

Gregory J. Wiggins
Curriculum Vitae

EDUCATION

- **Ph.D., Plants, Soils, and Insects**
UNIVERSITY OF TENNESSEE
December 2009
KNOXVILLE, TENNESSEE
- **Masters of Science, Entomology and Plant Pathology**
UNIVERSITY OF TENNESSEE
December 1997
KNOXVILLE, TENNESSEE
- **Bachelor of Arts, Biology**
SOUTHERN ADVENTIST UNIVERSITY
August 1994
COLLEGEDALE, TENNESSEE

EMPLOYMENT

National Institute for Mathematical and Biological Synthesis, University of Tennessee,
Knoxville, Tennessee

- **Education and Outreach Coordinator, May 2017-Present**

Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, Tennessee

- **Adjunct Professor, June 2017-Present**
- Research Assistant Professor, May 2010 – April 2017
- Research Associate, January 2010 – April 2010
- Graduate Research Assistant (Half-time) and Research Associate (Half-time),
January 2004 –December 2009
- Research Associate, January 1998 –December 2003
- Graduate Research Assistant, August 1995 -December 1997

REFEREED PUBLICATIONS

Carrasco, L., M. Papes, E. Lochner, B. Ruiz, A. Williams, and **G. Wiggins**. Potential regional declines in species richness of tomato pollinators in North America under climate change. Ecological Applications [in journal review].

Liang, W., L. Tran, **G. Wiggins**, J. Grant, Monica Papeş, S. Stewart, and R. Washington-Allen. Modeling invasions with geopolitical-unit level records: comparing performances of common methods on estimating overall spread rate and dynamics. Applied Geography [in journal review].

1. Jubb, C.S., A. Heminger, A. Mayfield, J. Elkinton, **G. Wiggins**, J. Grant, J. Lombardo, T. McAvoy, R. Crandall, and S. Salom. 2019. Impact of the biological control agent, *Laricobius nigrinus*, on hemlock woolly adelgid sistens generation and their ovisacs in the eastern United States. Biological Control 143:104180 doi: 10.1016/j.biocontrol.2019.104180.
2. Liang, W., L. Tran, **G. Wiggins**, S. Stewart, R. Washington-Allen, and J. Grant. 2019. Determining spread rate of kudzu bug (Hemiptera: Plataspidae) and its associations with environmental factors in a heterogenous landscape. Environmental Entomology 48: 309-317. doi: 10.1093/ee/nvz014.
3. Liang, W., M. Papeş, L. Tran, J. Grant, R. Washington-Allen, S. Stewart, **G. Wiggins**. 2018. The effect of pseudo-absence selection method on transferability of species distribution

- models in the context of non-adaptive niche shift. *Ecological Modeling* 388: 1-9. DOI: 10.1016/j.ecolmodel.2018.09.018.
4. **Wiggins, G.**, E. Benton, J. Grant, M. Kerr, and P. Lambdin. 2018. Short-term detection of imidacloprid in streams following applications in forest. *Journal of Environmental Quality* 47: 571-578. DOI:10.2134/jeq2017.11.0446.
5. Hakeem, A. J. Grant, P. Lambdin, F. Hale, J. Rhea, **G. Wiggins** and C. Coots. 2018. Influence of Imidacloprid and horticultural oil on spider abundance within eastern hemlock canopies in the southern Appalachians. *Environmental Entomology* 47: 951-959. DOI: 10.1093/ee/nvy065.
6. Liang, W., L. Tran, R. Washington-Allen, **G. Wiggins**, S. Stewart, J. Vogt, and J. Grant. 2018. Predicting the potential biological invasion of kudzu bug (*Megacopta cribraria*) in North and South America. *Biological Invasions* 20: 2899-2913. doi.org/10.1007/s10530-018-1743-y.
7. **Wiggins, G.**, J. Grant, J. Rhea, A. Mayfield, A. Hakeem, P. Lambdin, and A. Lamb Galloway. 2016. Emergence, seasonality, and hybridization of *Laricobius nigrinus*, an introduced predator of hemlock woolly adelgid, in the Tennessee Appalachians. *Environmental Entomology* 45: 1371-1378. DOI:10.1093/ee/nvw128.
8. **Wiggins, G.**, J. Grant, J. Rhea, A. Hakeem, and P. Lambdin. 2016. A field-based method to estimate densities of *Laricobius nigrinus* (Coleoptera: Derodontidae), an introduced predator of hemlock woolly adelgid (Hemiptera: Adelgidae). *Florida Entomologist* 99: 805-807. DOI: 10.1653/024.099.0442.
9. Britt, K., J. Grant, **G. Wiggins**, and S. Stewart. 2016. Prevalence and localized impact of the entomopathogenic fungus *Beauveria bassiana* on kudzu bug (*Megacopta cribraria*) in Eastern Tennessee. *Journal of Entomological Science* 51: 321-324. DOI:0.18474/JES16-26.1.
10. Daniels, D., K. Nix, P. Wadl, L. Vito, **G. Wiggins**, M. Windham, B. Ownley, P. Lambdin, J. Grant, P. Merten, W. Klingeman, and D. Hadziabdic. 2016. Thousand cankers disease complex: A forest health issue that threatens *Juglans* species across the U.S. *Forests* 7: 260. DOI:10.3390/f7110260.
11. Hooie, N., **G. Wiggins**, P. Lambdin, J. Grant, S. Powell, and J. Lelito. 2015. Native parasitoids and recovery of *Spathius agrili* from areas of release against emerald ash borer in eastern Tennessee, USA. *Biocontrol Science and Technology* 25:345-351. DOI: 10.1080/09583157.2014.971712.
12. Hadziabdic D., P. Wadl, M. Staton, W. Klingeman, J. Moulton, J. Pscheidt, **G. Wiggins**, J. Grant, P. Lambdin, M. Windham, M. Faccoli, P. Merten, and R. Trigiano. 2015. Development of microsatellite loci in *Pityophthorus juglandis*, a vector of thousand cankers disease in *Juglans* spp. *Conservation Genetics Resources* 7: 431-433. DOI: 10.1007/s12686-014-0388-0.
13. **Wiggins, G.**, J. Grant, P. Lambdin, P. Merten, K. Nix, D. Hadziabdic, and M. Windham. 2014. Discovery of walnut twig beetle, *Pityophthorus juglandis*, from forested black walnut, *Juglans nigra*, in the Eastern U.S. *Forests* 5: 1185-1193. DOI: 10.3390/f5061185.
14. Nix, K., C. Coots, P. Lambdin, J. Grant, D. Paulsen, **G. Wiggins**, and P. Merten. 2014. Concentrations of imidacloprid and olefin-imidacloprid metabolite in the walnut husk maggot (Diptera: Tephritidae). *Florida Entomologist* 97: 1848-1851. DOI: 10.1653/024.097.0465.
15. Hadziabdic, D., M. Windham, R. Baird, L. Vito, Q. Cheng, J. Grant, P. Lambdin, **G. Wiggins**, A. Windham, P. Merten, and G. Taylor. 2014. First report of *Geosmithia*

