

Michael C. Orr, PhD

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Institute of Zoology, Chinese Academy of Sciences, Beijing, P.R. China (IOZ)

Fall 2017–present

Postdoctoral Fellow (President’s International Fellowship Initiative)

Utah State University, Logan, UT (USU)

Fall 2011–Fall 2017

PhD in Biology

Dissertation: The Biogeography and Nesting Biology of *Anthophora*, with a Revision and Phylogeny of the *Anthophora* (*Micranthophora*)**Cornell University, Ithaca, NY (CU)**

Fall 2006–Spring 2010

B.S. in Entomology, with Distinction in Research

Honor’s Thesis: The Biodiversity of Bees in the Apple Orchards of New York State

Relevant appointments (non-teaching):

- Postdoctoral Fellow in the lab of Dr. Chao-Dong Zhu, IOZ (Fall 2017–present).
 - Research Assistant in the lab of Dr. Terry Griswold, USDA-ARS National Pollinating Insects Collection (Five semesters; Fall 2012–Fall 2013, Fall 2014, Spring 2016–Fall 2016).
 - Bee Identification Guide Designer, DiscoverLife.org (Spring 2011–Fall 2017, intermittently).
 - Bee Identification Specialist in the lab of Sam Droege, USGS Bee Inventory and Monitoring Lab (Fall 2010–Summer 2011).
 - Entomology Collection Intern in the lab of Dr. Seán Brady, Smithsonian National Museum of Natural History (Fall 2010–Summer 2011).
 - Lab Assistant (Fall 2008–Spring 2010) and Technician (Spring–Fall 2010) in the lab of Dr. Bryan Danforth, CU.
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Grants and funding: \$277,500

- Chinese Academy of Sciences President's International Fellowship Initiative: 2-year salary (2020; 500,000 RMB, \$75,000).
- National Science Foundation of China's Research Fund for International Young Scientists for "Reconstructing the evolution of mimicry at the world's center of bumble bee biodiversity" (2018; 400,000 RMB, \$59,000).
- Chinese Academy of Sciences President's International Fellowship Initiative: 2-year salary (2018; 500,000 RMB, \$75,000).
- USU School of Graduate Studies Dissertation Fellowship (2017; \$5000).
- USU Graduate Student Senate Graduate Enhancement Award (2015; \$4000).
- USU James A. MacMahon and Patty MacMahon Endowed Ecology Graduate Student Research Award (2015; \$1000).
- Joshua Tree National Park Association's Robert Lee Graduate Student Research Grant at Joshua Tree National Park (2014; \$3800).
- Cornell University Insect Collection J.C. Bradley Fund for the Advancement of Insect Taxonomy (2014; \$275).
- American Museum of Natural History Collection Study Grant (2014; \$1100).
- Community Foundation Desert Legacy Fund for California fieldwork (2013; \$2825).
- UC Riverside Friends of the Entomology Research Museum Visiting Curator Grant (2013; \$500).
- Orr, M.C. & S. Droege (to Polistes Foundation and United States Geological Survey). Development of Online Guides to the Identification of the 4000 Bees Found in North America. G. Unger Vetlesen Foundation (2011; \$50,000).

Awards and honors:

- AsiaEvo Conference Postdoctoral Researcher Travel Award (2018).
- USU Biology Department PhD Student Researcher of the Year (2018).
- USU College of Science Claude E. Zobell Graduate Scholarship (2017).
- USU Student Association President's Award (2017).
- USU Research and Graduate Studies Office's Graduate Student Travel Award (2016).
- Entomological Society of America's Pacific Branch Student Leadership Award (2016).
- Golden Key Academic Scholarship from USU Chapter (2016).
- Entomological Society of America's Pacific Branch Travel Award (2015).
- University of Wyoming Program in Ecology Student Symposium, First Place (2015).
- USU Research and Graduate Studies Office's Graduate Student Travel Award (2014).
- USDA-ARS SPOT Award for outreach efforts (2014).
- Entomological Society of America's Pacific Branch Travel Award (2014).
- USU Graduate Research Symposium, Biology poster, First Place (2013).

- Entomological Society of America Pacific Branch meeting, PhD poster, Second Place (2013).
- CU Outstanding Undergraduate Teaching Assistant in Entomology Award (2010).

