

Dr. Elinor M. Lichtenberg

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EDUCATION

- Ph.D.** 2011 University of California, San Diego. Division of Biological Sciences
Eavesdropping, Foraging and Dominance in Keystone Neotropical Pollinators: Stingless Bees, Advisor: James Nieh
- B.S.** 2003 University of Maryland, College Park. Biology: Behavior, Evolution, Ecology, and Systematics, *Summa cum Laude*, Biology High Honors, French Concentration
Honors Thesis: *Abdomen Bobbing in Stalk-eyed Flies*, Advisor: Gerald Wilkinson

APPOINTMENTS

- 2020-present Assistant Professor, Department of Biological Sciences, University of North Texas
- 2017-2019 Research Fellow, Department of Integrative Biology, The University of Texas at Austin, Austin, TX. Advisor: Shalene Jha
- 2015-2017 Postdoctoral Research Associate, Department of Ecology and Evolutionary Biology, The University of Arizona, Tucson, AZ. Advisor: Judith Bronstein
- 2013-2015 Postdoctoral Research Associate, Department of Entomology, Washington State University, Pullman, WA. Advisor: David Crowder

GRANTS AND FELLOWSHIPS

Funded

- 2023-2026 **US Fish and Wildlife Service**, State Wildlife Grants Program (\$200,000)
“Checklist Development and Conservation Status Assessment of Texas Native Bees.” PI.
- 2023-2025 **US Department of Agriculture**, Southern SARE On-Farm Grant (\$30,000).
“Assessing impacts of grazing management on pollinator conservation in rangeland.” PI
- 2023-2024 **UNT Colleges of Engineering and Science**, Collaborative Research Seed Grant (\$10,000). “GRAPH-N: Generating Rapid Applications for Predicting Heuristic Networks.” Co-PI.
- 2022-2023 **US Fish and Wildlife Service**, State Wildlife Grants Program (\$105,000) “Texas Native Bee Conservation Status Assessment and Digitizing the UNT Invertebrate Collection.” PI.
- 2022 **USDA E. Kika De La Garza Fellow**
- 2020-2023 **US Fish and Wildlife Service**, State Wildlife Grants Program (\$386,117) “Multi-year Investigation of Restoration Impacts on Pollinator Communities & Plant-Pollinator Interactions.” Co-PI.
- 2018 **Prairie Biotic Research**, Small Grant (\$1,500) “Diversity of beetle and fly pollinators at experimentally restored prairies.” PI.
- 2017 **American Association of University Women**, American Postdoctoral Fellowship (Declined; \$30,000)

- 2013 **WSU College of Agricultural, Human, and Natural Resource Sciences**, internship grant (\$2,500). "Aphid pest management." Co-PI with David Crowder.
- 2010-2011 **ARCS Foundation**, Graduate Scholar Award (\$7,500). PI.
- 2009-2012 **National Science Foundation**, Doctoral Dissertation Improvement Grant (\$13,000). "DISSERTATION RESEARCH: Landscape-scale effects of competition and eavesdropping in stingless bees." Co-PI with James Nieh.
- 2009 **Animal Behavior Society**, Research Grant (\$1,000). "Context-dependent eavesdropping in stingless bees." PI.
- 2006-2009 **National Science Foundation**, Graduate Research Fellowship (\$125,645).
- 2006 **Association of Women in Science San Diego Chapter**, Scholarship Award (\$1,000). PI.
- 2005-2009 **University of California, San Diego**, Chancellor's Graduate Fellowship (\$20,000).
- 2001-2003 **Howard Hughes Medical Institute**, Undergraduate Research Fellowship (\$14,000).

Under review

- US Department of Agriculture**, Capacity Building Grants for Non-Land Grant Colleges of Agriculture Program (\$750,000). "Research on the range: Promoting capacity for grassland conservation and biodiversity through integrative research and experiential learning." Co-PD with PD Adam Mitchell, Tarleton State University, Co-PDs Kimberly Wellman and Darrel Murray, Tarleton State University, Co-PDs Jim Muir and Jeff Brady, Texas A&M AgriLife Research-Stephenville, Co-PD Anil Somenahally, Texas A&M AgriLife Research-Overton.
- National Science Foundation**, Dynamics of Integrated Socio-Environmental Systems (DISES) program (\$1,800,000). "DISES: Integrating economics and ecology to evaluate landscape-crop pollination systems." Co-PI with PI Erik Lichtenberg, University of Maryland, Co-PI Kathy Baylis, University of California, Santa Barbara, Co-PI Rufus Isaacs, Michigan State University, Co-PI Xiaohui Yuan, University of North Texas.
- US Department of Agriculture**, AFRI Foundational and Applied Science grant, Sustainable Agroecosystems program (\$750,000). "Assessing the effects of livestock grazing strategies on rangeland ecosystem service providers." PD with Co-PDs Jeff Goodwin, Texas A&M University and Calvin Henard, University of North Texas.
- US Department of Agriculture**, AFRI Foundational and Applied Science grant, Environmental and Natural Resource Economics program (\$600,000). "Setting Priorities for Managing Pollinator Habitat." Co-PD with PD Erik Lichtenberg, University of Maryland and Co-PD Kathy Baylis, University of California, Santa Barbara.