- morbida* in North Carolina: The pathogen involved in thousand cankers disease of black walnut. *Plant Disease* 98: 992. DOI: 10.1094/PDIS-06-13-0630-PDN.
16. Hakeem, A., J. Grant, **G. Wiggins**, P. Lambdin, F. Hale, D. Buckley, J. Rhea, J. Parkman, and G. Taylor. 2013. Factors affecting establishment and recovery of *Sasajiscymnus tsugae* (Coleoptera: Coccinellidae), and introduced predator of hemlock woolly adelgid (Hemiptera: Adelgidae) on eastern hemlock (Pinales: Pinaceae). *Environmental Entomology* 42: 1272-1280. DOI: 10.1603/EN13017.
 17. **Wiggins, G.**, and J. Grant. 2012. New distribution record of *Larinus planus* (Coleoptera: Curculionidae) in Tennessee. *Journal of Entomological Science* 47: 92-94. doi.org/10.18474/0749-8004-47.1.92.
 18. Grant, J., M. Windham, W. Haun, **G. Wiggins**, and P. Lambdin. 2011. Initial assessment of thousand cankers disease on black walnut, *Juglans nigra*, in eastern Tennessee. *Forests* 2: 741-748. DOI: 10.3390/f2030741.
 19. Hakeem, A., J. Grant, **G. Wiggins**, P. Lambdin, and J. Rhea. 2011. Establishment and coexistence of two predators, *Laricobius nigrinus* and *Sasajiscymnus tsugae*, introduced against hemlock woolly adelgid on eastern hemlock. *Biocontrol Science and Technology* 21: 687-691. DOI: 10.1080/09583157.2011.571351.
 20. **Wiggins, G.**, J. Grant, P. Lambdin, J. Ranney, J. Wilkerson, A. Reed, and R. Follum. 2010. Host utilization of field-caged native and introduced thistle species by *Rhinocyllus conicus*. *Environmental Entomology* 39: 1858-1865. DOI: 10.1603/EN10053.
 21. **Wiggins, G.**, J. Grant, P. Lambdin, J. Ranney, J. Wilkerson, and F. van Manen. 2010. Spatial prediction of habitat overlap of introduced and native thistles to identify potential areas of non-target activity of biological control agents. *Environmental Entomology* 39: 1866-1877. doi: 10.1603/EN10112.
 22. Vlach, J., P. Lambdin, C. Dilling, J. Grant, D. Paulsen, and **G. Wiggins**. 2010. Diversity of the insect fauna within the unique Sinking Pond habitat in Middle Tennessee. *Journal of the Tennessee Academy of Science* 85:62-86.
 23. Hakeem, A., J. Grant, P. Lambdin, D. Buckley, F. Hale, J. Rhea, **G. Wiggins**, G. Taylor. 2010. Recovery of *Sasajiscymnus tsugae* (Coleoptera: Coccinellidae), released against hemlock woolly adelgid, *Adelges tsugae*, in the southern Appalachians. *Biocontrol Science and Technology* 20:1069-1074. doi.org/10.1080/09583157.2010.505323.
 24. **Wiggins, G.**, J. Grant, P. Lambdin, J. Ranney, and J. Wilkerson. 2009. First documentation of adult *T. horridus* on several non-target native *Cirsium* species in Tennessee. *Biocontrol Science and Technology* 19: 993-998. DOI: 10.1080/09583150903191343.
 25. Curler, G. and **G. Wiggins**. 2009. Introduction, Topic: Current APHIS/PPQ regulations on imported agricultural commodities are science-based and appropriately rigorous to protect United States agriculture while facilitating global trade, pg. 149, *IN* W. V. Aponte-Cordero and A. L. Nielsen [eds.], *Student Debate: Understanding biosecurity and its limitations*. *American Entomologist* 55 (3): 148-156. doi.org/10.1093/ae/55.3.148.
 26. Yuan, J., T. Kollner, **G. Wiggins**, J. Grant, J. Degenhardt and F. Chen. 2008. Molecular and genomic basis of volatile-mediated indirect defense against insects in rice. *The Plant Journal* 55: 491-503. DOI: 10.1111/j.1365-313X.2008.03524.x.
 27. Yuan, J., T. Kollner, **G. Wiggins**, J. Grant, N. Zhao, X. Zhuang, J. Degenhardt, and F. Chen. 2008. Elucidation of the genomic basis of indirect plant defense against insects. *Plant Signaling and Behavior* 3: 720-721.
 28. **Wiggins, G.**, J. Grant, and P. Lambdin. 2007. Diversity of darkling beetles (Coleoptera: Tenebrionidae) from Arnold Air Force Base in the Barrens of the eastern Highland Rim,