Publications: +=equally-contributing, *=corresponding, NPR=non-peer-reviewed

Academic articles:

- **Orr***, M.C. & M.G. Branstetter. (Accepted). Unusual nocturnal foraging by ants at sandstone bee nests (Hymenoptera: Apidae, Formicidae). *Journal of the Kansas Entomological Society*.
- Wagner, T.C., et al., as invited signatory. (Accepted). Agroecology in the Post2020 Global Biodiversity Framework. *Nature Ecology & Evolution*.
- Satyshur*, C. & **M.C. Orr**. (Accepted). Record of *Anthophora (Clisodon) terminalis* nesting in a wooden trap-nesting block and comparison to available nesting information (Hymenoptera: Apidae). *Journal of Melittology*.
- **Invited: Orr***, M.C. (In press). A preliminary report on the bees of Joshua Tree National Park, with special focus on *Anthophora* Digger Bees. *Joshua Tree Science* 1.
- Zhou, Q.-S., A. Luo, F. Zhang, Z.-Q. Niu, Q.-T. Wu, M. Xiong, **M.C. Orr**, & C.-D. Zhu*. (2020). The first draft genome of the plasterer bees (Hymenoptera: Colletidae: *Colletes gigas*). *Genome Biology & Evolution* evaa090.
- **NPR: Orr, M.C.**, A.-R. Luo, D. Chesters, Q.-S. Zhou, F. Zhang, & C.-D. Zhu. (2020). Future directions in Systematics: A report from the 4th Systematic Biology Forum in China. *Zoological Systematics* 45(2): 78-80.
- Zhang, D., Z.-Q. Niu, **M.C. Orr**, J.S. Ascher, & C.-D. Zhu*. (2020). Chinese species of *Nomia (Gnathonomia)* Pauly, 2005 (Hymenoptera: Apoidea: Halictidae: Nomiinae). *Zootaxa* 4768(1): 76-94.
- Walker, R., **M.C. Orr**, & S. Miller. (2020). Factors contributing to leaf decomposition vary with temperature in two montane rivers of the Intermountain West, Utah. *Aquatic Sciences* 82(49).
- Hughes*, A.C., A.M. Lechner, A. Chitov, A. Horstmann, A. Hinsley, A. Tritto, A. Chariton, B. Li, C. Wang, D. Ganapin, E. Simonov, K. Morton, K. Toktomushev, M. Foggin, M. Tan-Mullins, **M.C. Orr**, R. Griffiths, R. Nash, S. Perkin, R. Glemet, M. Kim, & D.W. Yu. (2020). Horizon Scan of the Belt and Road Initiative (BRI). *Trends in Ecology & Evolution* 35(7): 583-593.
- Sun, X., Y. Ding, **M.C. Orr**, & F. Zhang*. (2020). Streamlining universal single-copy ortholog and ultraconserved element design: a case study in Collembola. *Molecular Ecology Resources* 20(3).
- **Invited: Orr, M.C.**, J.S. Ascher, M. Bai, D. Chesters, & C.-D. Zhu*. (2020). Three questions: How can taxonomy survive and thrive worldwide? *Megataxa* 1(1): 19-27.
- **NPR:** Harvey*, J.A., ..., **M.C. Orr** (47th), ..., & H. de Kroon. (2020). International scientists formulate a roadmap for insect conservation and recovery. *Nature Ecology & Evolution* 4: 174-176.
- Chesters, D., P. Beckschafer, S.J. Adamowicz, **M.C. Orr**, K.-P. Chun*, & C.-D. Zhu. (2019). Climatic and Vegetational Drivers of Insect Beta Diversity at the Continental Scale. *Ecology and Evolution* 9: 13764-13775.

