CURRICULUM VITAE

STEVEN JON SEYBOLD

ADDRESS: *Business:* USDA Forest Service, Pacific Southwest Res. Station
1731 Research Park Drive and HDH001 Orchard Park Dr., Rm 116
Davis, CA 95618 USA

E-MAIL: sseybold@fs.fed.us or sjseybold@gmail.com

TELEPHONE: *Cellular*: (530)-219-8717

EDUCATION:

University	*Major Field*	*Degree*	*Date*
University of Wisconsin-Madison	Forestry	B.S.	1983
University of California-Berkeley	Entomology	Ph.D.	1992

PRESENT POSITION:

Research Entomologist, USDA Forest Service, Pacific Southwest Research Station (October, 2002—Present). (GS-12, October, 2002— October, 2006; GS-13, October, 2006—February, 2008; GS-14, February, 2008—November, 2014; GS-15, November, 2014—Present).

POSTGRADUATE EMPLOYMENT:

Assistant Professor, Departments of Entomology and Forest Resources, University of Minnesota (October, 1998—September, 2002).

Research Assistant Professor of Biochemistry, Department of Biochemistry, University of Nevada, Reno (September, 1995—September, 1998).

Postdoctoral Fellow in Biochemistry, "Enantioselective Biosynthesis of Pine Bark Beetle (*Ips* spp.) Pheromone Components." Funded by USDA National Research Initiative Competitive Grants Program at the University of Nevada, Reno, Department of Biochemistry (August, 1993—August, 1995).

Postdoctoral Associate, "Chemotaxonomy of *Ips pini*: Production of and Response to Pheromones, and Geographic Variation in Cuticular Hydrocarbon Composition." Funded at University of California at Berkeley by the USDA Forest Service, Pacific Southwest Research Station (May, 1992—May, 1993).

EXTRAMURAL RESEARCH FUNDING (approx. $11,275,000 in grants and contracts since Dec. 1989; sole PI unless otherwise indicated):

"Selection of Susceptible Walnut Hosts by the Walnut Twig Beetle: New Avenues for Managing Thousand Cankers Disease." California Department of Food and Agriculture 2016 Specialty Crop Block Grant Program, Project No. SCB16050, $372,547 (October 1, 2016 — March 31, 2019) (co-PI with Richard M. Bostock (lead PI), University of California Davis, Department of Plant Pathology, Davis, CA).

"Impact of Walnut Twig Beetle on English Walnut Health, Productivity, and Management: A Synthesis of Biotic and Abiotic Methods of Assessment." California Walnut Board, $99,756 (July, 2015—June, 2018) (PI with co-PI Elizabeth Fichtner, University of California Cooperative Extension, Tulare, CA).

"Technology for linking microsatellite DNA analyses of native walnut, walnut twig beetle, and *Geosmithia morbida* in the southwestern USA: Implications for distributions of unidentified hybrids or species and identification of native resistance to thousand cankers disease" USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, R3-2015-01, $148,159 (April, 2015—March, 2018) (PI with co-PI's Denita Hadžiabdić, University of Tennessee, Knoxville, TN, and A.D. Graves, USDA Forest Service, Forest Health Protection, Albuquerque, NM).

"Residue analysis of emamectin benzoate and imidacloprid from foliage of coast live oaks treated for control of goldspotted oak borer." USDA Forest Service, Forest Health Protection PIAP Program, $28,500 (April 1, 2015—March, 30, 2017) (PI with co-PI's T.W. Coleman, USDA FS FHP, San Bernardino, CA, D. Grosman, Arborjet Inc., Woburn, MA, D. Cox, Syngenta, Madera, CA, J. Doccola, Arborjet Inc., Woburn, MA, and Y. Chen, UCD, Dept. Entomology and Nematology).

"Development of Disease-resistant Walnut Rootstocks: Integration of Conventional and Genomic Approaches." USDA National Institute of Food and Agriculture, Specialty Crops Research Initiative Program, Project #11684658, $2,870,000 (Oct. 1, 2014-Sept. 30, 2017) [Co-PI with D. Kluepfel (lead), Department of Plant Pathology, UC-Davis and USDA-ARS, Davis, CA and 16 other co-PI's].

"Developing Efficient Detection Traps for the Exotic Goldspotted Oak Borer in Southern California Year 5" USDA APHIS, USDA Animal Plant Health Inspection Service-Plant Protection and Quarantine, Center for Plant Health Sciences, $43,000, Interagency Agreement 14-8130-0416-IA (August 2014—September 2014) (PI with co-PIs T.W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA, Y. Chen, Department of Entomology, University of California-Davis, Davis, CA, and Damon Crook, Department of Entomology, University of Massachusetts, Amherst, MA).

"Host Susceptibility and Potential for Range Expansion of the Invasive Polyphagous Shot Hole Borer (PSHB), *Euwallacea* sp., and Fusarium Dieback, *Fusarium euwallaceae,* in the U.S." USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, R5-2014-01, $183,614 (April, 2014—March, 2017) (PI with co-PI's R.C. Venette, USDA Forest Service, Northern Research Station, T.W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA, and R. Stouthamer, Department of Entomology, University of California, Riverside).

"Western Trials of Emamectin Benzoate for Protection of Walnut from Walnut Twig Beetle and Thousand Canker Disease." USDA Forest Service, Forest Health Protection PIAP Program, $60,559 (March 1, 2014—Sept. 30, 2016) (PI with co-PI's D. Grosman, Arborjet Inc., Woburn, MA, A.S. Munson, USDA Forest Service, Forest Health Protection, Ogden, UT, and D. Cox, Syngenta, Madera, CA).

"Development of Disease-resistant Walnut Rootstocks: Integration of Conventional and Genomic Approaches." USDA National Institute of Food and Agriculture, Specialty Crops Research Initiative Program, $1,142,000 (Sept., 2012—Aug., 2014) [Co-PI with D. Kluepfel (lead), USDA-ARS, Davis, CA and 16 other co-PI's].

"Walnut Twig Beetle Pheromone and Trapping: Applied Science for Improving the Detection Tool for Thousand Cankers Disease." USDA Forest Service, Forest Health Protection, Washington Office and Region 8, $100,000 (July 2012—June, 2013).

EXTRAMURAL RESEARCH FUNDING (continued):

"Development of Technology to Determine the Potential Distribution and Impact of the Walnut Twig Beetle (WTB), *Pityophthorus juglandis*, in the United States." USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, R2-2012-01, $181,189 (April, 2012—March, 2015) (Co-PI with R.C. Venette (lead), USDA Forest Service, Northern Research Station, J.J. Witcosky, USDA Forest Service, Forest Health Management, Lakewood, CO, and B.H. Aukema, Department of Entomology, University of Minnesota).

"Thousand Cankers Disease and the Walnut Twig Beetle: A Rapidly Emerging Invasive Threat to Walnuts in California." University of California, Agriculture and Natural Resources Competitive Grants Program, ANR Competitive Grant No. 11-1025, $296,695 (Nov. 1, 2011—Oct. 31, 2014) (Co-PI with R.M. Bostock, Dept. Plant Pathology, UC-Davis).

"Emamectin Benzoate and Propiconazole for Protection of Black Walnut from Walnut Twig Beetle and Thousand Cankers Disease." USDA Forest Service, Forest Health Protection PIAP Program, $60,000 (March 1, 2012—Sept. 30, 2014) (Co-PI with D. Grosman (lead), Texas Forest Service, Lufkin, TX, P. Merten, USDA Forest Service, Forest Health Protection, Asheville, NC, and D. Cox, Syngenta, Madera, CA).

"Development and Implementation of a Pheromone-baited Trap for the Walnut Twig Beetle, *Pityophthorus juglandis*." USDA Animal Plant Health Inspection Service-Plant Protection and Quarantine, Center for Plant Health Sciences, $399,040, Interagency Agreements 34-WT-10-8100-1491-IA (July 2010—June 2012, $129,040); 11-8130-1491-IA (11IA11272131069, Aug., 2011—June 14, 2013, $160,000); and 12-8130-1491-IA- $110,000 (Aug. 2012—June 14, 2014).

"Implementing Detection and Trapping Technology for the Walnut Twig Beetle, *Pityophthorus juglandis*, in Idaho, Utah, and Southern California." USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, R4-2011-01, $152,587 (April, 2011—March, 2014) (Lead-PI with A. S. Munson, USDA Forest Service, Forest Health Protection, Ogden, UT and T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA).

"Development of Detection and Trapping Technology for the Goldspotted Oak Borer (GSOB), *Agrilus auroguttatus* (Coleoptera: Buprestidae)." USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, R5-2011-03, $121,150 (April, 2011—March, 2014) (Lead-PI with T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA, and D. J. Crook, Dept. Entomology, University of Massachussets, Amherst).

"Developing Efficient Detection Traps for the Exotic Goldspotted Oak Borer in Southern California." USDA Animal and Plant Health Inspection Service, Center for Plant Health Science and Technology Agreements 1081001528CA and 1181301528CA, $144,000 (Sept., 2010—Sept., 2013) (co-PI with M. L. Flint (lead), Department of Entomology, UC-Davis, T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA, Y. Chen, Dept. Entomology, UC-Davis, and D. J. Crook, Dept. Entomology, University of Massachussets, Amherst).

"Monitoring Walnut Health and Decline in Response to Thousand Cankers Disease and Infestation by the Walnut Twig Beetle, *Pityophthorus juglandis*, in Southern California and New Mexico." USDA Forest Service, Forest Health Monitoring, Evaluation Monitoring Program, INT-EM-B-11-03, $71,400 (April, 2011—March, 2013) (Co-PI with A. D. Graves, USDA FS Forest Health Protection, Albuquerque, NM, T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA).

