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# CURRICULUM VITAE

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## James P. Strange, Ph.D.

### Chair and Professor

Department of Entomology  
The Ohio State University  
216 Kottman Hall  
2021 Coffey Rd  
Columbus, OH 43210  
[strange.54@osu.edu](mailto:strange.54@osu.edu)  
614-292-9325

### Expertise:

bumble bee biology and rearing, beekeeping, bee systematic and population genetics, pollinator conservation, insect pathology

### Education:

PhD Entomology, Washington State University (2005)

Dissertation: Genetic conservation of a locally adapted population of *Apis mellifera* L.: ethology, molecular markers and mating behavior

MS Entomology, Washington State University (2001)

Thesis: Optimum timing of miticide applications for the control of *Varroa destructor* (Acari: Varroidae) in *Apis mellifera* (Hymenoptera: Apidae) in Washington State

BS Agricultural Science, Pennsylvania State University (1994)

### Professional Experience:

2019-present Professor and Chair, Department of Entomology, The Ohio State University, Columbus, OH, Dr. Cathann Kress

2006-2019 Research Entomologist (GS-14), USDA-ARS, Pollinating Insect Biology, Management and Systematics Research Unit, Logan, UT, Dr. Diana Cox-Foster

2006-Present Adjunct faculty, Biology Department, Utah State University

2015 Acting Research Leader, USDA-ARS Pollinating Insect Research Unit, Logan, UT, Dr. Andrew Hammond

2005-2006 Postdoctoral Research Associate, Cornell University, Department of Entomology, Ithaca, NY, Dr. Nicholas Calderone

1998-2005 Research Assistant, Washington State University, Department of Entomology, Pullman, WA, Dr. Walter S. Sheppard

2003 Instructor, Entomology, Lewis-Clark State College, Lewiston, ID, Dr. Christine Pharr

- 2000 Evaluator, Critical Thinking Reading Group, Washington State University, Center for Teaching and Learning Technology, Pullman, WA, Dr. Dianne Kelly-Riley
- 1995-1998 Agricultural Science Research Technician, USDA-ARS, Prosser, WA, Dr. Richard Larsen
- 1995 Planning Technician, Fairfax County, Fairfax, VA, Steve Kerr

**Honors:**

- 2017 Distinction in Student Mentoring Award, Pacific Branch of the Entomological Society of America
- 2008 Student and Young Professional Participation Award Recipient, Entomological Society of America
- 2000 Outstanding Graduate Student, Washington State University, Department of Entomology, (\$1000)
- 1998 Certificate of Appreciation, USDA-ARS, (\$100)
- 1998 Certificate of Merit, USDA-ARS, (\$1000)
- 1996 Certificate of Merit, USDA-ARS (\$750)

**Grants:**

- 2022 "DISES: Addressing dynamic landscape inequalities in human well-being and bee health by greening" National Science Foundation. \$1,305,629. 08/2022-07/2027.
- "CRP impacts on habitat" USDA-Farm Services Agency. \$166,478. 09/2023-03/2025.
- 2019 "URoL: Epigenetics 2: Collaborative Research: Bumble bee cold tolerance across elevations- From epigenotype to phenotype across space, time, and levels of biological organization." National Science Foundation. \$1,170,992 total \$322,807 to PI Strange.
- "USFWS Rusty Patched Bumble Bee Recovery Plan." \$95,1274 to PI Strange
- 2018 "FY19 National Bumble Bee Survey" USDA-APHIS-PPQ. \$55,085 to PD Strange
- "Bumble bee conservation across an urban to rural gradient" USDA-NIFA- Foundational Programs \$88,842 to co-PI Strange.
- 2017 "Building Our Methods by Using Sound Science" USDA-NIFA- Conference Grant, \$25,000.
- "Bumble Bee Foraging and Colony Dynamics in Agricultural Landscapes" USDA-NIFA-AFRI, \$466,387 to PD Strange
- "Bumble Bee Pathogen Survey in the Western Bumble Bee" USDA-APHIS-PPQ, \$20,000.
- "Interactive effects of *Nosema* infection and neonicotienoid imidacloprid on bumble bee decline in the U.S." USDA-NIFA-AFRI, \$33,869 to co-PI Strange.

- “*Osmia lignaria* for sustainable agricultural production” USDA-WSARE, \$20,891 to co-PI Strange
- 2016 “Nationwide bumble bee pathogen survey” USDA-APHIS-PPQ, \$34,970 to PI Strange.  
 “North Cascades National Park Bioblitz” North Coast and Cascades Science and Learning Network, National Parks Service, \$3000.
- 2015 “Nationwide bumble bee pathogen survey” USDA-APHIS-PPQ, \$77,654 to PI Strange.  
 “Intraspecific evolution in complex landscapes: melding genomics, morphology, and experimental physiology across latitude and altitude” National Science Foundation, \$140,717 to co-PI Strange.
- 2013 “The effects of climate on bumble bee pollinator community composition and genetic diversity in the North Cascades and Coast Network” U.S. Park Service- NCCSLN, \$4974 to PI Strange
- 2012 “Integrating Native Bees into Sustainable Pollination Strategies for Specialty Crops” USDA-Specialty Crop Research Initiative, \$44,994 to co-PI Strange
- 2010 “Bumble bee decline conference 2010” USDA-AFRI conference grant \$33,680
- 2007 “Current status and potential causes of population decline in wild bumble bee pollinators” USDA-NRI, \$98,000 to Co-PI Strange
- 2004 “Work study funding for analysis of drone honey bees” Thurber Scholarship Committee, WA State Beekeepers Assoc. \$1000
- 2003 “Supplies and equipment for molecular analysis of drone honey bees” Thurber Scholarship Committee, WA State Beekeepers Assoc. \$1000  
 “Laboratory supplies for DCA research” Washington State University Scholarship Fund \$220
- 2002 “Travel and Equipment for DCA Study” Thurber Scholarship Committee, WA State Beekeepers Assoc. \$1000
- 2001 “Travel to ESA Pacific Branch Meetings” Getzin Award, Washington State University \$200  
 “Travel to ESA Annual Meeting” Getzin Award, Washington State University \$100  
 “Equipment grant for Drone Congregation Area Study” Thurber Scholarship Committee, WA State Beekeepers Assoc. \$750
- 2000 “Supplies for *Varroa jacobsoni* research” Washington State University \$200  
 “Equipment for Varroa destructor research” Washington State University \$100  
 “Travel to ESA Annual Meeting” Washington State University \$200

