

CURRICULUM VITA

**B. M. Kard -- Professor of Entomology
Endowed Professorship of Structural and Urban Entomology
Department of Entomology and Plant Pathology
Oklahoma State University, Stillwater**

January 17, 2017

I. TEACHING

1. OSU Pinkston Education Facility teaching offerings. These responsibilities are not regular numbered courses in the OSU Catalogue. These are training classroom and field programs conducted cooperatively between OSU and Oklahoma Dept. of Agriculture, Food, and Forestry that are part of the Oklahoma Certified Pesticide Applicator Program requirements. Six Category 7B (structural pests) training programs are conducted annually. In these programs, I teach four short-courses as part of the Termite Certified Pesticide Applicators Training School in the Dept. of Entomology and Plant Pathology. Trainees hailed from Idaho, Oklahoma, Kansas, Arkansas, Missouri, New Mexico, Saipan, Texas, and Saudi Arabia. These are ongoing programs. During each of 2014-2016 calendar year, ~190 pesticide applicators completed training in Categories 7a-General Pests (~80), 7b-Structural Pests (~95), and 7c-grain fumigation (~15) in the PSEP program. $\Sigma \approx 1,635$ pesticide applicators certified by OSU and ODAFF at the Pinkston Education Facility from 2007 through December 2016. During CY-2014-2016, an additional ~6,300 pest management professionals received training at off-campus seminars, conferences, annual association meetings, and supplemental certification CEU training sessions.

2. Instructional materials, textbook, laboratory manual or other training products.

Power point and slide presentations, and hands-on training with insect specimens, pest management products, and samples of damaged structural wood and other materials during the Pinkston Education Facility for Structural and Urban Pest Control quarterly training for Oklahoma and contiguous states certified applicators. (1) Termite biology and behavior, (2) Termite management and emerging termite management technologies, (3) Borates and other wood preservatives, (4) Termiticide research field tests, (5) Ant identification and control, (6) and participated in numerous laboratory sessions on wood-destroying insect damage recognition and hands-on training for certified structural pesticide applicators.

A. Professional Team Members

Charles Konemann, Senior Agriculturist, MS

K. T. Shelton-PSEP Coordinator, MS

C. C. Luper, Extension Associate, PSEP, BS

B. Support for Undergraduates

Eight undergraduate or graduate student workers have been employed within the Structural and Urban Entomology Program.

II. RESEARCH AND CREATIVE ACTIVITIES

Current Project: Biology, Ecology, and Pest Management of Wood-Destroying Subterranean Termites.

Project Description: The objectives of the project as detailed in the approved research project are as follows. (1) Elucidate subterranean termite taxonomy, biology, ecology, foraging, and feeding behavior; determine the physical, chemical, and genetic taxonomy of subterranean termites, and intra- and inter-colony interactions. Taxonomic studies are needed to delineate cyclic colony variations in termite foraging, abandonment of and return to foraging areas and nutrient sources, size of foraging territories, and foraging population numbers. The great diversity among various termite species necessitates that new research approaches be designed to take advantage of inter-species biological peculiarities; (2) Investigate resource allocation and brood placement in subterranean termite colonies relative to variation in food resources; (3) Delineate foraging territories and foraging seasonality of subterranean termites; (4) Evaluate efficacy of existing, improved, new and emerging termite management technologies including new technology baits and baiting strategies, physical barriers, and unique mode-of-action materials intended for use in termite control. Determine the distribution and fate of termite control insecticides in soil. The complexities of termite behavior and the diverse ways standard chemicals and new, non-detectable toxicants affect termites will require originality in formulating approaches to evaluate these potential termite management agents.

New knowledge of both the beneficial as well as detrimental aspects of subterranean termites will result from this research. Research will address issues of concern to owners and inhabitants of wooden structures. Objective information concerning efficacy of current and new termiticides, baits, insect growth regulators, biological agents, and low-toxicity and non-toxic barrier methods and technology, for use in termite prevention and control will be gained. Additionally a greater knowledge of termite biology and ecology will be gained, and thus aide in our understanding of termite management as well as their benefits to the environment and humankind. These research projects will last for a minimum duration of five years, but may be extended as needed.

1. Funded Research Projects

A. Research Grants received. $\Sigma = \$950,000$

2. Structural and Urban Entomology Endowment Gifts Received

Through CY 2016. $\Sigma = \$1,433,103$

2a. Additional Gifts: $\Sigma = \$667,991$ CY 2002-2017

2b. Grants Received Industry and Government-Research and Training

CY 2001-2016. $\Sigma = \$1,687,631$

3. Overall Grant and Gift Summary: $\Sigma\Sigma = \$4,738,725$

3. Publications

A. Recent Scientific Publications

Smith, A. L., M. P. Smith, and B. M. Kard. 2010. “Oklahoma Formosan Termite Surveillance Program and Termite Survey (Isoptera: Rhinotermitidae, Termitidae). *Journal of the Kansas Entomological Society* **83**(3): 248-259.

Smith, M. P., A. L. Smith, and B. M. Kard. 2012. “Subterranean Termites (Isoptera: Rhinotermitidae) of the Oklahoma Tallgrass Prairie Preserve Cross Timbers.” *American Midland Naturalist* **167**(1): 56-67.

Lenz, M., J. W. Creffield, T. A. Evans, B. M. Kard, C. Vongkaluang, Y. Sornnuwat, C.-Y. Lee, T. Yoshimura, and K. Tsunoda. 2012. “Resistance of Polyamide and Polyethylene Cable Sheathings to Termites in Australia, Thailand, USA, Malaysia and Japan: a Comparison of Four Field Assessment Methods.” *International Biodeterioration and Biodegradation* **66** (2012): 53-62.

Lenz, Michael, Brad Kard, James W. Creffield, Theodore A. Evans, Kenneth S. Brown, Edward D. Freytag, Zhong Yun-hong, Chow-Yang Lee, Boon-hoi Yeoh, Tsuyoshi Yoshimura, Kunio Tsunoda, Charunee Vongkaluang, Yupaporn Sornnuwat, Ted A. Roland, Sr., and Violaine Weibel. 2012. “Are results on the termite resistance of plastic materials comparable between countries?” *In* T. Yoshimura and C.-Y. Lee [eds.], *Pacific-Rim Termite Research Group 9th Annual Book-EP117676*: 48-54. Science and Technic Publishing House, Ha Noi and Ho Chi Minh City, Republic of Vietnam.

Bowen, C. J., and B. M. Kard. 2012. “Termite Aerial Colony Elimination Using Lufenuron Bait (Isoptera: Rhinotermitidae).” *Journal of the Kansas Entomological Society* **85**(4): 273-284.

Kard, B. M., G. J. Tompkins, G. L. Rotramel, and L. A. Renello. 2013. “Distribution of Pyrethroid Termiticides in ‘ABC’ Gravel.” pp. 78-81. *In* D. R. Suiter [ed.], *National Conference on Urban Entomology (Book)*. 236 Pp.

Creffield, J. W., M. Lenz, D. K. Scown, T. A. Evans, J.-H. Zhong, B. M. Kard, J. R. B. Hague, K. S. Brown, E. D. Freytag, J. P. Curole, W. R. Smith, and T. F. Shupe. 2013. “International field trials of pyrethroid-treated wood exposed to *Coptotermes acinaciformis* in Australia & *C. formosanus* (Isoptera: Rhinotermitidae) in China and the USA.” *Journal of Economic Entomology* **106**(1): 329-337. (doi: <http://dx.doi.org/10.1603/EC12058>).

Lenz, Michael, Brad Kard, James W. Creffield, Theodore A. Evans, Kenneth S. Brown, Edward D. Freytag, Zhong Yun-Hong, Chow-Yang Lee, Boon-Hoi Yeoh, Tsuyoshi Yoshimura, Kunio Tsunoda, Charunee Vongkaluang, Yupaporn Sornnuwat, Ted A. Roland, SR., and Marie Pommier de Santi. 2013. “Ability of

Field Populations of Six Species of *Coptotermes*, *Reticulitermes flavipes*, and *Mastotermes darwiniensis* (Isoptera: Rhinotermitidae; Mastotermitidae) to Damage Plastic Cable Sheathings.” *Journal of Economic Entomology* **106**(3): 1395-1403. (doi: <http://dx.doi.org/10.1603/EC12514>).