- Tennessee. *Natural Areas Journal* 27: 66-71. DOI: 10.3375/0885-8608(2007)27[66:DODBCT]2.0.CO;2.
29. **Wiggins, G.**, J. Grant, M. Windham, R. Vance, B. Rutherford, R. Klein, K. Johnson, and G. Taylor. 2004. Associations between causal agents of the beech bark disease complex [*Cryptococcus fagisuga* (Homoptera: Cryptococcidae), and *Nectria* spp.] in the Great Smoky Mountains National Park. *Environmental Entomology* 33:1274-1281. DOI: 10.1603/0046-225X-33.5.1274.
 30. Grant, J., A. Mayor, P. Lambdin, and **G. Wiggins**. 2003. New species records and incidence of bark beetles and ambrosia beetles (Coleoptera: Scolytidae) from the Barrens of Middle Tennessee, USA. *Natural Areas Journal* 23: 278-283.
 31. Lambdin, P., J. Grant, and **G. Wiggins**. 2003. Diversity of the true bugs (Hemiptera: Heteroptera) on Arnold Air Force Base, Tullahoma, Tennessee. *Journal of the Tennessee Academy of Science* 78:76-84.
 32. **Wiggins, G.**, D. Etnier, J. Grant, P. Lambdin, and A. Mayor. 2001. New Tennessee records for *Wormalia shawnee*, *Oligostomis ocelligera*, *Oligostomis pardalis*, and *Pychnopsyche rossi* (Trichoptera). *Entomological News* 112: 187-190.
 33. **Wiggins, G.**, J. Grant, and W. Welbourn. 2001. *Allothrombium mitchelli* (Acari: Trombidiidae) in the Great Smoky Mountains National Park: Incidence, seasonality, and predation on beech scale (Homoptera: Eriococcidae). *Annals of the Entomological Society of America* 94: 896-901. DOI: 10.1603/0013-8746(2001)094[0896:AMATIT]2.0.CO;2.

BOOK CHAPTER

1. Grant, J., J. Rhea, **G. Wiggins**, A. Hakeem, and P. Lambdin. 2011. Whole tree enclosures: A tool to assess introduced predators of hemlock woolly adelgid, *Adelges tsugae*, pp. 161-167. In R. Reardon and B. Onken (eds.), *Implementation and Status of Biological Control of the Hemlock Woolly Adelgid*. USDA Forest Service, Morgantown, WV, FHTET-2011-04.

EXTENSION/OUTREACH PUBLICATIONS

1. McCarty, E., **G. Wiggins**, and D. Coyle. 2019. [Biology and Management of the Hemlock Woolly Adelgid in the Eastern U.S.](#) Southern Regional Extension Forestry Fact Sheet SREF-FH-012 (online).
2. Lenhart, S., and **G. Wiggins**. Education Column: Connecting with Teachers. 2019. *Association for Women in Mathematics Newsletter* 49: 29-31.
3. Hale, F., **G. Wiggins**, P. Lambdin, and J. Grant. 2006. [Beech scale, a potential threat in the landscape](#). University of Tennessee Extension Publication SP503-H (online).

GRANT FUNDING AND GRANT SCHOLARSHIP

Received (over \$1,586,000.00 Total since 2011)

1. **Wiggins, G.**, and M. Papeş. 2019. Modeling Habitat Suitability for Black Walnut and Walnut Twig Beetle in the Eastern U.S. USDA Forest Service, Forest Health Protection, **\$24,994.00**.
2. Lenhart, S., **G. Wiggins**, and L. Gross. 2019. The 2019 NIMBioS Undergraduate Research Conference at the Interface of Biology and Mathematics. NSF Division of Undergraduate Education, **\$20,150.00**.
3. Lenhart, S., and **G. Wiggins**. 2018. Advancing undergraduate training via mathematical modeling of biological systems. National Security Agency Mathematical Sciences Program, **\$77,922.00**.

4. Lenhart, S., **G. Wiggins**, and L. Gross. 2018. The 2018 NIMBioS Undergraduate Research Conference at the Interface of Biology and Mathematics. NSF Division of Undergraduate Education, **\$20,150.00**.
5. Grant, J., and **G. Wiggins**. 2015. Geographical comparisons of the synchrony and phenology of emerald ash borer and its introduced larval parasitoids in Tennessee. USDA APHIS, **\$302,730.00**.
6. Grant, J., **G. Wiggins**, and P. Parkman. 2015. Coastal strain of *Laricobius nigrinus*: Assessment of impact on hemlock woolly adelgid. USDA Forest Service, **\$23,750.00** (Grant continuation with new funding).
7. Grant, J., **G. Wiggins**, and P. Parkman. 2014. Coastal strain of *Laricobius nigrinus*: Assessment of impact on hemlock woolly adelgid. USDA Forest Service, **\$35,000.00**.
8. Grant, J., **G. Wiggins**, P. Lambdin, and M. Windham. 2014. Distribution and dispersal of walnut twig beetle, causative agent of thousand cankers disease, on black walnuts in forested systems. USDA Forest Service, **\$70,512.00**.
9. **Wiggins, G.**, J. Grant, E. Benton, and P. Lambdin. 2013. Detection and peak concentrations of imidacoprid in streams following treatment of eastern hemlock. USDA Forest Service, Pesticide Impact Assessment Program, **\$49,591.00**.
10. Grant, J., and **G. Wiggins**. 2013. Assessment of new technologies to establish and evaluate introduced parasitoids of emerald ash borer: Focus on the southern United States. USDA APHIS PPQ, **\$70,000.00** (Grant continuation with new funding).
11. Hadziabdic, D., M. Windham, P. Lambdin, J. Grant, **G. Wiggins**, P. Wadl, and R. Trigiano. 2013. Thousand cankers disease in the Eastern United States: Monitoring, Early Molecular Detection and Distribution. USDA Forest Service, Southern Region, **\$149,688.00**.
12. Grant, J., A. Windham, E. Long, F. Hale, M. Windham, P. Lambdin, and **G. Wiggins**. 2012. Regional outreach plan to educate the public and endusers, train students, and enhance management of thousand cankers disease on black walnut in its native range. USDA APHIS Farm Bill, **\$129,384.00**.
13. Grant, J., **G. Wiggins**, A. Lamb, P. Lambdin, A. Mayfield, and P. Parkman. 2011. Laboratory and field studies to enhance management efforts using biological and chemical control tactics against hemlock woolly adelgid. USDA Forest Service, Southern Region, **\$498,392.00**.
14. Grant, J., and **G. Wiggins**. 2011. Assessment of new technologies to establish and evaluate introduced parasitoids of emerald ash borer: Focus on the southern United States. USDA APHIS PPQ, **\$123,275.00**.
15. Grant, J., **G. Wiggins**, M. Windham, and P. Lambdin. 2011. Survey and detection to determine presence and distribution of thousand cankers disease on black walnut in Tennessee forests. USDA Forest Service, Southern Region, **\$33,572.00**.