- 1999 “Work Study to Count *Varroa jacobsoni*” Thurber Scholarship Committee, WA State Beekeepers Assoc. \$750
- “Travel to Apimondia” Getzin Award, Washington State University \$375
- “Supplies for *Varroa jacobsoni* sampling” Hastings Award, Washington State University \$100

**Peer-reviewed Publications- students in *italics*, undergraduates denoted by asterisks:**

Koch, J., Branstetter, M. G., Cox-Foster, D., Knoblett, J., *Lindsay, T. T.*, Pitts-Singer, T., *Rohde, A.*, **Strange J. P.** & Tobin, K. (2023). Novel Microsatellite Markers for *Osmia lignaria* (Hymenoptera: Megachilidae): A North American Pollinator of Agricultural Crops and Wildland Plants. *Journal of Insect Science*, 23(1), 1.

Christman, M. E., Spears, L. R., **Strange, J. P.**, Pearse, W. D., Burchfield, E. K., & Ramirez, R. A. (2022). Land cover and climate drive shifts in *Bombus* assemblage composition. *Agriculture, Ecosystems & Environment*, 339, 108113.

Christman, M. E., Spears, L. R., Koch, J. B., *Lindsay, T. T. T.*, **Strange, J. P.**, Barnes, C. L., & Ramirez, R. A. (2022). Captive Rearing Success and Critical Thermal Maxima of *Bombus griseocollis* (Hymenoptera: Apidae): A Candidate for Commercialization?. *Journal of Insect Science*, 22(6), 2.

Austin M. W., Tripodi A. D., **Strange J. P.**, and A. S. Dunlap. (2022). Bumble bees exhibit intraspecific body size spatial structuring despite low genetic differentiation. *Scientific Reports*, 12 (1) 1-12.

Lozier, J. D., Parsons, Z. M., Rachoki, L., Jackson, J. M., Pimsler, M. L., Oyen, K. J., **Strange, J. P.** & Dillon, M. E. (2021). Divergence in Body Mass, Wing Loading, and Population Structure Reveals Species-Specific and Potentially Adaptive Trait Variation Across Elevations in Montane Bumble Bees. *Insect Systematics and Diversity*, 5(5), 3.

McGrady, C. M., **Strange, J. P.**, López-Urbe, M. M., & Fleischer, S. J. (2021). Wild bumble bee colony abundance, scaled by field size, predicts pollination services. *Ecosphere*, 12(9), e03735.

Oyen, K. J., Jardine, L. E., Parsons, Z. M., *Herndon, J. D.*, **Strange, J. P.**, Lozier, J. D., & Dillon, M. E. (2021). Body mass and sex, not local climate, drive differences in chill coma recovery times in common garden reared bumble bees. *Journal of Comparative Physiology B*, 1-12.

Hatfield R. G., **Strange J. P.**, Koch J. B., Jepsen S., and Stapleton I. (2021) Neonicotinoid Pesticides Cause Mass Fatalities of Native Bumble Bees: A Case Study from Wilsonville, Oregon, United States, *Environmental Entomology*. nvab059, <https://doi.org/10.1093/ee/nvab059>

Muth, F., Tripodi, A. D., Bonilla, R., **Strange, J. P.**, & Leonard, A. S. (2021). No sex differences in learning in wild bumblebees. *Behavioral Ecology*.

Kuivila, K. M., Judd, H., Hladik, M. L., & **Strange, J. P.** (2021). Field-Level Exposure of Bumble Bees to Fungicides Applied to a Commercial Cherry Orchard. *Journal of Economic Entomology*, 114(3), 1065-1071.

Simanonok, M. P., Otto, C. R., Cornman, R. S., Iwanowicz, D. D., **Strange, J. P.**, & Smith, T. A. (2021). A century of pollen foraging by the endangered rusty patched bumble bee (*Bombus affinis*): inferences from molecular sequencing of museum specimens. *Biodiversity and Conservation*, 30(1), 123-137.

Woodard, S. H., Federman, S., James, R. R., Danforth, B. N., Griswold, T. L., Inouye, D., McFrederick, Q. S., Morandin, L., Paul, D. L., Sellers, E. & **J. P. Strange**. (2020) Towards a US national program for monitoring native bees. *Biological Conservation*, 252, 108821.

Pimsler, M. L., Oyen, K. J., Herndon, J. D., Jackson, J. M., **Strange, J. P.**, Dillon, M. E., & Lozier, J. D. (2020). Biogeographic parallels in thermal tolerance and gene expression variation under temperature stress in a widespread bumble bee. *Scientific reports*, 10(1), 1-11.

Palmier, K. M., Tripodi, A. D., Cameron, A. D., **Strange, J. P.**, & Sheffield, C. S. (2020). First record of *Crithidia expoeki* (Trypanosomatida: Trypanosomatidae) from native Canadian bumble bees (Hymenoptera: Apidae: *Bombus*). *The Canadian Field-Naturalist*, 134(1), 16-20.  
<https://doi.org/10.22621/cfn.v134i1.2299>

Judd, H. J., Huntzinger, C., Ramirez, R., **Strange, J. P.** (2020). A 3D Printed Pollen Trap for Bumble Bee (*Bombus*) Hive Entrances. *J. Vis. Exp.* e61500.

