

CV: Thomas Seth Davis

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1. Education

<u>YEAR</u>	<u>DEGREE</u>	<u>PROGRAM</u>	<u>INSTITUTION</u>
2011	Graduate Certificate	Applied Statistics	Northern Arizona University
2011	Ph D	Forest Science	Northern Arizona University
2008	MS	Forest Entomology	Northern Arizona University
2006	BS	Forestry	Northern Arizona University

2. Academic Positions

- (2016 – Present) Assistant Professor, Forest Entomology, Colorado State University
 (2015 – 2016) Assistant Professor, Disturbance Ecology, California Polytechnic State University
 (2012 – 2015) Postdoctoral Scientist, Regional Approaches to Climate Change (REACCH), University of Idaho
 (2011 – 2012) Associate Research Entomologist, Fruit & Vegetable Insect Research Unit, USDA Agricultural Research Service
 (2008 – 2011) IGERT Research Assistant, College of Forestry, Engineering, and Natural Sciences, Northern Arizona University (PHD research)

3. Published works**Refereed Journal Articles**

(* invited submission; graduate student; undergraduate student; **Davis** in bold)

52. Chisholm, P., Stevens-Rumann, C.S., **Davis, T.S.** 2021. Interactions between climate and stand conditions predict pine mortality during a bark beetle outbreak. *Forests* 12:360. doi:10.3390/f12030360.
51. *Mann, A.J., **Davis, T.S.** 2021. Entomopathogenic fungi to control bark beetles: a review of ecological recommendations. In press, *Pest Management Science*. doi:10.1002/ps.6364
50. Atkins, D.H., **Davis, T.S.**, Stewart, J.E. 2021. Probability of occurrence and phenology of pine wilt disease transmission by insect vectors in the southern Rocky Mountains. *Ecological Solutions and Evidence* 2: e12044.
49. Ott, D.S., **Davis, T.S.**, Mercado, J.E. 2021. Interspecific variation in spruce constitutive and induced defenses in response to a bark beetle fungal symbiont provides insight into traits associated with resistance. In press, *Tree Physiology*. doi: 10.1093/treephys/tpaa170.
48. Pandey, M., Thapa-Magar, K.B., Poudel, B.S., **Davis, T.S.**, Shrestha, B.B. 2020. Plant invasion research in Nepal: a review of recent trends. *Weeds – Journal of the Asia-Pacific Weed Science Society* 2:16-33.
47. Thapa-Magar, K.B., **Davis, T.S.**, Kondratieff, B.C. 2020. Livestock grazing is associated with seasonal reduction in pollinator biodiversity and functional dispersion but cheatgrass invasion is not: Variation in bee assemblages in a multi-use shortgrass prairie. *PLOS ONE* 15: e0237484. doi: 10.1371/journal.pone.0237484.
46. **Davis, T.S.**, Rhoades, P.R., Mann, A.J., Griswold, T. 2020. Bark beetle outbreak enhances biodiversity and foraging habitat of native bees in alpine landscapes of the southern Rocky Mountains. *Scientific Reports* 10:16400. doi: 10.1038/s41598-020-73273-z.
45. **Davis, T.S.** 2020. Toxicity of two Engelmann spruce monoterpene chemotypes from the southern Rocky Mountains to North American spruce beetle. *The Canadian Entomologist* 152:790-796.
44. Stewart, J.E., Hariss, F.L., Otto, K., **Davis, T.S.** 2020. Responses of Engelmann spruce to inoculation with

Leptographium abietinum, a symbiotic fungus of the North American spruce beetle. Canadian Journal of Forest Research 50:465-472.