AWARDS AND HONORS

- 2018 **International Union for the Study of Social Insects (IUSI)-North American Section**, Travel Award
- 2018 **University of Texas College of Natural Sciences**, Rom Rhome International Professional Development Award
- 2017 **Ecological Society of America Early Career Ecologist Section**, Outstanding Publication Award Finalist
- 2016 **National Science Foundation**, early career investigator travel award, International Society for Behavioral Ecology 2016 conference
- 2012 **IUSI-North American Section**, Travel Award

- 2012 **IUSSI-North American Section**, Conference Award
 2010 **IUSSI-North American Section**, travel grant
 2008 **Entomological Society of America**, President's Prize - First Place
 2002 **University of Maryland, Baltimore County**, First Place, Biological Sciences Group 2 Poster Session, 5th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences
 2002 **Animal Behavior Society**, Genesis Award (Best Undergraduate Poster) - Honorable Mention
 2002-present **Phi Beta Kappa**
 2002 **Phi Beta Kappa Gamma of Maryland**, Junior Award (Outstanding Junior Inductee)

PUBLICATIONS

* Joint first authors, ^G Graduate co-author

- Cordeiro GD, Giannini TC, Consorte PM, Costa ACJ, Machida WS, Marques BF, Mazzei ND, Menezes PP, Resende LS, Shimoda J, Sousa FG, Souza RS, Acosta AL, Aguiar AJC, Almeida EAB, Alves DA, Alves-dos-Santos I, Andrade TO, Evandson JA-S, Barbosa AS, Barbosa ERM, Bezerra LA, Borges RC, Brito,TF, Camacho GP, Campbell AJ, Castro MS, Coelho BWT, Ferrari RR, Garófalo CA, González-Chaves AD, Keller GO, **Lichtenberg EM**, Martínez-Martínez CA, Martins MB, Martins AC, Maués MM, Moleiro HP, Mouga DMDS, Oliveira FF, Ramos KS, Ramos RL, Rocha-Filho LC, Santos IPV, Santos S, Santos-Júnior JE, Shibata A, Silva DP, Teixeira CMN, Tietz AL, Trindade-Santos ME, Vilhena PS, Vivallo F, Carvalheiro LG. Brazilian Bee Traits Database: addressing the Raunkiaerian shortfall for Neotropical bees. Submitted to *Ecology*.
- Behr WL, Whiting C, Simpson K, **Lichtenberg E**, Baum K, Jha S, Fowler N. Grassland plant communities in the southern Great Plains resistant to restoration by prescribed fire and seed addition. In review with *Restoration Ecology*.
- 22) Dorey J, Chesshire P, Bolaños A, O'Reilly R, Bossert S, Collins S^G, **Lichtenberg E**, Tucker EM, Smith-Pardo A, Falcon-Brindis A, Guevara D, Ribeiro B, Pedro Dd, Fischer E, Pickering J, Hung K, Parys K, McCabe L, Rogan M, Michkley R, Velazco S, Grisswold T, Zariillo T, Jetz W, Sica Y, Orr M, Guzman L, Ascher J, Hughes A, Cobb N. 2023. A globally synthesized and flagged bee occurrence dataset and cleaning workflow. *Scientific Data* 10: 747.
- Preprint: <https://doi.org/10.1101/2023.06.30.547152>
 - Data: <https://doi.org/10.25451/flinders.21709757>
 - R package: <https://jbdorey.github.io/BeeBDC/>
- 21) **Lichtenberg EM**, Milosavljević I, Campbell AJ, Crowder DW. 2023. Differential effects of soil conservation practices on arthropods and crop yields. *Journal of Applied Entomology* 147: 931-940.
- Preprint: <https://doi.org/10.1101/2021.12.06.471474>
 - Data: <https://zenodo.org/doi/10.5281/zenodo.8253577>
- 20) Allen-Perkins A, [87 additional authors], **Lichtenberg EM**, [91 additional authors], Ignasi Bartomeus. 2022. CropPol: a dynamic, open and global database on crop pollination. *Ecology* 103: e3614.
- 19) Campbell AJ*, **Lichtenberg EM***, Carvalheiro LG, Menezes C, Cabral RB, Coelho BTW, Freitas MAB, Giannini TC, Leão KL, Olivera FF, Silva TSF and Maués MM. 2022. High

- bee functional diversity buffers crop pollination services against Amazon deforestation. *Agriculture, Ecosystems & Environment* 326: 107777.
- 18) Baylis K, **Lichtenberg EM** and Lichtenberg E. 2021. Economics of pollination. *Annual Review of Resource Economics* 13: 335-354.
 - 17) **Lichtenberg EM**, Irwin RE and Bronstein JB. 2020. Bumble bees are constant to nectar-robbing behaviour despite low switching costs. *Animal Behaviour* 170: 177-188.
 - 16) **Lichtenberg EM***, Heiling JM*, Bronstein JL and Barker, JL. 2020. Noisy communities and signal detection: why do foragers visit rewardless flowers? *Philosophical Transactions of the Royal Society B: Biological Sciences* 375: 20190486.
 - 15) **Lichtenberg EM***, Richman SK*, Irwin RE and Bronstein JB. 2020. Competition for nectar resources does not affect bee foraging tactic constancy. *Ecological Entomology* 45: 904-909.
 - 14) **Lichtenberg EM**, Irwin RE and Bronstein JB. 2018. Costs and benefits of alternative food handling tactics help explain facultative exploitation of pollination mutualisms. *Ecology* 99: 1815-1824.
 - Data: <https://zenodo.org/record/1243208>
 - 13) **Lichtenberg EM**, Mendenhall CM and Brosi BJ. 2017. Foraging traits modulate stingless bee community disassembly under forest loss. *Journal of Animal Ecology* 86: 1404-1416.
 - Data: <https://zenodo.org/record/843615>
 - 12) vanEngelsdorp D, Traynor KS, Andree M, **Lichtenberg EM**, Chen Y, Saegerman C and Cox-Foster DL. 2017. Colony collapse disorder (CCD) and bee age impact honey bee pathophysiology. *PLOS ONE* 12: e0179535.
 - 11) Bronstein JB, Barker JL, **Lichtenberg EM**, Richardson LL and Irwin RE. 2017. The behavioral ecology of nectar robbing: why be tactic constant? *Current Opinion in Insect Science* 21: 14-18.
 - 10) **Lichtenberg EM**, Kennedy CK, Kremen C, [60 additional authors] and Crowder DC. 2017. A global synthesis of the effects of diversified farming systems on arthropod diversity at field and landscape scales. *Global Change Biology* 23: 4946-4957.
 - Data: <https://zenodo.org/record/439109>
 - 9) **Lichtenberg EM**, Graff Zivin J, Hrnecir M and Nieh JC. 2014. Eavesdropping selects for conspicuous signals. *Current Biology* 24: R598-R599.
 - 8) Pettis JS, **Lichtenberg EM**, Andree M, Stitzinger J, Rose R and vanEngelsdorp D. 2013. Crop pollination exposes honey bees to pesticides which alter their susceptibility to the gut pathogen *Nosema ceranae*. *PLOS ONE* 8: e70182.
 - Highly Cited Paper in Web of Knowledge
 - Used as a teaching model for how to structure a scientific paper by the World Health Organization's Hinari Access to Research for Health program. (<http://slideplayer.com/slide/4121536/> slide 28; I principally wrote the PLOS ONE article.)
 - 7) Pettis JS, Rose R, **Lichtenberg EM**, Chantawankul P, Buawangpong N, Somana W, Prachaval S and vanEngesldorp D. 2013. A rapid survey technique for *Tropilaelaps* mite detection. *Journal of Economic Entomology* 106: 1535-1544.
 - 6) **Lichtenberg EM** and Brosi BJ. 2012. Expanded ranges of two stingless bee species: *Aparatriona isopterophila* and *Ptilotrigona occidentalis*. *Journal of the Kansas Entomological Society* 85: 374-377.
 - 5) **Lichtenberg EM**, Hrnecir M, Turatti IC and Nieh JC. 2011. Olfactory eavesdropping by two competing stingless bee species. *Behavioral Ecology and Sociobiology* 65: 763-774.