Kard, B. M., G. J. Tompkins, G. L. Rotramel, and L. A. Renello. 2014. “Dispersion of Standard and Cellulose-Augmented Termiticides in ‘ABC’ Gravel Foundation Fill.” *Journal of the Kansas Entomological Society* **87**(2): 205-218.

Konemann, C. E., B. M. Kard, and M. E. Payton. 2014. “Palatability of Field-Collected Eastern Redcedar, *Juniperous virginiana* L., Components to Subterranean Termites (Isoptera: Rhinotermitidae).” *Journal of the Kansas Entomological Society* **87**(3): 269-279.

Ismayilzade, N. N., V. S. Samedov, B. M. Kard, and C. L. Jones. 2015. “Sunflower Seed Damage and Economic Injury Level of the European Sunflower Moth (Lepidoptera: Pyralidae) in the Republic of Azerbaijan.” *Journal of Entomological Science* **50**(2): 138-146.

Kard, B. M., C. E. Konemann, K. T. Shelton, C. C. Luper and R. A. Grantham. 2015. “Termiticide Residues in Building Foundation Aggregate Fill After Trench and Surface Applications.” *International Research Group on Wood Protection Doc. No. IRG/WP 15-30679*: 1-16.

Konemann, C. E., B. M. Kard, M. E. Payton, S. P. Deng, J. G. Warren, and T. M. Wilson. 2016. “CO₂ Emissions from Soil on Oklahoma’s Tallgrass Prairie Preserve in the Presence or Absence of Termites (Isoptera: Rhinotermitidae).” *American Midland Naturalist* **176**(1): 60-71. doi: 10.1674/0003-0031-176.1.60

Morris, C. G., B. M. Kard, R. A. Grantham, A. M. Morris, B. H. Noden, and P. G. Mulder, Jr. 2017. “Morphology and Foraging Behavior of Oklahoma’s Grass-Feeding Termite: *Gnathamitermes tubiformans* (Isoptera: Termitidae).” *Journal of the Kansas Entomological Society* (accepted).

B. Technical & Trade Journal Publications; Proceedings; Notes (recent)

106. **Brown, K. S., B. M. Kard, G. H. Broussard, M P. Smith, and A. L. Smith. 2006.** “*Reticulitermes flavipes* (Isoptera: Rhinotermitidae) on a Native Tallgrass Prairie. *Proc. National Conference on Urban Entomol.* pp. 29-33. May 21-24, 2006. Raleigh, NC.

107. **Kard, B. M., C. J. Bowen, G. H. Broussard, A. L. Smith, D. R. Kuehl, J. T. Criswell, K. T. Shelton, and C. C. Luper. 2006.** “Structural and Urban Entomology Research and Structural Pesticide Applicator Training Programs at Oklahoma State University. *NPMA PestWorld 2006*

Convention. Gaylord Texan Resort, Grapevine, TX. October 25-28, 2006.
National Pest Management Association, Fairfax, VA. USA. 2 Pp.

108. **Bowen, C. J., R. D. Madden, B. M. Kard, and J. W. Dillwith. 2006.** “Comparative Proteomics between Worker and Soldier Casts of *Reticulitermes flavipes* (Isoptera: Rhinotermitidae). pp. 16-17. *Proc. National Conference on Urban Entomology*. May 21-24, 2006.
109. **Brown, K. S., G. H. Broussard, B. M. Kard, M P. Smith, and A. L. Smith. 2006.** “Colony Characterization of *Reticulitermes flavipes* (Isoptera: Rhinotermitidae) on a Native Tallgrass Prairie. *Proc. National Conference on Urban Entomology*. May 21-24, 2006. Raleigh, NC. 5 Pp.
110. **Forschler, B. T., Jones, S. C., Kard, B. M., Baumann, G. J., Henderson, G., Suiter, D., Baker, P., Howell, H. N., Jr., Gold, R. E., and Jackson, D. 2007.** “Termite Management: Still an Ongoing Process.” *Pest Control* 75(3): 88-90, 92, 94-95.
111. **Arnold, D., E. Rebek, T. Royer, P. Mulder, and B. Kard. Assistance from (M. Hampton, M. Hackler, P. Loy, and L. Overall). 2008.** “Common Horticultural and Household Insects of Oklahoma (2008 Revision). **Circular E-918**. Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK 74078. 175 Pp.
112. **Nguyen, Ngan, Robbin Madden, Kenneth Brown, Brad Kard, and Jack Dillwith. 2009.** “Evidence of Dietary Cuticular Hydrocarbons transfer in *Reticulitermes flavipes* through Social Interactions.” pp. 11-12. *Proc. 57th Annual Meeting of the Southwestern Branch of the Entomological Society of America, and the Annual Meeting of the Society of Southwestern Entomologists*. 23-26 February 2009. Oklahoma State University.
113. **Jurgensen, Martin, Deborah Page-Dumroese, Artemio Cerdà, Brian Forschler, Carl Trettin, Steve Cook, and Brad Kard. 2009.** “Occurrence and Activity of Subterranean Termites in Temperate Forest Soils: United States and Spain.” *Geophysical Research Abstracts*, Vol. 11, EGU2009-3499-1, 2009. European Geosciences Union General Assembly. Austria Center, Vienna, Austria. 26-30 April 2009.
114. **Jurgensen, Martin, Deborah Page-Dumroese, Brian Forschler, Carl Trettin, Brad Kard, and Steve Cook. 2009.** “Occurrence and Activity of Subterranean Termites in Temperate Forest Soils.” *Proc. Annual meeting of the Soil Science Society of America*. Pittsburg, PA. November 1-5, 2009.

115. **Kard, Brad, Jim Criswell, Kevin Shelton, Charles Konemann, and Charles Luper. 2010.** “New Perspectives in Understanding Termites.” *Proc. 74th Annual Purdue Pest Management Conference*, pp. 45-56. January 11-15, 2010. Purdue University, West Lafayette, Indiana.
116. **Shelton, Kevin, Brad Kard, and Jim Criswell. 2010.** “Choosing a Pest Management Company to Protect Your Home Against Termites.” Oklahoma Cooperative Extension Service Fact Sheet EPP-7308. DASNR, Oklahoma State University, Stillwater. 4 Pp.
117. **Kard, Brad, Kevin Shelton, Charles Luper, and Charles Konemann. 2011.** “Termites and the Formosan Termite Threat.” *Proc. Turfgrass and Landscape Maintenance Program*. Murray State College, Tishomingo, OK. Feb. 18, 2011. OCES. 27 Pp.
118. **Lenz, Michael, Brad Kard, James W. Creffield, Theodore A. Evans, Kenneth S. Brown, Edward D. Freytag, Zhong Yun-hong, Chow-Yang Lee, Boon-hoi Yeoh, Tsuyoshi Yoshimura, Kunio Tsunoda, Charunee Vongkaluang, Yupaporn Sornnuwat, Ted A. Roland, Sr., and Violaine Weibel. 2012.** “Are results on the termite resistance of plastic materials comparable between countries? Field trial with *Coptotermes*, *Mastotermes* and *Reticulitermes* (Isoptera)”. *Proc. 9th Conference of the Pacific Rim Termite Research Group*. Hanoi, Vietnam. Feb. 27-28, 2012.
119. **Kard, Brad, George J. Tompkins, George L. Rotramel, and Leo A. Renello. 2012.** “Distribution of Pyrethroid Termiticides in ‘ABC’ Gravel.” pp. 78-81. *In* D. R. Suiter [ed.], *Proc. 2012 National Conference on Urban Entomology*. Atlanta (Marietta), Georgia. June 20-23, 2012.
120. **Konemann, Charlie, and Brad Kard. 2013.** CO₂ Emissions from Subterranean Termites (Isoptera: Rhinotermitidae) Feeding on Sapwood and Heartwood of Native Oklahoma Trees: a Laboratory Study. OSU Research Week Poster.
121. **Kard, Brad, Kevin Shelton, and Charles Luper. 2013.** “Pesticides in Residential Areas – Protecting the Environment.” Fact Sheet **EPP-7461** (7 Pp). Division of Agricultural Sciences and Natural Resources, Oklahoma Cooperative Extension Service, OSUniversity, Stillwater, OK 74078. USA.
122. **Kard, Brad, Kevin Shelton, and Charles Luper. 2013.** “Toxicity of Pesticides.” Pesticide Applicator Certification Series Fact Sheet **EPP-7457** (8 Pp). Division of Agricultural Sciences and Natural Resources, Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK 74078. USA.