43. Mann, A.J., **Davis, T. S.** 2020. Effects of environmental variation on growth and virulence of an entomopathogenic fungus (*Beauveria bassiana*) (Ascomycota: Hypocreales) to North American spruce beetle (*Dendroctonus rufipennis* Kirby) (Coleoptera: Curculionidae). *Biological Control* 141:104130.
42. Redmond, M. D., **Davis, T. S.**, Wion, A. P., Ferrenberg, S. 2019. Resource allocation trade-offs in a mast-seeding conifer: Pinyon pine prioritizes reproduction over defenses, but not growth. *AoB Plants* 11: plz070. doi: 10.1093/aobpla/plz070.
41. **Davis, T. S.**, Redmond, M. D., Foote, N. E., Miller, W. 2019. Factors associated with establishment and growth of *Pinus coulteri* and *Pinus sabiniana* in California's central coast bioregion. *Forest Science*, doi: 10.1093/forsci/fxz041.
40. Dell, I. H., **Davis, T. S.** 2019. Effects of site thermal variation and physiography on flight synchrony and phenology of the North American spruce beetle *Dendroctonus rufipennis* (Coleoptera: Scolytinae). *Environmental Entomology* 48:998-1011.
39. Magney, T.S., Frankenberg, C., Koehler, P., North, G., **Davis, T.S.**, Dold, C., Dutta, D., Fisher, J., Grossmann, K., Hatfield, J., Stutz, J., Sun, Y., and A. Porcar-Castell. 2019. Disentangling changes in the spectral shape of chlorophyll fluorescence: Implications for remote sensing of photosynthesis. *Journal of Geophysical Research – Biogeosciences* 124:1491-1507.
38. Wojcik, V., Smith, L., Carronero, W., Adams, L.D, **Davis, T.S.**, DeBano S.J., Fallon, C., Hatfield, R., Hoffman-Black, S., Kaye, T., Jepsen, S., McKnight, S., Morandin, L., Pelton, E., Rhoades, P., Rourke, K., Rowland, M., and W. Tinkham. 2018. New research and BMPs in natural areas: a synthesis of the pollinator management symposium from the 44th Natural Areas Conference, October 2017. *Natural Areas Journal* 38:334-346.
37. Rhoades, P.R., **Davis, T.S.**, Tinkham, W., Hoffman, C. 2018. Effects of seasonality, forest structure and understory plant richness on bee community assemblage in a southern Rocky Mountain mixed conifer forest. *Annals of the Entomological Society of America* 111:278-284.
36. ***Davis, T.S.**, Stewart, J.E., Mann, A., Bradley, C., Hofstetter, R.W. 2018. Evidence for multiple ecological roles of *Leptographium abietinum*, a symbiotic fungus associated with the North American spruce beetle. *Fungal Ecology* 38:62-70.
35. **Davis, T.S.**, Horne, F.B., Yetter, J.C., Stewart, J.E. 2018. Engelmann spruce chemotypes in Colorado and their effects on symbiotic fungi associated with North American spruce beetle. *Journal of Chemical Ecology* 44:601-610.
34. **Davis, T.S.**, Mann, A., Malesky, D., Jankowski, E., Bradley, C. 2018. Laboratory and field evaluation of the entomopathogenic fungus *Beauveria bassiana* for population management of spruce beetle, *Dendroctonus rufipennis* Kirby (Coleoptera: Scolytinae), in felled trees and factors limiting pathogen success. *Environmental Entomology* 47:594-602.
33. *Eigenbrode, S.D., Bosque-Pérez N.A., **Davis T.S.** 2018. Insect-borne plant pathogens and their vectors: ecology, evolution, and complex interactions. *Annual Review of Entomology* 63:169- 191.
32. **Davis, T.S.**, Hansen, M. 2018. An ordinal day model of spruce beetle flight phenology in northern Colorado. *Journal of Applied Entomology* 142:277-281.
31. Magney, T.S., Frankenberg, C., Fisher, J.B., Sun, Y., North G.B., **Davis, T.S.**, Kornfeld, A. 2017. Connecting active to passive fluorescence with photosynthesis: a method for evaluating remote sensing measurements of chlorophyll fluorescence. *New Phytologist* 215:1594-1608.
30. Foote, N.E., **Davis, T.S.**, Crowder, D., Bosque-Perez, N.A., Eigenbrode, S.D. 2017. Plant water stress affects interactions between an invasive and a naturalized aphid species on cereal crops. *Environmental Entomology* 46:609-616.
29. **Davis T.S.**, Wu Y., Eigenbrode S.D. 2017. The effects of Bean leafroll virus on life history traits and host

selection behavior of specialized pea aphid (*Acyrtosiphon pisum*, Hemiptera: Aphididae) genotypes. *Environmental Entomology* 46:68–74.

28. Eigenbrode, S.D., **Davis, T.S.**, Adams, J., Husebye, D., Waits, L., and D. Hawthorne. 2016. Host-adapted aphid populations differ in their migratory patterns and capacity to colonize crops. *Journal of Applied Ecology* 53:1382–1390.
27. **Davis T.S.**, Bosque-Pérez N.P., Popova I., and S.D. Eigenbrode. 2015. Evidence for additive effects of virus infection and water availability on phytohormone induction in a staple crop. *Frontiers in Ecology in Evolution*, doi: 10.3389/fevo.2015.00114
26. **Davis, T.S.**, Bosque-Pérez, N., Foote, N.E., Magney, T., and S.D. Eigenbrode. 2015. Environmentally dependent host-pathogen and vector-pathogen interactions in the Barley yellow dwarf virus pathosystem. *Journal of Applied Ecology* 52:1392–1401.
25. **Davis, T.S.**, Wu, Y., and S.D. Eigenbrode. 2015. Chickpea variety and phenology affect acquisition of Pea enation mosaic virus, subsequent plant injury, and aphid vector performance. *Annals of Applied Biology* 167:420–425.
24. ***Davis, T.S.** 2014. The ecology of yeasts in the bark beetle holobiont: a century of research revisited. *Microbial Ecology* 69:723–732.
23. Wu, Y., **Davis, T.S.**, and S.D. Eigenbrode. 2014. Aphid behavioral responses to virus-infected plants are similar despite divergent fitness effects. *Entomologia Experimentalis et Applicata* 153:246–255.
22. Landolt, P.J., Cha, D., and **T.S. Davis**. 2014. Attraction of the orange mint moth and false celery leaf-tier moth (Lepidoptera: Crambidae) to floral chemical lures. *Journal of Economic Entomology* 107:654–660.
21. Landolt, P.J., Ohler, B., Lo, P., Cha, D., **Davis, T.S.**, Suckling, D.M., and J. Brunner. 2014. N-butyl sulfide as an attractant and co-attractant for male and female codling moth (Lepidoptera: Tortricidae). *Environmental Entomology* 43:291–297.
20. **Davis, T.S.**, Wu, Y., and S.D. Eigenbrode. 2014. Host settling behavior, reproductive performance, and impacts on plant growth of a cereal aphid new to the United States, *Metopolophium dirhodum cerealium* (Hemiptera: Aphididae). *Environmental Entomology* 43:682–688.
19. **Davis, T.S.**, Abatzoglou, J., Bosque-Pérez, N., Halbert, S.E., Pike, K., and S.D. Eigenbrode. 2014. Differing contributions of density dependence and climate to the population dynamics of three eruptive herbivores. *Ecological Entomology* 39:566–577.
18. ***Davis, T.S.**, Hofstetter, R.W., Crippen, T., and J.K. Tomberlin. 2013. Microbial volatiles as insect semiochemicals. *Journal of Chemical Ecology* 39:840–859.
17. **Davis, T.S.** and R.W. Hofstetter. 2013. Allometry of phloem thickness and resin flow and their relation to tree chemotype in a southwestern ponderosa pine forest. *Forest Science* 60:270–274.
16. **Davis, T.S.**, Garczynski, S.F., Stevens-Rumann, C. and P. J. Landolt. 2013. A test of fruit varieties on entry rate and development by neonate larvae of the codling moth, *Cydia pomonella* (Lepidoptera: Tortricidae). *Entomologia Experimentalis et Applicata* 148:259–266.
15. ***Davis, T.S.** and P.J. Landolt. 2013. A survey of insect assemblages responding to volatiles from a ubiquitous fungus in an agricultural landscape. *Journal of Chemical Ecology* 39:860–868.
14. **Davis, T.S.** and R.W. Hofstetter. 2012. Plant secondary chemistry mediates the performance of a nutritional symbiont associated with a tree-killing herbivore. *Ecology* 93:421–429.
13. **Davis, T.S.**, Horton, D.R., Munyaneza, J.E., and P.J. Landolt. 2012. Experimental infection of plants with an herbivore-associated bacterial endosymbiont influences herbivore host selection. *PLOS ONE* 7: e49330. doi: 10.371/journal.pone.0049330.
12. **Davis, T.S.**, Boundy-Mills, K., and P.J. Landolt. 2012. Volatile emissions from an epiphytic fungus are semiochemicals for eusocial wasps. *Microbial Ecology* 64:1056–1063.
11. **Davis, T.S.** and P. J Landolt. 2012. Body size phenotypes are heritable and mediate fecundity but not fitness in the lepidopteran frugivore *Cydia pomonella*. *Naturwissenschaften* 99:483–491.
10. **Davis, T. S.**, Grady, K. C., and N. E. Foote. 2012. Ant colony response to disturbance is predicted by tree