"Studies on Thousand Cankers Disease of Walnut and Walnut Twig Beetle in California." USDA Forest Service, Forest Health Protection, Washington Office, $393,000 [March 2010—Sept, 2014, $60,000 (March 2010), $76,000 (June 2011), $50,000 (Feb. 15, 2012), $60,000 (June 2013), $50,000 (April 2, 2014), $50,000 (April 2015), and $47,000 (April 2016)].

"A Tier II Assessment of the Distribution and Impact of Goldspotted Oak Borer (GSOB), *Agrilus coxalis*." USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, R5-2010-02, $168,363 (April, 2010—March, 2013) (Co-PI with R. C. Venette (lead), USDA Forest Service, Northern Research Station, T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA, and M. L. Flint, Dept. Entomology, UC-Davis).

EXTRAMURAL RESEARCH FUNDING (continued):

"Monitoring Oak Health and Decline Before and After Infestation by the Goldspotted Oak Borer (GSOB), *Agrilus coxalis*." USDA Forest Service, Forest Health Monitoring, Evaluation Monitoring Program, Project WC-EM-F-10-01, $73,440 (April, 2010—March, 2012) (Co-PI with N.E. Grulke, USDA FS PSW Station, T.W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA).

"Evaluation of *Juglans* Species and Germplasm Material for Thousand Cankers Disease." USDA-ARS National Clonal Germplasm Repository, Clonal Gerplasm Collection Evaluation Program, $38,300 (April 1, 2010—March 31, 2013) (Co-PI with R.M. Bostock (lead), Dept. Plant Pathology, UC-Davis, C. A. Leslie, Dept. Plant Sciences, UC-Davis, and N. Tisserat, Dept. Bioagricultural Science and Pest Management, Colorado State University).

"Biology of the Walnut Twig Beetle, *Pityophthorus juglandis*, and the Fungus *Geosmithia* Associated with Walnut Mortality in the Western United States." USDA National Institute of Food and Agriculture, Western Region IPM Center Program, $80,000 (Sept., 2009—Aug., 2010) (Co-PI with N. Tisserat (lead), W. Cranshaw, and W. Jacobi Dept. Bioagricultural Science and Pest Management, Colorado State University and C. Reed Funk, Improving Perennial Plants for Food and Bioenergy, Richmond, UT).

"Southern California Oak Mortality: Biology, Management, and Impact of the Goldspotted Oak Borer with an Emphasis on Solarization Treatment of Infested Firewood." USDA Forest Service Pacific Southwest Research Station Invasive Species Program Grant 09-JV-11272138-028, $80,000 (May, 2009—July, 2011) (Co-PI with M. F. Flint (lead), Department of Entomology, UC-Davis and T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA).

"Distribution of the Walnut Twig Beetle, *Pityophthorus juglandis*, and the Fungus, *Geosmithia sp.*, Associated with *Juglans* spp. Mortality in the Western United States." USDA Forest Service, Forest Health Monitoring, Detection Monitoring Program, Project INT-DM-09-01, $20,000 (April, 2009—March, 2010) (Co-PI with N. Tisserat, W. Cranshaw, and W. Jacobi Dept. Bioagricultural Science and Pest Management, Colorado State University).

"Detection and Distribution of the Walnut Twig Beetle, *Pityophthorus juglandis*, and the Fungus, *Geosmithia*, Associated with *Juglans* Mortality in the Western United States." USDA National Institute of Food and Agriculture, Critical Issues Program- Emerging and New Plant and Animal Pests and Diseases, $100,000 (Sept, 2009—Aug., 2011) (Co-PI with N. Tisserat (lead), W. Cranshaw, and W. Jacobi Dept. Bioagricultural Science and Pest Management, Colorado State University).

"Goldspotted Oak Borer: Distribution and Impact of a New Non-native Pest of Oaks." USDA Forest Service, Forest Health Monitoring, Detection Monitoring Program, Project WC-DM-09-01, $20,000, April, 2009—March, 2010) (Co-PI with T. W. Coleman, USDA Forest Service, Forest Health Protection, San Bernardino, CA).

"Monitoring Invasive Bark and Woodboring Beetles in Periurban Forests Following Wildfire." USDA Forest Service, Forest Health Monitoring, Evaluation Monitoring Program, $74,543 (April, 2008—March, 2010).

"Improved Early Detection for the Mediterranean Pine Engraver, *Orthotomicus erosus*, an Invasive Bark Beetle." USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, $93,104 (April, 2008—March, 2011) (Lead-PI with A. S. Munson, USDA Forest Service, Forest Health Protection, Ogden, UT and R. C. Venette, USDA Forest Service, Northern Research Station).

"Defining a Mechanistic Link in Pines among Stand Thinning, Drought Stress, and Risk of Mortality from Pine Bark Beetles." USDA-NRI Managed Ecosystems Program, $347,000 (July 1, 2007— June 30, 2010) (Co-PI with N. E. Grulke (lead), USDA FS PSW Station, and B. Demmig-Adams and W. Adams, Department of Environment, Population, and Organism Biology, University of Colorado, Boulder).

"Dispersal Potential of the Mediterranean Pine Engraver, *Orthotomicus erosus*, in Support of Risk Mapping." USDA Forest Service Forest Health Technology Enterprise Team, Fort Collins, Colorado $29,500 (April 2007—October, 2007) (Lead-PI with R. C. Venette, USDA Forest Service, Northern Research Station and M. L. Flint, Dept. Entomology, UC-Davis).

EXTRAMURAL RESEARCH FUNDING (continued):

"Impact and Management of the Mediterranean Pine Engraver and Redhaired Pine Bark Beetle in Urban Pines in California." USDA Exotic/Invasive Pests and Diseases Research Program, UC Statewide Integrated Pest Management Program, $128,000 (Sept. 1, 2005— Aug. 31, 2008) (Co-PI with M. L. Fint, Dept. Entomology, UC-Davis, Seybold, and J. C. Lee, Dept. Entomology, UC-Davis).

"Treatment of Ponderosa Pine, *Pinus ponderosa*, with Methyl Jasmonate: Investigation of a Potential Operational Method for Inducing Tree Resistance to Attack by the Western Pine Beetle, *Dendroctonus brevicomis*." USDA Forest Service Pacific Southwest Research Station Competitive Grants Program, $20,000 (April, 2005—October, 2005) (Lead-PI with D. P. W. Huber, Dept. Entomology, UC-Davis and C. J. Fettig, PSW).

"Methyl Jasmonate: Development of a New Tool for Bark Beetle Management in Alaskan Spruce." USDA Forest Service Forest Health Technology Enterprise Team, $20,000 (Nov., 2004—Oct., 2005) (Lead-PI with E. H. Holsten, A. S. Munson, both USDA Forest Service Forest Health Protection, A. D. Graves, UMN, and D. P. W. Huber).

"Monitoring Host Selection Behavior and Progression of Infestation by the Mountain Pine beetle in Mixed Stands of Limber and Lodgepole Pine." USDA Forest Service, Forest Health Monitoring, Evaluation Monitoring Program, $51,000 (Oct. 1, 2004— Sept. 30, 2007) (Co-PI with J. L. Harris, USDA Forest Service, Forest Health Management, Region 2, Lakewood, Colorado).

"Serial Analysis of Gene Expression in a Pine Bark Beetle, the Pine Engraver, *Ips pini*" USDA Forest Service Pacific Southwest Research Station Competitive Grants Program, $20,000 (April, 2004— October, 2004) (Lead-PI with D. P. W. Huber, Dept. Entomology, UC-Davis).

"Can pheromone-baited Trees Reduce Douglas-fir beetle-caused Tree Mortality?" USDA Forest Service Forest Health Protection, Western Bark Beetle Initiative Program, $78,744 (April, 2004—Oct., 2004) (Lead-PI with D. W. Ross and K. F. Wallin, Department of Forest Science, Oregon State University).

"Biology and Chemical Ecology of *Scolytus schevyrewi* Semenov, a Newly Detected Bark Beetle in North America" USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, $177,615 (April, 2004—March, 2007) (Co- PI with J. Negrón, USDA Forest Service, Rocky Mountain Res. Station).

"Continued Improvement of the Attractant Pheromone for Rocky Mountain Populations of the Mountain Pine Beetle "USDA Forest Service Forest Health Technology Enterprise Team, $35,000 (Nov., 2003—Oct., 2004) (Lead-PI with S. Munson, T. Eager, J. McMillin, and K. Allen, all USDA Forest Service Forest Health Protection).

"Comparative Biochemical and Molecular Studies of Isoprenoid Biosynthesis in Pines and Pine Bark Beetles." Human Frontier Science Program, $750,000 (Dec., 2001—Nov., 2005) (Lead PI with J. Bohlmann, Biotechnology Laboratory, University of British Columbia).

"Development of a Monitoring and Management Tool for South-central Rocky Mountain Populations of the Mountain Pine Beetle, *Dendroctonus ponderosae*" USDA Forest Service Forest Health Protection Special Technology Development Program, Cooperative Agreement, $20,000 (Sept., 2001—Dec. 31, 2002).

"Isolation of Novel Sex-specific Inducible Myrcene Synthase Activity Associated with an Insect." University of Minnesota Grant-in-Aid of Research, Artistry, and Scholarship Program, $17,039 (July, 2001 —Jan., 2003).

"Prescribed Fire as a Management Tool for Curbing Potential Epidemics of Bark Beetles and Woodborers in a Forest Blowdown." Cooperative Agreement with the USDA Forest Service Federal Lands--Survey and Technical Assistance (USDA Forest Service Forest Health Protection), $78,000 (May, 2001—April, 2004) (Lead PI, Co- with D. W. Gilmore, Dept. Forest Resources, University of Minnesota).

EXTRAMURAL RESEARCH FUNDING (continued):

"Interactions of Wildland Fire with Oak Wilt, Oak Decline and Wilt/Decline-Associated Insects in the Wildland-Urban Interface and Implications for Forest Health Management Guidelines." Cooperative Agreement with the USDA Forest Service Federal Lands--Survey and Technical Assistance (USDA Forest Service Forest Health Protection), $78,000 (May, 2001—April, 2004) (Lead PI, Co- with J. Juzwik, Dept. Plant Pathology, University of Minnesota).