123. **Kard, Brad, Kevin Shelton, and Charles Luper. 2013.** “Private Applicator Pesticide Recordkeeping Requirements for Livestock Production.” Fact Sheet **EPP-221** (4 Pp). Division of Agricultural Sciences and Natural Resources, Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK 74078. USA.
124. **Kard, Brad, Kevin Shelton, and Charles Luper. 2013.** “Pesticide Applicator Recordkeeping Requirements for Crop Production.” Fact Sheet **EPP-322** (4 Pp). Division of Agricultural Sciences and Natural Resources, Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK 74078. USA.
125. **Shelton, Kevin T., and Brad Kard. 2013.** “Structural Pest Control Applicator Training Manual.” Pesticide Safety and Education Program Pesticide Applicator Manual **E-973**, Revised April 2013. **70 Pp.**
126. **Shelton, Kevin T., Jim T. Criswell, and Brad Kard. 2013.** “Aerial Application. A Training Manual for Pilots seeking Licensure as a Certified Pesticide Applicator.” Pesticide Safety and Education Program Pesticide Applicator Manual **E-1013** (2009; revised 2013). **103 Pp.** OCES, DASNR. Oklahoma State University, Stillwater, OK.
127. **Kard, Brad, Russ Wright, Kevin Shelton, and Charles Luper. 2014.** “Household Pest Control.” Oklahoma Cooperative Extension Service Fact Sheet **EPP-7312**. 8 Pp.
128. **Shelton, Kevin, Brad Kard, and Jim Criswell. 2014.** “Choosing a Pest Management Company to Protect Your Home Against Termites.” Oklahoma Cooperative Extension Service Fact Sheet **EPP-7308**. 4 Pp.
129. **Lee, Jackie, Kevin Shelton, Charles Luper, and Brad Kard. 2014.** “Choosing a Pest Management Professional for Bed Bug Control.” Oklahoma Cooperative Extension Service Fact Sheet **EPP-7332**. 4 Pp.
130. **Kard, B. M., C. E. Konemann, K. T. Shelton, C. C. Luper, R. A. Grantham, and M. E. Payton. 2014.** “Termiticide Residues in Gravel Fill.” 45th Annual Meeting of the International Research Group on Wood Protection. May 11-16, 2014. St. George, Utah, USA. Doc. No. IRG/WP **14-60360 (abstract)**. IRG Secretariat, Stockholm, Sweden.
131. **Kard, B. M., C. E. Konemann, K. T. Shelton, C. C. Luper, R. A. Grantham, and M. E. Payton. 2014.** “Termiticide Residues in Gravel Fill.” 45th Annual Meeting of the International Research Group on Wood Protection-Working Group 1b: Biological Problems. Poster. May 11-16, 2014. St. George, Utah, USA. IRG Secretariat, Stockholm, Sweden.

4. Presentations; Posters; Advisory Conferences (recent)

a. Invited papers before professional societies; submitted papers and posters; advisory meetings, and conference contributions (recent)

- (137). **Nguyen, Ngan, Robbin Madden, Kenneth Brown, Brad Kard, and Jack Dillwith. 2009.** “Evidence of Dietary Cuticular Hydrocarbons transfer in *Reticulitermes flavipes* through Social Interactions.” 57th Annual Meeting of the Southwestern Branch of the Entomological Society of America, and the Annual Meeting of the Society of Southwestern Entomologists. 23-26 February 2009. Oklahoma State University, Stillwater. (**Nguyen presented; 1st place - Ph.D. student verbal competition**)
- (138). **Martin Jurgensen, Deborah Page-Dumroese, Artemio Cerdà, Brian Forschler, Carl Trettin, Steve Cook, and Brad Kard. 2009.** “Occurrence and Activity of Subterranean Termites in Temperate Forest Soils: United States and Spain.” European Geoscience Union (EGU) General Assembly. Austria Center, Vienna, Austria. April 19-24, 2009.
- (139). **Kard, B. M. 2010.** “New Perspectives in Understanding Termites.” 74th Annual Purdue University Pest Management Conference. West Lafayette, Indiana. January 11-15, 2010.
- (140). **Kard, B. M., J. T. Criswell, K. S. Shelton, C. C. Luper, and C. Konemann. 2010.** “Termiticides, Alternatives, and Understanding Termites.” USEPA and State Local Authorities FIFRA Inspector Training. 1-5 Feb. 2010
- (141). **Kard, B. M., J. T. Criswell, K. S. Shelton, C. C. Luper, and C. E. Konemann. 2010.** “Recognizing and Managing Wood-Destroying Structural Insects.” B & G 40th Annual Pest Management Conference and Exposition. Clarion Convention Center, Oklahoma City, OK. 16 Feb 2010.
- (142). **Kard, B. M., Shelton, K. S. C. Konemann, and C. C. Luper 2010.** “New Perspectives in Termite Management.” Long Island Pest Control Association (LIPCA) Termite Workshop. Hilton Long Island, Melville, NY. 24-25 Feb. 2010.
- (143). **Kard, B. M. 2010.** “New Perspectives in Termite Management.” New Jersey Pest Control Association (NJPCA) Annual Termite Workshop. Rutgers University, New Brunswick, NJ. 12-13 Aug. 2010.
- (144). **Kard, B. M., Shelton, K. S. C. Konemann, and C. C. Luper. 2010.** Household Arthropod Pests.” 61st Annual Meeting of the Oklahoma Pest Control Association. Clarion, OKC. 9-10 Sept. 2010.

- (145). **Kard, B. M., Shelton, K. S. C. Konemann, and C. C. Luper. 2011.** “Pesticide Modes of Action.” 62nd Annual Meeting of the Oklahoma Pest Control Association. Marriott Southern Hills, Tulsa , OK. 15-16 Sept. 2011.
- (146). **Michael Lenz, Brad Kard, James W. Creffield, Theodore A. Evans, Kenneth S. Brown, Edward D. Freytag, Yun-Hong Zhong, Chow-Yang Lee, Boon-Hoi Yeoh, Tsuyoshi Yoshimura, the late Kunio Tsunoda, Charunee Vongkaluang, Yupaporn Sornnuwat, Ted A. Roland, Sr., and Violaine Weibel. 2012.** “Are results on the termite resistance of plastic materials comparable between countries? - Summary report of a field study with *Coptotermes*, *Mastotermes* and *Reticulitermes* (Isoptera).” pp. 48-54. *Proc. 9th Conference of the Pacific Rim Termite Research Group.* Hanoi, Vietnam. Feb. 27-28, 2012.
- (147). **Madden, R. D., C. E. Konemann, B. M. Kard, and J. W. Dillwith. 2012.** Modification of Termite Cuticular Hydrocarbon Profiles Increases Cuticular Permeability and Water Loss. 60th Annual Meeting of the Southwestern Branch of the Entomological Society of America. 4-8 March 2012. Little Rock, AR. (Poster).
- (148/9). **Kard, Brad. 2013.** “New Technologies and Termiticides in Termite Management; Distribution of Termiticide in Gravel Fill–Sessions #1 and #2. North Carolina 63rd Annual Pest Control Technicians School. Sheraton Downtown Hotel and Conference Center, Raleigh, NC. 21-24 January 2013.
- (150). **Konemann, C., and B. Kard. 2013.** CO₂ Emissions from Subterranean Termites (Isoptera: Rhinotermitidae) Feeding on Sapwood and Heartwood of Five Native Oklahoma Trees. 61st Annual Meeting of the SW Branch of the ESA meeting. February 25-28, 2013; Ramada Palms Hotel, Las Cruces, New Mexico. (3rd place MS Student Competition Poster Award)
- (151). **Kard, B. M., K. T. Shelton, and C. C. Luper. 2013.** “Structural Pest Update and the Conehead Termite Threat.” USEPA Region VI Semi-Annual Meeting. Sheraton Hotel, Oklahoma City, OK. 21-22 May 2013.
- (152). **Konemann, Charles, Shiping Deng, and Brad Kard. 2014.** “CO₂ Emission from *Reticulitermes flavipes* (Isoptera: Rhinotermitidae) in the Presence or Absence of Food.” ESA SW 62nd Annual ESA SW Branch Meeting-MS Student Poster Competition. February 23-26, 2014. San Antonio, TX.
- (153). **Creffield, J., M. Lenz, D. Scown, T. Evans, Junhong Zhong, B. Kard, J. Hague, K. Brown, E. Freytag, J. Curole, R. Smith, and T. Shupe. 2014.** “A Comparison of the Resistance of Pyrethroid-Treated Wood to Damage by *Coptotermes acinaciformis* in Australia and *C. formosanus* in China and the USA.” 45th Annual Meeting of the International Research Group on Wood Protection-Working Group 1b: Biological Problems. May 11-15, 2014. St.