OUTREACH/EDUCATION AND TEACHING ACTIVITIES

Outreach/Education/Extension Activities

- Project Manager. Enhancing quantitative and data science education for graduate students in biomedical Science at the University of Tennessee. funded by Burroughs Wellcome Fund, 2018-2020.
- Co-organized [NIMBioS Expanding Your Horizons](#) STEM Activity Day for Middle School Girls, November 9, 2019 (52 middle school students).

- Assisted with organization and coordination of NIMBioS Summer Research Experiences for Undergraduates, Summer [2017](#), [2018](#), and [2019](#) (48 students and one high school teacher total).
- Assisted with organization, coordination, hosting, and moderating the NIMBioS Annual Undergraduate Research Conference at the Interface of Biology and Mathematics, [2017](#), [2018](#), and [2019](#) (ca. 120 participants/year).
- Co-mentored three undergraduate students participating in a project I helped develop titled '[Climate Change as a Driver of Change in Human-Wildlife Interactions](#)', Summer 2019.
- Co-mentored three undergraduate students participating in a project I developed titled '[Ecological Niche Modeling and Risk Assessment of Thousand Cankers Disease](#)', Summer 2018.
- Co-organized the University of Tennessee Summer STEM Poster Symposium, July 2017 - 2019 (ca. 100 participants each summer).
- Assisted with organization, coordination, and hosting Adventures in STEM: An Engineering, Math, and Biology Camp for Middle School Girls, June [2017](#), [2018](#), and [2019](#) (52 students total).
- Presented NIMBioS 'Biodiversity Counts' interactive display at '[Get-and-Go STEMbugs Workshop](#)', Joint Meeting of the Entomological Society of America, Entomological Society of Canada, and Entomological Society of British Columbia, Vancouver, BC, Canada. November 11-14, 2018.
- Presented NIMBioS interactive displays at Insect Festival, Annual Meeting of the Tennessee Entomological Society, Knoxville, TN, October 4-5, 2018 (ca. 150 attendees).
- Presented NIMBioS interactive displays at Ask-A-Scientist STEAM Con, Knoxville, TN, July 29, 2018 (ca. 200 attendees).
- Co-organized NIMBioS Tutorial '[Applications of Spatial Data: Ecological Niche Modeling](#)', one in May and one in December, 2018 (62 total participants).
- Served as a mentor for students in the UT-STEM Alliance (NSF-funded program to increase success of persons with disabilities in STEM fields), 2017 and 2018 (10 students).
- Co-organized workshop 'Transitions for STEM Students with Disabilities', November 28, 2017 (28 participants).
- Presented talk titled 'Emerald Ash Borer and Walnut Twig Beetle Research' for Forest Research Overview Gathering Field Day 2017, Forest Resources AgResearch and Education Center, Oliver Springs, TN, September 22, 2017 (30 attendees).
- Assisted with organization and coordination of the NIMBioS Accelerator Tutorial Phylogenetic Analysis Using RevBayes, August 7-11, 2017 (18 participants).
- Assisted with organization and coordination of the NIMBioS Tutorial Uncertainty Quantification for Biological Models, June 26-28, 2017 (35 participants).
- Presented talk titled 'Conservation Biocontrol in Tennessee: Strengths, Opportunities, and Obstacles' for the NRCS, Xerces Society for Invertebrate Conservation Short Course 'Farming with Beneficial Insects for Pest Control', Knoxville, TN, June 9, 2017. (45 attendees).
- Assisted with organization and coordination of the Joint 2017 MBI-NIMBioS-CAMBAM Summer Graduate Program: Connecting Biological Data with Mathematical Models, June 19- 23, 2017 (50 participants).
- Assisted with or supervised numerous entomological outreach programs to over 20 Knoxville-area (in Claxton, Coalfield, Farragut, Fountain City, Friendsville, Gibbs,

Harrogate, Huntsville, Knoxville, Maryville, Maynardville, Oak Ridge, Oneida, Rutledge, Seymour, and Washburn, TN) elementary schools, 1996 through 2012 (ca. 300 attendees per school, ca. three programs per year, ca. 13,000 total attendees).