"Application of Density Management Diagrams to Forest Health: An Integrated Approach to Reducing Adverse Impacts of Forest Insects" USDA Forest Service Forest Health Protection/Research and Development, Special Technology Development Program, Cooperative Agreement, $93,000 (April, 2000—March, 2003) (Lead PI, Co- with K. Puettmann, Dept. For. Resources, Oregon State University).

"Monitoring Spruce Budworm Populations and Damage in Minnesota White Spruce Plantations: Integration of Silviculture and Forest Entomology." Minnesota Department of Natural Resources, $42,175 (July, 2000—June, 2003).

"Laboratory Studies of Verbenone as an Antiaggregant for the Spruce Engraver, *Ips perturbatus*." USDA Forest Service, Pacific Southwest Research Station Cooperative Agreement #USDA/FS-00-CA-11272138, $24,000 (August, 2000—October, 2002).

"Analysis of the Attractant Pheromone Composition of the Mountain Pine Beetle, *Dendroctonus ponderosae*, in the Rocky Mountain Region." Cooperative Agreement with the USDA Forest Service Federal Lands--Prevention and Suppression Program (USDA Forest Service Forest Health Technology Enterprise Team), $19,255 (June, 2000—May, 2002).

"Effects of Severe Windstorm Disturbance and Subsequent Silvicultural Treatments on the Plant and Arthropod Diversity of the Sub-Boreal Forest in Northwestern Minnesota," USDA Forest Service Research Joint Venture Agreement 00JV11231300-035, $30,000 (July, 2000—Dec., 2001)(Co-PI with D.W. Gilmore, Dept. Forest Resources, University of Minnesota).

"Enhancing Distance Learning of Forest Entomology: On-line Access to Historic Still and Video Images from the UMN Forest Insect Teaching Collection." University of Minnesota Technology Enhanced Learning (TEL) Small Grant, University of Minnesota Office of Information Technology, $5,000 (November, 2000—October, 2001).

"Developing Mass Trapping Technology for the Spruce Beetle, *Dendroctonus rufipennis*." USDA Forest Service Subcontract from Oregon State University, $11,000 (March, 2000—March, 2001).

"Development of a Monitoring and Mass Trapping Tool for Wood Destroying Beetles in Structures: Isolation and Identification of Attractants for the California Deathwatch Beetle, *Hemicoelus gibbicollis* (Coleoptera:Anobiidae), and the Old World Lyctus Beetle, *Lyctus brunneus* (Coleoptera:Lyctidae)." California Department of Consumer Affairs, Structural Pest Control Board, $9,900 (Feb., 2000—Dec., 2000) (Co-PI with V. R. Lewis, University of California at Berkeley).

"Development and Assessment of Oak Wilt Control Strategies: Life Histories of Principal Insect Vectors of the Oak Wilt Fungus." Legislative Commission on Minnesota Resources, $60,000 (July, 1999—June, 2001).

"Molecular Studies of the Site and Regulation of Pheromone Biosynthesis in Pine Bark Beetles." University of Minnesota Grant-in-Aid of Research, Artistry, and Scholarship Program, $25,000 (March, 1999 —June, 2000).

"Regional Assessment of Nitidulidae Associated with Oak Wilt Mats." USDA Forest Service North Central Research Station Research Cost Reimbursement Agreement #23-99-05-RCRA, $9,790 (Feb., 1999—Dec., 1999).

"Biochemistry and Endocrine Regulation of Aggregation Pheromone Production in *Dendroctonus* spp. Pine Bark Beetles." NSF Integrative Animal Biology Grant Program, Grant #IBN-9728555, $258,000 (April, 1998—March, 2002) (Lead PI with G. J. Blomquist as Co-PI).

EXTRAMURAL RESEARCH FUNDING (continued):

"Molecular Basis for the Regulation of Pheromone Production in Pine Bark Beetles." USDA National Research Competitive Grants Program, Grant #9802897, $90,000 (Jan., 1999—Dec., 2000)(Co-PI with G. J. Blomquist and C. Tittiger).

"Pheromone Biosynthesis in Pine Bark Beetles (*Ips* spp.): Implications for Control." USDA National Research Initiative Competitive Grants Program, Grant #9702991, $150,000 (Sept., 1997—March, 2000).

"Analysis of Pheromone Production in the Alaskan Spruce Engraver Beetle, *Ips perturbatus* (Eichhoff)." USDA Forest Service Pacific Southwest Research Station Cooperative Agreement #PSW-0028-CA, $7,000 (Direct Costs Only) (Aug., 1997—Dec., 1998).

"Community and Non-Toxic Bark Beetle Management: Education and Implementation in the Tahoe Basin." University of Nevada Agricultural Experiment Station and Nevada Cooperative Extension, $102,000 (Jan., 1997—Sept., 1998) (Co-PI with G. J. Blomquist and S. G. Donaldson).

"Capture and Analysis of Bark Beetle Pheromones." USDA Forest Service, Forest Health Technology Enterprise Team, Morgantown, West Virginia, Contract #42-3428-6-0061, $5,798 (Aug., 1996—Aug., 1997).

"Field Bioassay of Aggregation and Anti-aggregation Pheromones of the Jeffrey Pine Beetle." USDA Forest Service Pacific Southwest Research Station Cooperative Agreement #PSW-97-0007CA, $28,800 (Direct Costs Only) (Feb., 1997—Dec., 1997) (Co-PI with G. J. Blomquist).

"Experimental Systematic Initiative Grant: Seminar in Chemical Ecology." NSF EPSCoR Program, $5,000 (March, 1996—March, 1997) (Co-PI with G. J. Blomquist).

"Pheromone Biosynthesis in Pine Bark Beetles (*Ips* spp.): Implications for Control." USDA National Research Initiative Competitive Grants Program, Grant #9502551, $120,000 (Sept., 1995—Sept., 1997).

"Use of Radiochemical Techniques to Identify the Aggregation Pheromone Components of the Jeffrey Pine Beetle, *Dendroctonus jeffreyi* Hopkins." USDA Forest Service Pacific Southwest Research Station Cooperative Agreement #PSW-95-0035CA, $62,500 (Direct Costs Only) (Sept., 1995—June, 1997) (Co-PI with G. J. Blomquist).

"Enantioselective Biosynthesis of Pine Bark Beetle (*Ips* spp.) Pheromone Components." USDA National Research Initiative Competitive Grants Program, Grant #9302089, $90,000 (Aug., 1993—Aug. 1995).

"Pheromones and kairomones of *Conophthorus ponderosae* from several *Pinus* spp.: Identification and determination of enantiomeric composition." USDA Forest Service Pacific Southwest Research Station Competitive Grants Program, $15,000 (Oct., 1992—Oct., 1993) (Co-PI with N. G. Rappaport).

"The Role of Chirality in Olfactory-Directed Aggregation of Pine Bark Beetles (Coleoptera:Scolytidae)." NSF Doctoral Dissertation Improvement Grant, $5,750 (Dec., 1989—Nov., 1990).

SCHOLASTIC AWARDS:

National Science Foundation Graduate Fellowship (September, 1985—September, 1988)
Phi Beta Kappa Scholarship (Alpha Chapter of California, UC-Berkeley) (1989)
Magy Memorial Award (1989)
Julius H. Freitag Memorial Award (1988)
Keen Fellowship in Forest Entomology (September, 1984—September, 1985 & May, 1990—May, 1991)

PROFESSIONAL SOCIETIES:

International Society of Chemical Ecology
Entomological Society of America
Pacific Coast Entomological Society
Entomological Society of Canada

HONORARY SOCIETIES:

Sigma Xi (Scientific Research)
Gamma Sigma Delta (1983) (Agriculture)
Xi Sigma Pi (1983) (Forestry)
Phi Kappa Phi (1982)
Phi Beta Kappa (1980)

PROFESSIONAL AWARDS:

President's Award (July 2014), The Central Plant Board, for recognition of contributions that benefit and protect the natural resources and plant industries of the 12 Central Plant Board states. The members of the board voted unanimously to recognize the scientist for his Thousand Cankers Disease of Black Walnut (TCD) research that has contributed to the detection of the Walnut Twig Beetle, *Pityophthorus juglandis* (WTB).

SERVICE:

Councilor, International Society of Chemical Ecology, 2000–2003

Program Chairman, Western Forest Insect Work Conference, April 26-30, 2004, San Diego, California

Scholarship Committee, Western Forest Insect Work Conference, September 2003–Present

Founders Award Committee, Western Forest Insect Work Conference, March 2010–Present

Committee Chairman, Multistate Regional Research Projects W-189 (October, 2000, Duluth, Minnesota) and W-187 (October 17-19, 2003, Taos, New Mexico). Organized joint meeting of both projects in 2003.

Steering Committee Member, USDA Forest Service, Forest Health Technology Enterprise Team Invasive Species Steering Committee for the Mediterranean Pine Engraver, *Orthotomicus erosus*, National Hazard Map, March 2007–March 2009.

Technical Advisor/Team Member, National Thousand Cankers Disease Technical Working Team, January 2010–Present.

Team Member, National Thousand Cankers Disease Executive Steering Committee, June 2011–Present.

Committee Member, University of California Davis, Department of Entomology and Nematology Search Committee, Faculty Position in Chemical Ecology (July 2013-March 2014).

Planning Committee Member, USDA Forest Service R&D Invasive Species Workshop, Phoenix, Arizona, December 8-11, 2015.

PUBLICATIONS (approx. 200 publications since 1992, including 94 articles in peer-reviewed journals; 10 book chapters and book reviews; 53 research reports and abstracts; and 44 extension articles):

Peer-Reviewed Journal Articles:

1. Seybold, S.J., Teale, S.A., Wood, D.L., Zhang, A., Webster, F.X., Lindahl, K.Q., and Kubo, I. 1992. The role of lanierone in the chemical ecology of *Ips pini* (Coleoptera:Scolytidae) in California. *J. Chem. Ecol.* 18:2305–2329.