George, Utah, USA. Doc. No. IRG/WP 14-10830:1-12. IRG Secretariat, Stockholm, Sweden. (Verbal Presentation + publication).

- (154). **Kard, Brad, Charles E. Konemann, Kevin T. Shelton, Charles C. Luper, Richard A. Grantham, and Mark E. Payton. 2014. "Termiticide Residues in Gravel Fill."** 45th Annual Meeting of the International Research Group on Wood Protection-Working Group 1b: Biological Problems. May 11-15, 2014. St. George, Utah, USA. Doc. No. IRG/WP 14-20553:1-8. IRG Secretariat, Stockholm, Sweden. (Poster)
- (155). **Kard, B. M. 2014. "Structural and Urban Entomology."** Presentation to Entomology 4800: Entomology Practicum-Introduction to Research. Undergraduate and Graduate Course. Oklahoma State University, 17 October 2014.
- (156). **Konemann, C. E. and B. M. Kard. 2015. "CO₂ and CH₄ Emissions from soils and termites (Isoptera: Rhinotermitidae) on the Oklahoma Tallgrass Prairie Preserve."** *Proc.* 63rd Annual Meeting of the SW Branch of the Entomological Society of America. Hard Rock Hotel and Casino, Tulsa, OK. 23-26 Feb. 2015.
- (157). **Konemann, C. E. and B. M. Kard. 2015. "Contributions of *Reticulitermes flavipes* (Isoptera: Rhinotermitidae) to greenhouse gases, CO₂ and CH₄, on the Oklahoma Tallgrass Prairie Preserve."** 2015 ESA National Meeting Student Competition Poster. ID/Username: 102539; Password: 160138; Student Poster Competition program at the Entomology 2015 National Conference, Minneapolis, Minnesota. Nov. 17, 2015
- (158). **Kard, B. M. 2015. "Forensics of Structural and Urban Entomology."** Presentation to Forensic Entomology 4400/5020. Undergraduate and Graduate Course. Oklahoma State University, 17 Nov. 2015.
- (159). **Konemann, C. E. and B. M. Kard. 2015. "CO₂ and CH₄ Emissions by Subterranean Termites (Isoptera: Rhinotermitidae) on Oklahoma's Tallgrass Prairie.** 2015 S-1053 NIMSS [National Information Management and Support System] Annual Conference. Oklahoma State University, Stillwater, OK. Poster. December 05, 2015.
- (160). **Kard, B. M. 2016. "Native and Formosan Termite Control."** 21 January 2016, Marshall County Turf and Landscape Workshop, OCES. (49 PMP-10 OCES Personnel attended meeting).
- (161). **Konemann, C. E. and B. M. Kard. 2016. "CO₂ and CH₄ Emissions by Subterranean Termites (Isoptera: Rhinotermitidae) on Oklahoma's Tallgrass Prairie.** SW Branch ESA Annual Meeting. February 22-25, 2016. (poster)

(162). **Kard, B. M. 2016. “Structural and Urban Entomology.”** Presentation to Entomology 4800: Entomology Practicum-Introduction to Research. Undergraduate and Graduate Course. Oklahoma State University, February 16, 2016.

(163). **Kard, B. M. 2016. “Structural and Urban Entomology Endowment Program Overview, and Pesticide Safety Education Coordinator Certified Pesticide Applicator Training Program Overview.”** Depart Head Advisory Committee Conclave. December 16, 2016.

5. Graduate Student Thesis Advisor-Chair; Committee Membership

A. 11 MS students and 7 PhD students Advised and Mentored (2001-2017).

6. Creative Activities

A. Electronic Communication

- (1). In cooperation with Kevin Shelton, developed a Q & A termite web site as part of the PEF for Structural Pest Control. (<http://\pested.okstate.edu> OSU web site).
- (2). “Oklahoma **2002** Termite Swarming Season.” Plant Disease and Insect Advisory, Vol. 1, No. 11. May 1, 2002. Dept. Entomology and Plant Pathology, Oklahoma State Univ. 3 Pp. (www.pested.okstate.edu).
- (3). **Kard, B. M. 2008.** “Termite Swarming Season.” Plant Disease and Insect Advisory 7(10). 3 Pp.
- (4). **Kard, B. M. 2014.** “Termite Swarming Season.” Plant Disease and Insect Advisory. 3 Pp.

B. Field Survey and Research

- (1). Continuation of the ‘Oklahoma Termite Survey’, and Tallgrass Prairie collections.
- (2). **Five** additional field and laboratory termite-industry projects currently underway
- (3). Termite ecology work continues on the Tallgrass Prairie (2016-indefinite)

7. Laboratory Activities

- (1). Eight laboratory-related projects are completed or underway (2012-2017).

III. EXTENSION / OUTREACH

A. Programs; Presentations; Short Courses

I. USDA-Forest Service

- (1) Armed Forces Pest Management Board Meeting, Biloxi, MS, January 1988. "Evaluation of soil termiticides for subterranean termite control." 100+ attended. (Invited)
- (107) Host for a tour of the termite control research sites in the Harrison Experimental Forest, north of Gulfport, MS. Tour attended by representatives of American Cyanamid Company to include the senior market manager. November 16, 1995.
- (108) Host for a tour of the laboratory and termite control research sites in the Harrison Experimental Forest, north of Gulfport, MS. Tour was attended by the North American Commercial Development Director and the Field Development Representative for urban entomology products, Rhone-Poulenc AG Company, Research Triangle Park, North Carolina. January 22, 1996.
- (109) Coordinator for a tour of the termite control research sites in the Harrison Experimental Forest, north of Gulfport, MS. Tour attended by representatives of Rhone-Poulenc Company, Research Triangle Park, North Carolina, to include the senior market managers and nationwide TS & D personnel. June 3, 1996.
- (110) Ga. Regulators tour Sept. 9-10, 1996. Host for conference/tour.
- (111) AgrEvo visit and tour of Experimental Forest. Nov. 4-5, 1996. Host for tour.
- (112) Oldham Chemical Company/PCO Distributor Experimental Forest Field Tour. Nov 5, 1996. Host for tour.
- (113) Cecil Co. (France) Tour and HEF visit Nov 6, 1996. Host for tour.
- (114) DowElanco Company with new tech reps tour of the termiticide and termite control research sites on the Harrison experimental Forest, Gulfport, MS. Speaker for the field tour. 8 January 1997. .
- (115) Southeastern Branch of the Entomology Society of America Annual Meeting, Urban Pest Management Symposium. USDA-Forest Service Termite Control Research. J. E. Powell and B. M. Kard. 20-minute talk.
- (116) Seminar of termite research conducted by RWU 4502 and its relevance to the new ARS Formosan termite control project being initiated the Southern Research Center, ARS, New Orleans, LA. 16-17 March 1998. Center director, scientists, and associated ARS, LSU, and FS personnel.
- (117) EPA Tour. 18 August 1998. HEF.
- (118) Host for a tour of the termite control research sites in the Harrison Experimental Forest, north of Gulfport, MS. Tour was attended by pest control owners and operators and sponsored by Oldham Chemical Company and Distributors,