- 4) **Lichtenberg EM**, Imperatriz-Fonseca VL and Nieh JC. 2010. Behavioral suites mediate group-level foraging dynamics in communities of tropical stingless bees. *Insectes Sociaux* 57: 105-113.
- 3) **Lichtenberg EM**, Hrnecir M and Nieh JC. 2009. A scientific note: Foragers deposit attractive scent marks in a stingless bee that does not communicate food location. *Apidologie* 40: 1-2.
- 2) **Lichtenberg EM** and Hallager S. 2008. A description of commonly observed behaviors for the kori bustard (*Ardeotis kori*). *Journal of Ethology* 26: 17-34.
- 1) Hallager S and **Lichtenberg EM**. 2007. New display behavior in male kori bustard (*Ardeotis kori strunthiunculus*). *The Wilson Journal of Ornithology* 119: 750-755.

Manuscripts in preparation

Collins SM^G, **Lichtenberg EM**. Local nesting resources alter ground-nesting bee communities.
Whiting C, Behr W, **Lichtenberg E**, Baum K, Jha S and Fowler N. Effects of invasive grasses on fuel loads and fire temperatures in grasslands of the southern Great Plains, North America.

Non-peer-reviewed-publications

Lichtenberg EM, Pearson AE^G. 2023. Pollinators & Pollination: Nature and Society. Jeff Ollerton. 2021. Pelagic Publishing, Exeter, United Kingdom. 286 pp. \$32.00 paperback. ISBN: 978-1-78427-228-9. *The Journal of Wildlife Management* 87: e22416. (book review)
Koch, JB, Looney C, Hopkins B, **Lichtenberg EM**, Sheppard WS and Strange JP. 2019. Projected climate change will reduce habitat suitability for bumble bees in the Pacific Northwest. BioRxiv. <https://www.biorxiv.org/content/10.1101/610071v1>
Strange JP, Koch JB, Sheperd WS, Hopkins B, Long J, **Lichtenberg EM** and Looney C. 2014. Bumble bee community composition and population genetic diversity in the North Cascades and coast network: 2013 progress report. Seattle, WA: Pacific NW Cooperative Ecosystem Studies Unit.

INVITED TALKS

^GGraduate co-author, ^UUndergraduate co-author

- Jun. 2023 **Lichtenberg EM**, Jha S, Pearson A^G, Collins S^G, Lopez E^U, Baum K. “Habitat needs of diverse pollinators determine insect conservation and sustainable land management.” International Conference on Pollinator Biology, Health & Policy (State College, PA).
- Apr. 2022 **Lichtenberg EM**. “Pollinator biodiversity and pollination in human-dominated landscapes.” Division of Biology, Texas Women’s University (Denton, TX).
- Jul. 2021 **Lichtenberg EM**. “Pollinator biodiversity and pollination in human-dominated landscapes.” USDA Temperate Tree Fruit and Vegetable Research Unit (Wapato, WA).
- Oct. 2020 **Lichtenberg EM**. “Pollinator biodiversity and pollination in human-dominated landscapes.” Program in Ecology and Evolutionary Biology, Texas A&M University (College Station, TX).
- Sep. 2020 **Lichtenberg EM**. “Pollinator biodiversity and pollination in human-dominated landscapes.” Department of Biological Sciences, University of North Texas (Denton, TX).
- Feb. 2019 **Lichtenberg EM**. “Insect biodiversity and foraging under habitat restoration.” Department of Biological Sciences, University of North Texas (Denton, TX).