2. Seybold, S.J. 1993. The role of chirality in olfactory-directed behavior: Aggregation of pine engraver beetles in the genus *Ips* (Coleoptera:Scolytidae). *J. Chem. Ecol*. 19:1809–1831.

3. Seybold, S.J., and Wood, D.L. 1993. Extended development of *Polycaon stoutii* (LeConte) (Coleoptera:Bostrichidae). *Pan-Pac. Entomol*. 69:33–35.

PUBLICATIONS (continued):

4. Seybold, S.J., and Tupy, J.L. 1993. *Ernobius mollis* (L.) (Coleoptera:Anobiidae) established in California. *Pan-Pac. Entomol*. 69:36–40.

5. Seybold, S.J., Ohtsuka, T., Wood, D.L., and Kubo, I. 1995. The enantiomeric composition of ipsdienol: A chemotaxonomic character for North American populations of *Ips* spp. in the *pini* subgeneric group (Coleoptera: Scolytidae). *J. Chem. Ecol.* 21:995–1016.

6. Seybold, S.J., Quilici, D.R., Tillman, J.A., Vanderwel, D., Wood, D.L., and Blomquist, G.J. 1995. *De novo* biosynthesis of the aggregation pheromone components ipsenol and ipsdienol by the pine bark beetles, *Ips paraconfusus* Lanier and *Ips pini* (Say) (Coleoptera:Scolytidae). *Proc. Nat. Acad. Sci. USA* 92:8393–8397.

7. Warren, C.E., Wood, D.L., Seybold, S.J., Storer, A.J., and Bros, W.E. 1996. The olfactory responses of *Ips plastographus maritimus* Lanier (Coleoptera:Scolytidae) to insect and host associated volatiles in the laboratory. *J. Chem. Ecol.* 22:2299–2316.

8. Cognato, A.I., Seybold, S.J., Wood, D.L., and Teale, S.A. 1997. A cladistic analysis of pheromone evolution in *Ips* bark beetles (Coleoptera:Scolytidae). *Evolution* 51:313–318.

9. Page, M., Nelson, L.J., Blomquist, G.J., and Seybold, S.J. 1997. Cuticular hydrocarbons as chemotaxonomic characters of pine engraver beetles (*Ips* spp.) (Coleoptera:Scolytidae) in the *grandicollis* subgeneric group. *J. Chem. Ecol.* 23:1053–1099.

10. Miller, D.R., Gibson, K.E., Raffa, K.F., Seybold, S.J., Teale, S.A., and Wood, D.L. 1997. Geographic variation in response of pine engraver, *Ips pini*, and associated species to pheromone, lanierone. *J. Chem. Ecol.* 23:2013–2031.

11. McPheron L.J., Seybold, S.J., Storer, A.J., Wood, D.L., Ohtsuka, T., and Kubo, I. 1997. Effects of enantiomeric blend of verbenone on the response of *Ips paraconfusus* Lanier (Coleoptera:Scolytidae) to naturally produced aggregation pheromone in the laboratory. *J. Chem. Ecol.* 23:2825–2839.

12. Ivarsson, P., Blomquist, G.J., and Seybold, S.J. 1997. *In vitro* production of the pheromone intermediates ipsdienone and ipsenone by the bark beetles *Ips pini* (Say) and *I. paraconfusus* Lanier (Coleoptera:Scolytidae). *Naturwissenschaften* 84:454–457.

13. Tillman, J.A., Holbrook, G.L., Dallara, P.L., Schal, C., Wood, D.L., Blomquist, G.J., and Seybold, S.J. 1998. Endocrine regulation of *de novo* aggregation pheromone biosynthesis in the pine engraver, *Ips pini* (Say)(Coleoptera: Scolytidae). *Insect Biochem. Molec. Biol.* 28:705–715.

14. Ivarsson, P., Tittiger, C., Blomquist, C., Borgeson, C.E., Seybold, S.J., Blomquist, G.J., and Högberg, H.-E. 1998. Pheromone precursor synthesis is localized in the metathorax of *Ips paraconfusus* Lanier (Coleoptera:Scolytidae). *Naturwissenschaften* 85:507–511.

15. Tittiger, C., Blomquist, G.J., Ivarsson, P., Borgeson, C.E., and Seybold, S.J. 1999. Juvenile hormone regulation of HMG-R gene expression in the bark beetle, *Ips paraconfusus* Lanier (Coleoptera:Scolytidae): Implications for male aggregation pheromone biosynthesis. *Cell. Molec. Life Sci.* 55:121–127.

16. Tillman, J.A., Seybold, S.J., Jurenka, R.A., and Blomquist, G.J. 1999. Insect pheromones: An overview of biosynthesis and endocrine regulation. *Insect Biochem. Molec. Biol*. 29:481–514.

17. Cognato, A.I., Seybold, S.J., and Sperling, F.A.H. 1999. Incomplete barriers to mitochondrial gene flow between pheromone races of the North American pine engraver, *Ips pini* (Say) (Coleoptera:Scolytidae). *Proc. R. Soc. Lond. B.* 266:1843–1850.

18. Seybold, S.J., Bohlmann, J., and Raffa, K.F. 2000. The biosynthesis of coniferophagous bark beetle pheromones and conifer isoprenoids: Evolutionary perspective and synthesis. *Can. Entomol.* 132: 697–753.

PUBLICATIONS (continued):

19. Dallara, P.L., Seybold, S.J., Meyer, H., Tolasch, T., Francke, W., and Wood, D.L. 2000. Semiochemicals from three species of *Pityophthorus* Eichhoff (Coleoptera:Scolytidae) in central coastal California: Identification and field response. *Can. Entomol.* 132:889–906.

20. Tittiger, C., O'Keeffe, C., Bengoa, C.S., Barkawi, L.S., Seybold, S.J., and Blomquist, G.J. 2000. Isolation and endocrine regulation of an HMG-CoA synthase cDNA from the male Jeffrey pine beetle, *Dendroctonus jeffreyi* (Coleoptera:Scolytidae). *Insect Biochem. Molec. Biol.* 30:1203–1211.

21. Seybold, S.J. 2001. *Ernobius mollis* (L.) (Coleoptera:Anobiidae): An exotic beetle colonizes Monterey pine, *Pinus radiata* D. Don, in northern California. *Pan-Pac. Entomol.* 77:51–54.

22. Seybold, S.J. 2001. A new and unusual host record for *Hemicoelus gibbicollis* (LeConte) (Coleoptera:Anobiidae). *Pan-Pac. Entomol.* 77:123–125.

23. Holsten, E.H., Burnside, R.E., and Seybold, S.J. 2001. Verbenone interrupts the response to aggregation pheromones in the northern spruce engraver, *Ips perturbatus* (Coleoptera: Scolytidae), in south-central and interior Alaska. *J. Entomol. Soc. Brit. Columbia* 98:251–256.

24. Cabrera, B.J., Marsh, P.M., Lewis, V.R., and Seybold, S.J. 2002. A new species of *Heterospilus* (Hymenoptera: Braconidae) associated with the deathwatch beetle, *Hemicoelus gibbicollis* (LeConte) (Coleoptera: Anobiidae). *Pan-Pac. Entomol.* 78:7–16.

25. Hall, G.M., Tittiger, C., Andrews, G., Mastick, G., Kuenzli, M., Luo, X., Seybold, S.J., and Blomquist, G.J. 2002. Male pine engraver beetles, *Ips pini*, synthesize the monoterpenoid pheromone component ipsdienol *de novo* in anterior midgut tissue. *Naturwissenschaften* 89:79–83.

26. Gandhi, K.J.K., and Seybold, S.J. 2002. Tamarack (Pinaceae): A previously unrecorded developmental host for the pine engraver and the eastern fivespined ips (Coleoptera: Scolytidae). *Can. Entomol.* 134:299–302.

27. Kyhl, J.F., Bartelt, R.J., Cossé, A., Juzwik, J., and Seybold, S.J. 2002. Semiochemical-mediated flight responses of sap beetle (Coleoptera: Nitidulidae) vectors of oak wilt, *Ceratocystis fagacearum*. *J. Chem. Ecol.* 28:1527–1547.

28. Hall, G.M., Tittiger, C.R., Blomquist, G.J., Andrews, G., Mastick, G., Barkawi, L.S., Bengoa, C.S., and Seybold, S.J. 2002. Male Jeffrey pine beetle, *Dendroctonus jeffreyi*, synthesizes the pheromone component frontalin in anterior midgut tissue. *Insect Biochem. Molec. Biol*. 32:1525–1532.

29. Seybold, S.J., and Tittiger, C. 2003. Biochemistry and molecular biology of *de novo* isoprenoid pheromone production in the Scolytidae. *Ann. Rev. Entomol*. 48:425–453.

30. Tittiger, C., Barkawi, L.S., Bengoa, C.S., Blomquist, G.J., and Seybold, S.J. 2003. Structure and juvenile hormone-mediated regulation of the HMG-CoA reductase gene from the Jeffrey pine beetle, *Dendroctonus jeffreyi*. *Molecular and Cellular Endocrinology* 199:11–21.

31. Martin, D., Bohlmann, J., Gershenzon, J., Francke, W., and Seybold, S.J. 2003. A novel sex-specific and inducible monoterpene synthase activity associated with a pine bark beetle, the pine engraver, *Ips pini*. *Naturwissenschaften* 90: 173–179.

32. Barkawi, L.S., Francke W., Blomquist, G.J., and Seybold, S.J. 2003. Frontalin: *De novo* biosynthesis of an aggregation pheromone component by *Dendroctonus* spp. bark beetles (Coleoptera: Scolytidae). *Insect Biochem. Mol. Biol.* 33:773–788.