- Organized and directed field trips highlighting symptoms and impact of emerald ash borer and thousand cankers disease and presented two informational talks as part of the Emerald Ash Borer/Thousand Cankers Disease Hands-on Workshop, Knoxville, TN. June 2015 (28 attendees).
- Helped organize and direct an instructional lab tour in association with the Conference on Emerald Ash Borer and Thousand Cankers Disease in the Eastern United States, Knoxville, TN, November 2011, 2012, and 2013 (15 - 25 tour attendees per year, ca. 60 total attendees).
- Helped organize interactive educational insect displays for, and participated in University of Tennessee's annual "Ag Day", an exhibition that showcases the activities of the agricultural-based departments to alumni and the general public, Fall 1998 through 2016 (ca. 1,000 attendees per year, ca. 14,000 total attendees).
- Helped develop, organize, and direct a workshop on insect pests and diseases of woody ornamentals for the Horticulture Inspector Society, Southern Chapter, September 2011 (ca. 100 attendees).
- Helped organize and participated in a workshop detailing how to survey and process samples of black walnut, *Juglans nigra*, for the agents (*Pityophthorus juglandis* and *Geosmithia morbida*) of thousand cankers disease, July 2011 (ca. 80 attendees).
- Helped develop and finalize electronic educational modules addressing such subjects as an introduction to entomology, influence of insects on art and culture, the use of insects as natural enemies against pests, and impact of insects and diseases on forest systems for use in classes (such as "*Diseases and Insects of Ornamental Plants*") and workshops, 2002 to 2011.
- Helped organize interactive educational insect displays for, and participated in University of Tennessee's "Bloom's Days," a fund-raising event for the University Gardens, June 2004 through 2010, 2012 (ca. 500 attendees per year, ca. 3,500 total attendees).

Teaching Activities

- Co-instructor (with Jerome Grant, Paris Lambdin, and Ashley Lamb) for EPP 608 (a Ph.D. course) entitled '*Invasive Insects and Biological Control*', Spring 2010.
- Provided guest lecture for 'Insects and Diseases of Forests' (EPP 411, Paris Lambdin, professor) entitled 'Management of Hemlock Woolly Adelgid and Eastern Hemlock', Fall 2019.
- Provided guest lecture for '*Impact of Insects and Plant Diseases on Human Societies*' (EPP 201, Paris Lambdin, professor) entitled 'Use of insects to control invasive weeds: Lessons from musk thistle', Fall 2011 to 2019.
- Provided guest lecture on field sampling techniques and other assistance for '*Integrated Pest Management*' (EPP 530, Jerome Grant, professor), even years Fall 2002 to 2014.
- Assisted with labs of Insect Morphology (EPP 552, Jerome Grant and Paris Lambdin, professors) and Field Crop and Vegetable Insects (EPP 523, Jerome Grant, professor), 2004 to 2010.
- Completed "*Best Practices in Teaching Program*" offered by the Graduate School at the University of Tennessee to enhance the teaching skills of graduate assistants, graduate associates, postdoctoral lecturers, and new faculty, Fall 2006 through Spring 2007.

PRESENTATIONS

I have served as first author on >100 and as co-author on >95 talks and posters over my entire career. Listed below are presentations at professional meetings since 2010.

PROCEEDINGS AND ABSTRACTS (Since 2010; co-author on 35 other presentations)

1. **Wiggins, G.**, E. Benton, J. Grant, and P. Lambdin. 2017. Short-term detection of imidacloprid in streams following treatment of eastern hemlock. Proceedings of the 28th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 10-13, pg. 80.
2. **Wiggins, G.**, J. Grant, F. Palmer, and J. Gould. 2016. Emerald ash borer and its parasitoids in the Southeast. Proceedings: 2016 Emerald Ash Borer Research and Technology Development Meeting, Wooster, OH, October 19-20, pg. 31.
3. **Wiggins, G.**, J. Grant, P. Parkman, J. Webster, E. Benton, R. Rhea, and P. Lambdin. 2016. Influence of record cold in the southeastern U.S. on hemlock woolly adelgid and its introduced natural enemies. Proceedings of the 27th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 12-15, pg. 99.
4. **Wiggins, G.**, J. Grant, P. Parkman, J. Webster, E. Benton, R. Rhea, and P. Lambdin. 2015. From Polar Vortex to Siberian Express: Implications of record cold in the southeastern U.S. to hemlock woolly adelgid. Proceedings of the 57th Southern Forest Insect Work Conference, Fayetteville, AR, July 21-24, pp. 31-32.
5. **Wiggins, G.**, J. Grant, P. Lambdin, and N. Hooie. 2015. Overwintering of *Spathius agrili* in a southern climate: Fact or fiction? Proceedings of the 26th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 13-16, pg. 96.
6. **Wiggins, G.**, J. Grant, R. Rhea, J. Webster, E. Benton, P. Parkman, and P. Lambdin. 2015. Enhancing management of hemlock woolly adelgid by establishing a Biological Control Demonstration Site. Proceedings of the 26th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 13-16, pg. 95.
7. **Wiggins, G.**, J. Grant, P. Lambdin, P. Merten, K. Nix, D. Hadziabdic, and M. Windham. 2014. Discovery of walnut twig beetle, *Pityophthorus juglandis*, associated with forested black walnut, *Juglans nigra*, in the eastern U.S. Proceedings of the 56th Southern Forest Insect Work Conference, Charleston, SC, July 22-25, pg. 32.
8. **Wiggins, G.**, J. Grant, R. Rhea, P. Parkman, J. Webster, E. Benton, and P. Lambdin. 2014. Establishment of a hemlock woolly adelgid biological control demonstration site in the Great Smoky Mountains National Park. Proceedings of the 56th Southern Forest Insect Work Conference, Charleston, SC, July 22-25, pp. 32-33.
9. **Wiggins, G.**, J. Grant, P. Lambdin, N. Hooie, and J. Lelito. 2013. Parasitoids to the rescue? Biological control efforts against emerald ash borer in Tennessee. Proceeding of the 55th Southern Forest Insect Work Conference, New Orleans, LA, July 23-26, pg. 46.
10. **Wiggins, G.**, J. Grant, A. Hakeem, P. Lambdin, J. Rhea, and G. Taylor. 2012. Establishment and dissemination of *Sasajiscymnus tsugae* ten years after initial releases in the Great Smoky Mountains National Park. Proceedings of the 54th Southern Forest Insect Work Conference, Charlottesville, VA, July 20-23, pgs. 46-47.
11. **Wiggins, G.**, J. Grant, A. Mayfield, A. Lamb, A. Hakeem, and P. Lambdin. 2011. Emergence cages: An effective tool to assess emergence of *Laricobius* spp. in the southern Appalachians? Proceedings of the North American Forest Insect Work Conference, Portland, OR. May 9-12 2011, pg. 117.