- Portman*, Z.M., **M.C. Orr**, & T. Griswold. (2019). A review and updated classification of pollen gathering behavior in bees (Hymenoptera: Apoidea). *Journal of Hymenoptera Research* 71: 171-208.
- Niu, Z.-Q., J.S. Ascher, **M.C. Orr**, T. Griswold, & C.-D. Zhu*. (2019). Overview of the Bee Genus *Trachusa* Panzer, 1804 (Hymenoptera: Apoidea: Anthidiini) from China with Description of three New Species. *Zootaxa* 4646(2): 251-270.
- **Orr***, **M.C.**, F.D. Parker*, & G.D. Smith*. (2019). *Sceloporus tristichus* and *Sceloporus magister*: Diet and behavior at bee nests. *Herpetological Review* 50(2): 378.
- Zhang*, F., Y. Ding, C.D. Zhu, X. Zhou, **M. Orr**, S. Scheu, & Y. Luan*. (2019). Phylogenomics from Low-coverage Whole-genome Sequencing. *Methods in Ecology and Evolution* 10(4): 507–517.
- **Invited, NPR: Orr, M.C.**, F.D. Parker, T. Griswold, & S.H. Woodard. (2018). A tale of two cliff dwellings: parallels between the Ancestral Puebloan Peoples and native bees. *American Entomologist* 64(4): 218–223.
- Taylor*, S., J. Meiners, K. Riemer, **M. Orr**, & E. White. (2018). Comparison of large-scale citizen science data and long-term study for phenology modeling. *Ecology* 100(2): e02568.
- **Orr***, **M.C.**, J.P. Pitts, & T. Griswold. (2018). Revision of the bee group *Anthophora* (*Micranthophora*) (Hymenoptera: Apidae), with notes on potential conservation concerns and a molecular phylogeny of the genus. *Zootaxa* 4511(1): 1-193.
- Parys*, K., T. Griswold, H.W. Ikerd, & **M.C. Orr**. (2018). New records and range extensions of several species of native bees (Hymenoptera: Apoidea) from Mississippi, USA. *Biodiversity Data Journal* 6: e25320.
- **Orr***, **M.C.** & A.D. Tripodi. (2017). Stiff upper lip: Labrum deformity and functionality in bees (Hymenoptera: Apoidea). *Journal of Hymenoptera Research* 57: 89–101.
- **Orr***, **M.C.**, T. Griswold, J.P. Pitts, & F.D. Parker. (2016). A new bee species that excavates sandstone nests. *Current Biology* 26(17): R792–3.
- Erenler*, H.E., **M.C. Orr**, M.P. Gillman, B.R.B. Parkes, H. Rymer, & J.M. Maes. (2016). Persistent nesting by *Anthophora* Latreille (Hymenoptera: Apidae) bees in ash adjacent to an active volcano. *Pan-Pacific Entomologist* 92(2): 67–78.
- **Orr***, **M.C.** & T. Griswold. (2015). A review of the cleptoparasitic bee genus *Townsendiella* (Apidae, Nomadinae, Townsendiellini), with the description of a new species from Pinnacles National Park. *ZooKeys* 546: 87–104.
- **Orr***, **M.C.**, Z.M. Portman, & T. Griswold. (2015). *Megachile* (*Megachile*) *montivaga* (Hymenoptera: Megachilidae) nesting in live thistle (Asteraceae: *Cirsium*). *Journal of Melittology* 48: 1–6.
- **Orr***, **M.C.**, J.B. Koch, T. Griswold, & J.P. Pitts. (2014). Taxonomic utility of environmental niche models for species distinction: A case study in *Anthophora* (*Heliophila*) (Hymenoptera: Apidae). *Zootaxa* 3846(3): 411–429.
- Park, M.G., **M.C. Orr**, & B.N. Danforth. (2010). The role of native bees in apple pollination. *New York State Fruit Quarterly* 18(1): 21–25.

Technical reports:

- **Orr, M.C.** & T. Griswold. (2013 & 2014). A Faunal Survey of the Native Bees and Wasps of Death Valley National Park. Investigator's Annual Report submitted via IRMA RPRS.

Popular and other articles

- **Orr, M.C.** (Submitted). Building new bridges for Asian bee research.
- **Invited: Orr, M.C.** (2018). My time in China as a postdoctoral researcher. *Chinese Academy of Sciences Newsletter: Science Story No. 141*.
- **Orr, M.C.** (2017). Cars do not like rocks. *University of California Riverside Friends of the Entomology Research Museum Newsletter* 40: 3–4.
- **Invited, Cover Image: Orr, M.C.,** F.D. Parker, T. Griswold, & S.H. Woodard. (2016). Between a Rock and a Hard Place: The (Re)discovery of a Sandstone-excavating Bee. *Bee World* 93(3): 80–84.