33. Bartelt, R.J., Kyhl, J.F., Ambourn, A.K., Juzwik, J., and Seybold, S.J. 2004. Male-produced aggregation pheromone of *Carpophilus sayi*, a nitidulid vector of oak wilt disease, and pheromonal comparison with *Carpophilus lugubris*. *Agricultural and Forest Entomology* 6:39–46.

34. Allison, J.D., Borden, J.H., and Seybold, S.J. 2004. A review of the chemical ecology of the Cerambycidae (Coleoptera). *Chemoecology* 14:123–150.

PUBLICATIONS (continued):

35. Tillman, J.A., Lu, F., Goddard, L.M., Donaldson, Z.R., Dwinell, S.C., Tittiger, C., Hall, G.M., Storer, A.J., Blomquist, G.J., and Seybold, S.J. 2004. Juvenile hormone regulates *de novo* isoprenoid aggregation pheromone biosynthesis in pine bark beetles, *Ips* spp. (Coleoptera: Scolytidae), through transcriptional control of HMG-CoA reductase. *J. Chem. Ecol.* 30:2459–2494.

36. Gandhi, K.J.K., Gilmore, D.W., Ball, G.E., Holzenthal, R.W., Katovich, S.A., Koehle, J.J., Larsen, K.J., Mattson, W.J., and Seybold, S.J. 2005. A review of ground beetle species (Coleoptera: Carabidae) of Minnesota, USA: New records and range extensions. *Proc. Ent. Soc. Wash.* 107:917–940.

37. Negrón, J.F., Witcosky, J.J., Cain, R.J., LaBonte, J.R., Duerr, D.A., McElwey, S.J., Lee, J.C., and Seybold, S.J. 2005. The banded elm bark beetle: A new threat to elms in North America. *American Entomologist* 51(2):84–94.

38. Seybold, S.J., Huber, D.P.W., Lee, J.C., Graves, A. D., and Bohlmann, J. 2006. Pine monoterpenes and pine bark beetles: A marriage of convenience for defense and chemical communication. *Phytochemistry Reviews* 5:143–178.

39. Fettig, C.J., McMillin, J.D., Anhold, J.A., Hamud, S.M., Borys, R.R., Dabney, C.P., and Seybold, S.J. 2006. The effects of mechanical fuel reduction treatments on the activity of bark beetles (Coleoptera: Scolytidae) infesting ponderosa pine. *For. Ecol. Manage.* 230:55–68.

40. Huber, D.P.W., Erickson, M.L., Leutenegger, C., Bohlmann, J., and Seybold, S.J. 2007. Isolation and extreme sex-specific expression of cytochrome P450 genes in the bark beetle, *Ips paraconfusus*, following feeding on the phloem of host ponderosa pine, *Pinus ponderosa*. *Insect Molecular Biology* 16:335–349.

41. Gandhi, K.J.K., Gilmore, D.W., Katovich, S.A., Mattson, W.J., Spence, J.R., and Seybold, S.J. 2007. Physical effects of weather events on the abundance and diversity of insects in North American forests. *Environmental Reviews* 15:113–152.

42. Shepherd, W. P., Huber, D.P.W., Seybold, S.J., and Fettig, C.J. 2007. Antennal responses of the western pine beetle, *Dendroctonus brevicomis*, to stem volatiles of its primary host, *Pinus ponderosa*, and nine sympatric nonhost angiosperms and conifers. *Chemoecology* 17:209–221.

43. Liu, D.-G., Flint, M.L., and Seybold, S.J. 2008. A secondary sexual character in the redhaired pine bark beetle, *Hylurgus ligniperda* Fabricius (Coleoptera: Scolytidae). *Pan-Pac. Entomol.* 84:26–28.

44. Lee, J.C., Flint, M.L., and Seybold, S.J. 2008. Suitability of pines and other conifers as hosts for the invasive Mediterranean pine engraver (Coleoptera: Scolytidae) in North America. *J. Econ. Entomol.* 101:829–837.

45. Gandhi, K.J.K., Gilmore, D.W., Katovich, S.A., Mattson, W.J., Zasada, J.C., and Seybold, S.J. 2008. Catastrophic windstorm and fuel-reduction treatments alter ground beetle (Coleoptera: Carabidae) assemblages in a North American sub-boreal forest. *For. Ecol. Manage.* 256:1104–1123.

46. Negrón, J.F., Bentz, B.J., Fettig, C.J., Gillette, N.G., Hansen, E.M., Hayes, J.L., Kelsey, R., Lundquist, J.E., Lynch, A.L., Progar, R., and Seybold, S.J. 2008. USDA Forest Service bark beetle research in the western United States: Looking into the future. *J. Forestry* 106:325–331.

47. Graves, A.D., Holsten, E.H., Ascerno, M.E., Zogas, K., Hard, J.S., Huber, D.P.W., Blanchette, R., and Seybold, S.J. 2008. Protection of spruce from colonization by the bark beetle, *Ips perturbatus*, in Alaska. *For. Ecol. Manage.* 256:1825–1839.

48. Zhang, Q.-H., Erbilgen, N., and Seybold, S.J. 2008. GC-EAD responses to semiochemicals by eight beetles in the subcortical community associated with Monterey pine trees in coastal California: Similarities and disparities across three trophic levels. *Chemoecology* 18:243–254.

PUBLICATIONS (continued):

49. Coleman, T.W. and Seybold, S.J. 2008. Previously unrecorded damage to oak, *Quercus* spp., in southern California by the goldspotted oak borer, *Agrilus coxalis* Waterhouse (Coleoptera: Buprestidae). *Pan-Pac. Entomol.* 84:288–300.

50. Lee, J.C., Aguayo, I., Aslin, R., Durham, G., Hamud, S.M., Moltzan, B.D., Munson, A.S., Negrón, J.F., Peterson, T., Ragenovich, I.R., Witcosky, J.J., and Seybold, S.J. 2009. Co-occurrence of the invasive banded and European elm bark beetles (Coleoptera: Scolytidae) in North America. *Ann. Entomol. Soc. Am.* 102:426–436.

51. Fettig, C.J., McKelvey, S.R., Borys, R.R., Dabney, C.P, Hamud, S.M., Nelson, L.J., and Seybold, S.J. 2009. Efficacy of verbenone for protecting ponderosa pine stands from western pine beetle (Coleoptera: Curculionidae, Scolytinae) attack in California. *J. Econ. Entomol.* 102:1846–1858.

52. Gandhi, K. J. K., Gilmore, D. W., Haack, R. A., Katovich, S.A., Krauth, S. J., Mattson, W.J., Zasada, J.C., and Seybold, S.J. 2009. Application of semiochemicals to assess the biodiversity of subcortical insects following an ecosystem disturbance in a sub-boreal forest. *J. Chem. Ecol.* 35:1384–1410. DOI:10.1007/s10886-009-9724-3.

53. Lee, J.C. and Seybold, S.J. 2010. Host acceptance and larval competition in the banded and European elm bark beetles (Coleoptera: Scolytidae): Potential mechanisms for competitive displacement between invasive species. *J. Insect Behav.* 23:19–34. http://dx.doi.org/10.1007/s10905-009-9192-1.

54. Dodds, K. J., Gilmore, D. W., and Seybold, S. J. 2010. Assessing the threat posed by indigenous exotics: A case study of two North American bark beetle species. *Ann. Entomol. Soc. Am.* 103:39–49.

55. Lee, J. C., Hamud, S. M., Negrón, J. F., Witcosky, J. J., and Seybold, S. J. 2010. Semiochemical-mediated flight strategies of two invasive elm bark beetles: A potential factor in competitive displacement. *Environ. Entomol.* 39:642-652. DOI:10.1603/EN09327

56. Walter, A. J., Venette, R. C., Kells, S. A., and Seybold, S. J. 2010. Boring in response to bark and phloem extracts from North American trees does not explain host acceptance by the Mediterranean pine engraver, *Orthotomicus erosus* (Coleoptera: Scolytidae). *Environ. Entomol.* 39:661-669. DOI:10.1603/EN09320.

57. Walter, A. J., Venette, R. C., Kells, S. A., and Seybold, S. J. 2010. Walking response of the Mediterranean pine engraver, *Orthotomicus erosus*, to novel plant odors host in a laboratory olfactometer. *J. Insect Behav.* 23:251–267, DOI: 10.1007/s10905-010-9211-2

58. Coleman, T.W. and Seybold, S.J. 2010. Verification of a useful character for separating the sexes of the goldspotted oak borer, *Agrilus coxalis auroguttatus* (Coleoptera: Buprestidae). *Pan-Pacific Entomol.* 86:58-62.

59. Bentz, B.J., Régnière, J., Fettig, C.J., Hansen, E.M., Hayes, J.L., Hicke, J.A., Kelsey, R.G., Negrón, J.F., and Seybold, S.J. 2010. Climate change and bark beetles of the western US and Canada: Direct and indirect effects. *BioScience* 60:602–613.

60. Kim, S., Harrington, T.C., Lee, J. C., and Seybold, S. J. 2011. *Leptographium tereforme*, *sp. nov.* and other Ophiostomatales isolated from the redhaired pine bark beetle, *Hylurgus ligniperda*, in California. *Mycologica* 103(1):152-163. doi:10.3852/10-096.

61. Coleman, T.W., Grulke, N.E., Daly, M., Godinez, C., Schilling, S.L., Riggan, P.J., and Seybold, S.J. 2011. Coast live oak, *Quercus agrifolia*, susceptibility and response to goldspotted oak borer, *Agrilus auroguttatus*, injury in southern California. *For. Ecol. Manage.* 261:1852–1865. doi:10.1016/j.foreco.2011.02.008.

62. Coleman, T.W. and Seybold, S.J. 2011. Collection history and comparison of the interactions of the goldspotted oak borer, *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae), with host oaks in southern California and southeastern Arizona. *Coleop. Bulletin* 65:93–108.