- Feb. 2019 **Lichtenberg EM.** "Insect biodiversity and foraging in dynamic landscapes." Department of Biological Sciences, Fordham University (Bronx, NY).
- Jan. 2019 **Lichtenberg EM.** "Improving ecological management through understanding plant-animal interactions." School of Biological Sciences, Queens University Belfast (Belfast, UK).
- Nov. 2018 **Lichtenberg EM,** Crowder DW Milosavljević I, Jha S, Heiser J^U. "Pollinator responses to habitat loss and sustainability-oriented farming practices." Entomological Society of America Annual Meeting (Vancouver, Canada).
- June 2018 **Lichtenberg EM.** "My plans in research and teaching." School of Biological Sciences, University of Bristol (Bristol, UK).
- May 2018 **Lichtenberg EM.** "Insect biodiversity and foraging in dynamic landscapes." Department of Ecology and Evolution, Université de Lausanne (Lausanne, Switzerland).
- Mar. 2018 **Lichtenberg EM.** "Multifunctionality and insect foraging in dynamic landscapes." Department of Biology, Georgia Southern University (Statesboro, GA).
- Aug. 2017 **Lichtenberg EM,** Kennedy CK, Crowder DW. "Can environmental heterogeneity support multiple ecosystem services in agricultural landscapes? A global perspective." Early career perspectives on Future Earth: ecology & civilization webinar.
- Feb. 2017 **Lichtenberg EM.** "Multi-scale pollination dynamics in a changing world." Department of Biology, New Mexico State University (Las Cruces, NM).
- Mar. 2016 **Lichtenberg EM.** "Bee foraging behavior and ecology in anthropogenic landscapes." Department of Ecology and Plant Pathology, Auburn University (Auburn, AL).
- Feb. 2016 **Lichtenberg EM.** "Plant-pollinator interactions in a changing world." Department of Biology, Geology and Environmental Science, University of Tennessee Chattanooga (Chattanooga, TN).
- Sep. 2015 **Lichtenberg EM.** "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Department of Entomology, The University of Arizona (Tucson, AZ).
- Feb. 2015 **Lichtenberg EM.** "Eavesdropping, foraging and habitat loss in keystone Neotropical pollinators, stingless bees." Department of Entomology, University of California, Riverside (Riverside, CA).
- Feb. 2015 **Lichtenberg EM.** "Effects of community-level interactions on bee foraging." Department of Biological Sciences, Mississippi State University (Starkville, MS).
- Nov. 2014 **Lichtenberg EM,** Kennedy C, Crowder D. "Effects of agricultural management and landscapes on the abundance and diversity of arthropods: a global analysis." Entomology 2014 (Portland, OR).
- Dec. 2013 **Lichtenberg EM.** "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Department of Entomology, Washington State University (Pullman, WA).
- Oct. 2013 **Lichtenberg EM** and Brosi BJ. "Stingless bee species' traits alter responses to deforestation." WSU School of Biological Sciences Ecolunch (Pullman, WA).
- Sep. 2013 **Lichtenberg EM.** "Eavesdropping selects for conspicuous signals." Palouse Ecologists, Evolutionary Biologists and Systematists (Moscow, ID).

- Aug. 2012 **Lichtenberg EM**, Nieh JC. "Heterospecific recruitment pheromones facilitate efficient foraging by keystone Neotropical pollinators." Ecological Society of America Annual Meeting (Portland, OR).
- May 2012 **Lichtenberg EM**. "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Department of Entomology, National Museum of Natural History (Washington, D.C.).
- Feb. 2012 **Lichtenberg EM**. "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Biology Department, Georgetown University (Washington, D.C.).
- Jan. 2012 **Lichtenberg EM**. "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Bee Research Laboratory, Agricultural Research Service, US Department of Agriculture (Beltsville, MD).
- Nov. 2011 **Lichtenberg EM**. "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Department of Entomology, University of Maryland, College Park (College Park, MD).
- Feb. 2011 **Lichtenberg EM**. "Context-dependent eavesdropping by stingless bees." UCSD Division of Biological Sciences Recruitment (La Jolla, CA).
- Aug. 2010 **Lichtenberg EM**. "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." Department of Biological Sciences, Aarhus University (Aarhus, Denmark).
- Aug. 2010 **Lichtenberg EM**. "Eavesdropping, foraging and dominance in keystone Neotropical pollinators: stingless bees." School of Biological and Environmental Sciences, University of Stirling (Stirling, Scotland).
- July 2010 **Lichtenberg EM**. "Dominance and context-dependent eavesdropping by stingless bees." IX Encontro sobre Abelhas: Genética e Biologia Evolutiva de Abelhas (Ribeirão Preto, Brazil).
- Feb. 2010 **Lichtenberg EM**. "Context-dependent eavesdropping by stingless bees." UCSD Division of Biological Sciences Recruitment (La Jolla, CA).
- July 2008 **Lichtenberg EM**. "Scent marking by stingless bees." VIII Encontro sobre Abelhas: Biodiversidade e Uso Sustentado de Abelhas (Ribeirão Preto, Brazil).

PRESENTATIONS

^G Graduate co-author. ^U Undergraduate co-author

- Nov. 2023 Pearson AE^G, Collins SM^G, Taylor LA, **Lichtenberg EM**. Synergies and tradeoffs in conserving diverse pollinators: a traits-based approach. Entomological Society of America Annual Meeting (Fort Washington, MD). Oral presentation.
- Aug. 2023 Collins SM^G, Ferring R, **Lichtenberg EM**. Bottom-up impacts of rotational grazing disturbance on ground-nesting bee assemblages: do they dig it? Ecological Society of America Annual Meeting (Portland, OR). Poster.
- Aug. 2023 Raulinaitis L, Griffin SR, **Lichtenberg EM**, Baum K, Jha S. Grassland restoration mediates plant-pollinator species interaction network reassembly. Ecological Society of America Annual Meeting (Portland, OR). Poster.
- Jul. 2023 Muñoz ML^U, Gage A^U, Linogao J^U, Lopez PA^U, Meadows BT^U, Neathery A^U, Vohs M, **Lichtenberg EM**. Can Bumble Bees Learn from Lady Beetles? Animal Behavior Society Annual Meeting (Portland, OR). Poster.