Hegarty S.D., Sutton J.M., Pimsler M.L., Fierst J.L. **Strange J. P.**, Lozier J.D. (2020). *De Novo* Genome Assemblies for Three North American Bumble Bee species: *Bombus bifarius*, *Bombus vancouverensis*, and *Bombus vosnesenskii*. G3: Genes Genomes Genetics.  
<https://doi.org/10.1534/g3.120.401437>

Graves, T. A., Janousek, W. M., Gaulke, S. M., Nicholas, A. C., Keinath, D. A., Bell, C. M., Cannings, S., Hatfield, R. G., Heron, J. M., Koch, J. B., Loffland, H. L., Richardson, L. L., Rohde, A. T., Rykken, J., **Strange, J. P.**, Tronstad, L. M., and Sheffield, C. S.. (2020). Western bumble bee: declines in the continental United States and range-wide information gaps. *Ecosphere* 11( 6):e03141. [10.1002/ecs2.3141](https://doi.org/10.1002/ecs2.3141)

Jackson, J. M., Pimsler, M. L., Oyen, K. J., **Strange, J. P.**, Dillon, M. E., & Lozier, J. D. (2020). Local adaptation across a complex bioclimatic landscape in two montane bumble bee species. *Molecular Ecology*. <https://doi.org/10.1111/mec.15376>

Ghisbain, G., J.D. Lozier, S.R. Rahman, B.D. Ezray, L. Tian, J.M. Ulmer, S.D. Heraghty, **J.P. Strange**, P. Rasmont and H.M. Hines. (2020). Substantial genetic divergence and lack of recent gene flow support cryptic speciation in a color polymorphic bumble bee (*Bombus bifarius*) species complex. *Systematic Entomology*. <https://doi.org/10.1111/syen.12419>

Mullins, J., **J.P. Strange** and A.D. Tripodi. (2020) Why don't queens get broody? Failed nest initiation not linked to parasites, mating status, or ovary development in two bumble bee species of *Pyrobombus* (Hymenoptera: Apidae: Bombus). *Journal of Economic Entomology*. <https://doi.org/10.1093/jee/toz330>

Klinger, EG, A.A. Camp, **J.P. Strange**, D. Cox-Foster, & D.M. Lehmann. (2019) *Bombus* (Hymenoptera: Apidae) Microcolonies as a Tool for Biological Understanding and Pesticide Risk Assessment. *Environmental Entomology*. <https://doi.org/10.1093/ee/nvz117>

Baur, A. \*, **J.P. Strange** and J.B. Koch (2019) Foraging ergonomics of the Hunt bumble bee, *Bombus huntii* (Hymenoptera: Apidae), a viable pollinator for commercial agriculture. *Environmental Entomology*. 48: 799-806. <https://doi.org/10.1093/ee/nvz075>

Tian, L., S.R. Rahman, B. Ezray, L. Franzini, **J.P. Strange**, P. Lhomme, H.M. Hines. (2019) Tinkering outside the Hox: A homeotic shift late in development drives mimetic color variation in a bumble bee. *Proceedings of the National Academy of Science*. 116: 11857-11865. <https://doi.org/10.1073/pnas.1900365116>

Looney, C., **J.P. Strange**, M. Freeman, and D. Jennings. (2019) The expanding Pacific Northwest range of *Bombus impatiens* Cresson and its establishment in Washington State. *Biological Invasions*. 21: 299-304. <https://doi.org/10.1007/s10530-019-01970-6>

Tripodi, A.D and **J.P. Strange** (2019) No second chances for pollen-laden queens? *Insectes Sociaux*. 1-6. <https://doi.org/10.1007/s00040-019-00685-0>

**Strange, J.P.** and A.D. Tripodi. (2019) Characterizing bumble bee (*Bombus*) communities in the United States and assessing a method for conservation monitoring. *Ecology and Evolution* 2019: 1-9. <https://doi.org/10.1002/ece3.4783>

Koch J.B., Rodriguez J., Pitts J.P., and **J.P. Strange** (2018) Phylogeny and population genetic analyses reveals cryptic speciation in the *Bombus fervidus* species complex (Hymenoptera: Apidae). *PLoS ONE* 13(11): e0207080. <https://doi.org/10.1371/journal.pone.0207080>

Koch-Uhuad, J. B., Vandame, R., Mérida-Rivas, J., Sagot, P., and **Strange, J.** (2018). Quaternary climate instability is correlated with patterns of population genetic variability in *Bombus huntii*. *Ecology and Evolution*. <https://doi.org/10.1002/ece3.4294>

Boyle, N. K., Tripodi, A. D., Machtley, S. A., **Strange, J. P.**, Pitts-Singer, T. L., and Hagler, J. R. (2018). A Nonlethal Method to Examine Non-Apis Bees for Mark-Capture Research. *Journal of Insect Science*, 18(3). <https://doi.org/10.1093/jisesa/iey043>

Tripodi, A.D. and **J.P. Strange**. (2018) Rarely reported, widely distributed, and unexpectedly diverse: Molecular characterization of mermithid nematodes (Nematoda: Mermithidae) infecting bumble bees (Hymenoptera: Apidae: *Bombus*) in the United States. *Parasitology*. 1-6. Doi:10.1017/S0031182018000410

Jackson J.M., Pimsler M.L., Oyen K.J., *Koch-Uhuad J.B.*, *Herndon J.D.*, **Strange J.P.**, Dillon M.D., and Lozier J.D. (2018). Distance, elevation, and environment as drivers of diversity and divergence in bumble bees across latitude and altitude. *Molecular Ecology*. <https://doi.org/10.1111/mec.14735>

Tripodi, A.D., A. Szalanski, and **J.P. Strange**. (2018) Novel multiplex PCR reveals multiple trypanosomatid species infecting North American bumble bees (Hymenoptera: Apidae: *Bombus*). *Journal of Invertebrate Pathology*. 153: 147-155.

**Strange, J.P.**, D.A. Delaney, D.R. Tarpy, and R.R. James. (2017). Novel microsatellite loci reveal high genetic diversity yet low population structure for alfalfa leafcutting bees in North America. *Conservation Genetics*, 1-9.