Online publications:

- 30+ web-published bee identification guides with the DiscoverLife.org system. An example may be found at the following URL: http://www.discoverlife.org/mp/20q?guide=Anthophora_male

Presentations:*Invited presentations:*

- **Orr, M.C.,** A.C. Hughes, D. Chesters, J. Pickering, C.-D. Zhu, & J.S. Ascher. Challenges in documenting global bee distribution. Third Asian Bee Meeting, Centre for Pollination Studies (CPS), University of Calcutta, Kolkata, India (27 February 2020).
- **Orr, M.C.,** A.C. Hughes, D. Chesters, J. Pickering, C.-D. Zhu, & J.S. Ascher. Global bee distribution: current challenges and prospects. Instituto de Investigaciones en Recursos Naturales, Agroecología y Desarrollo Rural (IRNAD), Bariloche, Argentina (30 January 2020).
- **Orr, M.C.** & A.C. Hughes. A dearth of insect data along the BRI (and almost everywhere else). Belt and Road Horizon Scan, Kunming Institute of Zoology, China (13 October 2019).
- **Orr, M.C.,** A.C. Hughes, D. Chesters, J. Pickering, C.-D. Zhu, & J.S. Ascher. Patterns of bee distribution. IV Eurasian Symposium on Hymenoptera, Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russia (10 September 2019).
- **Orr, M.C.,** A.C. Hughes, D. Chesters, J. Pickering, J.S. Ascher, & C.-D. Zhu. Global patterns and drivers of bee distribution. Horticultural Research Institute, Shanxi Academy of Sciences, Taiyuan, China (2 August 2019).
- **Orr, M.C.** Extreme nesting behaviors in bees. Second Asian Bee Meeting, National Centre for Biological Sciences, Bangalore, India (1 March 2019).
- **Orr, M.C.** An Introduction to Bee Nesting Biology. University of Agricultural and Horticultural Sciences, Mudigere, India (27 February 2019).
- **Orr, M.C.** Mimicry Across Chinese Bees. Nankai University, China (25 October 2018).

- **Orr, M.C.** An overview of bee nesting biology. Xishuangbanna Tropical Botanical Garden, China (21 August 2018).
- **Orr, M.C.** Floral specialization and diversification in desert bees. Kunming Institute of Botany, China (8 April 2018).
- **Orr, M.C.** Bee nesting biology and biogeography. University of Northampton, UK (13 March 2018).
- **Orr, M.C.** Ecology of the Sandstone Bees. Beijing Ecological Society: Frontiers in Ecology series, China (12 December 2017).
- **Orr, M.C.** & F.D. Parker. Between a rock and a hard place to live: Discovery of a new bee nesting in sandstone. Grand Staircase-Escalante Science Forum, Escalante, USA (4 August 2016).
- **Orr, M.C.** & J.B. Koch. How to build an insect zoo. Entomological Society of America, Coeur d'Alene, USA (15 April 2015).
- **Orr, M.C.**, T. Griswold, & J.P. Pitts. Missing bees or missed bees?: using *Anthophora* to investigate rarity. Entomological Society of America, Coeur d'Alene, USA (14 April 2015).
- **Orr, M.C.**, J.B. Koch, T. Griswold, & J.P. Pitts. Some like it hot: Biology of the xerophilous *Anthophora* (*Heliophila*). Entomological Society of America, Tucson, USA (8 April 2014).

General or submitted presentations:

- **Postponed: M.C. Orr**, A.C. Hughes, D. Chesters, J. Pickering, C.-D. Zhu, & J.S. Ascher. Improving our knowledge of global bee distribution. Advances in hymenopteran biodiversity research and conservation symposium, International Congress of Entomology 2020, Helsinki, Finland (21 July 2020).
- Garibaldi, L.A., F. Oddi, **M.C. Orr**, A.C. Hughes, F. Santibanez, & C.-D. Zhu. Agricultural landscapes must include at least 20% of natural habitats: benefits for pollinators and crop pollination. Apimondia, Montreal, Canada (10 September 2019).
- **Orr, M.C.**, A.C. Hughes, D. Chesters, J. Pickering, J.S. Ascher, & C.-D. Zhu. Global patterns and drivers of bee distribution. Second International Symposium on Insect Systematics and Evolution, Hangzhou, China (20 July 2019).
- Meiners, J.M., **M.C. Orr**, K. Riemer, S. Taylor, & T.L. Griswold. The influence of data type, functional traits, and ecoregion on native bee phenology. Ecological Society of America, New Orleans (6 August 2018).
- **Orr, M.C.** Bee Research in China. 9th Congress of the International Society of Hymenopterists, Matsuyama (26 July 2018).
- **Orr, M.C.** Bee Nesting Biology: Toward a Deeper Understanding. Pollinator Forum, Beijing (26 May 2018).
- **Orr, M.C.** Drivers of Diversification in Desert Bees. AsiaEvo, Shenzhen (20 April 2018).
- **Orr, M.C.** Bee nesting biology in extreme environments. Beijing Ecological Society Annual Meeting, Beijing (18 December 2017).