size but not tree density in a neotropical ant-plant association. *International Journal of Tropical Insect Science* 32:116–121.

9. Landolt, P.J., Adams, T., **Davis, T.S.** and H. Rogg. 2012. Spotted wing drosophila, *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) attraction to the combination of wine and vinegar. *Florida Entomologist* 95:326–332.
8. **Davis, T.S.** and R.W. Hofstetter. 2011. Oleoresin chemistry mediates oviposition behavior and fecundity of a tree-killing bark beetle. *Journal of Chemical Ecology* 37:1177–1183.
7. **Davis, T.S.** and R.W. Hofstetter. 2011. Reciprocal interactions between the bark-beetle associated yeast *Ogataea pini* and host tree phytochemistry. *Mycologia* 103:1201–1207.
6. **Davis, T.S.**, Hofstetter, R.W., Foster, J.T., Foote, N.E., and P. Keim. 2011. Interactions between *Ogataea pini* and filamentous fungi associated with the western pine beetle. *Microbial Ecology* 61:626–634.
5. **Davis, T.S.**, Jarvis, K., Parise, K.L., and R.W. Hofstetter. 2011. Oleoresin exudation rate increases and viscosity declines following a fire event in a ponderosa pine ecosystem. *Journal of the Arizona - Nevada Academy of Science* 43:6–11.
4. **Davis, T.S.**, Hofstetter, R.W., and J.T. Foster. 2010. Host-tree phytochemistry has non-additive effects on mycangial fungi isolated from *Dendroctonus brevicomis*. (Abstract). *International Forestry Review* 12:354.
3. **Davis T.S.**, R.W. Hofstetter, K.D. Klepzig, J.T. Foster, and P. Keim. 2010. Interactions between multiple fungi isolated from two bark beetles, *Dendroctonus brevicomis* and *D. frontalis* (Coleoptera: Curculionidae). *Journal of Yeast and Fungal Research* 1:118–126.
2. Waring, K.M., Reboletti, D.M., Mork, L.A., Hofstetter, R.W., Garcia, A.M., Fulé, P.Z., and **T. S. Davis**. 2009. Modeling the impacts of two bark beetle species under warming climate in the southwestern U.S.A.: ecological and economic consequences. *Environmental Management* 44:824–835.
1. **Davis, T.S.** and R.W. Hofstetter. 2009. Effects of gallery density and species ratio on the fitness and fecundity of two sympatric bark beetles (Coleoptera: Curculionidae: Scolytinae). *Environmental Entomology* 38:639–650.

Articles Under Review

2. Crossley, M., Smith, O. **Davis, T.S.**, Eigenbrode, S.D., Hartman, G., Lagos-Kutz, D., Halbert, S., Voegtlin, D., Moran, M., Snyder, W. Complex life histories predispose aphids to recent abundance declines. Under review at *Global Change Biology*.
1. **Davis, T.S.** Impacts of climate change and altered host tree physiology on plant-insect interactions in forest ecosystems: examples from the southwestern ecoregion. In revision for Hofstetter, R.W., Ghandi, K. (Eds), *Bark Beetle Management, Ecology, and Climate Change*. Elsevier.