*Koch, J.B.*, C. Looney, W.S. Sheppard, and **J.P. Strange**. (2017). Patterns of population genetic structure and diversity across bumble bee communities in the Pacific Northwest. *Conservation Genetics*, 1-14.

*Koch J.B.*, C. Looney, W.S. Sheppard, and **J.P. Strange** (2016) Range extension of two bumble bee species (Hymenoptera: Apidae) into Olympic National Park. *Northwest Science* 90: 228-234.

Lozier J.D., J.M. Jackson, M.E. Dillon and **J.P. Strange**. (2016) Population genomics of divergence among extreme and intermediate color forms in a polymorphic insect. *Ecology and Evolution*, 6: 1075–1091. doi:10.1002/ece3.1928

Spears L.R., C. Looney, H. Ikerd, *J.B. Koch*, T. Griswold, **J.P. Strange**, and R.A. Ramirez (2016) Pheromone lure and trap color affects bycatch in agricultural landscapes of Utah. *Environmental Entomology* nvw085.

Rhoades P. R., *J.B. Koch*, L. Waits, **J.P. Strange** and S.D. Eigenbrode. (2016) Evidence for *Bombus occidentalis* (Hymenoptera: Apidae) Populations in the Olympic Peninsula, the Palouse Prairie, and Forests of Northern Idaho. *Journal of Insect Science* 16: 1-5.

*Koch J.B.*, J.D. Lozier, **J.P. Strange**, H. Ikerd, T. Griswold, N. Cordes, L. Solter, I. Stewart, and S. Cameron. (2015) USBombus, contemporary survey data of North American bumble bees

(Hymenoptera, Apidae, Bombus) distributed in the United States. *Biodiversity Data Journal* 3: e6833. <http://dx.doi.org/10.3897%2FBDJ.3.e6833>

Lozier J.D., S.A. Cameron, M.A. Duennes, **J.P. Strange**, P.H. Williams, D. Goulson, M.J.F. Brown, C. Morales and S. Jepsen (2015) Relocation risky for bumblebee colonies. *Science* 350:286-287.

Woodard, S.H., J.D. Lozier, D. Goulson, P.H. Williams, **J.P. Strange**, and S. Jha. (2015) Molecular tools and bumble bees: revealing hidden details of ecology and evolution in a model system. *Molecular Ecology*. 24: 2916-2936.

Hatten T.D., **J.P. Strange**, and J.M. Maxwell (2015) Late season survey of bumble bees along several highways of British Columbia and Yukon Territories of Canada: An ecoregion perspective. *Western North American Naturalist*. 75:170-180.

**Strange, J.P.** (2015) Comparing *Bombus huntii*, *Bombus impatiens* and *Bombus vosnesenskii* (Hymenoptera: Apidae) as pollinators of greenhouse grown tomatoes in western North America. *J. Economic Entomology*. 108:873-879. <http://dx.doi.org/10.1093/jee/tov078>

Geib J.C., **J.P. Strange** and C. Galen. (2015) Habitat-scale relationships between bumblebee nest abundance and plant reproduction: implications for pollinator decline. *Ecological Applications*. 25: 768-778.

Blaker, E.A., **J.P. Strange**, R.R James, F.P. Monroy, and N.S. Cobb. (2014) PCR reveals high prevalence of non-sporulating *Nosema bombi* (Microsporidia) infections in bumble bees (*Bombus*) in northern Arizona. *J. Invertebrate Pathology*. 123:25-33. <http://dx.doi.org/10.1016/j.jip.2014.09.001>

**Strange J.P.**, A. Baur\* and, J. Koch, (2014) A scientific note on *Bombus* (*Psithyrus insularis*) invasions of bumblebee and honeybee hives in the western USA. *Apidologie* 45:554-556.

Koch, J., B. Love, E. G. Klinger and **J.P. Strange** (2014) The effect of photobleaching on bee (Hymenoptera: Apoidea) setae color and its implications for studying aging and behavior. *J. of Melittology*. 38: 1-9.

Xu J., **J.P. Strange**, D.L. Welker, and R.R. James (2013) Detoxification and stress response genes expressed in a western North American bumble bee, *Bombus huntii* (Hymenoptera: Apidae). *BMC GENOMICS*, 14:874 [doi:10.1186/1471-2164-14-874](https://doi.org/10.1186/1471-2164-14-874)

Lozier, J.D., **J.P. Strange**, and J.B. Koch (2013) Landscape heterogeneity predicts gene flow in a widespread polymorphic bumble bee, *Bombus bifarius* (Hymenoptera: Apidae). *Conservation Genetics*. [10.1007/s10592-013-0498-3](https://doi.org/10.1007/s10592-013-0498-3)

Hatten, T.D., C. Looney, and **J.P. Strange** (2013) Bumble bee fauna of Palouse Prairie: survey of native bee pollinators in a fragmented ecosystem. *Journal of Insect Science*. [www.insectscience.org/13.26/](http://www.insectscience.org/13.26/)



Rao S. and **J.P. Strange** (2012) Microsatellite analysis of bumble bee foraging in mass flowering agricultural fields. *Environmental Entomology*. 41:905-915.

Cordes N., W.-F. Huang, **J.P. Strange**, S.A. Cameron, T.L. Griswold, J.D. Lozier, and L.F. Solter (2012) Interspecific geographic distribution and variation of the pathogens *Nosema bombi* and *Crithidia* species in United States bumble bee populations. *Journal of Invertebrate Pathology*. 109: 209-216.

*Koch, J.* and **J.P. Strange**. (2012) The status of *Bombus occidentalis* and *B. moderatus* in Alaska with special focus on *Nosema bombi* incidence. *Northwest Science*. 86:212-220.