PUBLICATIONS (continued):

63. Lee, J.C., Negrón, J.F., McElwey, S.J., Williams, L., Witcosky, J.J., Popp, J.B., and Seybold, S.J. 2011. Biology of the invasive banded elm bark beetle (Coleoptera: Scolytidae) in the western United States. *Ann. Entomol. Soc. Am.* 104:705–717. doi:10.1603/AN 10150.

64. Tisserat N., Cranshaw W., Putnam, M., Pscheidt, J. Leslie, C.A., Murray, M., Hoffman, J., Barkley, Y., Alexander, K., and Seybold, S.J. 2011. Thousand cankers disease is widespread on black walnut, *Juglans nigra*, in the western United States. Online. *Plant Health Progr*. (June 30, 2011) doi:10.1094/PHP-2011-0630-01-BR.

65. Coleman, T.W., Lopez, V., Rugman-Jones, P.F., Stouthamer, R., Seybold, S.J., Reardon, R., and Hoddle, M.S. 2012. Can the destruction of California's oak woodlands be prevented? Potential for biological control of the goldspotted oak borer, *Agrilus auroguttatus*. *BioControl* 57:211–225 doi: 10.1007/s10526-011-9404-4.

66. Coleman, T.W., Graves, A.D., Hoddle, M.S., Heath, Z., Flint, M.L., Chen, Y., and Seybold, S.J. 2012. Forest stand composition and impacts associated with *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae) and *Agrilus coxalis* Waterhouse in oak woodlands. *For. Ecol. Manage.* 276:104–117. http://dx.doi.org/10.1016/j.foreco.2012.03.011

67. Haavik, L. J., Coleman, T. W., Chen, Y., Jones, M. I., Venette, R. C., Flint, M. L., and Seybold, S. J. 2012. First occurrence of the goldspotted oak borer parasitoid, *Calosota elongata* (Hymenoptera: Eupelmidae), in California. *Pan-Pac. Entomol*. 88:374–376.

68. Dallara, P.L., Flint, M.L., and Seybold, S.J. 2012. An analysis of the larval instars of the walnut twig beetle, *Pityophthorus juglandis*, in northern California black walnut, *Juglans hindsii*, and a new host record for *Hylocurus hirtellus*. *Pan-Pac. Entomol*. 88:338–366.

69. Seybold, S.J. King, J.A., Harris, D.R., Nelson, L.J., Hamud, S.M., and Chen, Y. 2012. Diurnal flight response of the walnut twig beetle, *Pityophthorus juglandis*, to pheromone-baited traps in two northern California walnut habitats. *Pan-Pac. Entomol*. 88:231–247.

70. Seybold, S.J., Coleman, T.W., Dallara, P.L., Dart, N.L., Graves, A.D., Pederson, L., and Spichiger, S.–E. 2012. Recent collecting reveals new state records and the extremes in the distribution of the walnut twig beetle, *Pityophthorus juglandis* Blackman (Coleoptera: Scolytidae), in the United States. *Pan-Pac. Entomol*. 88:377–380.

71. Haavik, L.J., Coleman, T.W., Flint, M.L., Venette, R.C., and Seybold, S.J. 2012. *Agrilus auroguttatus* exit hole distributions on *Quercus agrifolia* boles and a sampling method to estimate their density on individual trees. *Can. Entomol*. 144:1–12.

72. Jones, M.I., Coleman, T.W., Graves, A.D., Flint, M.L., and Seybold, S.J. 2013. Sanitation options for managing oak wood infested with the invasive goldspotted oak borer (Coleoptera: Buprestidae) in southern California. *J. Econ. Entomol.* 106:235–246. doi: http://dx.doi.org/10.1603/EC12177.

73. Utley, C., Nguyen, T., Roubtsova, T., Coggeshall, M., Ford, T. C., Graulke, L.J., Graves, A.D., Leslie, C.A., McKenna, J., Woeste, K., Yaghmour, M. A., Cranshaw W., Seybold, S .J., Bostock, R. M., and Tisserat, N. A. 2013. Susceptibility of walnut and hickory species to *Geosmithia morbida*. *Plant Disease* 97:601–607. http://dx.doi.org/10.1094/PDIS-07-12-0636-RE, "First Look" posted December 5, 2012.

74. Chen, Y. and Seybold, S.J. 2013. Application of a frequency distribution method for determining instars of the beet armyworm (Lepidoptera: Noctuidae) from widths of cast head capsules. *J. Econ. Entomol.* 106:800–806. doi: http://dx.doi.org/10.1603/EC12367.

75. Haavik, L.J., Coleman, T.W., Flint, M.L., Venette, R.C., and Seybold, S.J. 2013. *Agrilus auroguttatus* (Coleoptera: Buprestidae) seasonal development within *Quercus agrifolia* (Fagales: Fagaceae) in southern California. *Ann. Entomol. Soc. Am.* 106:189–197. DOI: http://dx.doi.org/10.1603/AN12112.

76. Chen, Y., Coleman, T. W., Jones, M. I., Flint, M. L., and Seybold, S. J. 2013. Foliar nutrients explain goldspotted oak borer, *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae), adult feeding preference among four California oak species. *Entomologia Experimentalis et Applicata* 149:57–66. DOI: 10.1111/eea.12110.

PUBLICATIONS (continued):

77. Haavik, L.J., Graves, A.D., Coleman, T.W., Flint, M.L., Venette, R.C., and Seybold, S.J. 2014. Suitability of native and ornamental oak species in California for *Agrilus auroguttatus*. *Entomologia Experimentalis et Applicata* 150:86–97 DOI: 10.1111/eea.12141.

78. Beh, M.M., Metz, M.R., Seybold, S.J., and Rizzo, D.M. 2014. The novel interaction between *Phytophthora ramorum* and wildfire elicits elevated ambrosia beetle landing rates on tanoak, *Notholithocarpus densiflorus*. *For. Ecol. Manage.* 318:21–33. http://dx.doi.org/10.1016/j.foreco.2014.01.007

79. Haavik, L.J., Coleman, T.W., Flint, M.L., Venette, R.C., and Seybold, S.J. 2014. Densities of *Agrilus auroguttatus* and other borers in California and Arizona oaks. *Insects* 4:287–300. doi:10.3390/insects40x000x.

80. Goldarazena A., Bright, D.E., Hishinuma, S.M., López, S., and Seybold, S.J. 2014. First record of *Pityophthorus solus* (Blackman, 1928) in Europe. *Bulletin OEPP/EPPO Bulletin* (2014) 44 (1):65–69. DOI: 10.1111/epp.12093

81. Coleman, T.W., Chen, Y., Graves, A.D., Hishinuma, S.M., Grulke, N.E., Flint, M.L., and Seybold, S.J. 2014. Developing monitoring techniques for the invasive goldspotted oak borer (Coleoptera: Buprestidae) in California. *Environ. Entomol.* 43:729–743. http://dx.doi.org/10.1603/EN13162.

82. Coleman, T.W., Jones, M.I., Courtial, B., Graves, A.D., Woods, M., Roques, A., and Seybold, S.J. 2014. Impact of the first recorded outbreak of the Douglas-fir tussock moth, *Orgyia pseudotsugata*, in southern California and the extent of its distribution in the Pacific Southwest region. *For. Ecol. Manage.* 329:295–305. http://dx.doi.org/10.1016/j.foreco.2014.06.027.

83. Yaghmour, M.A., Nguyen, T.L., Roubtsova, T.V., Hasey, J.K., Fichtner, E.J., DeBuse, C., Seybold, S.J., and Bostock, R.M. 2014. First report of *Geosmithia morbida* on English walnut and its Paradox rootstock in California. *Plant Disease* 98:1441 (published online at http://dx.doi.org/10.1094/PDIS-06-14-0569-PDN).

84. Chen, Y. and Seybold, S.J. 2014. Crepuscular flight activity of an invasive insect governed by interacting abiotic factors. *PLoS ONE* 9(8): e105945. doi:10.1371/journal.pone.0105945.

85. Zerillo, M.M., Caballero, J.I., Woeste, K., Graves, A.D., Hartel, C., Pscheidt, J., Tonos, J., Broders, K., Cranshaw, W., Seybold, S.J., and Tisserat, N. 2014. Population structure of *Geosmithia morbida*, the causal agent of thousand cankers disease of walnut trees in the United States. *PLoS ONE* 9(11): e112847. doi:10.1371/journal.pone.0112847.

86. Haavik, L.J., Flint, M.L., Coleman, T.W., Venette, R.C., and Seybold, S.J. 2015. Goldspotted oak borer effects on tree health and colonization patterns at six newly-established sites. *Agric. For. Entomol.* 17:146-157. DOI: 10.1111/afe.12090.

87. Coleman, T.W., Jones, M.I., Hoddle, M.S., Haavik, L.J., Moser, J.C., Flint, M.L., and Seybold, S.J. 2015. *Pyemotes tritici* (Acari: Pyemotidae): A parasitoid of *Agrilus auroguttatus* and *Agrilus coxalis* (Coleoptera: Buprestidae) in the southwestern United States of America and southern Mexico. *Can. Entomol.* 147:244–248. DOI: 10.4039/tce.2014.38.

88. Rugman-Jones, P.F., Seybold, S.J., Graves, A.D., and Stouthamer, R. 2015. Phylogeography of the walnut twig beetle, *Pityophthorus juglandis*, the vector of thousand cankers disease in North American walnut trees. *PLoS ONE* 10(2): e0118264. DOI:10.1371/journal.pone.0118264.

89. Chen, Y., Flint, M.L., Coleman, T. W., Doccola, J.J., Grosman, D.M., Wood, D.L., and Seybold, S. J. 2015. Impact of the goldspotted oak borer, *Agrilus auroguttatus*, on the health of coast live oak before and after treatment with two systemic insecticides. *Pest Manage. Sci.* 71:1540–1552. http://onlinelibrary.wiley.com/doi/10.1002/ps.3959/pdf.

