
 121. Dell, J.E., L.A. Richards, J.J. O'Brien, E.L. Loudermilk, A.T. Hudak, S.M. Pokswinski, B.C. Bright, J.K. Hiers, B.W. Williams, and L.A. Dyer. 2018. Maximizing diversity for management activities: Additive partitioning of plant species diversity across a frequently burned ecosystem. *Forest Ecology and Management*. 432: 409-414.
 120. Dyer, L.A. 2018. Multidimensional diversity associated with plants: a view from a plant–

- insect interaction ecologist. *American Journal of Botany* 105: 1–4.
119. Pardikes, N.A., W. Lumpkin, P.J. Hurtado, and L.A. Dyer. 2018. Simulated tri-trophic networks reveal complex relationships between species diversity and interaction diversity. *Plos ONE* 13(3):e0193822. <https://doi.org/10.1371/journal.pone.0193822>.
 118. Richards, L.A., Oliveira, C. Dyer, L.A., Rumbaugh, A., Urbano-Munoz, F., Wallace, I.S., Dodson, C.D., and C. Jeffrey. 2018. Shedding light on chemically mediated tri-trophic interactions: A ¹H-NMR network approach to identify compound structural features and associated biological activity. *Frontiers in Plant Science* <https://doi.org/10.3389/fpls.2018.01155>.
 117. Dyer, L.A., Philbin, C.S., Ochsenrider, K.M., Richards, L.A., Massad, T.J., Smilanich, A.M., Forister, M.L., Parchman, T.L., Galland, L.M., Hurtado, P.J., Espeset, A.E., Dodson, C.D., and C. Jeffrey. 2018. Modern approaches to study plant–insect interactions in chemical ecology. *Nature Reviews Chemistry* 2:50–64.
 116. Slinn H.L., Richards L.A., Dyer L.A., Hurtado P., Smilanich A.M. 2018. Across multiple species, phytochemical diversity and herbivore diet breadth have cascading effects on herbivore immunity and parasitism in a tropical model system. *Frontiers in Plant Science* 9:656 doi: 10.3389/fpls.2018.00656.
 115. Smilanich, A.M., Langus, T.C., Doan, L., Dyer, L.A., Harrison, J.G., Hsueh, J. and Teglas, M.B., 2018. Host plant associated enhancement of immunity and survival in virus infected caterpillars. *Journal of invertebrate pathology* 151:102-112.
 114. Giron D., Dubreuil G., Bennet A., Dedeine F., Dicke M., Dyer L., Erb M., Harris M.O., Huguet E., Kaloshian I., Kawakita A., Lopez -Vaamonde C., Palmer T.M., Petanidou T., Poulsen. M., Sallé A., Simon J.C., Terblanche J.S., Thiéry D., Whiteman N., Woods H.A., Zchori-Fein E., and S. Pincebourde. 2018. Promises and challenges in insect–plant–microbe interactions. *Entomologia Experimentalis et Applicata* 166: 319-343.
 113. Dyer, L.A. 2018. The Phytochemical Landscape: Linking Trophic Interactions and Nutrient Dynamics. *The Quarterly Review of Biology* 93:169-170.
 112. Jahner, J.P., Forister, M.L., Parchman, T.L., Smilanich, A.M., Miller, J.S., Wilson, J.S., Walla, T.R., Tepe, E.J., Richards, L.A., Quijano-Abril, M.A., Glassmire, A.E., and L.A. Dyer. 2017. Host conservatism, geography, and elevation in the evolution of a Neotropical moth radiation. *Evolution*, 71:2885-2900.
 111. Dell, J.E., L.A. Richards, J.J. O'Brien, E.L. Loudermilk, A.T. Hudak, S.M. Pokswinski, B.C. Bright, J.K. Hiers, B.W. Williams, and L.A. Dyer. 2017. Overstory-Derived Surface Fuels Mediate Plant Species Diversity in Frequently Burned Longleaf Pine Forests. *Ecosphere* 8(10).
 110. Glassmire, A. E., Jahner, J. P., Badik, K.J., Forister, M. L., Smilanich, A. M., Dyer, L. A., and Wilson, J. S. 2017. The soil mosaic hypothesis: a synthesis of multi-trophic diversification via soil heterogeneity. *Ideas in Ecology and Evolution* 10.4033/iee.2017.10.5.n.
 109. Stireman III, J.O., Dyer, L.A., and Greeney, H.F. 2017. Specialized generalists? Food web structure of a tropical tachinid-caterpillar community? *Insect Conservation and Diversity* 10:367–384.
 108. Dell, J.E., O'Brien, J.J., Doan, L., Richards, L.A., and Dyer, L.A. 2017. An arthropod survival strategy in a frequently burned forest. *Ecology* 98:2972-2974.
 107. Massad, T. J., Martins de Moraes, M., Philbin, C., Oliveira, C., Cebrian Torrejon, G., Fumiko Yamaguchi, L., Jeffrey, C. S., Dyer, L. A., Richards, L. A. and Kato, M. J. 2017. Similarity in volatile communities leads to increased herbivory and greater tropical forest