Cameron S.C., Lozier J.D, **Strange J.P.**, *Koch J.B.*, Cordes N., Solter L.F., and Griswold T.L. (2011) Recent widespread population declines of some North American bumble bees: Current status and causal factors. *Proceedings of the National Academy of Science*. 108: 662-667.

**Strange, J.P.**, *J.B. Koch*, V. B. Gonzalez, L. Nemelka\*, and T. Griswold. (2011) Global invasion by *Anthidium manicatum* (Linnaeus) (Hymenoptera: Megachilidae): assessing potential distribution in North America and beyond. *Biological Invasions*. 13:2115-2133.

Lozier, J.D., **J.P. Strange**, I.J. Stewart and S.A. Cameron (2011) Patterns of range-wide genetic variation in six North American bumble bee (Apidae: *Bombus*) species. *Mol. Ecol.* 20:4870-4888.

Peng W., J. Li, H. Boncristiani, **J.P. Strange**, M. Hamilton, and Y. Chen. (2011) Host Range Expansion of Black Queen Cell Virus in the Bumble Bee, *Bombus huntii*. *Apidologie*. 42:650-658.

Li J., W. Peng, **J.P. Strange**, H. Boncristiani, Y. Chen (2011) Cross-species infection of deformed wing virus poses a new threat to pollinator conservation. *Journal of Economic Entomology* 104:732-739.

**Strange J.P.** (2010) Nest initiation in three North American bumble bees (*Bombus*): Gyne number and presence of honey bee workers influence establishment success and colony size. *Journal of Insect Science* 10:130 available online:[insectscience.org/10.130](http://insectscience.org/10.130)

**Strange J.P.**, J. Knoblett and T. Griswold. (2009) DNA amplification from pin-mounted bumble bees (*Bombus*) in a museum collection: effects of fragment size and specimen age on successful PCR. *Apidologie* 40: 134-139.

**Strange J.P.** and N.W. Calderone. (2009) Evaluation of apicultural characteristics of first year colonies initiated from packaged honey bees (Hymenoptera: Apidae). *J. of Econ. Entomol.* 102: 485-492.

*Koch J.B.* and **J.P. Strange**. (2009) Constructing a species database and historic range maps for North American bumble bees (*Bombus sensu stricto* Latreille) to inform conservation decisions. *U. Bee J.* 9:97- 108.

**Strange J.P.**, L. Garnery, and W.S. Sheppard. (2008) Morphological and molecular characterization of the Landes honey bee (*Apis mellifera* L.) ecotype for genetic characterization. *Journal of Insect Conservation*. 12: 527-537.

**Strange J.P.**, R.P. Cicciarelli, and N.W. Calderone. (2008) What's in that package? An evaluation of quality of package honey bee (Hymenoptera: Apidae) shipments in the United States. *Journal of Economic Entomology* 101: 668-673.

**Strange J.P.**, L. Garnery, and W.S. Sheppard. (2007) Persistence of the Landes ecotype of *Apis mellifera mellifera* in southwest France: Confirmation of a locally adaptive annual brood cycle trait. *Apidologie* 38: 259-267.

Kamel, S., **J.P. Strange**, and W.S. Sheppard. (2003) A scientific note on hygienic behavior in *Apis mellifera lamarckii* and *A. m. carnica* in Egypt. *Apidologie* 34: 189-190.

Perrier C., **J.P. Strange**, O. Langella, W.S. Sheppard, and L. Garnery. (2003) Diversité génétique, introgressions mitochondriales et nucléaire dans une population d'abeilles des Landes de Gascogne. *Les Actes du BRG* 4: 79-100.

Sheppard W.S., M. Gardner, S. Hasher, B. Kahkonen, M.D. Meixner, and **J.P. Strange**. (2003) Use of sucrose octanoate esters to control the parasitic honey bee mite *Varroa destructor*. *American Bee Journal* 12: 982-985.

**Strange J.P.** and W.S. Sheppard. (2001) Optimum treatment timing of fluvalinate for the control of *Varroa destructor* (Acari: Varroidae) in *Apis mellifera* in Washington State. *Journal of Economic Entomology* 94: 1324-1331.

**Strange J.P.** (2001) "A severe stinging and much fatigue"-- Frank Benton and his 1881 search for *Apis dorsata*. *American Entomologist* 47: 112-116.

Zack R.C., C.N. Looney, M.L. Hitchcox and **J.P. Strange**. (2000) First record of Leptopodidae in Washington State. *Pan-Pacific Entomologist* 77: 47-50.

### **Book Chapters:**

Rowe, G., Hagadorn, M. A., Lindsay, T. T. T., Malfi, R., Williams, N. M., & **Strange, J. P.** (2023). Production of bumblebees (Hymenoptera: Apidae) for pollination and research. In Mass Production of Beneficial Organisms (pp. 559-579). Academic Press.

### **Other Publications:**

**Strange, J.P.**, Colla, S.R., Duennes, M., Evans, E., Figueroa, L.L., Inouye, D.W., Lehmann, D.M., Moylett, H., Richardson, L., Sadd, B.M., Smith, J.W., Tripodi, A.D., and L.D. Adams (2022) Developing a Commercial Bumble Bee Clean Stock Certification Program: A white paper of the North American Pollinator Protection Campaign Bombus Task Force.

<https://www.pollinator.org/nappc/imperiled-bombus-conservation>

Smith, T.A., **J.P. Strange**, E.C. Evans, B.M. Sadd, J.C. Steiner, J.M. Mola and K. Traylor-Holzer. (Eds.). (2020) Rusty Patched Bumble Bee, *Bombus affinis*, *Ex Situ* Assessment and Planning Workshop: Final Report. IUCN SSC Conservation Planning Specialist Group, Apple Valley, MN, USA.

*Messner R., J.P. Strange* and R. Brain (2013) Backyard Beekeeping. Utah State University Extension bulletin.