12. **Wiggins, G.**, Hakeem, A., R. Follum, R. Rhea, P. L. Lambdin, and J. F. Grant. 2010. Seasonality of established populations of *Sasajiscymnus tsugae* on eastern hemlock in the southern Appalachians. Proceedings of the Fifth Hemlock Woolly Adelgid Symposium, Asheville, NC, August 17-19, pp. 203-205.
13. **Wiggins, G.**, Hakeem, A., R. Follum, D. Paulsen, R. Rhea, P. L. Lambdin, and J. F. Grant. 2010. Assessment of tree health characteristics following releases of predatory beetles on eastern hemlock. Proceedings of the Fifth Hemlock Woolly Adelgid Symposium, Asheville, NC, August 17-19, pp. 206-209.
14. **Wiggins, G.**, A. Hakeem, R. Follum, J. F. Grant, and P. L. Lambdin. 2010. Cicadas in the midst: A glimpse of the 17-year periodical cicada in a mixed stand of eastern hemlock. Proceedings of the 53rd Southern Forest Insect Work Conference, Wilmington, NC, July 20-23, pg. 26.

INVITED PRESENTATIONS (Since 2010)

1. **Wiggins, G.** 2018. Town Hall Interactive Panel Discussion of Broadening Participation Success in Center-Scale Activities. NSF INCLUDES Summit: Broadening Participation through Center-Scale Research Activities (**Invited Speaker and Panelist**, 10minute talk, 40-minute panel)
2. **Wiggins, G.**, J. Grant, P. Lambdin, and P. Parkman. 2017. Biological control of invasive forest pests in Tennessee. 91st Annual Meeting of the Southeastern Branch of the Entomological Society of America, Memphis, TN, March 12-15. (**Invited Speaker**, 20-minute)
3. **Wiggins, G.**, J. Grant, and P. Lambdin. 2016. Biological control as an ecologically-based pest management technique in forest systems. Proceedings: The XXV International Congress of Entomology, Orlando, FL, September 25-30 (**Invited speaker**, 15-minute), doi: 10.1603/ICE.2016.93691.
4. **Wiggins, G.**, J. Grant, P. Lambdin, and P. Parkman. 2016. From predators to parasitoids: Biological control of invasive insect pests of Tennessee forests. 90th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Raleigh, NC, March 13-16. (**Invited Speaker**, 20-minute)
5. **Wiggins, G.**, J. Grant, R. Rhea, A. Hakeem, P. Parkman, and P. Lambdin. 2015. Promising predators: Biological control of hemlock woolly adelgid in Tennessee. 89th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Biloxi, MS, March 15-18. (**Invited speaker**, 20-minute)
6. **Wiggins, G.**, J. Grant, R. Rhea, A. Hakeem, P. Parkman, and P. Lambdin. 2014. Biological control of hemlock woolly adelgid in Tennessee: Twelve years later. Proceedings of the 56th Southern Forest Insect Work Conference, Charleston, SC, July 22-25, pg. 24 (**Invited speaker**, 20 minutes)
7. **Wiggins, G.** 2013. Thousand cankers disease in the forest: What is a forest? 3rd Annual Conference on Thousand Cankers Disease and Emerald Ash Borer in the Eastern U.S., Knoxville, TN, December 11-13. (**Invited speaker**, 15-minute)
8. **Wiggins, G.**, J. Grant, A. Hakeem, C. Coots, and P. Lambdin. 2013. Management of hemlock woolly adelgid: Traditional techniques yield novel technologies IN Student Symposium “Invasive Species and Novel Methods of Identification, Monitoring, and Control”. 87th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Baton Rouge, LA, March 3-6. (**Invited speaker**, 25-minute)

9. **Wiggins, G.** 2012. How safe are the weed biological control agents that have been released? IN Member Symposium “Improving the Safety and Effectiveness of Biological Control Agents of Weeds in the U.S.A”. Annual Meeting of the Entomological Society of America, Knoxville, TN. November 11-14. (**Invited speaker**, 15-minute).
10. **Wiggins, G.** 2011. Walnut twig beetle research at the University of Tennessee: Identification, biology, and relationship to TCD. 13th Annual Horticultural Inspection Society, Southern Chapter, Knoxville, TN. September 12-15. (**Invited speaker**, 30-minute)

PRESENTATIONS AT PROFESSIONAL MEETINGS (Since 2010; not listed above in Proceedings and Abstracts)

Oral Presentations (co-author on 18 other presentations)