- diversity. *Ecology* 98:1750–1756.
106. Seltnmann, K.C., Cobb, N.S., Gall, L.F., Bartlett, C.R., Basham, M.A., Betancourt, I., Bills, C., Brandt, B., Brown, R.L., Bundy, C., Dyer, L.A., Pardikes, N., et al., 2017. LepNet: The Lepidoptera of North America Network. *Zootaxa* 4247:73-77.
 105. Richards, L.A., Glassmire, A.E., Ochsenrider, K.M., Smilanich, A.M., Dodson, C.D., Jeffrey, C.S. and Dyer, L.A. 2016. Phytochemical diversity and synergistic effects on herbivores. *Phytochemistry Reviews* 15:1153-1166.
 104. Glassmire, A. E., Jeffrey, C. S., Forister, M. L., Parchman, T. L., Nice, C. C., Jahner, J. P., Wilson, J. S., Walla, T. R., Richards, L. A., Smilanich, A. M., Leonard, M. D., Morrison, C. R., Simbaña, W., Salagaje, L. A., Dodson, C. D., Miller, J. S., Tepe, E. J., Villamarin-Cortez, S. and Dyer, L. A. 2016. Intraspecific phytochemical variation shapes community and population structure for specialist caterpillars. *New Phytologist* 212:208-219.
 103. Rodríguez-Castañeda, G., Brehm, G., Fiedler, K. and Dyer, L.A., 2016. Ant predation on herbivores through a multitrophic lens: how effects of ants on plant herbivore defense and natural enemies vary along temperature gradients. *Current Opinion in Insect Science* 14:73-80.
 102. Hansen, A.C., A.E. Glassmire, L.A. Dyer, and A.M. Smilanich. 2017. Patterns in parasitism frequency explained by diet and immunity. *Ecography* 40:803-805.
 101. Smilanich, A.M., R.M. Fincher, and L.A. Dyer. 2016. Does plant-apparency matter? Insights from 30 years of data reveal clear patterns of the effects of plant chemistry on herbivores. *New Phytologist* 210:1944-1047.
 100. Scherrer, S., C. Lepesqueur, M.C. Vieira, M. Almeida-Neto, L.A. Dyer, M.L. Forister, I. Rezende Diniz. 2016. Seasonal variation in host plant specialization by folivorous lepidopterans: contrasting patterns at the species and community levels. *Biotropica* 48:491-498.
 99. Dyer, L.A. and M.L. Forister. 2016. Wherefore and whither the modeler: understanding the population dynamics of monarchs will require integrative and quantitative techniques. *Annals of the Entomological Society of America*.
 98. Dyer, L.A. and M.L. Forister. 2015. The lives of Lepidopterists. Springer.
 97. Richards, L.A., L. A. Dyer, M.L. Forister, A.M. Smilanich, C.D. Dodson, M.D. Leonard and C. S. Jeffrey. 2015. Phytochemical diversity drives tropical plant-insect community diversity. *Proceedings of the National Academy of Sciences* 112: 10973–10978.
 96. Greeney, H.F., R. Meneses, C.E. Hamilton, E.R. Hough, E.K. Austudillo, E. Lichter-Marck, R.W. Mannan, N. Snyder, H. Snyder, C.M. Ripplinger, S.M. Wethington, and L.A. Dyer. 2015. Trait-mediated trophic cascade creates enemy-free space for nesting hummingbirds. *Science Advances* - 1, e1500310.
 95. Davis, A.K. and L.A. Dyer. 2015. Long-term trends in eastern North American monarch butterflies: a collection of studies focusing on spring, summer and fall dynamics. *Annals of the Entomological Society of America* 108:661-663.
 94. Pardikes, N.A., A.M. Shapiro, L.A. Dyer, and M.L. Forister. 2015. Global weather and local butterflies: variable responses to a large-scale climate pattern along an elevational gradient. *Ecology* 96:2891-2901.
 93. Forister, M. L., Novotny, V., Panorska, A. K., Baje, L., Basset, Y., Butterill, P. T., Cizek, L., Coley, P. D., Dem, F., Diniz, I. R., Drozd, P., Fox, M., Glassmire, A., Hazen, R., Hrccek, J., Jahner, J. P., Kama, O., Kozubowski, T. J., Kursar, T. A., Lewis, O. T., Lill, J., Marquis, R. J., Miller, S. E., Morais, H. C., Murakami, M., Nickel, H., Pardikes, N., Ricklefs, R. E., Singer, M. S., Smilanich, A. M., Stireman, J. O., Villamarín-Cortez, S., Vodka, S., Volf, M., Wagner, D. L., Walla, T., Weiblen, G. D., and L. A. Dyer. 2015. Global distribution of diet breadth