Book Chapters

2. Hofstetter R.W., Dinkins-Bookwalter J., **Davis T.S.**, and K.D. Klepzig. 2015. Symbiotic associations of bark beetles. In: Vega, F. and Hofstetter, R.W. (Eds), *Biology and Ecology of Native and Invasive Species*. Academic Press, Elsevier Publishing, San Diego, CA, USA.
1. Eigenbrode S.D., **Davis, T.S.**, and D.W. Crowder. 2014. Climate Change and Biological Control in Agricultural Systems: Principles and Examples from North America. In: Björkman, C. and Niemelä, P (Eds), *Climate Change and Insect Pests*. CABI Publishing, Abingdon, UK.

Extension publications

1. Atkins, D.H., **Davis, T.S.**, Stewart, J.E. Pine wilt disease in the Front Range of Colorado. Colorado State University Extension. Topic: 6.30 Insect: Trees and Shrubs. Fact Sheet # 2019-0817.

Non-peer reviewed works

1. **Davis, T.S., Gelles, R., Kondratieff, B., Stevens-Rumann, C.S.** 2019. Effects of fire and thinning disturbances on biodiversity of wild bee communities in the Front Range of Colorado. Final Report to Boulder County Parks and Open Spaces and Mountain Parks. 33 p.

Published datasets

1. **Atkins, D.H., Davis, T.S., Stewart, J.E.** 2020. Dryad Dataset, <https://doi.org/10.5061/dryad.sn02v6x32>.
2. **Davis, T.S.; Thapa-Magar, K.; Kondratieff, B.** 2020. Dryad Dataset, <https://doi.org/10.5061/dryad.cjsxksn4w>.

Popular press

- The Academic Minute. "Beneficial plant viruses". WAMC, Northeast Public Radio, Mount Holyoke College. September 2015.
- The Coloradoan. "Inside Colorado's quest to tackle dangerously unhealthy forests." The Coloradoan, March 2018.
- Channel 9 News. "Colorado State University researching link between climate change and spruce beetle outbreaks." July 2019.
- The Colorado Sun. "Climate change is transforming Western forests. And that could have big consequences far beyond wildfires." July 2019.
- Colorado Matters Public Radio. "The earth is warming and that means spruce beetles are getting bigger (but its not all bad news)". August 2019.
- CBS Channel 4, Denver. "Colorado researcher warns of possible spruce beetle population explosion". September 2019.
- KRCC 91.5, Colorado Springs. "Increasing temperatures could mean an increase in spruce beetle activity". October 2019.
- Longmont Daily Times-Call, Longmont. "Boulder County's native bee species thrive in disturbed environments". February 2020.

2. Grants and contracts: total \$1,999,079

Externally-Funded, Active

- (2021) "CAREER: Is phytohormone crosstalk the mechanism that predisposes drought-stressed conifers to bark beetle attack?", Davis, T.S. (PI). National Science Foundation, Division of Integrative Organismal Systems, Plant Biotic Interactions, \$981,483, Disciplinary research.
- (2020) "Effects of prescribed fire restoration treatment on wild bee communities within Colorado", Davis, T.S. (PI). Joint Fire Science Program, \$24,498. Disciplinary research.
- (2020) "Large trees, tiny beetles: evaluating the pest potential of a bark beetle in giant sequoia", Davis, T.S. (PI). Save the Redwoods League, \$127,100. Disciplinary research.
- (2020) "Seeing the forest for the bees: effects of forest restoration on native pollinators", Davis, T. S. (PI). USDA-NIFA-National Institute of Food and Agriculture, \$383,226. Disciplinary research.
- (2020) "Does sagebrush restoration impact native bee pollinators and their habitats?" Davis, T.S. (PI). Bureau of Land Management, Management Studies Support Program for National Conservation Lands, \$71,315. Disciplinary research.
- (2018) "Quantifying the effects of silviculture treatments on forest resilience to spruce beetle epidemics in Colorado", Battaglia, M. (PI), Davis, T. S. (CoPI), Meddens, A. (CoPI), USDA-USFS-Rocky Mtn. Rsrch Station - CO, \$80,351. Interdisciplinary research.

Externally-funded, Closed

- (2019) "Quantifying the effects of wildfire severity and wildfire mitigation treatments on biodiversity of wild bee communities", Joint agency proposal, Davis, T. S. (PI). Stevens-Rumann, C. S. (CoPI). Boulder County Parks and Open Space, \$9,995. Disciplinary research.
- (2019) "Quantifying the effects of wildfire severity and wildfire mitigation treatments on biodiversity of wild bee communities", Joint agency proposal, Davis, T. S. (PI). Stevens-Rumann, C. S. (CoPI). City of Boulder Open Space and Mountain Parks, \$9,994. Disciplinary research.
- (2016) "Assessment of Current Conditions and Management Plan for Western Pine Beetle Mitigation in Mt Diablo State Park", Davis, T.S. (PI), California Department of Parks and Recreation, \$15,000. Service and engagement, Disciplinary research.

Internally-Funded, Active

- (2020) "Restoration is in the eye of the bee-holder: the influence of ecological restoration treatments on pollinator health and reproduction in ponderosa pine forests of Colorado", Davis, T.S. (PI), Cheng, A. (coPI), Galbraith, S. (coPI), USDA-NIFA-National Institute of Food and Agriculture (McIntire-Stennis), \$83,117. Disciplinary research.