- Jul. 2023 Whyle RL^G, **Lichtenberg EM**. Behavioral and Ecological Drivers of Insect Cuticular Hydrocarbon Profiles. Animal Behavior Society Annual Meeting (Portland, OR). Poster.
- Aug. 2022 Whyle RL^G, Wei N, Trowbridge AM, Ashman T-L, **Lichtenberg EM**, Jamieson MA. Genotype, mycorrhizae, and herbivory interactively shape plant functional traits and the floral microbiome. Ecological Society of America Annual Meeting (Montréal, QC). Oral presentation.
- Aug. 2022 Collins SM^G, Ferring RC, **Lichtenberg EM**. Bottom-up impacts of rotational grazing disturbance on ground-nesting bee assemblages: do they dig it? Ecological Society of America Annual Meeting (Montréal, QC). Poster.
- Winner, E. Lucy Braun Award (best poster)
- Aug. 2021 **Lichtenberg EM**, Vohs M, Gage A^U, Lopez PA^U, Muniz M^U. Can bees learn from beetles? Social learning across insect orders. Animal Behavior Society Annual Meeting (virtual). Poster.
- Aug. 2020 **Lichtenberg EM**, Richman SK, Irwin RE, Bronstein JL. “Why do nectar-robbing bees show high food handling tactic constancy?” Animal Behavior Society Annual Meeting (virtual). Oral presentation.
- Aug. 2020 Lopez EA, Griffin SR, **Lichtenberg E**, Wilhelm S, Baum K, Jha S. “Effects of prescribed burns on pollination networks in restored prairies.” Animal Behavior Society Annual Meeting (virtual). Oral presentation.
- Aug. 2019 **Lichtenberg EM**, Heiser J^U, Baum KA, Jha S. “Resource requirements at local and landscape scales underlie trade-offs for conserving diverse pollinators.” Ecological Society of America Annual Meeting (Louisville, KY). Oral presentation.
- Aug. 2019 Behr W, Simpson KM^U, **Lichtenberg EM**, Jha S, Fowler NL. “Forb responses to prescribed fire in Texas and Oklahoma.” Ecological Society of America Annual Meeting (Louisville, KY). Poster.
- Jul. 2019 **Lichtenberg EM**, Gross BJ, Zilberman D, Kremen C, Lichtenberg E. “Managing pollination services: a model of substitution between wild pollinator habitat and honey bee hive rental.” International Pollinator Conference (Davis, CA). Poster.
- Dec. 2018 Campbell AJ, **Lichtenberg EM**, Cabral RB, Carvalheiro LG, Coelho BTW, Freitas MAB, Oliveira FF de, Maués MM, Menezes C, Giannini TC. “Functional traits can inform tropical bee conservation but not ecosystem services.” III Simpósio Brasileiro de Polinização (Botucato, Brazil). Oral presentation.
- Aug. 2018 **Lichtenberg EM**, Mendenhall CM, Brosi B. “Foraging traits drive outcomes of Neotropical stingless bee community disassembly under land use change.” International Union for the Study of Social Insects Congress (Guarujá, Brazil). Oral presentation.
- Mar. 2018 **Lichtenberg EM**. “Alternative food handling tactics and exploitation of pollination mutualisms: bumble bee nectar robbing decisions.” Brain, Behavior, and Evolution Seminar, University of Texas (Austin, TX). Oral presentation.
- Jan. 2018 Bronstein J, Barker JL, **Lichtenberg EM**, Richardson LL, Irwin RE. “The behavioral ecology of nectar-robbing: how alluring is ‘the Temptation to Cheat’?” American Society of Naturalists Annual Meeting (Asilomar, CA). Oral presentation.

- Aug. 2017 **Lichtenberg EM**, Irwin RE, Bronstein JL. "Exploitation of pollination mutualisms: Tactic constancy of nectar robbing." Ecological Society of America Annual Meeting (Portland, OR). Oral presentation
- Aug. 2017 Bronstein JL, **Lichtenberg EM**, Irwin RE. "The ecology of cheating: why nectar-robs a flower more than once?" Ecological Society of America Annual Meeting (Portland, OR). Oral presentation
- Sept. 2016 **Lichtenberg EM**, Irwin RE, Bronstein JL. "Context dependency of bumble bee nectar robbing." XXV International Congress of Entomology (Orlando, FL). Oral presentation.
- Sept. 2016 **Lichtenberg EM**, Mendenhall CM, Brosi B. "Diet breadth impacts tropical eusocial bee species' sensitivity to forest loss." International Union for the Study of Social Insects-North America Section Colloquium (Orlando, FL). Oral presentation.
- Aug. 2016 **Lichtenberg EM**, Irwin RE, Bronstein JL. "Impacts of alternative food handling tactics on bee foraging efficiencies." International Society for Behavioral Ecology Conference (Exeter, UK). Oral presentation.
- Jul. 2015 **Lichtenberg EM** and Brosi BJ. "Stingless bee species' traits alter responses to deforestation." Graduate Seminar, Rocky Mountain Biological Lab (Gothic, CO). Oral presentation.
- Aug. 2014 **Lichtenberg EM**, Nieh JC. "Eavesdropping selects for conspicuous signals." International Society for Behavioral Ecology Conference (New York, NY). Oral presentation.
- Nov. 2013 **Lichtenberg EM**, Kennedy C and Crowder D. "Effects of farming practices on local and regional abundance, richness and evenness of arthropods." Entomological Society of America Annual Meeting (Austin, TX). Oral presentation.
- Aug. 2013 **Lichtenberg EM** and Brosi BJ. "Stingless bee species' traits alter responses to deforestation." 2nd International Conference on Pollinator Biology, Health and Policy (State College, PA). Oral presentation.
- Jan. 2013 **Lichtenberg EM**, Pettis JS, Andree M, Stitzinger J, Rose R and vanEngelsdorp D. "Colony health implications of pollen and pesticide diversity in colonies rented for crop pollination." American Bee Research Conference (Hershey, PA). Oral presentation.
- Oct. 2012 **Lichtenberg EM**. "Eavesdropping on heterospecific recruitment pheromones facilitates efficient foraging by stingless bees." International Union for the Study of Social Insects-North America Section Meeting (Greensboro, NC). Oral presentation.
- Aug. 2011 **Lichtenberg EM** and Nieh JC. "Cost-effective eavesdropping between competing bee species: Empirical and theoretical support." Ecological Society of America Annual Meeting (Austin, TX). Oral presentation.
- July 2011 **Lichtenberg EM** and Nieh JC. "Fight or flight? Conflict costs drive heterospecific eavesdropping by competing stingless bees." Behavior 2011 (Bloomington, IN). Oral presentation.
- Aug. 2010 **Lichtenberg EM**. "Context-dependent eavesdropping by a dominant stingless bee species." International Union for the Study of Social Insects Congress (Copenhagen, Denmark). Poster.