- in insect herbivores. *Proceedings of the National Academy of Sciences* 112:442-447.
92. Dyer, L.A., T.J. Massad, and M.L. Forister. 2015. The question of scale in trophic ecology. Pages 288-317 in: Hanley, T. and K. La Pierre (eds.). *Trophic Ecology: Bottom-Up and Top-Down Interactions across Aquatic and Terrestrial Systems*. Cambridge University Press, Cambridge, MA.
 91. Lampert, E., L.A. Dyer, and M.D. Bowers. 2014. Dietary specialization and the effects of plant species on potential multitrophic interactions of three species of nymphaline caterpillars. *Entomologia Experimentalis et Applicata* 153:207-215.
 90. Datillo, W. and L.A. Dyer. 2014. Canopy Openness Enhances Diversity of Ant-Plant Interactions in the Brazilian Amazon Rain Forest. *Biotropica* 46:712-719.
 89. Dyer, L.A., T.L. Parchman, C.S. Jeffrey, and L.A. Richards. 2014. New dimensions of tropical diversity: an inordinate fondness for insect molecules, taxa, and trophic interactions. *Current Opinions in Insect Science* 2:14-19.
 88. Jeffrey, C.S., M. D. Leonard, A. E. Glassmire, C. D. Dodson, L. A. Richards, M. J. Kato, and L. A. Dyer. 2014. Anti-herbivore prenylated benzoic acid derivatives from *Piper kelleyi*. *Journal of Natural Products* 77:148-153.
 87. Tepe, E. J., Rodríguez-Castañeda, G., Glassmire, A.E., and L.A. Dyer. 2014. *Piper kelleyi*, a hotspot of ecological interactions and a new species from Ecuador and Peru. *PhytoKeys* 34:19-32.
 86. Whitehead, S.R., Jeffrey, C.S., Leonard, M.D., Dodson, C.D., Dyer, L.A., and M.D. Bowers. 2013. Patterns of Secondary Metabolite Allocation to Fruits and Seeds in *Piper reticulatum*. *Journal of Chemical Ecology* 39:1373-1384.
 85. Mramba, L.K., Barber, S., Hommola, K., Dyer, L.A., Wilson, J.S., Forister, M.L., and W.R. Gilks. 2013. Permutation tests for analyzing cospeciation in multiple phylogenies: applications in tri-trophic ecology. *Statistical Applications in Genetics and Molecular Biology* 12:679-701.
 84. Dyer, L.A. and D.K. Letourneau. 2013. Can Climate Change Trigger Massive Diversity Cascades in Terrestrial Ecosystems? *Diversity* 5:1-35.
 83. Dyer, L.A., Richards, L.A., Short, S. A., Dodson, C.D. 2013. Effects of CO₂ and temperature on tritrophic interactions. *PLOS ONE* 8(4): e62528.
 82. Massad, T.J., Dyer, L.A., and G. Vega C. 2012. Costs of defense and a test of the Carbon-Nutrient Balance and Growth-Differentiation Balance Hypotheses for two co-occurring classes of plant defense. *PLOS ONE* 7(10): e47554.
 81. Richards L.A., Lampert E.C., Bowers M.D., Dodson C.D., Smilanich A.M. and Dyer L.A. 2012. Synergistic effects of iridoid glycosides on the survival, development, and immune response of a specialist caterpillar (*Junonia coenia* Nymphalidae). *Journal of Chemical Ecology* 38: 1276-1284.
 80. Smilanich, A.M. and L.A. Dyer. 2012. Effects of banana plantation pesticides on the immune response of lepidopteran larvae and their parasitoid natural enemies. *Insects* 3:616-628.
 79. Wilson, J.S., Forister, M.L., Dyer, L.A., O'Connor, J.M., Burls, K., Feldman, C.R., Jaramillo, M.A., Miller, J. S., Rodríguez-Castañeda, G., Tepe, E.J., Whitfield, J.B., Young, B. 2012. Host conservatism, host shifts and diversification across three trophic levels in two Neotropical forests. *Journal of Evolutionary Biology* 25:532-546.
 78. Dyer, L.A., Wagner, D.L., Greeney, H.F., Smilanich, A.M., Massad, T.M., Robinson, M. Fox, M., Hazen, R., Glassmire, A., Pardikes, N., Fredrickson, K., Pearson, C., Gentry, G.L., and J.O. Stireman III. 2012. Novel insights into tritrophic interaction diversity and chemical ecology using 16 years of volunteer supported research. *American Entomologist*