Internally-Funded, Closed

- (2018) "Identifying reservoirs and insect vectors of pine wilt disease in the Front Range", Davis, T.S. (PI), Stewart, J. E. (CoPI), USDA-NIFA-National Institute of Food and Agriculture (McIntire-Stennis), \$109,272. Disciplinary research.
- (2017) "Surveying biological and functional diversity of insect pollinators in rangeland habitats of Colorado", Davis, T. S., Agricultural Experiment Station (HATCH), \$103,728. Disciplinary research.

Externally-Funded, Under Review

- (2021) "Colorado State University Extension (CSUE) Naturalist and Stewardship program in Colorado", Davis, T.S. (PI), Rollins, K. (CoPI), Graham, S. (CoPI). USDA-NIFA, Renewable Resources Extension Act, National Focus Funds Projects, \$99,898. Extension program development.
- (2020) "Evaluation of western cedar bark beetle as a novel contributing agent to dieback and mortality in giant sequoia", Davis, T.S. (PI), Stephenson, N. (coPI). USDA-USFS-Forest Health Protection, Environmental Monitoring program, \$82,340. Disciplinary research.
- (2020) "Assessing the drivers of ponderosa pine dieback and mortality in the Colorado Front Range and southern Wyoming", Stewart, J.E. (PI), Davis, T.S. (coPI). USDA-USFS-Forest Health Protection, Environmental Monitoring program, \$72,000. Disciplinary research.

3. Invited lectures, papers presented, and symposia

Invited seminars

- (2020) It takes three to tango: interactions between spruce beetles, tree chemistry, and symbiotic fungi. Society of American Foresters National Convention, Virtual.
- (2020) Old dogs can learn new tricks: exploiting microbial signals for chemical ecology. Peter Landolt Memorial Symposium. Entomological Society of America, Virtual.
- (2019) Interactions among spruce beetle, Engelmann spruce, and fungal symbionts. Western Forest Insect Work Conference, Anchorage, AK.
- (2019) Complex interactions between a tree-killing insect, host chemistry, and microbial symbioses. Departmental Seminar, Department of Entomology, Texas A&M University, College Station, TX.

- (2019) Chemical and microbial ecology of spruce beetle. Departmental Seminar, Botany Department, University of Wyoming; Laramie, WY.
- (2018) Advances in the biology and ecology of spruce beetle in Colorado. Departmental Seminar, Forest and Rangeland Stewardship, Colorado State University; Fort Collins, CO.
- (2017) Drought stress facilitates conditional mutualism in a plant-virus-vector interaction. 3rd Hemipteran-Plant Interactions Symposium, Madrid, Spain.
- (2017) Climate- and disease-induced demographic shifts in an endemic conifer of coastal California. Ecological Society of America; Portland, OR.
- (2016) Sometimes getting sick is good: complex dynamics in aphid-crop-virus pathosystems. Departmental Seminar, Bioagricultural Sciences & Pest Management, Colorado State University; Fort Collins, CO.
- (2016) Chemical and microbial ecology of western pine beetle in southwestern ecosystems: past, present, and future. Research Seminar, Colorado State University; Fort Collins, CO.
- (2016) Complex interactions between herbivores, plants, and viruses. Departmental Seminar (Biology), California Polytechnic State University; San Luis Obispo, CA.
- (2015) Pine chemical phenotypes drive agents of forest disturbance. Research Seminar, UC Berkeley; Berkeley, CA.
- (2014) The ecology of yeasts in the bark beetle holobiont. Entomological Society of America; Portland, OR.
- (2014) Pine chemical phenotypes regulate a tree-killing symbiotic complex. Research Seminar, California Polytechnic University; San Luis Obispo, CA.
- (2014) Tree chemical diversity moderates performance of an insect-microbe complex. Departmental Seminar, University of Idaho; Moscow, ID.
- (2014) A bark beetle-microbe complex is moderated by chemical variability in host pines. Research Seminar; University of Washington, Seattle, WA.
- (2013) Chemical regulation of an insect-fungal complex. Research Seminar; Stanford University, Palo Alto, CA.
- (2013) Infection of plants by a bacterial endosymbiont mediates host selection in the potato psyllid. Entomological Society of America; Austin, TX.
- (2013) The microbial ecology of chemical ecology. Departmental Seminar, Swedish University of Agricultural Sciences; Lund, Sweden.
- (2013) Climate drivers of aphid phenology and biogeography in the Pacific Northwest. Pacific Branch Meeting, Entomological Society of America; Reno, NV.
- (2012) A symbiotic community is regulated by plant phytochemistry. Departmental Seminar, College of Forestry and Conservation, University of Montana.
- (2010) Ecological and economic predictions for an invasive bark beetle in the southwestern U.S.A. Entomological Society of America; San Diego, CA.
- (2010) An Inconvenient Pest! Potential spread of a non-native bark beetle: ecological and economic consequences. National Center for Ecological Analysis and Synthesis; Santa Barbara, CA.

Contributed seminars or papers

Approximately 75 co-authored contributed seminars; only seminars with Davis as lead presenter are listed.