- Aug. 2009 **Lichtenberg EM**, Imperatriz-Fonseca VL and Nieh JC. “Group foraging is beneficial for stingless bees.” Ecological Society of America Annual Meeting (Albuquerque, NM). Poster.
- June 2009 **Lichtenberg EM** and Nieh JC. “Risk-sensitive eavesdropping by stingless bees.” Animal Behavior Society Annual Meeting (Pirenópolis, Brazil). Oral presentation.
- Nov. 2008 **Lichtenberg EM** and Nieh JC. “Olfactory eavesdropping mediates stingless bee foraging patterns.” Entomological Society of America Annual Meeting (Reno, NV). Oral presentation.
- July 2008 **Lichtenberg EM**, Imperatriz-Fonseca VL and Nieh JC. “Group foraging is beneficial for stingless bees.” VIII Encontro sobre Abelhas: Biodiversidade e Uso Sustentado de Abelhas (Ribeirão Preto, Brazil). Poster.
- Dec. 2007 **Lichtenberg EM** and Nieh JC. “Stingless bee competition: dominance, aggression and coexistence in a Brazilian meliponine community.” Entomological Society of America Annual Meeting (San Diego, CA). Oral presentation.
- Mar. 2007 **Lichtenberg EM** and Nieh JC. “Rethinking stingless bee competition: dominance, aggression and coexistence in a Brazilian meliponine community.” Southern California Animal Behavior Symposium (Santa Barbara, CA). Oral presentation.
- Mar. 2006 **Lichtenberg EM** and Hallager S. “Factors affecting breeding success in captive kori bustards (*Ardeotis kori*).” California Animal Behavior Symposium (San Diego, CA). Oral presentation.
- Oct. 2005 **Lichtenberg EM** and Hallager S. “Factors affecting breeding success in captive kori bustards (*Ardeotis kori*).” Section of Ecology, Behavior and Evolution retreat (San Diego, CA). Oral presentation.
- 2002-2003 **Lichtenberg EM** and Wilkinson JS. “Abdominal oscillations and status discrimination in stalk-eyed flies.”
- Undergraduate Research Day, College Park, MD, April 2003. Oral presentation.
 - 5th Undergraduate Research Symposium in the Chemical and Biological Sciences, Baltimore, MD, October 2002. Poster.
 - Animal Behavior Society Meetings, Bloomington, IN, July 2002. Poster.
 - Undergraduate Research Day, College Park, MD, April 2002. Poster.

MENTORSHIP

Graduate students

- 2022-present Avery Pearson (MS) , *How does land use impact plant-pollinator interactions?*
- 1st place, Entomological Society of America President’s Prize for best graduate student presentation, 2023
 - JKG Silvey Scholarship, 2023-2024
 - Floyd Shafer Memorial Scholarship, 2023-2024
- 2021-present Robert Whyte (PhD) , *Social learning across insect orders*
- R.B. Toulouse Scholarship, 2022-2026
- 2020-2023 Shannon Collins (MS) , *Bottom-up impacts of grazing disturbance on ground-nesting bee assemblages*
- Lucy Braun Award for Excellence in Ecology, Ecological Society of America best poster award, 2022

- The Garden Club of America Board of Associates Centennial Pollinator Fellowship, 2022
- R.B. Toulouse Scholarship, 2021-2023

Undergraduates (^GNow in or completed graduate/professional school)

- 2021-2023 Marie Muñiz, “*Can Bumblebees Learn from Lady Beetles?*”; Distinguished Honors College Scholar
- Undergraduate Research Fellow, 2022-2023
 - Frank C. Spencer Rural Student Scholarship, 2022
 - College of Science research spotlight: <https://cos.unt.edu/news/undergrad-research-spotlight-marie-l-mu%C3%B1iz>
- 2018 Jaclyn Heiser - “*Analysis of Pollinator and Plant Diversity and Abundance Across the Southern Plains Region*”; Capstone Research Project
- 2017 Kathleen Dunleavy - “*Bee behavior and foraging tactics while gathering nectar*”
- 2016 Karen Wang^G – “*Does bee body size affect flower handling?*”; NSF REU Project
- 2014 Laura Rafferty – Horticulture Intern
- 2014 Bryla Jones – “*Interactions between predators and bees on canola*”; WSU Funded Internship
- 2010-2012 Kyle Burks^G – “*Function and chemistry of bumble bee labial gland secretions*”
- 2006 Shawn Kessler – “*Pattern discrimination by stingless bees*”

Student committees

- 2023-present Mikayla Mayfield (PSM, Environmental Science, Advisor: Ed Mager)
- 2021-2023 Tessa Boucher (MS, Environmental Science, Advisor: Jim Bednarz)
- 2021-2023 Sara McGillewie (PhD, Biology, Advisor: David Hoeinghaus)
- 2020-2023 Alicia Dunton (PhD, Biology, Advisor: Warren Burggren)
- 2020-2022 Ashleigh Haddock (PSM, Environmental Science, Advisor: Ed Mager)
- 2020-2021 Emily Hartdegen (MS not completed, Biology, Advisor: David Hoeinghaus)

Technicians

- 2023 Marie Muñiz, Lab Manager
- 2021-2023 Laura Taylor^G, Lab Manager
- 2020-2021 Michelle Vohs, Lab Manager

Research assistants (undergraduate and post-baccalaureate; ^GNow in or completed graduate/professional school)