*Koch J., J. Strange* and P. Williams. (2012) Guide to the Bumble Bees of Western United States. A publication of the U.S. Forest Service. Washington D.C. \*Selected as a **Notable Government Document of 2012** by the American Library Association

Cameron, S., S. Jepsen, E. Spevak, **J. Strange**, M. Vaughan, J. Engler, and O. Byers (Eds.). (2011) North American Bumble Bee Species Conservation Planning Final Report. IUCN/SSC Conservation Breeding Specialist Group: apple Valley, MN.

Lozier, J., S. Jha, K. Goka, J. Quezada-Euan, and **J.P. Strange**. (2011). Genetic and Demographic Issues *in* Conservation Strategies. In: North American Bumble Bee Species Conservation Planning Workshop Final Report. Cameron, S., S. Jepsen, E. Spevak, J. Strange, M. Vaughan, J. Engler, and O. Byers (eds.). IUCN/SSC Conservation Breeding Specialist Group: Apple Valley, MN.

**Strange J.P.** (2009) Bee (Book Review). *American Entomologist*. 55: 58-59.

**Strange J.P.** (2003) The bournacq hive of southwest France. *Bee Culture*.

**Invited research and extension presentations (First Author Only):**

2022 “Recent history and future trends in Entomology concerning bees.” Entomological Society of America program symposium, Vancouver, BC.

“Patterns of population genetic structure in North American bumble bee communities” UWyo Zoology and Physiology Departmental Seminar

2021 “Mellitology 101” OSU Bee Short Course. Columbus, OH. Virtual delivery.

“Bumble bee declines in North America: from causes to conservation” Departmental Seminar, Rutgers, University. Virtual delivery.

“Clean feed for bees: Collecting and sterilizing pollen for bee diet” Entomological Society of America Symposium, Denver CO

2020 “Rusty Patched Bumble Bee conservation” Ohio State Pollinator Education Program. On line.

“The Role for Urban Landscapes in Bumble Bee Conservation” Cincinnati Zoo, Cincinnati.

“Bumble bee rearing as a conservation tool.” U.S. Fish and Wildlife Service Rusty Patched Bumble Bee Conservation Planning Meeting, Minnesota Zoo, Minneapolis, MN

“The Role for Urban Landscapes in Bumble Bee Conservation” Ohio Bee Atlas, Dawes Arboretum

- 2019 "A Robbin in the Coalmine" Pacific Branch of the Entomological Society of America Symposium honoring Robbin Thorp. San Diego, CA.  
 "A tribute to Robbin Thorp" Western Apicultural Society. Ashland, OR.  
 "Bumble bee population genetics" Department of Entomology Seminar, The Ohio State University  
 "Tracking bumble bee movements" co-presented with John Mola, BOMBUSS, Toronto  
 "Intesity of agricultural management impacts community composition of bumble bees and their parasites" Entomological Society of America Section Symposium. Saint Louis, MO.  
 "Bumble Bees of Ohio" Ohio State Pollinator Education Program. Seacrest Arboretum. Wooster, OH.
- 2018 "Borderless pollinators" ESA, Vancouver, BC  
 "Patterns of population genetic structure in North American bumble bee communities" Ecology Seminar, Montana State University  
 "Understanding the causes of bumble bee declines in the western US and current conservation efforts" Western Apicultural Society, Boise, ID
- 2017 "Pathogen movement between honey bees and native bees: A two-way street?" ESA, Denver, CO  
 "Patterns of population genetic structure in North American bumble bee communities" Entomology Department Seminar, Washington State University  
 "Patterns of population genetic structure in North American bumble bee communities" Biology Department Seminar, North Dakota State University  
 "Population genetic structure observed in western North American bumble bees" and "Bumble bee genetic structure, diversity, and a changing climate" PBESA, Portland, OR
- 2016 "Pollinator Research Action Plan" and "Conservation of wild pollinators" Wyoming Bee College, Cheyenne, WY  
 "Bumble bee genetic structure, diversity, and a changing climate" and "Western North American bumble bees: where have we come from and where are we going?" PBESA, Honolulu, HI  
 "Bumble bee genetic structure, diversity, and a changing climate" North Cascades National Park, Stehekin, WA  
 "Swarm science and the movies: taking the sting out of filming bees" Science Unwrapped, Utah State University, College of Science
- 2015 "Bumble bee genetic structure, diversity, and a changing climate" ESA, Minneapolis, MN  
 "Understanding the flight range and nesting density of multiple bumble bee species in diverse habitats" Michigan State University, Department of Entomology Seminar  
 "Getting your bees off the pesticide treadmill" Colorado State Beekeeping Association, Rifle, CO
- 2014 "Keeping Bees Healthy to Meet Pollination Needs" North American Pollinator Protection Campaign, Washington D.C.

- “The promise and perils of retroactive data capture from museum specimens” New Perspectives in Changing Landscapes and Big Data Symposium, Pacific Branch ESA, Tucson, AZ.
- “Getting your bees off of the pesticide treadmill” Keynote Speaker, Wyoming Bee College, Cheyenne, WY
- “Rearing your own queens” South Salt Lake Beekeepers, UT
- 2013 “Bumble bee conservation: Applying molecular techniques to preserve biodiversity” International Conference on Pollinator Biology, Health, and Policy, State College, PA.  
 “Applying molecular techniques to bumble bee conservation” Pollinator Symposium Pacific Branch ESA, Lake Tahoe, NV.  
 “Rearing your own queens” Weber County Extension, UT  
 “Bumble Bee Identification and Monitoring” four workshops at Fort Vancouver National Park, Lewis and Clark National Park, North Cascades National Park and Olympic National Park  
 “Bumble bee declines” invited Lewis and Clark NHP, Astoria, OR  
 “Bumble bee declines” invited, televised on local public channel Fort Vancouver NHP, Vancouver, WA
- 2012 “Bumble bee conservation: Applying molecular techniques to preserve diversity” University of Arkansas, Department of Entomology Seminar  
 “Bumble bee conservation: Applying molecular techniques to preserve biodiversity” Brigham Young University, Department of Microbiology and Molecular Biology.  
 “Basic Beekeeping” a three part course through Weber County Extension, UT
- 2011 – 1999 Forty-three (47) invited extension and research presentations