- Mobile, Alabama. September 21, 1998
- (119) Second Annual Pest Control Technology Conference. Feb 1-4, 1999. New Orleans, Louisiana. Member of Panel of Experts Discussing Problems and solutions to Termite Control Issues. 90 minute session.
 - (120) Armed Forces Pest Management Board Meeting, Annual Review of U. S. D. A., Research of Interest to the Department of Defense. Ft. Collins, Colorado. February 1-5, 1999. Principal speaker concerning laboratory screening, bait-block research, wood extractives, non-chemical and low-chemical mechanical barriers to termites, and termiticide treatment phases of termite control research conducted by scientists at the Forestry Sciences Laboratory, Forest Products Insects Project, Gulfport, MS. Provided a 1-hour presentation of research results and their impact on pest control in the Dept. of Defense. 85+ attended. (Invited)
 - (121) Host for a tour of the termite control research sites on the Santa Rita Experimental Range, Arizona. Tour attended by representatives of Zeneca Company; University of Arizona, Tucson; ARS Phoenix, AZ; and North and Root Pest Control Consultants, Aztec, NM. 5-7 May 1999.
 - (122) Host for a tour of the termite control research sites on the Santa Rita Experimental Range, Arizona. Tour attended by representatives of FMC Company; University of Arizona; Univ. of Hawaii; Univ. of Calif.; Texas A & M University; Univ. of Maryland; Univ. of Georgia; University of Kentucky; and Chico State Univ. 5 October 1999.
 - (123) Host for training session and a tour of the termite control research sites in the Harrison Experimental Forest, north of Gulfport, MS. Tour was attended by pest control and pesticide inspectors from SC Dept. of Pesticide Regulation, Clemson, South Carolina. April, 25, 2000. (23 attended)
 - (124) Host for training session and a tour of the termite control research sites in the Harrison Experimental Forest, north of Gulfport, MS. Tour was attended by pest control and pesticide inspectors from the Georgia Dept. of Agriculture, Atlanta, GA. May 23, 2000. (12 attended)
 - (125) Trainer and tour guide for members of Georgia Pest Control Association. Three hours classroom training, and 3 hours field exercise. Harrison Experimental Forest, Saucier, MS. November 8, 2000.
 - (126) Presentation entitled "Gulfport termite control testing report." Florida Pest Control Association Termite Symposium. Dec. 8, 2000. Orlando, FL.

II. OSU Technical and Training Presentations (recent)

- (363). **Kard, B. M., J. A. Lee, K. T. Shelton, C. C. Luper, and C. E. Konemann.** 2015. Oklahoma State University and ODAFF, Certified Applicator Training. November 17, 2015. General Pest Certification Category 7a, 50-minute presentation: "Ant Identification and Management."

- (364). **Kard, B M., J. A. Lee, K. T. Shelton, C. C., and C. E. Konemann. 2015.** “Termite Biology and Management.” PEF 7b Certification Training. November 18, 2015. OSU Stillwater, OK.
- (365). **Kard, B M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 2015.** “Termiticides.” PEF 7b Certification Training. November 18, 2015. OSU Stillwater, OK.
- (366). **Kard, B M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 2015.** “Borates, Stainless Steel Mesh, and Wood Preservatives.” PEF 7b Certification Training. November 19, 2015. OSU Stillwater, OK.
- (367). **Kard, B. M., J. A. Lee, K. T. Shelton, C. C. Luper, and C. E. Konemann. 2015.** Oklahoma State University and ODAFF, Certified Applicator Training. December 8, 2015. General Pest Certification Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (368). **Kard, B. M. 2015. New Extension Agent Training and Introductions. Entomology and Plant Pathology Dept.** Oklahoma State University December 16, 2015. Presentation on the Structural and Urban Entomology Program. Provided to visiting new OSU Extension Agents as part of an all-day program involving the entire Department of EPP.
- (369). **Kard, B. M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 2016.** Oklahoma State University and ODAFF, Certified Applicator Training. January 12, 2016. General Pest Certification Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (370). **Kard, B. M. 2016.** Turfgrass and Landscape Maintenance Program, Marshall County OSU Cooperative Extension Service. Marshall County Exposition Center, Madill, OK. “Native and Formosan Termite Control.”
- (371). **Kard, B. M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 22 March 2016.** Oklahoma State University and ODAFF, Certified Applicator Training. January 12, 2016. General Pest Certification Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (372). **Kard, B. M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 23 March 2016.** “Termite Biology and Management.” PEF 7b Certification Training. November 18, 2015. OSU Stillwater, OK.
- (373). **Kard, B. M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 23 March 2016.** “Termiticides.” PEF 7b Certification Training. OSU Stillwater, OK.

- (374). **Kard, B. M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 2016.** “Borates, Stainless Steel Mesh, and Wood Preservatives.” PEF 7b Certification Training. 24 March 2016. OSU Stillwater, OK.
- (375). **Konemann, C. E. and B. M. Kard. 2016.** Termites and Soil. Soil Biology Discussion Group Seminar Series. Ento-PIP, OSU. 25 March 2016.
- (376). **Kard, B. M., K. T. Shelton, C.C. Luper, and C. E. Konemann. 2016.** Oklahoma State University and ODAFF, Certified Applicator Training. 19 April 2016. General Pest Certification Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (377). **Kard, B. M. 2016.** Termite identification and management. Oklahoma Gardening. April 23-24, 2016 (segment aired four times).
- (378). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 22 March 2016.** Oklahoma State University and ODAFF, Certified Applicator Training. May 17, 2016. General Pest Certification Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (379). **Kard, B. M., K. T. Shelton, C. C. Luper and C. E. Konemann. 2016.** “Termite Biology and Management.” PEF 7b Certification Training. May 18, 2016. OSU Stillwater, OK.
- (380). **Kard, B. M., K. T. Shelton, C. C. Luper, and C. E. Konemann. 2016.** “Termiticides.” PEF 7b Certification Training. May 18, 2016. OSU Stillwater, OK.
- (381). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.** “Borates, Stainless Steel Mesh, and Wood Preservatives.” PEF 7b Certification Training. May 19, 2016. OSU Stillwater, OK.
- (382). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 22 March 2016.** Oklahoma State University and ODAFF, Certified Applicator Training. July 12, 2016. General Pest Certification Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (383). **Kard, B. M., K. T. Shelton, C. C. Luper and C. E. Konemann. 2016.** “Termite Biology and Management.” PEF 7b Certification Training. July 13, 2016. OSU Stillwater, OK.
- (384). **Kard, B. M., K. T. Shelton, C. C. Luper, and C. E. Konemann. 2016.** “Termiticides.” PEF 7b Certification Training. July 13, 2016. OSU Stillwater, OK.

- (385). **Kard, B. M., J. A. Lee, K. T. Shelton, Charles Luper, and C. Konemann. 2016.** “Borates, Stainless Steel Mesh, and Wood Preservatives.” PEF 7b Certification Training. July 14, 2016. OSU Stillwater, OK.
- (386). **Shelton, K. T., C. C. Luper and B. M. Kard. 2016.** “Service Technician Training.” Herbicide use and pesticide safety for Oklahoma Law Enforcement Officers. DEA; OK Bureau of Narcotics; OK Highway Patrol; and OK Deputy Sheriffs. OK Bureau of Narcotics HQ, OKC. 29 July 2016.
- (387). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.** Oklahoma State University and ODAFF, Certified Applicator Training. August 16, 2016. General Pest Certification Category 7a, 60-minute presentation: “Ant Identification and Management.”
- (388). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.** “Past, Present and Future Termite Management”. 2nd Annual Pest Control Conference. Oklahoma Pest Management Association. Sept. 15-16, 2016.
- (389). **Shelton, K. T. , C. C. Luper and B. M. Kard. 2016.** “OSU PSEP Update.” 2nd Annual Pest Control Conference. Oklahoma Pest Management Association. Sept. 15-16, 2016.
- (390). **Kard, B. M. 2016.** “Urban and Structural Endowment Update.” 2nd Annual Pest Control Conference. Oklahoma Pest Management Association. Sept. 15-16, 2016.
- (391). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.** OK State Univ. and ODAFF, Certified Applicator Training. Sept. 20, 2016. General Pest Cert. Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (392). **Kard, B. M., K. T. Shelton, C. C. Luper and C. E. Konemann. 2016.** “Termite Biology and Management.” PEF 7b Certification Training. Sept. 21, 2016. OSU Stillwater, OK.
- (393). **Kard, B. M., K. T. Shelton, C. C. Luper, and C. E. Konemann. 2016.** “Termiticides.” PEF 7b Certification Training. Sept.21, 2016. OSU Stillwater, OK.
- (394). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.** “Borates, Stainless Steel Mesh, and Wood Preservatives.” PEF 7b Certification Training. Sept. 22, 2016. OSU Stillwater, OK.
- (395). **Kard, B. M., and K. T. Shelton. 2016.** “OSU PSEP Update.” Region VI USEPA Pesticide Safety Education Program Annual Conference. Dallas, TX. 12 October 2016.