- UNT: Viktorya Dietrich, Braeden Duffee, Isaac Eastland, Alejandra Gage^G, Christopher Graffam^G, Alyssa Kinman, John Linogao, Pablo Lopez, Jada Martinez, Monzerratt Martinez, Aidan McKinnis, Brandon Meadows, Nicholas Medina, Karla Montanez, Julian Moore, Marie Muñiz, Sarah Paroski, Devin Pedraza, Ethan Phillips, Brand Richter, Abbey Schedler
- Other: Llewyn Blossfeld, John Bosak^G, Kelsey Brennan^G, Isabel Brofsky^G, Shannon Dang, Kayla Fillion, Emily Graber, Bridget Harter^G, Jaclyn Heiser, Hayley Hunter-Zinck^G, Rhiana Jones^G, Michael Joseph, Angie Kemsley, Shawn Kessler, Elizabeth Lopez, Hannah Niland^G, Cody Phillips^G, Laura Rafferty, Tín Rodriguez, Isaac Rubenstein^G, Kyle Simpson^G, Gavin Smetzler, Shelbie Spalding, Michael Stemkovski^G, Katie Strain^G, Savannah Troy^G, Sam Wilhelm^G, Caity Winterbottom^G, Kate Wynne^G

RESEARCH POSITIONS

- 2011-2015 **Research Associate** (part time), Dennis vanEngelsdorp (Department of Entomology, University of Maryland, College Park) and Jeffery Pettis (Bee Research Lab, Agricultural Research Service, US Department of Agriculture, Beltsville, MD)
- 2011-2013 **Visiting Researcher**, Department of Biology, University of Maryland, College Park
- 2005-2006 **Graduate Rotation Student**
- Ronald Burton, Scripps Institute of Oceanography – molecular techniques
 - Russell Lande, University of California, San Diego – game theory
- Sep. 2004 **Kori Bustard Behavior Research Intern**, Smithsonian National Zoological Society
- Aug. 2005
- Jan. 2001 **Undergraduate Researcher**, Gerald Wilkinson’s lab, University of Maryland, College Park
- May 2003
- Summer 2000 **Research Assistant**, Gerald Borgia’s lab, University of Maryland, College Park

TEACHING EXPERIENCE

- Spring 2021 **Guest Lecturer**, “Developmental Integrative Biology Seminar” (BIOL 5870.001), University of North Texas
- Spring 2021 **Instructor**, “Environmental Science” (BIOL 1132), University of North Texas
- present
- Fall 2020 **Instructor**, “Behavioral Ecology” (BIOL 4005.008 & 5005.008, BIOL 4035 & 5035), University of North Texas
- present
- Fall 2017 **Guest Lecturer**, “Topics & Skills for Grad-students in Biology” (BIO389D), University of Texas at Austin
- & 2018
- Fall 2015 **Mentor**, "Honors Introductory Biology" (MCB181), University of Arizona
- Spring 2014 **Primary Instructor**, "Insect Behavior" (ENTOM593), Department of Entomology, Washington State University
- Summer 2009 **Lecturer**, “English for Biologists” mini-course, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo
- Summer 2008 **Lecturer**, “Uma Introdução a Estatística - Análise Prática dos Dados” mini-course [Translated title: An Introduction to Statistics: Practical Data Analysis], Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo
- Summer 2007 **Lecturer**, “Stingless bee competition and foraging” mini-course, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo
- 2007-2011 **Teaching Assistant**, Division of Biological Sciences, UCSD
- "Biodiversity," Spring 2011; "Animal Behavior and Communication," Winter 2011; “Introductory Ecology: Organisms and Habitats,” Fall 2008; "Biometry," Fall 2007; “Animal Behavior & Communication,” Spring 2007
- 2003-2004 **Peace Corps Volunteer Math Teacher**, 8th and 9th grades, Collège de Lafou, Guinea, West Africa

PROFESSIONAL TRAINING

- Oct. 2023 **Ranching for Resilience: Linking Management Practices to Soil & Rangeland Health**, Holistic Management International, Decatur, TX
- Oct. 2022 **Adaptive Grazing and Brush Management**, Grassroots Carbon, Decatur, TX

- Aug. 2021 **Becoming a JEDI (Justice, Equity, Diversity, and Inclusion) Mentor: Strategies for Inclusive Mentoring**, Animal Behavior Society. Online.
- Summer 2021 **Unlikely Allies in the Academy**, University of North Texas, Denton, TX
- Apr. 2020 **Suicide Prevention Workshop**, University of North Texas, Denton, TX
- Oct. 2018 **Bystander training**, BeVocal, University of Texas, Austin, TX
- Oct. 2018 **Modern R for Data Science**, Locke Data, Austin, TX
- Oct. 2015 **Scientific Computing Skills Workshop**, University of Arizona, Tucson, AZ
- Feb. 2014 **Transformational Women's Leadership Symposium**, Washington State University, Pullman, WA
- Aug. 2012 **Getting off the Ground with Individual-Based Modeling: A Primer for Instructors and Researchers**, Ecological Society of America Annual Meeting workshop, Portland, OR
- 2009 **The Bee Course**, American Museum of Natural History, Portal, AZ
- Winter 2007 **Tropical Rainforest and Canopy Ecology**, Institute for Tropical Ecology and Conservation, Bocas del Toro, Panama

SCIENTIFIC MEMBERSHIPS

Animal Behavior Society; Association for Women in Science; Ecological Society of America; Entomological Society of America; International Union for the Study of Social Insects

SERVICE

Departmental/University

- 2023-present **Member**, Department of Biological Sciences Graduate Admissions/TA/Scholarship Committee
- 2023-2024 **Search committee member**, Department of Biological Sciences
- 2023 **Co-organizer** with undergraduate student leaders, Panel on REU, REEU, RaMP programs, UNT Society for Ecological Restoration Student Chapter
- 2022-2023 **Member**, UNT Ricco Ethics Award Committee
- 2022-2023 **Search committee member**, College of Science
- 2022, 2023 **Panelist**, UNT Peace Corps Stories event
- 2022 **Search committee member**, Department of Biological Sciences
- 2021-present **Member**, Department of Biological Sciences Inclusive Curriculum Working Group
- 2020-present **Member**, UNT Bee Campus USA Committee
- 2016-2017 **Chair**, UA Postdoc Association Postdoc Guide Committee
- 2016-2017 **Founder and Organizer**, UA EEB Statistics and R Group
- 2016-2017 **Postdoctoral representative**, Department of Ecology and Evolutionary Biology, The University of Arizona
- 2008-2010 **Admissions Committee Member**, Division of Biological Sciences, UCSD
- 2007-2011 **Graduate student liaison**, Section of Ecology, Behavior and Evolution, Division of Biological Sciences, UCSD
- 2007-2008 **Graduate Student Association Representative**, UCSD