58:15-19.

77. Forister, M. L., Dyer, L.A., Singer, M.S., Stireman III, J.O., and J.T. Lill. 2012. Progress and perspectives in the study of ecological specialization, with emphasis on insect-plant interactions. *Ecology* 93:981-991.
76. Greeney H.F., Dyer L.A., and Smilanich A.M. 2012. Feeding by lepidopteran larvae is dangerous: A review of caterpillars' chemical, physiological, morphological, and behavioral defenses against natural enemies. *Invertebrate Survival Journal* 9:7-34.
75. Lampert, E.C., Dyer, L.A., and M.D. Bowers. 2011. Chemical Defense Across Three Trophic Levels: *Catalpa bignonioides*, the Caterpillar *Ceratomia catalpae*, and its Endoparasitoid *Cotesia congregata*. *Journal of Chemical Ecology* 37:1063-1070.
74. Greeney, H.F., Whitfield, J.B., Stireman III, J.O., Penz, C.M., and L.A. Dyer. 2011. The natural history of *Eryphanis greeneyi* (Lepidoptera: Nymphalidae) and its enemies, with a description of a new species of braconid parasitoid and notes on its tachinid parasitoid. *Annals of the Entomological Society of America* 104:1078-1090.
73. Rab Green, S.B., Gentry, G.L., Greeney, H.F., and L.A. Dyer. 2011. Ecology, natural history, and larval descriptions of Arctiinae (Lepidoptera: Noctuoidea: Erebiidae) from a cloud forest in the eastern Andes of Ecuador. *Annals of the Entomological Society of America* 104:1135-1148.
72. Dyer, L.A. 2011. New Synthesis. Back to the future: New approaches and directions in chemical studies of coevolution. *Journal of Chemical Ecology* 37:669.
71. Dyer, L.A., Carson, W.P., Leigh, E.G. 2012. Insect Outbreaks in Tropical Forests: Patterns, Mechanisms, and Consequences. In: Barbosa, P., Letourneau, D.K. and Agrawal, A.A. *Insect Outbreaks Revisited*. Wiley-Blackwell, New Jersey.
70. Dyer, L.A. 2011. Trophic levels. In: Gibson, D. (editor). *Oxford Bibliographies Online: Ecology*. Oxford University Press, New York.
69. Massad, T.J., Fincher, R.M., Smilanich, A.M., and L.A. Dyer. 2011. A quantitative evaluation of major plant defense hypotheses, nature versus nurture, and chemistry versus ants. *Arthropod-Plant Interactions* 5:125-139.
68. Greeney, H.F., Dyer L.A., Pyrcz T.W. 2011. First description of the early stage biology of the genus *Mygona*: The natural history of the saturniid butterfly, *Mygona irmina* in eastern Ecuador. *Journal of Insect Science* 11:5; available online: insectscience.org/11.5
67. Rodriguez-Castaneda, G., Forkner, R. E., Tepe, E.J., Gentry, G. L., and L. A. Dyer. 2011. Weighing defensive and nutritive roles of ant mutualists across a tropical altitudinal gradient. *Biotropica* 43:343-350.
66. Smilanich, A.M., J. Vargas, L.A. Dyer, and M.D. Bowers. 2011. Effects of ingested secondary metabolites on the immune response of a polyphagous caterpillar (*Grammia incorrupta*, Arctiidae). *Journal of Chemical Ecology* 37:239-245.
65. Dyer, L.A., Letourneau, D.K., Vega Chavarria, G. and D. Salazar Amoretti. 2010. Herbivores on a dominant understory shrub increase local plant diversity in rain forest communities. *Ecology* 91:3707-3718.
64. Rodriguez-Castaneda, G., Dyer, L.A., Brehm, G., Connahs, H., Forkner, R.E., and T.R. Walla. 2010. Tropical forests are not flat: how mountains affect herbivore diversity. *Ecology Letters* 13:1348-1357.
63. Lampert, E.C., Dyer, L.A., and M.D. Bowers. 2010. Caterpillar Chemical Defense and Parasitoid Success: *Cotesia congregata* Parasitism of *Ceratomia catalpa*. *Journal of Chemical Ecology* 36:992-998.
62. Richards, L., Dyer, L.A., Smilanich, A.M., and C.D. Dodson. 2010. Synergistic effects of amides from two *Piper* species on generalist and specialist herbivores. *Journal of Chemical Ecology* 36:1105-1113.