- **Orr, M.C.** Past and future work in Anthophorini systematics. IOZ (28 November 2017).
- **Orr, M.C.**, T. Griswold, & J.P. Pitts. Bee biogeography in the xeric Southwestern United States. Entomological Society of America, Denver, CO (7 November 2017).
- Griswold, T., J.S. Ascher, D. Yanega, **M.C. Orr**, Z. Portman, & J. Wilson. North America's rich bee fauna: Where resides the wealth? Entomological Society of America, Denver, CO (7 November 2017).
- **Orr, M.C.** Greatest hits of rock(excavat)ing bees. Entomological Collections Network, Denver, CO (5 November 2017).
- **Orr, M.C.**, K. Wright, J.P. Pitts, & T. Griswold. How does specializing on Asteraceae influence species diversification rates in bees? Entomological Society of America, Portland, OR (3 April 2017).
- **Orr, M.C.**, J.M. Meiners, H. Ikerd, O. Messinger Carril, J.P. Pitts, & T. Griswold. What can inventories tell us about bee phenology? International Congress of Entomology, Orlando, FL (30 September 2016).
- **Orr, M.C.**, J.M. Meiners, H. Ikerd, O. Messinger Carril, J.P. Pitts, & T. Griswold. Understanding phenology through big data: Case Studies in native bees? Entomological Collections Network, Orlando, FL (24 September 2016).
- **Orr, M.C.**, F.D. Parker, T. Griswold, & J.P. Pitts. Biology of a new bee species that nests in sandstone, *Anthophora pueblo* (Hymenoptera: Apidae). Entomological Society of America, Honolulu, HI (4 April 2016).
- **Orr, M.C.** An Introduction to Bee Nesting Biology. Ecology Center Ecolunch, USU (26 February 2016).
- **Orr, M.C.**, H.E. Erenler, & T. Griswold. Extreme nesting substrates of the bee group *Anthophora*: Volcanic ash and sandstone. Entomological Society of America, Minneapolis, MN (17 November 2015).
- Danforth, B.N., M. Park, E. Blitzer, J. Gibbs, & **M.C. Orr**. Patterns of bee biodiversity across commercial New York apple orchards. Entomological Society of America, Reno, NV (13 November 2011).
- **Orr, M.C.**, M.G. Park, & B.N. Danforth. The Biodiversity of Bees in the Apple Orchards of New York State. Jugatae seminar series, Cornell University, Ithaca, NY (3 May 2010).

Competition posters:

- Walker, R.H., **M.C. Orr**, & S.W. Miller. Mechanisms of leaf decomposition in two streams of the Intermountain West: Examining the functional role of an extirpated shredding invertebrate. University of Wyoming Program in Ecology Student Symposium, Laramie, WY (20 February 2015). **First Place**.
- **Orr, M.C.**, J.B. Koch, J.P. Pitts, & T. Griswold. Taxonomic utility of environmental niche models for species delineation: a case study in *Anthophora* (Hymenoptera: Apidae). Entomological Society of America 2014, Portland, OR (17 November 2014).

- **Orr, M.C.**, T. Griswold, & J.P. Pitts. Color variation in the sweat bee, *Dieunomia heteropoda* (Hymenoptera: Halictidae). USU Graduate Research Symposium, Logan, UT (12 April 2013). **First Place.**
- **Orr, M.C.**, T. Griswold, & J.P. Pitts. The taxonomic fate of a rare and variable bee, *Dieunomia heteropoda* (Hymenoptera: Halictidae). Entomological Society of America, Lake Tahoe, CA (8 April 2013). **Second Place.**

General or submitted posters:

- Walker, R., **M.C. Orr**, & S. Miller. Assessing the role of species extirpation on leaf decomposition in two streams of the Intermountain West, Utah. Joint Aquatics Sciences Meeting, Portland, OR (18 May 2014).
- Koch, J.B., **M.C. Orr**, & H. Ikerd. The buzz on bee biodiversity in Utah. Maps on the Hill, Salt Lake City, UT (29 January 2014).
- **Orr, M.C.** & J.B. Koch. Environmental niche mapping as a taxonomic tool in bees. Maps on the Hill, Salt Lake City, UT (29 January 2014).
- **Orr, M.C.** & H. Ikerd. Bee inventory projects of the Bee Biology and Systematics Lab. Maps on the Hill, Salt Lake City, UT (28 January 2013).