90. Westcott, R.L., Haines, R.D., Hishinuma, S.M., Nelson, L.J., and Seybold, S.J. 2015. *Chrysobothris analis* LeConte, 1860 (Coleoptera: Buprestidae) discovered in California with notes on *Chrysobothris wintu* Wellso & Manley, 2007. *Pan-Pac. Entomol*. 91:337–341. DOI: http://dx.doi.org/10.3956/2015-91.4.337.

PUBLICATIONS (continued):

91. Hishinuma, S.M., Dallara, P.L., Yaghmour, M.A., Zerillo, M.M., Parker, C.M., Roubtsova, T.V., Nguyen, T.L., Tisserat, N.A., Bostock, R.M., Flint, M.L., and Seybold, S.J. 2016. Wingnut (Juglandaceae) as a new generic host for *Pityophthorus juglandis* (Coleoptera: Curculionidae) and the thousand cankers disease pathogen, *Geosmithia morbida* (Ascomycota: Hypocreales). *Can. Entomol.* 148:83–91. DOI: 10.4039/tce.2015.37.

92. Hefty, A.R., Coggeshall, M.V., Aukema, B.H., Venette, R.C., and Seybold, S.J. 2016. Reproduction of walnut twig beetle in black walnut and butternut. *HortTechnology* 26:727–734. doi: 10.21273/HORTTECH03427-16.

93. Chen, Y., Dallara, P.L., Nelson, L. J., Coleman, T.W., Hishinuma, S.M., Carrillo, D., and Seybold, S. J. 2016. Comparative morphometric and chemical analyses of phenotypes of 2 invasive ambrosia beetles (*Euwallacea* spp.) in the United States. *Insect Science* DOI 10.1111/1744-7917.12329.

94. Morris, J.L., Cottrell, S., Fettig, C.J., Hansen, W.D., Sherriff, R.L., Carter, V.A., Clear, J.L., Clement, J., DeRose, R.J., Hicke, J.A., Higuera, P.E., Mattor, K.M., Seddon, A.W.R., Seppä, H.T., Stednick, J.D., and Seybold, S.J. 2016. Managing bark beetle impacts on ecosystems and society: Priority questions to motivate future research. *Journal of Applied Ecology* doi: 10.1111/1365-2664.12782.

Manuscripts Submitted or in Preparation

xx. Kolařík, M., Hulcr, J., Tisserat, N., De Beer, W., Kostovčík, M., Kolaříková, Z., Seybold, S.J., and Rizzo, D.M. 2016. *Geosmithia* associated with bark beetles and woodborers in the western USA: Taxonomic diversity and vector specificity. *Mycologia* (Accepted for Publication, Oct. 24, 2016).

xx. Morris, J.L., Cottrell, S., Fettig, C.J., Hansen, W.D., Sherriff, R.L., Carter, V.A., Clear, J., Clement, J., DeRose, R.J., Hicke, J.A., Higuera, P.E., Mattor, K.M., Seddon, A.W.R., Seppä, H., Stednick, J.D., and Seybold, S.J. 2016. Bark beetle impacts on social-ecological systems. *Frontiers of Ecology and the Environment* (In Revision, December 15, 2016).

xx. Hefty, A.R., Seybold, S.J., Aukema, B.H., and Venette, R.C. 2016. Cold tolerance of *Pityophthorus juglandis* (Coleoptera: Scolytidae) from northern California. *Environmental Entomology* (Submitted, October 24, 2016).

xx. Kees, A.M., Hefty, A.R., Venette, R.C., Seybold, S.J., and Aukema, B.H. 2017. Flight capacity of the walnut twig beetle, *Pityophthorus juglandis* (Coleoptera: Scolytidae), on a laboratory flight mill. *Environ. Entomol*. (Submitted Nov. 21, 2016).

xx. Hefty, A.R., Aukema, B.H., Venette, R.C., Coggeshall, M.V., McKenna, J.R., and Seybold, S.J. 2016. Reproduction of walnut twig beetle across the Juglandaceae: Implications for range expansion of a United States domestic invasive. *Biological Invasions* (In Prep., Nov. 23, 2016).

xx. Chen, Y., Aukema, B.H., and Seybold, S.J. 2016. The effects of weather on the flight of an invasive bark beetle, *Pityophthorus juglandis*. *Pop. Ecol.* (In Prep).

xx. Walter, A.J., Kells, S.A., Lee, J.C., Seybold, S.J., and Venette, R.C. 2016. Phylogeny of evolutionarily novel plants is correlated with suitability but not acceptability for an herbivore. *Proc. Royal Soc. Lond. B* (Under revision).

xx. Tatiossian, K.J., Chen, Y., Hishinuma, S.M., Flint, M.L., and Seybold, S.J. 2016. Flight response of the walnut twig beetle, *Pityophthorus juglandis*, to aggregation pheromones produced by low densities of males. *Naturwissenschaften* (In Prep).

xx. Chen, Y., Coleman, T.W., Poloni, A.L., Nelson, L. J., and Seybold, S. J. 2016. Reproduction and control of the invasive polyphagous shot hole borer, *Euwallacea* sp., in three species of hardwoods: Effective sanitation through felling and chipping, *Agric. For. Entomol*. (In Prep.).

PUBLICATIONS (continued):

Book Chapters and Book Reviews:

95. Seybold, S.J. 1995. Invited Book Review of "Beetle-Pathogen Interactions in Conifer Forests." *J. Chem. Ecol.* 21:1229-1232.

96. Blomquist, G.J., Tillman, J.A., Mpuru, S., and Seybold, S.J. 1998. The cuticle and cuticular hydrocarbons of insects: Structure, function, and biochemistry, pp. 34-54, *in* Vander Meer, R.K., Breed, M., Winston, M. and Espelie, C. eds., "Pheromone Communication in Social Insects," Westview Press, Boulder, Colorado.

97. Seybold, S.J., and Vanderwel, D. 2003. Biosynthesis and endocrine regulation of pheromone production in the Coleoptera, pp. 137-200, in Blomquist, G.J., and Vogt, R.G., eds., "Insect Pheromone Biochemistry and Molecular Biology–The biosynthesis and detection of pheromones and plant volatiles," Elsevier Academic Press, Amsterdam.

98. Seybold, S.J. 2004. The Eighth Day of Discovery: Molecular Biology Comes to Chemical Ecology. Editorial Preface to Special Molecular Issue of *The Journal of Chemical Ecology*. *J. Chem. Ecol.* 30:2327-2333.

99. Grulke, N.E., Minnich, R.A., Paine, T.D., Seybold, S.J., Chavez, D., Fenn, M.E., Riggan, P.J., and Dunn, A. 2009. Air pollution increases forest susceptibility to wildfires: A case study in the San Bernardino Mountains in southern California, pp. 365-403, in Bytnerowicz, A., Arbaugh, M., Riebau, A., and Anderson, C. (eds.). Air Pollution and Fire, Developments in Environmental Science, Vol. 8: Elsevier B. V., Amsterdam, The Netherlands.

100. Seybold, S.J. 2010. General Guidelines for Authors for Submission of Manuscripts that Contain Molecular Biological Content-*The Journal of Chemical Ecology*. *J. Chem. Ecol.* 36:1288–1292. (written with input from an adhoc committee consisting of: J. Gershenzon (Max Planck Institute for Chemical Ecology, Jena), D. Huber (University of Northern British Columbia), P. Nagnan-Le Meillour (INRA, Université de Lille), J. Pelletier (University of California, Davis), E. Plettner and C. Castillo (Simon Fraser University), A. Rafaeli (The Volcani Center, Bet Dagan), C. Tittiger (University of Nevada), and L. Walling (University of California, Riverside).

101. Lundquist, J.E., Camp, A.E., Tyrell, M.L., Seybold, S.J., Cannon, P., and Lodge, D.J. 2011. Earth, wind, and fire: Abiotic factors and the impacts of global environmental change on forest health, pp. 195-243, Ch. 7, *in* Castello, J.D., and Teale, S.A. (eds.). Forest Health: An Integrated Perspective. Cambridge University Press, Cambridge, UK, 392 pp.

102. Lopez, V.M., Coleman, T.W., Seybold, S.J., Reardon, R., and Hoddle, M.S. 2014. Goldspotted Oak Borer (*Agrilus auroguttatus* Schaeffer) (Coleoptera: Buprestidae), pp. 211–219, *in* Van Driesche, R. and Reardon, R.C. (eds.). The Use of Classical Biological Control to Preserve Forests in North America. USDA Forest Service, Forest Health Technology Enterprise Team, Morgantown, West Virginia.

103. Coleman, T.W. and Seybold, S.J. 2016. Goldspotted oak borer in California: Invasion history, biology, impact, management, and implications for Mediterranean forests worldwide, pp. 663-697, *in*: T.D. Paine and F. Lieutier (eds.). Insects and Diseases of Mediterranean Forest Systems, Springer International Publishing AG, Cham, Switzerland. DOI: 10.1007/978-3-319-24744-1_22.

104. Seybold, S.J., Penrose, R.L., and Graves, A.D. 2016. Invasive bark and ambrosia beetles in California Mediterranean forest ecosystems. pp. 583-662, *in*: T.D. Paine and F. Lieutier (eds.). Insects and Diseases of Mediterranean Forest Systems, Springer International Publishing AG, Cham, Switzerland. DOI: 10.1007/978-3-319-24744-1_21.

Non-Peer-Reviewed Research Publications:

105. Seybold, S.J. 1992. The status of scolytid genetics: A reductionist's view, pp. 12-13, *in* J.L. Hayes and J.L. Robertson (tech. coords.). Proceedings of a Workshop on Bark Beetle Genetics, May 17-18, 1992, Berkeley, CA, USDA Forest Service Gen. Tech. Report PSW-GTR-138.