61. Massad, T.J. and L.A. Dyer. 2010. A meta-analysis of the effects of global environmental change on plant-herbivore interactions. **Arthropod-Plant Interactions** 4:181-188.
60. Massad, T.J., Chambers, J.Q., Rolim, S.G., Renato, M.J., and L.A. Dyer. 2010. Restoration of pasture to forest in Brazil's Mata Atlântica: The roles of herbivory, seedling defenses, and plot design in reforestation. **Restoration Ecology** 19: 257-267.
59. Greeney, H.F., Pyrcz, T.W. Dyer, L.A., Sánchez Z., M., and T.R. Walla. 2010. The early stages and natural history of *Corades medeba* Hewitson, 1850 in eastern Ecuador (Lepidoptera: Nymphalidae: Satyrinae : Pronophilina). **Tropical Lepidoptera Research** 20:8-13.
58. Greeney, H.F., Dyer, L.A., DeVries, P.J., Walla, T. R., Salazar Vega, L., Simbaña, W. and L. Salagaje. 2010. Early stages and natural history of *Perisama oppelii* (Latreille, 1811) (Nymphalidae, Lepidoptera) in Eastern Ecuador. *Kempffiana* 6:16-30
56. Dyer, L.A., T.R. Walla, H.F. Greeney, J.O. Stireman III, and R.F. Hazen. 2010. Diversity of interactions: A metric for studies of biodiversity. **Biotropica** 42:281-289.
55. Smilanich, A.M., L.A. Dyer, M.D. Bowers, and J.Q. Chambers. 2009. Immunological costs to specialization and the evolution of insect diet breadth. **Ecology Letters** 12:612-621.
54. Smilanich, A.M., L.A. Dyer, and G. L. Gentry. 2009. The insect immune response and other putative defenses as effective predictors of parasitism. **Ecology** 90:1434-1440.
53. Carlson, J.C., L.A. Dyer, F.X. Omlin, and J.C. Beier. 2009. Diversity Cascades and Malaria Vectors. **Journal of Medical Entomology**. 46:460-464.
52. Miller, J. and L.A. Dyer. 2009. Special Feature: Diversity of insect-plant interactions in the eastern Andes of Ecuador. **Journal of Insect Science** 9:26, available online: insectscience.org/9.26.
51. Stireman III, J.O., H.F. Greeny, and L.A. Dyer. 2009. Species richness and host associations of Lepidoptera-attacking Tachinidae in the northeast Ecuadorian Andes. **Journal of Insect Science** 9:39, available online: insectscience.org/9.39.
50. Tepe, E.J., W.A. Kelley, G. Rodríguez-Castañeda, and L.A. Dyer. 2009. Characterizing the cauline domatia of two newly discovered Ecuadorian ant-plants in *Piper*: an example of convergent evolution. **Journal of Insect Science** 9:27, available online: insectscience.org/9.27.
49. Connahs, H., G. Rodríguez-Castañeda, T. Walters, T.R. Walla and L.A. Dyer. 2009. Geographical variation in host-specificity and parasitoid pressure of an herbivore (Geometridae) associated with the tropical genus *Piper*. **Journal of Insect Science** 9:28, available online: insectscience.org/9.28.
48. Greeney, H.F., T.W. Pyrcz, M.R. Hualingua, P.J. DeVries, and L.A. Dyer. 2009. The early stages of *Pedaliodes poesia* (Hewitson, 1862) in eastern Ecuador (Lepidoptera, Satyrinae, Pronophilina). **Journal of Insect Science** 9:38, available online: insectscience.org/9.38.
47. Greeney, H.F., P.J. DeVries, C.M. Penz, R.B. Granizo-T, H. Connahs, J.O. Stireman III, T.R. Walla, and L.A. Dyer. 2009. The early stages and natural history of *Antirrhea adoptive porphyrosticta* (Watkins, 1928) in eastern Ecuador (Lepidoptera, Nymphalidae, Morphinae). **Journal of Insect Science** 9:26, available online: insectscience.org/9.26.
46. Grinter, C.C., J.B. Whitfield, H. Connahs, L.A. Dyer, W. Hallwachs, and D.H. Janzen. 2009. Review of Neotropical *Distatrix* Mason (Hymenoptera: Braconidae), with descriptions of six new reared species. **Journal of Insect Science** 9:29, available online: insectscience.org/9.29.
45. Pearson, C.V., T.J. Massad, L.A. Dyer. 2008. Diversity cascades in alfalfa fields: from plant quality to agroecosystem diversity. **Environmental Entomology** 37:947-955.
44. Fincher, R.M., L.A. Dyer, C.D. Dodson, J. L. Richards, M.A. Tobler, J. Searcy, J. E. Mather, A. J. Reid, J. S. Rolig and W. Pidcock. 2008. Inter- and Intraspecific comparisons of