1. **Wiggins, G.,** M. Papes, and B. Alred. 2019. Niche modeling of walnut twig beetle in a changing climate. Southern Appalachian Forest Entomologist/Pathologist Seminar, Crossnore, TN, March 14-15.
2. **Wiggins, G.,** E. Benton, J. Grant, and P. Lambdin. 2018. Short-term detection of imidacloprid in streams adjacent to treated hemlock stands. Annual Meeting of the Tennessee Entomological Society, Knoxville, TN, October 4-5. (15-minute)
3. **Wiggins, G.,** J. Grant, and P. Lambdin. 2015. Recovery of introduced parasitoids of emerald ash borer in Tennessee. Annual Meeting of the Tennessee Entomological Society, Knoxville, TN, October 15-16. (15-minute)
4. **Wiggins, G.** 2015. Rating and evaluating ash stands: Learning from our mistakes. Emerald Ash Borer Hands-on Workshop, Knoxville, TN. June 17-18. (15-minute)
5. **Wiggins, G.** 2015. Implementation and assessment of biological control of EAB. Emerald Ash Borer Hands-on Workshop, Knoxville, TN. June 17-18. (15-minute)
6. **Wiggins, G.,** A. Hakeem, J. Grant, R. Rhea, and P. Lambdin. 2015. Field assessments and remotely-sensed imagery as tools to evaluate hemlock tree health and mortality. Southern Appalachian Forest Entomology/Pathology Workshop, Crossnore, NC. March 5-6. (10-minute)
7. **Wiggins, G.,** N. Hooie, J. Grant, P. Lambdin, and J. Lelito. 2014. Biological control of emerald ash borer in a southern climate: Can they take the heat? Annual Meeting of the Entomological Society of America, Portland, OR, November 16-19. (12-minute)
8. **Wiggins, G.,** J. Grant, P. Lambdin, and N. Hooie. 2014. Biological control of emerald ash borer in a southern climate: Is Tennessee the place to be? Annual Meeting of the Tennessee Entomological Society, Knoxville, TN, October 16-17. (15-minute)
9. **Wiggins, G.,** J. Grant, A. Hakeem, R. Rhea, P. Lambdin, G. Taylor, and J. Webster. 2014. *Sasajiscymnus tsugae* and *Laricobius nigrinus*: Are the beetles making a hard day’s night for hemlock woolly adelgid? The Great Smoky Mountains Science Colloquium, Gatlinburg, TN, March 21. (20-minute)
10. **Wiggins, G.,** J. Grant, P. Lambdin, P. Merten, and M. Windham. 2014. Forested black walnut and walnut twig beetle: Is walnut twig beetle at home in the woods? Southern Appalachian Forest Entomology/Pathology Workshop, Crossnore, NC. March 6-7. (10-minute)
11. **Wiggins, G.,** J. Grant, P. Lambdin, A. Hakeem, R. Rhea, G. Taylor, and J. Webster. 2014. Good neighbors? Coexistence of *Sasajiscymnus tsugae* and *Laricobius nigrinus* in the Great Smoky Mountains National Park. Southern Appalachian Forest Entomology/Pathology Workshop, Crossnore, NC. March 6-7. (10-minute)

12. **Wiggins, G.,** J. Grant, P. Lambdin, P. Merten, M. Windham, D. Johnson, and K. Nix. 2014. Walnut twig beetle in forests: Implications for spread of thousand cankers disease. 88th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Greenville, SC, March 2-5. (12-minute)
13. **Wiggins, G.,** J. Grant, P. Lambdin, A. Hakeem, R. Follum, R. Rhea, G. Taylor. 2013. Spread of *Sasajiscymnus tsugae* and coexistence with *Laricobius* species: Won't you be my neighbor? Annual Meeting of the Entomological Society of America, Austin, TX, November 10-13. (12-minute)
14. **Wiggins, G.,** J. Grant, R. Rhea, A. Hakeem, P. Parkman, and P. Lambdin. 2013. Cloudy with a chance of *Sasajiscymnus tsugae*: Implications for biological control of hemlock woolly adelgid. Annual Meeting of the Tennessee Entomological Society, Nashville, TN, October 17-18. (15-minute)
15. **Wiggins, G.,** J. Grant, A. Hakeem, P. Lambdin, A. Mayfield, and R. Rhea. 2013. Emergence and seasonal abundance of *Laricobius nigrinus* in the Southern Appalachians. Hemlock Woolly Adelgid Work Group Meeting, in conjunction with 24th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 8. (10-minute)
16. **Wiggins, G.,** J. Grant, J. Rhea, A. Hakeem, A. Lamb, J. Parkman, P. Lambdin, and R. Follum. 2012. *Sasajiscymnus tsugae* in Tennessee: Where do we go from here? IN Member Symposium "Biology and Management of Hemlock Woolly Adelgid in North America". Annual Meeting of the Entomological Society of America, Knoxville, TN. November 11-14. (**Invited speaker**, 15-minute)
17. **Wiggins, G.,** J. Grant, A. Hakeem, J. Rhea, A. Mayfield, and P. Lambdin. 2012. Emergence and seasonal abundance of native and introduced *Laricobius* species on eastern hemlock in the southern Appalachians. 86th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, AR. March 4-7. (12-minute)
18. **Wiggins, G.,** J. Grant, P. Lambdin, J. Wilkerson, and J. Ranney. 2010. Can introduced biological control agents impact native thistles in Tennessee? 84nd Annual Meeting of the Southeastern Branch of the Entomological Society of America, Atlanta, GA. March 7-10. (12-minute)
19. **Wiggins, G.** 2010. Beetles in a haystack: Searching for *Laricobius nigrinus* in the Great Smoky Mountains National Park. Southern Appalachian Forest Entomology/ Pathology Workshop, Crossnore, NC. March 4-5. (10-minute)

Display Presentations (co-author on 40 other presentations)

1. **Wiggins, G.,** M. Papeş, B. Alred, B. Reber, B. Schenck and J. Grant. 2018. Modeling impact of thousand cankers disease in the eastern U.S. in a changing climate. Joint Meeting of the Entomological Society of America, Entomological Society of Canada, and Entomological Society of British Columbia, Vancouver, BC, Canada. November 11-14.
2. **Wiggins, G.,** S. Lenhart, and C. Crawley. 2017. NIMBioS: Enhancing education at the interface between mathematics and biology. Annual Meeting of the Entomological Society of America, Denver, CO, November 5-8. (**Highlighted Poster**)
3. **Wiggins, G.,** E. Benton, J. Grant, and P. Lambdin. 2017. Short-term detection of imidacloprid in streams following treatment of eastern hemlock. Southern Appalachian Forest Entomology/ Pathology Seminar, Crossnore, NC. March 2-3.
4. **Wiggins, G.,** E. Benton, J. Grant, and P. Lambdin. 2016. Evaluating short-term detection of imidacloprid in streams following soil applications in hemlock systems. 90th Annual Meeting