- (2018) Engelmann spruce chemodiversity affects spruce beetle at multiple scales. Western Forest Insect Work Conference, Denver, CO.
- (2017) Biological and functional diversity of pollinators in rangeland habitats of Colorado. Natural Areas Conference, Fort Collins, CO.
- (2017) Using aerial survey data to define the range of variation in spruce beetle activity across forest

- landscapes of the western U.S.: What is normal? Western Forest Insect Work Conference; Jackson, WY.
- (2017) Population genetics of pea aphid in the PNW: what does it mean for pest and virus disease management in pulses?
- (2016) Complex interactions between herbivores, plants, and crop viruses. Pacific Branch Meeting, Entomological Society of America; Honolulu, HI.
- (2015) Drought stress facilitates conditional mutualism in a multitrophic pathosystem. Pacific Branch Meeting, Entomological Society of America; Coeur d'Alene, ID.
- (2014) Pea aphid biotypes in the inland Northwest. Pacific Branch Meeting, Entomological Society of America; Tucson, AZ.
- (2013) The effects of tree chemistry and beetle chemical legacy on the growth of a fungal mutualist. Western Forest Insect Work Conference; Coeur d'Alene, ID.
- (2013) Long term patterns of herbivore abundance in cereal agrosystems of the Pacific Northwest. Regional Approaches to Climate Change Annual Meeting; Portland, OR.
- (2012) Body size phenotypes are heritable and mediate fecundity but not fitness in the lepidopteran frugivore *Cydia pomonella*. Entomological Society of America; Knoxville, TN.
- (2012) Fungal volatiles mediate the orientation response of eusocial wasps. Ecological Society of America; Portland, OR.
- (2011) Reciprocal interactions between the bark-beetle associated yeast *Ogataea pini* and host tree phytochemistry. Entomological Society of America; Reno, NV.
- (2011) Reciprocal interactions between the bark-beetle associated yeast *Ogataea pini* and host tree phytochemistry. (Poster). North America Forest Insect Work Conference; Portland, OR.
- (2010) Interactions between a yeast and filamentous fungi associated with the western pine beetle. Entomological Society of America; San Diego, CA.
- (2010) Host-tree phytochemistry has non-additive effects on mycangial fungi isolated from *Dendroctonus brevicomis*. International Union of Forest Research Organizations, World Congress; Seoul, South Korea.
- (2010) Characterizing the ecology of a yeast associated with the western pine beetle, *Dendroctonus brevicomis*. Western Forest Insect Work Conference; Flagstaff, AZ.
- (2010) The heritability of size and the effects of size on fitness and fecundity in bark beetles. Western Forest Insect Work Conference; Flagstaff, AZ.
- (2009) Response of the western pine beetle (*Dendroctonus brevicomis*) to variation in host phytochemistry. Entomological Society of America. Indianapolis, IN.
- (2009) Modeling the impacts of two bark beetle species under warming climate in the southwestern U.S.A.: ecological and economic consequences. (Poster). Western Forest Insect Work Conference, Spokane, WA.
- (2009) Detecting the role of bacteria associated with the mycangium of the western pine beetle (*Dendroctonus brevicomis*). (Poster). Western Forest Insect Work Conference, Spokane, WA.
- (2009) Patterns of resource acquisition among fungal symbionts isolated from four bark beetle populations. Western Forest Insect Work Conference; Spokane, WA.
- (2008) Interspecific interactions among two foundation bark beetles. Entomological Society of America; Reno, NV.
- (2008) Bark beetle-fungal symbioses: sympatry, allopatry, and ecological strategy. International Congress of Entomology; Durban, South Africa
- (2008) An ant-acacia mutualism is altered by land-use in a dry tropical forest. NAU International Research Symposium; Flagstaff, AZ.
- (2008) Interspecific interactions among two primary bark beetles. Western Insect Forest Work Conference; Boulder, CO.

- (2008) Have phoretic mites influenced the evolution of insect-microbial symbiosis in bark beetle systems? Western Forest Insect Pest Workshop. April 2008.
- (2007) Interactions among primary bark beetles (*Dendroctonus frontalis* and *D. brevicornis*) in Northern Arizona. Western Forest Insect Work Conference; Boise, ID.

Symposia organized

- (2019) Member symposium, Entomological Society of America. “Effects of land management and disturbance on wild bee communities”. 3-hour session.
- (2019) Member symposium, Western Forest Insect Work Conference. “Forest pollinators”. 3-hour session.
- (2018) Member symposium, Western Forest Insect Work Conference. “Spruce beetle impacts on high elevation forests”. 1.5-hour session.
- (2013) Member Symposium, Entomological Society of America, Pacific Branch. “Climate change and its broader impacts for arthropods”. 3-hour session.

4. Teaching and advising

Awards

- (2019) Instructor of the Year. Warner College of Natural Resources, Colorado State University.

Courses taught

Colorado State University

- F 581: Field Ecology. Lead instructor 2017.
- NR 420: Integrated Ecosystem Management (every Spring semester). Lead instructor 2016 (S), 2017 (S), 2018 (S), 2019 (S), 2020 (S, F).

California Polytechnic State University

- NR 465: Ecosystem management. Lead instructor. 2015. NR 402: Forest health. Lead instructor. 2015.
- NR 306: Natural resource ecology. Lead instructor. 2015. NR 208: Dendrology. Lead instructor. 2015.
- NR 141: Introduction to forest ecosystem management. Lead instructor. 2015.

Northern Arizona University

- FOR 499/599: Tropical Entomology Field Course (Nicaragua). Teaching Assistant. 2010. FOR 454/554. Forest Entomology. Teaching Assistant. 2010.