- antiherbivore defenses in three species of rainforest understory shrubs. *Journal of Chemical Ecology* 34:558-574.
43. Dyer, L.A. 2008. The ecology of tri-trophic interactions in the tropics. Pages 275-293 in: Carson, W.P. and S.A. Schnitzer (editors). *Tropical Forest Community Ecology*. Blackwell Science, Oxford, UK.
 42. Dyer, L.A., M.S. Singer, J.T. Lill, J.O. Stireman III, G.L. Gentry, R.J. Marquis, R.E. Ricklefs, H.F. Greeney, D.L. Wagner, H.C. Morais, I.R. Diniz, T.A. Kursar, and P.D. Coley. 2007. Host specificity of Lepidoptera in tropical and temperate forests. *Nature* 448:696-699.
 41. Dyer, L.A. and D.K. Letourneau. 2007. Determinants of lichen diversity in a rainforest understory. *Biotropica* 39:525-539.
 40. Dyer, L.A. 2007. Large scale gradients in tritrophic interactions. *Tropinet* 18:1-3.
 39. Dyer, L.A. and R.E. Forkner. 2007. Why are agroecosystems green? *Ecology* 88:1606-1607.
 38. Armstrong, M., Berkowitz, A.R., Dyer, L.A. and J. Taylor. 2007. Understanding why students underrepresented in ecology pursue ecology careers: a preliminary case study of 39 African American students. *Frontiers in Ecology and the Environment* 5:415-420.
 37. Dyer, L.A. 2008. Do not go gentle into that tropical night. Chapter 6 in: Adams, R.A. (ed.). *Into the Night: Tales of Nocturnal Wildlife Expeditions*. University Press of Colorado.
 36. Pearson, C.V. and L.A. Dyer. 2006. Trophic diversity in two grassland ecosystems. *Journal of Insect Science* 6:23.
 35. Stireman III, J.O., L.A. Dyer, D.H. Janzen, M.S. Singer, J.T. Lill, R.J. Marquis, R.E. Ricklefs, G.L. Gentry, W. Hallwachs, P.D. Coley, J.A. Barone, H.F. Greeney, H. Connahs, P. Barbosa, H.C. Morais, and I.R. Diniz. 2005. Climatic unpredictability and caterpillar parasitism: implications of global warming. *Proceedings of the National Academy of Sciences* 102:17384-17387.
 34. Dyer, L.A., Matlock, R.M., Cherzad, D., and R. O'Malley. 2005. Predicting successful biological control in banana plantations. *Environmental Entomology* 34:403-409.
 33. Stireman, J.O. III, Dyer, L.A., and R.M. Matlock. 2005. Top-down forces in managed versus unmanaged habitats. Pages 303-323 in: Barbosa, P. and I. Castellanos (eds.). *Ecology of Predator-Prey Interactions*. Oxford University Press, Oxford.
 32. Letourneau, D.K. and L.A. Dyer. 2005. Multi-trophic interactions and biodiversity: beetles, ants, caterpillars, and plants. Pages 366-385 in: Burslem, D.F.R.P.; Pinard, M.A.; Hartley, S.E. (eds.). *Biotic Interactions in the Tropics: Their Role in the Maintenance of Species Diversity*. Cambridge University Press, Cambridge, UK.
 31. Irschick, D., Dyer, L.A., and T. Sherry. 2005. Phylogenetic methods for studying specialization. *Oikos* 110:404-408.
 30. Dyer, L.A., Dodson, C.D., Letourneau, D.K., Tobler, M.A., Hsu, A., and J.O. Stireman III. 2004. Ecological causes and consequences of variation in defensive chemistry of a neotropical shrub. *Ecology* 85:2795-2803.
 29. Letourneau, D.K., Dyer, L.A., and G. Vega. 2004. Indirect effects of top predator on rain forest understory plant community. *Ecology* 85:2144-2152.
 28. Dyer, L.A. and A.N. Palmer. 2004. *Piper*. A model genus for studies of evolution, chemical ecology, and trophic interactions. Kluwer Academic Publishers, Boston.
 27. Dyer, L.A., Dodson, C.D., and J. Richards. 2004. Isolation, synthesis, and evolutionary ecology of *Piper* amides. Pages 117-139 in: Dyer, L.A. and A.N. Palmer (eds.). *Piper*. A model genus for studies of evolution, chemical ecology, and trophic interactions. Kluwer Academic Publishers, Boston.
 26. Dyer, L.A., Gentry, G. and M. Tobler. 2004. Fitness consequences of herbivory: impacts on asexual reproduction of tropical rainforest understory plants. *Biotropica* 36:68-73.