- (396). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.**
OK State Univ. and ODAFF, Certified Applicator Training. Nov. 15, 2016.
General Pest Cert. Category 7a, 50-minute presentation: “Ant Identification and Management.”
- (397). **Kard, B. M., K. T. Shelton, C. C. Luper and C. E. Konemann. 2016.**
“Termite Biology and Management.” PEF 7b Certification Training. Nov. 16, 2016. OSU Stillwater, OK.
- (398). **Kard, B. M., K. T. Shelton, C. C. Luper, and C. E. Konemann. 2016.**
“Termiticides.” PEF 7b Certification Training. Nov. 16, 2016. OSU Stillwater, OK.
- (399). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2016.**
“Borates, Stainless Steel Mesh, and Wood Preservatives.” PEF 7b Certification Training. Nov. 17 2016. OSU Stillwater, OK.
- (400). **Kard, B. M. 2016.** “Past, Present, and Future of Termite Management.”
Missouri and Kansas Category 7a: Wood-Destroying Pests. Joint Missouri Pest Management Association and Kansas Pest Control Association Winter Conference and Exposition. 6-8 December 2016. Riverside, Missouri.
- (401). **Kard, B. M., K. T. Shelton, Charles Luper, and C. Konemann. 2017.**
OK State Univ. and ODAFF, Certified Applicator Training. Jan. 10, 2017.
General Pest Cert. Category 7a, 60-minute presentation: “Ant Identification and Management.”

B. Publications, Posters, Videos, TV, and Extension Updates (recent)

- (54). **Kard, Brad, Russ Wright, Kevin Shelton, and Charles Luper. 2014.** “Household Pest Control.” Fact Sheet **EPP-2312** (8 pp.). Division of Agricultural Sciences and Natural Resources, Oklahoma Cooperative Extension Service.
- (55). **Kard, Brad, Charles E. Konemann, Kevin T. Shelton, Charles C. Luper, Richard A. Grantham, and Mark E. Payton. 2014.** “Termiticide Residues in Gravel Fill.” 45th Annual Meeting of the International Research Group on Wood Protection-Working Group 1b: Biological Problems. Poster. May 11-15, 2014. St. George, Utah, USA. Doc. No. IRG/WP **14-60360**. IRG Secretariat, Stockholm, Sweden. Poster and abstract for IRG-45-2014.
- (56). **Lee, Jackie, Gina Peek, Brad Kard, Tom Royer, and Kevin Shelton. 2014.**
“Choosing a Pest Management Professional for Bed Bug Control.” Oklahoma Cooperative Extension Service Fact Sheet **EPP-7332** (4 pp.).
- (57). **Kard, B. (contributor). 2015.** The 2015 OSU Extension Agents Handbook of Insect, Plant Disease, and Weed Control E-832, Household Pest Control Section.

pp. 411-419. Division of Agricultural Sciences and Natural Resources, Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, OK.

- (58). **Konemann, C. E., and B. M. Kard. 2015.** “Contributions of *Reticulitermes flavipes* (Isoptera: Rhinotermitidae) to Greenhouse Gases, CO₂ and CH₄, on The Oklahoma Tallgrass Prairie Preserve.” ESA Annual National Meeting, Minneapolis, MN. (Poster; student competition)
- (59). **Konemann, C. E. and B. M. Kard. 2015.** “CO₂ and CH₄ Emissions by Subterranean Termites (Isoptera: Rhinotermitidae) on Oklahoma’s Tallgrass Prairie. 2015 **S-1053** NIMSS [National Information Management and Support System] Annual Conference. Oklahoma State University. Dec. 5, 2015.
- (60). **Kard, B. M. 2016.** “Subterranean and Formosan Termite Control.” *In* Turfgrass and Landscape Maintenance Seminar Manual, Oklahoma Cooperative Extension Service, Marshall County Extension Exposition Center, 11545 Highway 70, Madill, OK. Concurrent Session Group I. Jan. 21, 2016. 15 Pp.
- (61). **Konemann, C. E. and B. M. Kard. 2016.** “CO₂ and CH₄ Emissions by Subterranean Termites (Isoptera: Rhinotermitidae) on Oklahoma’s Tallgrass Prairie.” Poster # 110070 Master’s Competition, SW Branch ESA Annual Meeting. February 22-25, 2016, Tyler, Texas.
- (62). **Kard, B. M. 2016.** Termite Identification and Management. Oklahoma Gardening, Regional and on-line podcast television segment. April 23-24, 2016 (segment aired four times. Permanent on YouTube and OK Gardening archives. (Audience 100,000s).
- (63). **Kard, B. 2017.** Household Pests: Insects. **2017.** “Household Pest Control Suggestions.” 2017 OSU Extension Agents’ Handbook of Insect, Plant Disease, and Weed Control: E-832. OSU OCES, DASNR.

C. Creative Activities

- (1). Training of Oklahoma Pesticide Applicators for Certification – General Pests; Structural Pests ODAFF certification Categories 7A and 7B. Pinkston Education Facility for Structural and Urban Pest Control (PEFSUPC).
- a. March 2002 – 2014. Three-day training sessions. Developed presentations used to teach termite biology, termite management, and current and emerging termite control technologies. Participated as field training resource at the PSEP during hands-on training. (1,950+ total students as of Dec. 2016).
- b. Training of Oklahoma General Pest and Food Processing Programs for Category 7A Oklahoma Certification.

D. Technology Transfer to Extension Agents and the Public

- (1). Answer 100s of telephone and email inquiries annually, concerning termite biology and control. Advise extension agents.
- (2). Mail dozens of termite control publications to the general public, OCES, etc..
- (3). Answer 1000s of email inquiries concerning termite biology and control.

IV. PROFESSIONAL ACTIVITIES:

A. Committees

- (1). Voting member of the Association of Structural Pest Control Regulatory Officials (ASPCRO) Termiticide Label Review Committee, a USEPA advisory group; national in scope (national and international impact).
- (2). Judge for Student Poster Competition, Section Fb, ESA Annual Meeting 2001, San Diego, CA
- (3). Moderator for 'Workshop A', Structural Pests–Biology and Control. The 4th International Conference on Urban Pests. July 7-10, 2002. Charleston, South Carolina.
- (4). Moderator, 10-minute papers. Annual ESA Meeting, 1300-1700 hours, October 28, 2003. Crop Protection Entomology.
- (5). Program Committee, 2004 ESA Annual Meeting, Salt Lake City, UT.
- (6). Awards Committee; SW Branch ESA. 2004-2009.
- (7). Graduate Student Committee Chair; Committee Membership
 - (a). 7-Ph.D.; 11 MS. 1998-2016
- (8). Termiticide Scientific Review Panel. Association of Structural Pest Control Regulatory Officials (ASPCRO)-RISE-USEPA-NPMA advisory group on scientific merit and efficacy of new termite management research products. A high-level commission with 100s of Millions-to- \$5 Billion+ impact on US Economy and World pest management industry (national, international impact).
- (9). ESA International Congress of Entomology Travel Grant Committee-2004. Review and evaluate all ESA Sections E and F applications for grants for junior scientists to attend the ICE Congress in Brisbane, Australia during August 2004. 190+ total applications received for ESA; evaluated 36 personally.