Alternative presentation formats:

- Interactive display, Tripodi, A.D., **M.C. Orr**, J.B. Koch, C. Andrikipoulos, S. Burrows, H. Judd, A. Kopit, B. Love, J.M. Meiners, J.H. Cane, S. Droege, T. Griswold, T.L. Pitts-Singer, & J. Strange. Invasion of the Bee Girls. Entomological Society of America, Coeur d'Alene, ID (14 April 2015).
- Interactive map, **Orr, M.C.**, J.B. Koch, & H. Ikerd. Bees of Utah. Maps on the Hill, Salt Lake City, UT (29 January 2014).
- Interactive map, **Orr, M.C.** & H. Ikerd. How does collector effort impact measures of bee species richness? Maps on the Hill, Salt Lake City, UT (28 January 2013).

Professional service:

Conferences and scientific societies:

- Conference Co-Organizer, 4th Systematic Biology Forum, Institute of Zoology, Beijing (6-9 December 2019).
- Program Committee, IV Eurasian Symposium on Hymenoptera. Vladivostok, Russia (9-15 September 2019).
- Conference Co-Organizer, 4th Annual Pollinating Insects Forum, Institute of Zoology, Beijing (31 May-2 June 2019).
- Symposium Moderator, Systematics, Biodiversity, & Conservation of Bees. Entomological Society of America 2017 (8 November 2017).

- Symposium Co-organizer, Orr, M.C., S.H. Woodard, & N.M Williams. Recent advances in understanding floral specialization in bees. Entomological Society of America (3 April 2017).
- Symposium Co-organizer, Orr, M.C. & E.A. Sadler-Pitts. Making Species Inventories Work for You: Diverse Uses Across Varied Fields. International Congress of Entomology 2016 (30 September 2016).
- Symposium Moderator, Biodiversity, Biogeography and Conservation of Arthropods: Hymenoptera. International Congress of Entomology 2016 (30 September 2016).
- Judge, Student Poster Competition. International Congress of Entomology 2016 (26 September 2016).
- Texting Competition Chair. Pacific Branch Entomological Society of America (Fall 2014–Spring 2017).

Institutional:

- Workshop co-lead, National Workshop on Taxonomic Identification of Indian Bees, Zoological Survey of India, Kolkata (2–3 March 2020).
- Board Member, Zoological Systematics and Evolution Key Lab Postdoctoral Union, Institute of Zoology, Beijing (June 2019–present).
- Host for Dr. S. Hollis Woodard of University of California, Riverside for Biology Department Seminar Series, USU (12–15 March 2017).
- Co-host, Biology Department Graduate Student Recruitment Luncheon, USU (24 February 2017).
- Reviewer, Biology Graduate Student Association Research Award, USU (10 November 2016).
- Discussion Leader, Undergraduate Research Symposium Poster Help Session, USU (28 October 2015).
- Co-organizer, “Small Wonders: The Expansive World of Insects” display at Utah State Merrill-Cazier Library (Fall 2015–Spring 2016).
- Academic Mentor, Biology Graduate Student Association (Summer 2014–Fall 2017).

Other:

- Reviewer for 18 journals: Megataxa (Winter 2019), Insect Systematics & Evolution (Winter 2019), ZooKeys (Fall 2019), Diversity & Distributions (Summer 2019), Global Ecology and Conservation (Summer 2019), The Great Lakes Entomologist (Spring 2019), Journal of Hymenoptera Research (Winter 2018), Journal of Apicultural Research (Winter 2018), Cladistics (Fall 2018), Arthropod-Plant Interactions (Summer 2018), Oriental Insects (Spring 2018), Journal of Natural History (Fall 2017), Journal of the Kansas Entomological Society (Summer 2017), Western North American Naturalist (Spring 2017), Systematic Entomology (Spring 2015), Zootaxa (Spring 2015), Pan-Pacific Entomologist (November 2014), & Journal of Melittology (Fall 2013).
- Taxon Expert for Anthophorini (~1,700 species names) on the Integrated Taxonomic Information System (ITIS.gov).