Workshops and Symposia

- 2023 **Assistant**, Weaving the Future of Animal Behavior: A professional-development workshop for pre-tenure faculty and postdoctoral researchers in animal behavior, Animal Behavior Society

- 2022-2023 **Organizer**, EEB summer seminar series at UNT
 2022 **Instructor, CV workshop**, Biology Grad Student Association, UNT
 2016 **Organizer**, Recruiting Diversity Working Group, UA Women in Natural Sciences
 2015 **Organizer, Symposium**, Annual Meeting of the Pacific Branch of the Entomological Society of America (Symposium Title: Celebrating Pollination Biology in Changing Landscapes)
 2014 **Organizer, Section Symposium**, Entomology 2014 (Symposium Title: Entomology's Role in Sustaining Ecosystem Services in Agroecosystems)
 2013, 2014 **Instructor, CV workshop**, Department of Entomology, Washington State University
 2010 **Organizer, English conversation practice group**, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo
 2009-2011 **Translator (French to English)**, Alliance Guinea

Reviewing

- 2023 **Grant reviewer**, National Science Foundation
 2022 **Grant reviewer**, US Department of Agriculture
 2022 **Fellowship reviewer**, National Science Foundation Graduate Research Fellowship Program
 2019 **Grant reviewer**, National Science Foundation
 2018 **Grant reviewer**, UK Natural Resource Environmental Council Newton Fund
 2017, 2018 **Student grant reviewer**, Animal Behavior Society
 2010-2011 **Scholarship committee**, Association for Women in Science San Diego Chapter
 2006-present **Manuscript reviewer** for: *Acta Ethologica*, *Acta Zoológica Mexicana*; *Agriculture, Ecosystems and Environment*; *Animal Behaviour*; *Annals of Botany*; *Apidologie*; *Behavioral Ecology*; *Behavioral Ecology and Sociobiology*; *Biological Conservation*; *Biological Control*; *Ecological Applications*; *Ecological Entomology*; *Ecology*; *Ecology and Evolution*; *Ethology*; *Forests*; *Global Change Biology*; *Global Ecology and Biogeography*; *Journal of Apicultural Research*; *Journal of Comparative Physiology A*; *Journal of Apicultural Research*; *Journal of Ecology*; *Journal of Economic Entomology*; *Journal of Pollination Ecology*; *Neotropical Entomology*; *PLOS ONE*; *Proc R Soc B*; *Psyche*; *Revista Colombiana de Entomologia*; *Sociobiology*; *The Science of Nature*

OUTREACH AND SCIENCE EDUCATION

- 2021 **Speaker**, “Managing grasslands for pollinator conservation,” Texas Master Naturalist 2021 Annual Meeting, online.
 2021 **Invited presenter**, “Pollinators in grasslands: habitat requirements and management,” Trinity Forks Chapter of the Native Plant Society of Texas, online.
 2019 **Invited presenter**, “Pollinators in grasslands: habitat requirements and management,” Austin Butterfly Forum, Austin, TX
 2018-present **Founder and Moderator**, “STEM diversity inclusion resources” Slack workspace (<https://stemdiversityresource.slack.com/>)
 2018 **Volunteer**, Jean Andrews Lecture and Outreach Fair, Austin, TX
 2015, 2016 **Volunteer**, "Pollinator Paradise," Arizona Insect Festival, Tucson, AZ
 2014-2015 **Planning Committee Member and Presenter**, Improving Your Farm with Insects: Attracting and Managing Beneficials and Pollinators, Moscow, ID

- 2011-2012 **Organizer**, All Things Bugs (prepared part of the Entomology section for the 2012 USA Science and Engineering Festival in Washington, D.C.)
- 2009 **Lab host**, Young Black Scholars visit to UC San Diego
- 2006-2011 **Judge**, Association of Women in Science professional society awards, Greater San Diego Science & Engineering Fair
- 2006 **Mentor**, Expanding Your Horizons conference, San Diego, CA

SOCIAL MEDIA

- Lichtenberg EM**. Jul. 2015. "Bombus mixtus robbing Mertensia ciliata flowers." YouTube video. <https://www.youtube.com/watch?v=vInVsBQmT-I>.
- Lichtenberg EM**, Kessler S (research assistant). Jun. 2014. "Stingless bees fighting over a food source." YouTube video. <https://www.youtube.com/watch?v=2315f1M3pvA>.
- Used by instructors in undergraduate courses
- Lichtenberg EM**. Sep. 2013. "Tropilaelaps Mites, Part 2." Bee Informed Partnership blog. <http://beeinformed.org/2013/09/tropilaelaps-mites-part-2/>.

MEDIA COVERAGE

- Lichtenberg EM**. Jun. 2021. Research overview by Brittney Dear: <https://research.unt.edu/news/bee-sustainable>.
- Lichtenberg EM**. Jan. 2018. Interview and ongoing research discussed in the Sherman-Denison Herald Democrat: <http://www.heralddemocrat.com/news/20180125/hagerman-holds-control-burn-for-wildlife-research>.
- Lichtenberg EM** and colleagues. 2014. "Eavesdropping selects for conspicuous signals" covered by The Eastern Tribune, The Examiner, Entomology Today, Tech Times
- Pettis JM, **Lichtenberg EM** and colleagues. 2013. "Crop pollination exposes honey bees to pesticides which alter their susceptibility to the gut pathogen *Nosema ceranae*" coverage included NBC, US News & World Report, Los Angeles Times, Ag Information Network, Mother Jones, University Herald, Business Week, Bloomberg News, French Tribune, TakePart (>30 outlets in total)