- (10). ESA 2004 National Meeting Program Committee. Organize annual meeting, and evaluate and vote on Program Symposia, Section Symposia, and meeting Symposia.
- (11). Organizer and Moderator for the National Conference on Urban Entomology. Symposium: Diversity of Desert Termites, in Honor of Bill Nutting, Professor of Entomology, University of Arizona (deceased). May 19-22, 2004. Phoenix, AZ.
- (12). Oklahoma Pest Control Association Annual Meeting Planning Committee (indef).
- (13). Vice-chair (2005-2007); Chair (2007-2009) Biological Science Graduate Faculty (Group I). 2007-2009
- (14). Academic Program Committee, OSU. 2007-2009
- (15). Oklahoma ODAFF Termiticide Minimum Label Requirements Committee.
- (16). Faculty Advisor to the Sanborn Entomology Club. 2005-indefinite
- (17). Oral Paper Judge. Feb 22, 2007. GSPGA 18th Annual Research Symposium. Student Union, OSU, Stillwater, OK.
- (18). Student Poster Judge. Feb 22, 2007. GSPGA 18th Annual Research Symposium. Student Union, OSU, Stillwater, OK.
- (19). Dept. Entomology and Plant Pathology, Graduate Program Coordinator, 2009-2010.
- (20). Committee member: Nan-Yao Su Endowment Creative Student Annual Award Committee-ESA SVPHS Section Representative. 2009- indefinite
- (21). Committee member: Bill and Ruth Nutting Student Research Award Committee Judging Panel: NCUE 2009-indefinite.
- (22). OSU William's Outstanding Thesis Awards Committee. Evaluation of Graduate Student Theses for MS and Ph.D. student awards (CASNR Academic Programs). **2009-2010**. B. Kard, Dave Henneberry, Gerald Horn, Art Klatt, William McGlynn.
- (23). Interim Pesticide Coordinator, DASNR, OSU (2009-2013; 2016 – 201x)
- (24). Pesticide Advisory Committee member. ODAFF, CPS, Oklahoma City, OK. Committee consists of representatives of large constituents of Agriculture and related businesses in Oklahoma. Agribusiness Retailers; Vegetation Managers; Aerial Pesticide Applicators; Commercial Pest Control Applicators; Restricted Use Pesticide Dealers; Pesticide Manufacturers; Pesticide Applicators; Agricultural Organizations; General Public Representative(s) w/emphasis on consumer protection; OSU/OCES; and the Turfgrass Industry. Feb. 22, **2011**-indefinite.

- (25). NPMA Committee – Termite Pretreat Blue-Ribbon Task Force. July 1, 2013 – June 30, 2014. National Pest Management Association.
- (26). OSU Group-I Biology: Graduate Faculty Bylaws Review and Revision Committee. 2014-Indefinite.
- (27). Committee Member : National Advisory Committee for the Conehead Termite (Eradication) Program. Florida Dept. of Agriculture and Consumer Services, Dania Beach, FL. Science Advisor and Program Coordinator to FL DACS, Dr. Barbara Thorne, Univ. MD Professor Emerita.
- (28). Certified TermaTrac Technician. Microwave, Infra-red, electromagnetic field moisture detection specialist. February 18, 2016 – indefinite.
- (29). OARA – OK Agriculture Association Advisory Director. May 2016-Indefinite.

B. Service in professional organizations / scientific papers/ grants reviewed (2001-2016)

(Recent)

- (70). Reviewed and edited. **2016**. “Spatial and Temporal Distribution of *Phyllophaga* spp. Infesting Bermudagrass Stands in Oklahoma.” Crop Science. 29 May 2016.
- (71). Reviewed and edited. **2016**. “Field evaluation of sugarcane stalks and straw as potential bait matrices for use in termite control programs and for collection of *Microcerotermes diversus* Silvestri (Isoptera: Termitidae).”
¹Dept. of Plant Protection, College of Agriculture, Shahid Chamran Univ., Ahwaz, Iran
²Dept.of Wood and Paper Industries, College of Natural Resources, Khatam Alanbia Univ., Behbahan, Iran. 29 May 2016.
- (72). Reviewed and edited. **2016**. “Survey on discrimination of five species of *Megachile* Latreille (Hymenoptera: Megachilidae) by using wing geometric morphometrics based on two submarginal cells' landmarks.”
¹Department of Plant Protection, College of Agriculture, Shahid-Chamran University of Ahvaz, Iran.
²Department of Plant Protection, Faculty of Agriculture, Yasouj University, Yasouj, Iran. May 29, 2016.
- (73). Reviewed, edited and revised. **2016**. “Laboratory evaluation of chemical additives as feeding stimulants for termites.”
¹Department of Plant Protection, College of Agriculture, Shahid Chamran University of Ahvaz, Iran
²Department of Wood and Paper Industries, College of Natural Resources, Khatam Alanbia University of Behbahan, Iran. 01 June 2016.

- (74). Reviewed and edited. **2016**. “Morphometrics of *Microcerotermes diversus* (Silvestri) (Isoptera: Termitidae) in Southwestern Iran.” Dept. of Plant Protection, College of Agriculture, Shahid-Chamran Univ., Ahwaz, Iran. 03 June 2016.
- (75). Reviewed and edited. **2016**. “Spatial and Temporal Distribution of *Phyllophaga* spp. Infesting Bermudagrass Stands in Oklahoma.” J. Crop Science. 28 June 2016.
- (76). Reviewed and edited. **2016**. Ph.D. Candidate’s Resume'. September 2016.
- (77). Reviewed and edited. **2016**. “TERMIDOR[®]H•P II High Precision Termiticide” label. 07 October 2016.
- (78). Reviewed, revised and edited JEE submitted paper. **2016**. “HPLC Analysis for Determining Concentration and Time Dependent Degradation, Half-life and Bioavailability of Termiticides Biflex (Bifenthrin) and Fipronil (Phenyl pyrazole) in Soils.” (20 October 2016)
- (79). Reviewed, revised, and edited. **2016**. “Effects of Process Variables on Production of Ethylcellulose-Based Nanocapsules Containing Imidacloprid.” Dept. of Plant Protection, College of Agriculture, Shahid-Chamran Univ., Ahwaz, Iran. October 21, 2016.
- (80). Reviewed, revised, and edited. **2016**. “Incorporating Biological Control into IPM Decision Making.” Current Opinion Insect Science November 18, 2106. 16 Pp.
- (81). Reviewed and edited. **2016**. “Surveillance of Mosquitoes in Urban Areas Across Oklahoma.” MS thesis. November 22, 2016.
- (82). Reviewed and edited. **2017**. “Discrimination of four *Hoplitis* spp. Klug (Hymenoptera: Megachilidae) using wing geometric morphometrics.” Dept. of Plant Protection, College of Agriculture, Shahid-Chamran Univ., Ahwaz, Iran. January 6, 2017.

Memberships

- (1). Entomological Society of America
- (2). Florida Entomological Society
- (3). Georgia Entomological Society
- (4). Central States (Kansas) Entomology Society
- (5). Southwestern Entomological Society
- (6). International Research Group on Wood Protection (IRG; Stockholm, Sweden)

- (7). Board Certified Entomologist: Structural and Urban Entomology (ESA)
- (8). Former Adjunct Associate Professor, Dept. Entomol., Mississippi State Univ.
- (9). National Committees: ASPCRO, Association of Structural Pest Control Regulatory Officials - Termiticide Label Review Committee.
- (10). Termiticide Scientific Review Panel (RISE/ ASPCRO/ USEPA).
- (11). Oklahoma Pesticide Advisory Council. ODAFF
- (12). Oklahoma Pest Control Association Annual Meeting Planning Committee
- (13). Certified Pesticide Applicator, State of Oklahoma. General Pests; Structural Pests

V. SPECIAL AWARDS AND RECOGNITION:

- (1). Syngenta and Pest Control Technology National Leadership Award 1999, for sustained leadership excellence in the National Pest Control industry. Presented at the National Pest Management Association Annual Meeting.
- (2). 2001 Orkin Pest Control Award for Research Excellence. Included \$3,000 Contribution to the Urban Entomology Endowment.
- (3). 2002 ESA Meeting President' Prize Awards. Honorable mention: Survey of Oklahoma Termites.
- (4). 2012. Oklahoma State University Medallion for Structural and Urban Entomology Endowed Professorship Accomplishments.
- (5). 2016. Richard L. 'Dick' Parker Award for sustained 'Above and Beyond' contributions to the Oklahoma Pest Management Association and OK Pest Management Industry. Awarded during the 2nd Annual Pest Management Conference, Reed Convention Center, Midwest City, OK. Sept. 15, 2016.
- (6). OK Cooperative Extension Service Honor Award for 2016. OSU DASNR.