- Invited Participant for Belt & Road Initiative Horizon Scan (BRI-HS-2019) in Kunming (12–15 October 2019).
 - Consultant (unpaid), Mantis Digital Arts for “Buzz Whizz: Bees” video game (Spring 2014–Spring 2015).
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Memberships and positions:

- Member of Apimondia Pollination and Bee Flora Commission (Fall 2019–present).
 - Group on Earth Observations (Summer 2018–present).
 - Beijing Ecological Society (Winter 2017–present).
 - The International Society of Hymenopterists (Spring 2016–present).
 - Golden Key Honor Society (Fall 2014–present).
 - Society for Advancement of Chicanos and Native Americans in Science (Fall 2013–Fall 2017).
 - Friends of the Entomology Research Museum, UC Riverside (Spring 2013–present).
 - USU Entomology Club (Spring 2013–Fall 2017): Live Animal Manager (Spring 2013–Spring 2015), Treasurer (Spring 2013–Spring 2014).
 - Entomological Society of America (Spring 2012–present).
 - USU Biology Graduate Student Association (Fall 2011–Fall 2017): Vice President (Winter 2015–Winter 2016), Academic Committee member (Spring 2015–Spring 2017), Fundraising Committee member (Spring 2014–Spring 2017), Outreach Committee Chair (Spring 2014–Spring 2015) and member (Spring 2014–Spring 2017), & Treasurer (Fall 2011–Fall 2013).
 - CU Snodgrass and Wigglesworth Undergraduate Entomology Club (Fall 2006–Spring 2010): Treasurer (Fall 2006–Spring 2009).
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Teaching experience:*Instructorships:*

- Biology and the Citizen, daily broadcast lecture course, USU (Summer 2017, 7 weeks).
- Guest Instructor, Native American Bee Workshop, USDA-ARS Bee Lab (Summer 2017, 1 week).

Teaching assistantships and experience:

- Evolutionary Biology lecture, Dr. Zachariah Gompert, USU (Spring 2017).
- Evolutionary Biology lecture (gave one lecture), Dr. Frank Messina, USU (Fall 2015).
- Principles of Genetics lecture, Dr. Paul Wolf, USU (Spring 2015).
- Principles of Genetics lecture, Dr. Gregory Podgorski, USU (Spring 2014).
- Principles of Genetics lecture (gave two lectures), Dr. Paul Wolf, USU (Spring 2012).
- Principles of Genetics lab (gave two lectures), Dr. Paul Wolf, USU (Fall 2011).
- Teaching Assistant Training Course completion, USU (Fall 2011).

- Insect Phylogenetics and Evolution field trip, Dr. Bryan Danforth, CU (Fall 2009).
- Spider Biology lecture and lab, Dr. Linda Rayor, CU (Fall 2009).

Invited guest lectures:

- Chao-Dong Zhu's Systematic and Evolutionary Biology, University of the Chinese Academy of Sciences (5 December 2017).
- Gareth Hopkins' Biology & The Citizen, USU (3 June 2015).
- Nick Kiriazis' Field Science and Biodiversity, Venture High School (2–4 October 2014).

Extension and outreach efforts:

Invited public talks

- Desert Bees and Climate Change. Black Rock Ranger Station, Joshua Tree National Park, CA (2 September 2016).
- Entomology: How to make a living studying insects. Utah's GEAR Up Education program, USU (26 June 2014).
- What can you do with a biology degree? Cache Valley Youth Center, Logan, UT (25 April 2014).

Coordination and management experience: 48 events

- Co-organizer, Bug Fest, Natural History Museum of Utah, USDA Bee Lab (3 June 2017).
- Curriculum enrichment, specimens and information, Nick Kiriazis' Natural History course, Venture High School (8 January 2016).
- Co-organizer, Insect Demos, Heritage Elementary School, Nibley, UT (5 March 2015).
- Leader, two Spider Biology tours for interested students, Entomology Club (Summer 2014–Fall 2016).
- Co-organizer, Bear River Celebration, Biology Graduate Student Association (7 June 2014).
- Organizer, five presentations at First Presbyterian Church of Logan's Summer Camp (3 June 2014).
- Co-organizer, Plant Sale, Biology Graduate Student Association (24 April 2014, 23 April 2015, 28 April 2016).
- Organizer, USU Science Unwrapped, Biology Graduate Student Association (21 March 2014, 12 September 2014, 10 October 2014, 14 November 2014, 16 January 2015).
- Co-organizer, USU STE²M Center Opening, Entomology Club (11 February 2014).
- Co-organizer, USU "Fear no Weevil" Halloween, Entomology Club (31 October 2013).
- Leader, fifteen Bug Zoo tours for local classrooms, Entomology Club (Summer 2013–Fall 2016).
- Co-organizer, National Pollinator Week at the Logan Farmer's Market, USDA Bee Lab (16 June 2012, 22 June 2013, 19 June 2014, 20 June 2015, 25 June 2016).
- Co-organizer, USU Pow Wow, Biology Department (3 March 2012, 2 March 2013, 28 February 2014, 1 March 2014).