25. Dyer, L.A., Dodson, C.D., Gentry, G. 2003. A bioassay for insect deterrent compounds found in plant and animal tissues. *Phytochemical Analysis* 14:381-388.
24. Dyer, L.A. and J.O. Stireman III. 2003. Community-wide trophic cascades and other indirect interactions in an agricultural community. *Basic and Applied Ecology* 4:423-432.
23. Dyer, L.A., Dodson, C.D., Stireman, J.O., Tobler, M.A., Smilanich, A.M., Fincher, R.M., and D.K. Letourneau. 2003. Synergistic effects of three *Piper* amides on generalist and specialist herbivores. *Journal of Chemical Ecology* 29:2499-2514.
22. Dyer, L.A. and D.K. Letourneau. 2003. Top-down and bottom-up diversity cascades in detrital versus living food webs. *Ecology Letters* 6:60-68.
21. Gentry, G.L. and L.A. Dyer. 2002. On the conditional nature of neotropical caterpillar defenses against their natural enemies. *Ecology* 83:3108-3119.
20. Dyer, L.A. 2002. Jungle phobias. *Earthwatch* 21:10-11.
19. Dyer, L.A. 2002. A quantification of predation rates, indirect positive effects on plants, and foraging variation of the giant tropical ant, *Paraponera clavata*. *Journal of Insect Science* 2.18:1-7.
18. Dyer, L.A. and G.L. Gentry. 2002. Caterpillars and parasitoids of a tropical lowland wet forest. <http://www.caterpillars.org>.
17. Dyer, L.A. and N. Bishop. 2001. In defense of caterpillars. *Natural History* 110:42-47.
16. Dyer, L.A. and P.D. Coley. 2001. Latitudinal gradients in tri-trophic interactions. Pages 67-88 in: Tscharnkte, T. and Hawkins, B.A. (editors). *Multitrophic Level Interactions*. Cambridge University Press.
15. Dyer, L.A., Dodson, C.D., Beihoffer, J. and D.K. Letourneau. 2001. Trade offs in anti-herbivore defenses in *Piper cenocladum*: ant mutualists versus plant secondary metabolites. *Journal of Chemical Ecology* 27:581-592.
14. Dodson, C.D., Dyer, L.A., Searcy, J., Wright, Z., and D.K. Letourneau. 2000. Cenocladamide, a dihydropyridone alkaloid from *Piper cenocladum*. *Phytochemistry* 53:51-54.
13. Dyer, L.A., Williams, W., Dodson, C., and D.K. Letourneau. 2000. A commensalism between *Piper marginatum* Jacq. (Piperaceae) and a coccinellid beetle. *Journal of Tropical Ecology* 15:841-846.
12. Dyer, L.A. 2000. Cybernetic insect outbreaks. *Ecology* 81:3262-3263.
11. Dyer, L.A. and D.K. Letourneau. 1999. Trophic cascades in a complex, terrestrial community. *Proceedings of the National Academy of Sciences* 96:5072-5076.
10. Dyer, L.A. and D.K. Letourneau. 1999. Relative strengths of top-down and bottom-up forces in a tropical forest community. *Oecologia* 119:265-274.
9. Dyer, L.A. and Gentry, G. 1999. Larval defensive mechanisms as predictors of successful biological control. *Ecological Applications* 9:402-408.
8. Letourneau, D.K. and L.A. Dyer. 1998. Density patterns of *Piper* ant-plants and associated arthropods: Top predator cascades in a terrestrial system? *Biotropica* 30:162-169.
7. Letourneau, D.K. and L.A. Dyer. 1998. Experimental manipulations in lowland tropical forest demonstrate top-down cascades through four trophic levels. *Ecology* 79:1678-1687.
6. Dyer, L.A. 1997. Effectiveness of caterpillar defenses against three species of invertebrate predators. *Journal of Research on the Lepidoptera* 34:48-68.
5. Dyer, L.A. and M.D. Bowers. 1996. The importance of sequestered iridoid glycosides as a defense against an ant predator. *Journal of Chemical Ecology* 22:1527-1539.
4. Folgarait, P.J., L.A. Dyer, R.J. Marquis, and H.E. Braker. 1996. Leaf-cutting ant (*Atta cephalotes*) preferences for five native tropical plantation tree species growing under different light conditions. *Entomologia Experimentalis et Applicata* 80:521-531.
3. Dyer, L.A. 1995. Tasty generalists and nasty specialists? A comparative study of