- of the Southeastern Branch of the Entomological Society of America, Raleigh, NC, March 13-16.
5. **Wiggins, G.**, J. Grant, P. Lambdin, and N. Hooie. 2015. Overwintering ability of *Spathius agrili* in Tennessee. 89th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Biloxi, MS, March 15-18.
 6. **Wiggins, G.**, J. Grant, R. Rhea, P. Parkman, J. Webster, E. Benton, and P. Lambdin. 2014. A biological control demonstration site: An educational resource to enhance management of hemlock woolly adelgid. Annual Meeting of the Entomological Society of America, Portland, OR, November 16-19.
 7. **Wiggins, G.**, J. Grant, N. Hooie, P. Lambdin, and J. Lelito. 2014. Parasitoids collected from ash species in Tennessee: Implications for biological control of emerald ash borer in the southern United States. Proceedings of the 25th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 7-10.
 8. **Wiggins, G.**, J. Grant, P. Lambdin, K. Nix, M. Windham, and D. Hadziabdic. 2013. Are black walnuts in forests at risk from thousand cankers disease? Annual Meeting of the Entomological Society of America, Austin, TX, November 10-13.
 9. **Wiggins, G.**, J. Grant, S. Powell, K. Copely. 2012. Biology and management of emerald ash borer: A view from the South. Annual Meeting of the Entomological Society of America, Knoxville, TN, November 11-14.
 10. **Wiggins, G.**, J. Grant, J. Rhea, A. Hakeem, R. Follum, and P. Lambdin. 2012. On the Move? Novel collections of *Sasajiscymnus tsugae* in the Great Smoky Mountains National Park. 86th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, AR, March 4-7.
 11. **Wiggins, G.**, J. Grant, A. Hakeem, J. Rhea, A. Mayfield, and Nathan Havill. 2011. Seasonal abundance and hybridization of native and introduced *Laricobius* species on eastern hemlock in the southern Appalachians. Annual Meeting of the Entomological Society of America, Reno, NV, November 13-16.

PROFESSIONAL SERVICE

Reviewer

Served as reviewer for the following scientific journals: **2020** – Insects, Journal of Economic Entomology, International Journal of Pest Management; **2019** – Insects, Environmental Entomology, Journal of the Kansas Entomological Society; **2018** – Insects, International Journal of Molecular Science, Molecules; **2017** – PLoS ONE; **2016** – Entomologia Experimentalis et Applicata, Insects; **2015** – Bulletin of Entomological Research, Journal of Agricultural and Urban Entomology, Forests, Forest Ecology and Management; **2014** – Biological Control, Forest Ecology and Management; **2013** – Biocontrol Science and Technology, Biological Control; **2011** – African Journal of Agricultural Research.

Currently serving on the Reviewer Board of Insects (MDPI Open Access Journals), 2019-2020. Served as a technical reviewer for the 2013 update of *Rhinocyllus conicus* in the Invasive Species Compendium (<http://www.cabi.org/isc/?compid=5&dsid=47083&loadmodule=datasheet&page=481&site=14>).

Professional Society Service (since 2010)

Entomological Society of America

- Judge: Vancouver, BC (2018); Minneapolis, MN (2015); Austin, TX (2013).

- Moderator: Denver, CO (2017); Portland, OR (2014).
- Co-organizer/performer in musical programs: ‘Tailgate Party’, Knoxville, TN (2012); ‘The Stridulators’, San Diego, CA (2010).

International Congress of Entomology

- Co-organized and Moderated symposium ‘Sustainable Agriculture through Ecological Pest Management’, Orlando, FL (2016).

Society for Advancement of Chicanos/Hispanics and Native Americans in Science

- Judge - Poster Session, Salt Lake City, UT (2017).
- Participated in Modern Math Workshop Career Fair, Salt Lake City, UT (2017).

Southeastern Branch of the Entomological Society of America

- Judge: Raleigh, NC (2016); Greenville, SC (2014);
- Moderator: Memphis, TN (2017); Baton Rouge, LA (2013);
- Committee: Member Awards (2017-2019 and 2010-2013; Chair 2013); Public Relations (2017).

Southern Forest Insect Work Conference

- Judge: Student Paper Competition (2014).
- Co-organized symposium “Hemlock Woolly Adelgid Management: Where Do We Stand?” Melbourne, FL (2017).

Southern Region Biological Control Work Group

- Chair, Greenville, SC (2014).
- Secretary, Baton Rouge, LA (2013).

Tennessee Entomological Society

- Editor, Firefly (Proceedings of the Tennessee Entomological Society), 2019-2021
- Moderator, Nashville, TN (2016).

University/Departmental Service and Activities

- Served as a committee member of the following graduate students: Hannah Thompson (PhD, current), Wanwan Liang (PhD, graduated 2019), David Bechtel (Master’s, graduates 2020), Philip Hensley (Master’s, graduated 2018), Amy Michael (Master’s, graduated 2018), Forest Palmer (Master’s, graduated 2018), Kadie Britt (Master’s, graduated 2016), Nick Hooie (Master’s, graduated 2014).
- Entomology and Plant Pathology Committees: Strategic Plan Communications work group (2017), Seminar and Program Assessment Committee (2015-2016), ad hoc committee to develop a non-thesis Master’s program (2015), ad hoc committee reviewing ‘Professional Experiences’ for the doctoral program (2013).
- Founder of the student organization “The Bluegrass Music Club” at the University of Tennessee, 2004 - 2012.

HONORS AND AWARDS (Since 2005)

- **President, Tennessee Entomological Society, 2016-2017.**
- **Friends of IPM - Pulling Together Award, The Southern Region Integrated Pest Management Center, 2015.**
- **The Entomological Society of America Student Activity Award, 2009.**
- **The Entomological Society of America National Science Foundation Travel Grant, 2008.**

- **First Place, Student Competition for the President's Prize**, Entomological Society of America, 2007.
- **John Henry Comstock Award for Outstanding Graduate Student Achievement**, Entomological Society of America, 2007.
- **Robert T. Gast Award for Best Ph.D Paper**, Southeastern Branch of the Entomological Society of America, 2006.
- **Tennessee Entomological Society's Student Paper Competition**, 1st (2005), 2nd (2008).