- Co-organizer, USU Science Unwrapped, USDA Bee Lab (4 November 2011).
- Specimen provider and co-designer, pollination and mimicry outreach displays, CU (2009–2010).
- Co-organizer, Entomology Department Open House “Insectapalooza,” CU (2009).

Volunteer experience: 38 events

- Volunteer, National Pollinator Week at the Logan Farmer’s Market, USDA Bee Lab (24 June 2017).
- Woodard Lab Tour for GEMS in STEM program, UC Riverside (6 December 2016).
- Guided Pollinator Walk, Grand-Staircase Escalante National Monument (3 August 2016).
- Landscaping Project, USU Golden Key (30 April 2016).
- Biology Graduate Student Association table at Major’s Fair, USU (22 September 2015).
- Spider Festival, Antelope Island State Park (8 August 2015, 30 July 2016).
- Bee Lab tour for local school (27 April 2015).
- USU Science Unwrapped, Biology Graduate Student Association (20 February 2015, 20 March 2015, 6 November 2015, 29 February 2016, 16 September 2016, 27 January 2017).
- Judge, Thomas Edison School Science Fair (6 February 2015).
- USU “Fear no Weevil” Halloween, Entomology Club (27 October 2014, 30 October 2015, 28 October 2016).
- USU Day on the Quad, Entomology Club (27 August 2014).
- Judge, Bridgerland Science Fair at USU (22 February 2014, 21 March 2015, 27 February 2016).
- Bridgerland Science Fair, Entomology Club (22 February 2014).
- USU Science Unwrapped, SACNAS (24 January 2014).
- USU Edith Bowen Elementary School Science Night, Biology Department (5 March 2013).
- Nine outreach presentations for Naturalist Outreach Practicum course, taught by Dr. Linda Rayor, CU (Fall 2009).
- CU Entomology Department table at the Tompkins Co., NY State Fair (Fall 2009).
- Entomology Department Open House “Insectapalooza,” CU (2006–2008).

Selected popular media coverage

- Radio show guest, “Colony Collapse Disorder” on KBLU/LP 92.3. 21 November 2016.
- “New Bee Species Bores into Sandstone.” EntomologyToday. <https://entomologytoday.org/2016/10/27/new-bee-species-bores-into-sandstone>
- “New Species of Bee Are Drilling Into Sandstone to Make Their Home.” Utah Public Radio. <http://upr.org/post/new-species-bee-are-drilling-sandstone-make-their-home>
- “These burrowing bees really rock! New species discovered which chews through STONE to make itself a home.” Daily News. <http://www.dailymail.co.uk/sciencetech/article-3810290/These-burrowing-bees-really-rock-New-species-discovered-chews-STONE-make-home.html>
- “Rock-Chomping Bees Burrow into Sandstone.” EOS. <https://eos.org/articles/rock-chomping-bees-burrow-into-sandstone>

- “New bee species carves nests out of sandstone.” The Wildlife Society. <http://wildlife.org/new-bee-species-carves-nests-out-of-sandstone>
 - “Unusual bee species drills apartment-style nests out of rock.” Fox News Science. <http://www.foxnews.com/science/2016/09/15/unusual-bee-species-drills-apartment-style-nests-out-rock.html>
 - “New desert bee species builds nests out of solid rock.” Reuters. <https://www.rt.com/viral/359237-sandstone-bees-nests-rock>
 - “This bee lives on the edge—of an active volcano.” Science. <http://www.sciencemag.org/news/2016/07/bee-lives-edge-active-volcano>
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Extracurricular courses and certifications:

- Entomological Collections Management Workshop by Dr. David Furth and Dr. Floyd Shockley, Smithsonian Institution, Washington, D.C. (18–20 July 2016).
 - Software Carpentry Workshop, hosted by Dr. Greg Wilson, USU (16–17 March 2015).
 - Science Communication Workshop: Strategies Scientists Should Know, USU (25 March 2014).
 - Software Carpentry Software Bootcamp, hosted by Dr. Ethan White, USU (23–24 March 2013).
 - Getting Started as a Successful Proposal Writer and Academician, USU (26 February 2013).
 - Bee Course, AMNH’s Southwestern Research Station, Portal, AZ (10 September 2012).
 - Xerces Society Pollinator Short Course, State College, PA (29 July 2010).
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