- antipredator mechanisms in tropical lepidopteran larvae. ***Ecology*** 76:1483-1496.
2. De la Fuente, M.A., L.A. Dyer, and M.D. Bowers. 1994. The iridoid glycoside, catalpol, as a deterrent to the predator *Camponotus floridanus* (Formicidae). ***Chemoecology*** 5/6:13-18.
 1. Dyer, L.A. and T. Floyd. 1993. Determinants of predation on phytophagous insects: the importance of diet breadth. ***Oecologia*** 96:575-582.

OUTREACH

- Neotropical Lepidoptera Course. Loreto, Peru, 2013; Bahia Brazil, 2015; Colombia, 2017. Two week intensive field training experience for students, postdocs, faculty, and non-academics; most students are from Latin America, but also includes participants from Europe.
- HSBC Climate Change and Sustainability Training, 2012 – present; work in the field (3 weeks per year) to provide training on sustainability and the science of climate change to CEOs, COOs, and other top executives in the HSBC international bank.
- Earthwatch Institute, 7/96 - present: teach, train, and conduct research with over 50 volunteers per year (approximately 1100 total volunteers to date); provide experience in Ecology and Evolutionary Biology for teachers, high school students, and the general public. Work with underrepresented groups of K-12 students. All teams of volunteers last 1-3 weeks. *These intensive community science and diversity and inclusion programs are the focus of all my laboratory's outreach efforts.*
- Research Experience for Teachers (NSF), Research Opportunity Awards (NSF), other educational supplemental funding; 2007 – present (1 per year).
- Founder, Western Colorado Center for Tropical Research; 8/97 – WCCTR is still active and provides tropical research experience, grants, tropical biology courses, and trips to the tropics.
- Serve as scientist for public lands agencies (BLM RAC and USFS committees).
- Worked with local K-12 schools in New Orleans and Reno to expose students to Entomology and Ecology (1-3 schools per year).

REFERENCES

Doctoral Advisor:

Dr. Deane Bowers
Dept. of EPO Biology, C.B. 334
University of Colorado
Boulder, CO 80309
(303) 492-5530
Deane.Bowers@colorado.edu

Postdoctoral Advisor:

Dr. Deborah Letourneau
Environmental Studies
University of California
Santa Cruz, CA 95064
(408) 459-2860
dletour@ucsc.edu

Collaborator:

Dr. Phyllis Coley
257 South 1400 East
Biology Department
University of Utah
Salt Lake City, UT 84112-0840
801-581-7088
coley@biology.utah.edu

Collaborator:

Dr. Pedro Barbosa
Department of Entomology
Plant Sciences Building
University of Maryland
College Park, MD USA 20742
(301) 405-3946
pbarbosa@umd.edu

Collaborator:

Dr. Craig Dodson
University of Nevada Reno
Reno, NV 89557
(970) 248-1595
Craig.Dodson@unr.edu

Former Collaborator:

Dr. Ted Floyd
Editor, Birding, ABA
P.O. Box 7974
Boulder, Colorado 80306-7974
(775) 348-2644
tedfloyd@aba.org