Graduate student advising

STUDENT NAME	DEGREE	DATES SERVED	ROLE	PROJECT TITLE
Brousil, Matthew	MS	F2015 – S2016	Member	Compounding fire disturbance history encourages coast redwood regeneration and community dominance
Woodward, Brian	MS	F2016 – S2017	Member	Modelling tree mortality from spruce beetle in Colorado
Truslove, Micaela	MS	F2016 – S2018	Member	Allometric biomass equations for urban green ash in Colorado

Mann, Andrew	MS	S2017 – S2019	Advisor	Tradeoffs between environmental tolerance and pathogenicity in an entomopathogenic fungus
Dell, Isaac	MS	S2017 – F2018	Advisor	Geographic and climatic drivers of spruce beetle trap capture and emergence phenology in Colorado
Khum Thapa-Magar	PhD	F2017 – present	Advisor	Surveying pollinator biological and functional diversity in rangeland habitats of Colorado
Riches, MJ	PhD	F2017 – present	Outside member	Plant BVOC responses to stress
Atkins, David	MS	F2018-S2020	Advisor	Identifying reservoirs and insect vectors of pine wilt disease in the Front Range
Gelles, Ryleigh	MS	F2019-present	Advisor	Quantifying the effects of wildfire severity and wildfire mitigation treatments on biodiversity of wild bee communities
Davies, Cora	MS	F2020-present	Advisor	Effects of forest thinning on plant-pollinator networks
Dodge, Jessie	PhD	F2020-present	Advisor	Ecological restoration impacts on health of <i>Osmia lignaria</i>
Gadd, Teri	PhD	F2020-present	Advisor	Lodgepole pine stress physiology host chemistry mountain pine beetle interactions

Undergraduate research mentoring

- (2019) SADIE Internship, Native bees, Katrina Thomas (CSU)
- (2019) Research Technician, Bee biodiversity, Sarah LeVane (CSU)
- (2018) Research technician, Sawyer beetles, Abi Cohen (FRCC)
- (2018) Skills for Undergraduate Participation in Ecological Research (SUPER) program mentor, Seed allelopathy, Amy Spinden (CSU)
- (2018) Research technician, Bee biodiversity, Samuel Murray (CSU)
- (2017) Research volunteer, Yeast metabolism, Steven Edwards (CSU)
- (2017) Senior project, Spruce chemistry, Jens Yetter (Elon)
- (2016) Research volunteer, Wheat hormones, Hope Chatwin (CSU)
- (2016) Research technician, Floral volatiles, Haley Obermueller (CSU)
- (2016) Research volunteer, Spruce beetle fungus, Fiona Horne (CSU)
- (2016) Research volunteer, Spruce beetle fungus, Gaby Carbonell (CSU)
- (2016) Senior project, Plant growth & mycorrhizae, Eliot Salazar (Cal Poly)
- (2016) Research volunteer, Mosquito behavior, Ben Christensen (Cal Poly)
- (2015) Research volunteer, Insect biodiversity, Avity Norman (Cal Poly)
- (2015) REU student project, Cereal leaf beetle, Ned Caisley (UI)
- (2009) Hooper Undergraduate research project, Bark beetle yeast, Nate Foote (NAU)
- (2008) IGERT Undergraduate research project, Bark beetle yeast, Nate Foote (NAU)

5. Professional service

Professional affiliations

- (2008-present) Entomological Society of America. *Ten-year member*. (EntSoc)
(2009-present) International Union of Forest Research Organizations (IUFRO)
(2014-2016) International Society for Chemical Ecology (ISCE)
(2012-2013) Ecological Society of America (ESA)
(2004-2007) Society of American Foresters (SAF)

Committee work for professional societies

- (2020) Scientific program committee, Western Forest Insect Workshop (WFIWC), Edmonton, Alberta
(2019) Scientific program committee, Western Forest Insect Workshop (WFIWC), Anchorage, AK
(2018) Scientific program committee, Western Forest Insect Workshop (WFIWC), Denver, CO
(2017) Scientific program committee, Western Forest Insect Workshop (WFIWC), Jackson Hole, WY
(2012) Presider; contributed oral sessions: "Mutualism and Facilitation III"; Ecological Society of America, Portland OR

Editorial and peer review

Editorial work

- (2015- present) Associate Editor, *Frontiers in Ecology and Evolution*.
(2013-2015) Review Editor, *Frontiers in Ecology and Evolution*.

Peer review

Estimated >100 ad-hoc peer reviews to date, with approximately ~5-10 reviews per year. Regular proposal reviewer for USDA-NIFA and NSF.