**Papers presented at professional meetings (First Author Only):**

- 2016 Poster: “A National Survey of Bumble Bee Pathogens and Parasites Reveals Diverse Associations in Bumble Bee Communities” International Conference on Pollinator Biology, Health, and Policy, State College, PA  
 Poster: “Sixteen novel microsatellite loci for *Megachile rotundata* (Hymenoptera: Megachilidae) and related taxa” International Congress of Entomology, Orlando, FL
- 2014 Poster: Society for Conservation Biology, Missoula, MT
- 2013 Poster: Society of Invertebrate Pathology, Pittsburg, PA
- 2010 Poster: “*Bombus huntii*: a western North American bumble bee as a potential commercial pollinator” ESA Pacific Branch Meeting Boise, ID
- 2008 Poster: Current Status and Potential Causes of Population Decline in Wild Bumble Bee Pollinators NRI Awardees Symposium, Entomological Society of America, Reno, NV  
 Poster: “Using Historic Data to Inform Collection Efforts for Rare Bumble Bees” Entomological Society of America, Reno, NV
- 2007 – 1999 Seven (9) research presentations at scientific meetings.

**Mentoring:**

- 2007-present served as adjunct faculty Biology Department, Utah State University
  - Post-doctoral research advisor for Amber D. Tripodi (2014-2018)- currently risk assessment analyst for USDA-APHIS-PPQ
  - Post-doctoral advisor for Kayla Perry (2020-2021)- currently Assistant Professor at The Ohio State University
  - Post-doctoral research advisor for Pinar Barkan (2022- present)
  - Post-doctoral research advisor for Morgan Christman (2022- present)
  - Graduate research advisor and committee member for:
    - Jonathan B. Koch, MS thesis: Decline and conservation status of North American bumble bees (2011); PhD dissertation: Biogeography, population genetics, and community structure of North American bumble bees (2015)
    - Houston Judd MS, thesis: Using field-collected pollen from foraging bumble bees to determine forage resource preferences in an agricultural landscape (2017 defended, did not deposit thesis)
    - James D. Herndon, MS thesis working title: Understanding details of the bumble bee life cycle: investigations into the reproductive development and trap-nesting of bumble bees (2019)
    - Thuy Tien Lindsay, MS thesis: Impacts of cold storage on bumble bee queens (2020)
    - Ashley Rohde, PhD Natural Resources, dissertation: Conservation genetics of *Bombus* and *Osmia* in the western North America co-advised with Michael Branstetter and Karen Mock (2022)
    - Iliana Moore, MS (current)
    - Liam Whiteman, MS (current)
    - Dante Centuori, PhD (current)
    - Brooke Donzelli, PhD (current)
  - Committee member for Juanita Rodriguez (PhD, Biology, USU), Cecelia Waichert (PhD, Biology, USU), Mallory Hagadorn (PhD, Biology, USU), Cecilia Vieira (PhD, Biology, USU), Andi Kopit (MS, Biology, USU), Carley McGrady (MS, Entomology, PSU), Morgan Christman (PhD, Biology, USU), Dylan Ricke (MS, Entomology, OSU), Caralee Shepard (PhD, Entomology, OSU), Emily Runnion (MS, EEOB, OSU), Rachel (Rae) Olsson (PhD, Entomology, Washington State University), Elizabeth Blaker (MS, Biology, Northern Arizona University), Sarah Waybright (PhD, Biology and Physiology, University of Wyoming), Archana Prasad (PhD, Environmental Science and Management, Montclair State University)
  - Undergraduate research advisor for student presentations at conferences:
    - Lindsay Nemelka, poster, Spines of Death- the Wool Carder Bee (2008), USU undergraduate research symposium
    - Abby Baur, poster, Color by Numbers: *Bombus huntii* foraging behaviors (2013), PBESA

- Shannon Heiner, poster, Bumble bee development in vitro (2017), USU undergraduate research symposium and Utah Science on the Hill
    - Tien Lindsay, talk, Bumble bee queen survival in cold storage (2017), PBESA
    - Blake McKinley, poster, comparative study of bumble bee colony growth (2017), PBESA
    - Jessica Mullins, Parasites of bumble bee queens (2017), ENTSOC
    - Lizzy Sakulich, overwintering of bumble bees in Ohio
  - 
  - Undergraduate research advisor for students (no presentation):
    - Jessica Belcher (high school science teacher), Leah Waldner, (wildlife biologist), Daniel Young (physician), Hannah Jarvis (lab tech)
    - Dalen Moore, overwintering of bumble bees in Ohio
    - Current graduate students at other programs: Devon Picklum, University Nevada-Reno; Camden Hunt, University of California- Santa Barbara; Amir Ghazi Tabatabaei University of Utah; Jessica Mullins, University of Colorado- Boulder
    - Others: Tyler Begay, Leah Hazlett, Nicole Bitner, and Zac Bybee, Isabella Wang, Daniel Anderson, Kai Torrens, Allison Hillman
- Short term lab visitors (1-4 weeks):
  - Sheena Sidhu (Ph.D., Pennsylvania State University), Carley Miller (M.S., Pennsylvania State University), Knute Gundersen (Ph.D., Michigan State University), Rachel Olsson (Ph.D., Washington State University), Amber Vinchesi (Ph.D., Washington State University), Natalie Boyle (Ph.D., Washington State University), Jenni Geib (Ph.D., University of Missouri), Jess Manson (Ph.D., Dartmouth), Charlie Nicholson (Ph.D., University of Vermont), John Mola (Ph.D., University of California-Davis), Kaylin Bickerman (M.S., University of Maine), Felicity Muth (Post-Doc, University of Nevada-Reno), Sarah Maxwell-Taylor (M.S., Oregon State University), Paul Rhoades (Ph.D., University of Idaho). Work performed in the lab through these collaborations is being included in these student graduate theses, in publications (Geib and Rhoades) or publications in prep (Sidhu, Manson and Muth)
- 2016, 2017, 2018 Native American Student Mentorship Program- mentored two Native American students each year for one week, students primarily from Navajo nation spent a week in the lab learning about native pollinators

**Instruction:**

- 2018 Instructor for BIOL 6750: Winter Physiology of Insects for Utah State University graduate level course, instructed five graduate students in one credit class
- 2004-2005, 2013 Workshop presenter at the Washington State University/ Washington State Beekeepers Association Annual Beekeeping Field Day.