VI. COOPERATIVE INTERDISCIPLINARY ACTIVITIES

A. Field and Laboratory Research

- (1). Continuation of the 'Oklahoma Termite Survey'.
- (2). Field research in the USA in cooperation with scientists from Australia, Thailand, Malaysia, Japan, Turkey, TA&MU and University of Georgia.
- (3). International field research in cooperation with Australian scientists.
- (4). Continue cooperation Soil Sciences in investigating impact of termites in grasslands.
- (5). Ongoing cooperation with molecular biologists.

- (6). Training sessions in the PEFSUPC conducted in cooperation with ODAFF inspectors and OSU colleagues.
- (7). Established field research in cooperation with the Nature Conservancy. Located on the Oklahoma Native Tall Grass Prairie Preserve.
- (8). Cooperative research with University of Idaho and USDA-Forest Service scientists.

B. Results of Team Efforts

- (1). Five indigenous Oklahoma subterranean species have been identified and their general distribution determined. A dampwood termite (exotic) was identified in boards in an Oklahoma lumber yard. The wood was imported from the Oregon-Washington west coast where these termites are numerous.
- (2). More than 2 million termites have been recovered from Mississippi and Georgia test sites from research plots. Several studies are underway.
- (3). Numerous Category 7 A and 7B training sessions have been and continue to be conducted for pesticide applicator certification using the Pinkston Education Facility for Structural and Urban Pest Control
- (4). Fifteen peer-review scientific papers, and numerous proceedings, abstracts, technical papers, and posters have been published or presented. Several peer-review papers have been submitted to journals, are in departmental review, or in preparation.
- (5). Several grants, and Structural and Urban Entomology Endowment funds have been received.

C. National and International Accomplishments and Responsibilities

1. Paper-Annual IRG conference; Czechoslovakia. May 2002
2. Paper- Annual pest mgmt. conference; Brisbane, Australia. May 2003
3. Cooperating on research with Australian, Thai, Malay, Turk, Azerbaijan, and Japanese scientists.
4. Paper presented at the International Congress of Entomology, August 2004, Brisbane, Australia. Termite IPM (Kard and S. C. Jones; Kard presented)
5. Paper presented at the Pacific Rim Termite Research Group annual conference, Feb. 2012. Han Noi, Republic of Vietnam.

VII. PROFESSIONAL DEVELOPMENT ACTIVITIES- Ongoing

Oklahoma Pest Control Association, Assoc. of Structural Pest Control Regulatory Officials (ASPCRO) Annual Meeting; National Pest Management Association (NPMA); Entomological Society of America (ESA), ESA South West Branch, B and G, Estes, Louisiana, Texas, Kansas, Nebraska, North Carolina, Illinois, Maryland, Missouri, and Mississippi Pest Control Associations, American Wood-Preservers Association, National Conference on Urban Entomology, International Group on Wood Preservation, and University conferences are attended and presentations given on a cyclic basis. Oklahoma Crop

Improvement Association Annual Meeting. Target Specialty Conference, OKC; Tulsa.
TermaTrac Certified Technician (2 Feb 2016-indefinite).

VIII. OK INTERIM PESTICIDE EDUCATION COORDINATOR (5/09-10/2013; 4/2016-)

A. State Regulation Requirements

1. Review and recommend to ODAFF, CEUs for 120-160 organizations/year
2. Serve on the **CEU Review Committee**-resolve CEU challenges
3. Ensure General Pest, Structural Pest, and Grain Fumigation practical training sessions are conducted. Kevin Shelton, Charles Luper, ODAFF Inspectors, and I coordinate and conduct the 7A and 7B. Kevin Shelton does this coordination. Kevin Shelton, Carol Jones, Edmond Bonjour, and Charles Luper plan and conduct 7C practical sessions.

B. State Regulation Agreements

1. Review **Section 18** Emergency / Crisis Exemptions for pesticides. Advise ODAFF. Provide documentation as needed.
 - a. Review Specific exemptions, and Crisis exemptions.
2. Review **24(c)** state and local need label requests. Provide documentation.
3. **Worker Protection Program.** Provide educational assistance to ODAFF in training nursery and greenhouse operators who are in violation of USEPA's standards (Charles Luper coordinates this program).
4. **Unwanted Pesticide Collection Program.** **49,725** lbs of unwanted pesticides Collected and disposed of annually (Charles Luper Coordinates).
5. **Container Collection Program.** Coop/w US Ag. Recycling to collect used pesticide containers. (100,000s lbs)
6. **Additional CEU programming.** Added training, especially at the end of a calendar year so that applicators short of CEUs can remain current.

C. Additional Responsibilities

1. Review the Federal Register-pesticide regulations, grants of interest to OK.
2. Attend Regulatory Meetings relative to new/contentious regulations.
3. Provide assistance concerning Federal and State pesticide regulations.
4. Provide assistance in interpreting pesticide labels.
5. Write newsletters for OPCA as needed (Shelton does this as needed)
6. Update Certification Manuals (Shelton, Luper, Kard, Jones, Bonjour).
7. Update County Agent's Handbook (E-832) annually as needed.
8. Review and provide recommendations to OK Law and Regulations to ODAFF (Shelton, Kard, Luper, OK Pest Control Assoc. Representatives).
9. **State IR-4 Liaison** (Luper handles the majority of these responsibilities).
10. Coordinate with Aerial Applicators Association (2009-2013; 2016-).

Summary: January 10, 2017

- 1. Committee Chair and Advisor 4 Ph.D.; 5 MS Students (at OSU).
Committee - 5 MS; 4 Ph.D. Students.**
- 2. Presented scientific papers, classroom sessions, and training to 21,000+ PCOs, company owners, industry representatives, pesticide applicators, and colleagues during OSU tenure (in addition, 60,000+ during USDA tenure).**
- 3. Provided training during ‘Structural Pest’, ‘General Pest’, and Fumigation Certified Pesticide Applicator Schools (1,635) applicators trained and certified through 2016.**
- 4. Published 181 scientific, technical, and professional journal papers; four scientific papers currently submitted to journal for 2017 publication (one accepted; three in review); 13 additional papers in preparation. (+21 additional social media outputs)**
- 5. Published 63 extension papers, including 18 posters.**

**World-wide HGTV Segment – termite management (20,000,000+ viewers)
2 videos (termite control research: USDA-FS)
1 Oklahoma Gardening segment. Termite Identification and Management.
Segment aired four times, twice each 23 April and 24 April 2016
2 TV segments (OK Channel 5; 850,000+ viewers).
1 OSU You-tube, Bed-Bug control: 1,200+ hits)
13 Newspaper articles (termite control),
1 scientific protocol-coop. FL Dept. Ag.**

$\sum\sum_{4,5} = 244$ publications total to date (not including newspaper articles, protocols, videos, you-tube, TV segments).

- 7. Author or co-author of 163 oral and poster presentations at scientific/technical meetings and conferences.**
- 8. Provided 527 presentations at extension meetings and pesticide safety training Sessions (as of May 2016).
 $\sum\sum_{7,8} = 690$ presentations total through December 2016.**
- 9. Author or co-author of 200+ USDA technical progress reports.**
- 10. 2002 Secretary, 2003 Vice-chair; 2004 Chair, Section F-Medical, Urban and Veterinary Entomology [MUVE], Entomological Society of America.**
- 11. 2004 ESA National Meeting Program Committee.**

- 12. Initiated 12 lab, 1 greenhouse, and 16 field research studies.**
- 13. Conducting 32 EUP field studies in cooperation with Industry.**
- 14. Cooperating international studies: Australia, Thailand, Japan, Indonesia, Turkey, Azerbaijan, Singapore, and USA.**
- 15. Vice-chair, Biological Sciences Graduate Faculty (Group I) 2005-2007; Chair 2007-2009.**
- 16. Dept. Entomology and Plant Pathology Graduate Program Coordinator (2008-2013; 2016 – interim Coordinator).**
- 17. Member, ASPCRO Termiticide Label Review Committee (national scope; indef.).**
- 18. Member ASPCRO-RISE-USEPA Tech. Scientific Review Panel (national; indef.).**
- 19. Oklahoma ODAFF Termiticide Minimum Standards Committee (indef.).**
- 20. OK Pest Management Association Annual Meeting Planning Committee (indef.).**
- 21. Reviewed and edited 83 submissions for editors of scientific Journals, and student theses and dissertations 2002-2016.**
- 22. Grants total: \$4,738,725 (January 10, 2017).**