Regular or frequent referee at:

Arthropod-Plant Interactions

Canadian Entomologist

Chemoecology

Current Biology

Ecology

Ecological Entomology

Ecology Letters

Ecology and Evolution

Ecosphere

Environmental Entomology

Frontiers in Ecology and Environment

Frontiers in Ecology and Evolution

Functional Ecology

Fungal Ecology

Journal of Applied Ecology

Journal of Chemical Ecology

Journal of Economic Entomology

Journal of Insect Behavior

Journal of Insect Science

Journal of Pest Science

Microbial Ecology

Pest Management Science

Phytochemistry

PLOS ONE

Population Ecology

PNAS

Scientific Reports

6. University extension and engagement

Extension programming

- “Biology and management of scale insects on landscape and forest trees in the Front Range”. Adult, Virtual. Number of times program was made: 1. Total number of participants: 50. Percent Responsible: 100%. 1st quarter, 2020.
- “Pine wilt disease in Colorado”. Adult, Fort Collins, Colorado. Number of times program was made: 1. Total number of participants: 30. Percent Responsible: 100%. 4th quarter, 2019.
- “Spruce beetles, symbiotic fungi, and survival: a tale of forest decline”. Adult, Telluride, Colorado. Number of times program was made: 1. Total number of participants: 50. Percent Responsible: 100%. 3rd Quarter 2019.
- “Spruce beetles in Rocky Mountain National Park”. Adult, Estes Park, Colorado. Number of times program was made: 1. Total number of participants: 50. Percent Responsible: 100%. 2nd Quarter 2019.
- “Wood borers and bark beetles on urban trees”. Adult, Fort Collins, Colorado. Number of times program was made: 1. Total number of participants: 100. Percent Responsible: 100%. 3rd Quarter 2018.
- “Pest management to promote forest health”. Adult, Colorado Springs, Colorado. Number of times program was made: 1. Total number of participants: 200. Percent Responsible: 100%. 4th quarter 2017.
- “Fungus-based pesticides for control of tree-killing bark beetles (such as spruce beetle)”. Adult, Fort Collins, Colorado. Number of times program was made: 1. Total number of participants: 40. Percent Responsible: 100%. 3rd Quarter 2017.
- “Variation in Engelmann spruce phloem monoterpenes and their association with bark beetle disturbances”. Adult, Fort Collins, Colorado. Number of times program was made: 1. Total number of participants: 50. Percent Responsible: 100%. 4th Quarter 2017.
- “What is a healthy forest?” Adult, Colorado Springs, Colorado. Number of times program was made: 1. Total number of participants: 250. Percent Responsible: 100%. 4th Quarter 2016.

Public workshops

- “Effects of warming and drought on plant protection strategies”. Adult, Fort Collins, Colorado. Number of times program was made: 1. Total number of participants: 200. Percent Responsible: 100%. 4th Quarter 2019.
- “Spruce beetle in Colorado: basic biology, outbreak patterns, and control options.” Adult, Grand Junction, Colorado. Number of times program was made: 1. Total number of participants: 150. Percent Responsible: 100%. 1st Quarter 2017.
- “Pollinator biodiversity in high elevation spruce forests of Colorado.” Adult, Denver, Colorado. Number of times program was made: 1. Total number of participants: 100. Percent Responsible: 100%. 4th Quarter 2017.

Industry consulting and advising

- For Profit Organization, Rainbow Tree Care Scientific Advancements, Fort Collins, Colorado, United States. (August 2018 - Present).
- For Profit Organization, Montana BioAgriculture, Missoula, Montana, United States. (August 2016 - November 2018).
- Government, California State Parks, Clayton, California, United States. (September 2017 - April 2018).
- For Profit Organization, Rainbow Tree Care Scientific Advancements, Denver, Colorado, United States. (April 2017 - October 2017).

Planning activities

- (2019) CSU Extension Forum. Fort Collins, CO.
- (2018) CSU Extension, Program Lead meeting. Fort Collins, CO. (2018) CSU Extension Forum. Fort Collins, CO.
- (2018) Natural Resources Consortium, Annual Meeting. USAFA, Colorado Springs, CO.
- (2018) Program Reporting Unit, Natural Resources Extension group (CSU). Denver, CO.
- (2017) Northern Colorado Pest Meeting. Fort Collins, CO.
- (2017) EAB Response Team/ Emerging Pests in Colorado (EPIC). Broomfield, CO.
- (2016) EAB Response Team/ Emerging Pests in Colorado (EPIC). Broomfield, CO.
- (2016) Front Range Urban Forestry Council. Longmont, CO.

7. Diversity and inclusion

Formal trainings

- (2020) Training. "Inclusive pedagogy and praxis", Colorado State University. Approximate Number of Hours: 4.
- (2020) Training. "Uncomfortable diversity," Colorado State University. Approximate Number of Hours: 1.
- (2020) Training. "Safe zone training," Colorado State University. Approximate Number of Hours: 3.
- (2019) Training. "Research mentor training for faculty," Colorado State University. Approximate Number of Hours Spent: 4.
- (2018) Training, "Notice and respond training," Colorado State University. Approximate Number of Hours Spent Per Year: 2.
- (2018) Training, "Inclusive pedagogy and teaching practices," Colorado State University. Approximate Number of Hours Spent Per Year: 2.
- (2018) Training, "Multicultural organizational development and change framework," Colorado State University. Approximate Number of Hours Spent Per Year: 2.
- (2017) Training, "Best practices for inclusive classrooms," Colorado State University. Approximate Number of Hours Spent Per Year: 2.
- (2016) Training, "Implicit bias," Colorado State University. Approximate Number of Hours Spent Per Year: 2.

Programs

- (2021) **S**cience and **D**iversity: Internships in **E**cology (SaDIE program). Formal scientific mentoring of select high school students from disadvantaged and/or underrepresented populations. Partner with Poudre School District in Fort Collins, CO. 3 interns mentored.
- (2019) **S**cience and **D**iversity: Internships in **E**cology (SaDIE program). Formal scientific mentoring of select high school students from disadvantaged and/or underrepresented populations. Partner with Poudre School District in Fort Collins, CO. 1 intern mentored.