- 2010 and 2012 Organized and instructed USDA-ARS bumble bee management workshop
- Organized and led four-day workshop to teach Molecular Methods for Pollination Ecologists as part of a USDA-NIFA funded Specialty Crop Research Initiative grant. Led instruction for twelve students in lab-intensive training.

**Service:**

- 2022 Chair NCAC 15 Department Heads committee.
- *Ad hoc* CFAES service:
  - CFAES Reach working group (2021) co-chair
  - CFAES Seed Your Future task force (2021) chair
  - CFAES Waterman Visitor Center planning committee (2021)
- 2021 Chair search committee for Department of Animal Science Chair, Ohio State University
- 2020- present Secret Arboretum Support Council member, committee membership: Strategic Planning and Finance committees, Ohio State University
- 2019- 2020 Co-organizer US Fish and Wildlife Service, IUCN-CPSG Rusty Patched Bumble Bee *Ex Situ* Conservation Planning Meeting, Minnesota Zoo, Minneapolis, MN
- 2019- present Ohio State University Environmental Chairs Caucus
- 2018 USDA-NIFA pre-doctoral and post-doctoral fellowship grant panel
- 2017 Organized and hosted BOMBUSS: Building Our Methods By Using Sound Science, international workshop in Logan, UT
  - Currently serving on the organizing committee for BOMBUSS 2.0 planned for October 2019, Toronto
- 2017 to present advisory role for US Fish and Wildlife Service *Bombus affinis* Endangered Species Act species recovery planning
- 2010 Contributor to Utah Public Radio “Wild About Utah” Radio Show
- International Union for the Conservation of Nature
  - 2010 Co-organized North American Bumble Bee Conservation Planning meeting at the St. Louis Zoo, St. Louis, MO
  - 2014- present Bumble Bee Species Specialist Group, reviewer for Red List assessments
- 2014-2015 Section lead for Status and Trends in the Obama administration’s Pollinator Health Task Force
  - Wrote and edited Status and Trends section in the U.S. Pollinator Research Action Plan
- 2000- present member of the Entomological Society of America
  - 2022, 2017, 2015 Judge- student presentation competition
  - 2018 Co-organized a program symposium at the Entomological Society of American annual meeting in Vancouver, BC
  - 2017-present *Journal of Economic Entomology*, Subject Editor, Apiculture and Social Insects



- Co-Organized the Pollinator Symposium at the Entomological Society of America Annual Meeting, Reno, NV
- 2000-2005 Three-time student volunteer at the Entomological Society of America annual meeting, serving at registration and ESA Heritage exhibit
- Pacific Branch of the Entomological Society of America
  - 2013-2014 Co-Chair Student Judging Committee
  - 2014-2017 Executive Committee Member at Large
  - 2017 PBESA site selection committee for 2019 meeting
  - 2017-2018 Chair *ad hoc* Awards Task Force
  - Co-organized Pollinator Symposium at Pacific Branch of the Entomological Society Meeting, Boise, ID.
- North Central Branch, Entomological Society of America
  - 2022 Co-organized Program Symposium- *Preventing Permanent Diapause: Conservation of the Rusty Patched Bumble Bee*
  - 2022 Co-organized USFWS Rusty Patched Bumble Bee Research Coordination Workshop
- Stokes Nature Center, Logan UT
  - 2014-2019 Board of Trustees member
  - 2017-2018 Board Chair
  - 2019 Executive Director hiring committee
- North American Pollinator Protection Campaign
  - 2008-2009 Agricultural Task Force member.
  - 2011-2013, 2018 Member *Bombus* Task Force.
  - 2009-2010, 2014-2017 Co-Chair *Bombus* Task Force.
- *Ad hoc* reviewer for *Animal Genetics, Apidologie, Biological Conservation, Ecology letters, Environmental Entomology, Genetics and Molecular Biology, Insect Molecular Biology, Insect Science, Journal of Apicultural Research, Journal of Economic Entomology, Journal of the Kansas Entomological Society, Northwest Science, Pan- Pacific Entomologist, Molecular Ecology Resources, PLOS ONE* and *Nature*.

### **Professional Development**

2021 LEAD21- year long course in leadership in Land-Grant Universities

2021 Big Ten Academic Alliance- Department Executive Officer Leadership training

### **Professional References:**

Rufus Isaacs, Professor,  
 Department of Entomology  
 Michigan State University  
 578 Wilson Rd. Room 202 CIPS  
 East Lansing, MI 48824  
[isaacsr@msu.edu](mailto:isaacsr@msu.edu), 517-355-6619

W. Steve Sheppard, Professor  
Department of Entomology  
Washington State University  
FSHN 166  
Pullman, WA 99164-6382  
[shepp@wsu.edu](mailto:shepp@wsu.edu), 509-335-5180

Theresa Pitts-Singer, Research Entomologist  
USDA-ARS-Pollinating Insects Research Unit  
1410 N 800 E  
N. Logan, UT 84341  
[Theresa.pitts-singer@ars.usda.gov](mailto:Theresa.pitts-singer@ars.usda.gov), 435-797-0581

Neal Williams, Professor  
Department of Entomology and Nematology  
University of California- Davis  
380B Briggs Hall  
Davis, CA, 95616  
[nmwilliams@ucdavis.edu](mailto:nmwilliams@ucdavis.edu), 530-752-9358