PUBLICATIONS (continued):

106. Wood, D.L., Storer, A.J., Gorden, T.R., Seybold, S.J., and Page, M. 1992. Biosystematics of *Ips mexicanus* and *Ips plastographus* (Coleoptera:Scolytidae) and their fungal symbionts, pp. 10-11, *in* J.L. Hayes and J.L. Robertson (tech. coords.). Proceedings of a Workshop on Bark Beetle Genetics, May 17-18, 1992, Berkeley, CA, USDA Forest Service Gen. Tech. Report PSW-GTR-138.

107. Page, M. and Seybold, S.J. 1998. Cuticular hydrocarbons as characters for taxonomic and phylogenetic analyses of bark beetles, pp. 323-324, *in* V. Brunnhofer and T. Soldan (eds.). Book of Abstracts, Proceedings of the VIth European Congress of Entomology, August 23-29, 1998, Ceske Budejovice, Czech Republic, Institute of Entomology, Academy of Sciences of the Czech Republic. (Abstract).

108. Seybold, S.J., Cognato, A.I., and Page, M. 1998. Biochemical basis for the application of aggregation pheromones and cuticular hydrocarbons to taxonomic and phylogenetic analyses of bark beetles (Coleoptera: Scolytidae), pp. 328-329, *in* V. Brunnhofer and T. Soldan (eds.). Book of Abstracts, Proceedings of the VIth European Congress of Entomology, August 23-29, 1998, Ceske Budejovice, Czech Republic, Institute of Entomology, Academy of Sciences of the Czech Republic. (Abstract).

109. Holsten, E.H., Burnside, R.E., and Seybold, S.J. 2000. Attractant semiochemicals of the engraver beetle, *Ips perturbatus* (Eichhoff), in south-central and interior Alaska. *Research Paper PNW-RP-529*, USDA Forest Service Pacific Northwest Research Station, 9 pp.

110. Seybold, S.J. 2001. The status of education in forest entomology in the United States, pp. 180-183, *in* W.J.A. Volney, J.R. Spence, and E.M. Lefebvre (eds.). Boreal Odyssey: Proceedings: North American Forest Insect Work Conference; May 14-18, 2001, Edmonton, Alberta, Canada, Information Report NOR-X-381, 234 pp. Canadian Forest Service, Northern Forestry Centre, Edmonton, Alberta, Canada. (Abstract).

111. Blackford, D.C., Puettmann, K.J., and Seybold, S.J. 2001. Impacts of the eastern spruce budworm, *Choristoneura fumiferana*, on white spruce, *Picea glauca*, plantations in northern Minnesota, p. 192, *in* W.J.A. Volney, J.R. Spence, and E.M. Lefebvre (eds.). Proceedings: North American Forest Insect Work Conference; May 14-18, 2001. Edmonton, Alberta, Canada. Information Report NOR-X-381. 234 pp. Canadian Forest Service, Northern Forestry Centre, Edmonton, Alberta, Canada. (Abstract).

112**.** Gandhi, K.J.K., Anderson, P.J., Gilmore, D.W., Haack, R.A., Mattson, W.J., Zasada, J.C., and Seybold, S.J. 2001. Responses of sub-boreal beetles to a severe windstorm event and silvicultural practices in northeastern Minnesota, p. 198, *in* W.J.A. Volney, J.R. Spence, and E.M. Lefebvre (eds.). Proceedings: North American Forest Insect Work Conference; May 14-18, 2001. Edmonton, Alberta, Canada. Information Report NOR-X-381. 234 pp. Canadian Forest Service, Northern Forestry Centre, Edmonton, Alberta, Canada. (Abstract).

113. Gilmore, D.W., Seybold, S.J., Zasada, J.C., Anderson, P.J., Kastendick, D.N., Gandhi, K.J.K, and Johnson, H.P. 2002. Cumulative effects of a severe windstorm and subsequent silvicultural treatments on plant and arthropod diversity in the Gunflint Corridor of the Superior National Forest in northern Minnesota: Project design, pp. 364-379, *in*: Proc. of the Society of American Foresters, 2001 National Convention, Denver, Colorado. Soc. Am. For. Publication 02-01, Bethesda, MD, 469 pp.

114. Jensen, C., and Seybold, S.J. 2002. Co-colonization of red pine in central Minnesota by *Ips* spp**.** Minnesota Department of Natural Resources Forest Insect and Disease Newsletter, January 9, 2002.

115. Kyhl, J.F., Juzwik, J., Bartelt, R.J., and Seybold, S.J. 2002. Use of aggregation pheromones of sap beetles to study overland transmission of *Ceratocystis fagacearum*. Abstract for 2002 Annual Meeting of the American Phytopathology Association. *Phytopathology* 92: S43.

116. Seybold, S.J., Graves, A.D., and Schultz, M.E. 2003. Pheromone attractant composition for the pine engraver beetle: Southeast Alaska population. USDA Forest Health Protection Special Report R10-TP-117, 6 pp.

117. Seybold, S.J., Blumenburg, M., Titze, J., and Francke, W. 2003. The origin and activity of isoprenoids in pines and pine bark beetles. *Chem. Listy* 97:319-322.

PUBLICATIONS (continued):

118. Dodds, K.J., Gilmore, D.W., and Seybold, S. J. 2004. Ecological risk assessments for insect species emerged from western larch imported to northern Minnesota. Staff Paper Series No. 174, Department of Forest Resources, College of Natural Resources and Minnesota Agricultural Experiment Station, University of Minnesota, July 15, 2004, 57 pp.

119. Gilmore, D.W., S.J. Seybold, J.C. Zasada, D.N. Kastendick, K.J.K. Gandhi, and H.P. Johnson. 2005. Cumulative effects of a severe windstorm and subsequent silvicultural treatments on plant and arthropod diversity in the Gunflint Corridor of the Superior National Forest in northern Minnesota: Five-year results. *In* Proceedings Canadian Institute of Forester/Society of American Foresters 2004 Joint Meeting. October 2-6, 2004. Edmonton, Alberta. CD-ROM. Society of American Foresters, Bethesda, MD.

120. Dodds, K.J., Gilmore, D.W., and Seybold, S.J. 2006. The Douglas-fir beetle in Minnesota: Locating an indigenous exotic in northern forests. *In* Proceedings Society of American Foresters 2005 Annual Meeting. Fort Worth, Texas. CD-ROM. Society of American Foresters, Bethesda, MD.

121. Seybold, S.J., Lee, J.C., Luxová, A., Hamud, S.M., Jiroš, P., and Penrose, R.L. 2006. Chemical ecology of bark beetles in California's urban forests, pp. 87-94, *in* Hoddle, M.S. and Johnson, M.W. (eds.). Proceedings of the 5th Annual Meeting of the California Conference on Biological Control, Riverside, California, July 27-28, 2006, 198 pp.

122. Fettig, C.J., McMillin, J.D., Anhold, J.A., Hamud, S.M., Borys, R.R., and Seybold, S.J. 2007. The effect of mechanical fuel reduction treatments in the wildland-urban interface on the amount and distribution of bark beetle-caused tree mortality In: Powers, R. F. (ed.). Restoring fire-adapted ecosystems: Proceedings of the 2005 National Silviculture Workshop. Gen. Tech. Rep. PSW-GTR-203, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture: p. 306.

123. Huber, D.P.W., Erickson, M., Leutenegger, C., Bohlmann, J., and Seybold, S.J. 2007. Expression patterns of bark beetle cytochromes p450 during host colonization: Likely physiological functions and potential targets for pest management, pp. 41-42, *in* B. Bentz, A. Cognato, and K. Raffa (eds.). Proceedings from the Third Workshop on Genetics of Bark Beetles and Associated Microorganisms, May 20-22, 2006, Asheville, NC, USDA Forest Service Rocky Mountain Research Station Proceedings RMRS-P-45.

124. Kim, S., Harrington, T.C., Flint, M.L., Liu, D.-G., Lee, J.C., and Seybold, S.J. 2008. Ophiostomataceae associated with the exotic bark beetle, *Hylurgus ligniperda* (Coleoptera: Scolytidae), in California. Abstract of Poster Presented at the 2008 Centennial Meeting of the American Phytopathological Society, Minneapolis, Minnesota, July 26-30, 2008. *Phytopathology* 98(6, Supplement):S82.

125. Venette, R.C., Walter, A.J., and Seybold, S.J. 2009. Comparing risks from native and exotic bark beetles to the health of Great Lakes forests. *In* Proceedings Society of American Foresters 2008 Annual Meeting. Reno, NV. CD-ROM. Society of American Foresters, Bethesda, MD.

126. Lee, J. C., Aguayo, I., Aslin, R., Durham, G., Hamud, S., Moltzan, B., Munson, S., Negrón, J. F., Peterson, T., Ragenovich, I., Witcosky, J., and Seybold, S.J. 2009. Trend of two invasives: The banded and European elm bark beetles. pp. 43, *in* K. McManus and K. W. Gottschalk (eds.). Proceedings, 19th U.S. Department of Agriculture Interagency Research Forum on Gypsy Moth and Other Invasive Species 2008; Gen. Tech. Rep. NRS-P-36. Newtown Square, Pennsylvania: USDA, Forest Service, Northern Research Station, January 2009.

127. Coleman, T.W., Flint, M.L., and Seybold, S. J. 2009. Managing the invasive goldspotted oak borer in the California wildland-urban interface: Outlines of an IPM Program. The Sixth International IPM Symposium, March 24-26, 2009, Portland, OR, Abstract P159, P. 132 (poster presentation by Flint).

128. Seybold, S.J. and Downing, M. 2009. What risk do invasive bark beetles and woodborers pose to forests of the western U.S.?: A case study of the Mediterranean pine engraver, *Orthotomicus erosus*, pp. 111-134, *in* Hayes, J.L. and Lundquist, J.E. (compilers). The Western Bark Beetle Research Group: A Unique Collaboration with Forest Health Protection." Proceedings of a Symposium at the 2007 Society of American Foresters Conference, October 23–28, 2007, Portland, Oregon. USDA Forest Service Gen. Tech. Rep., GTR–PNW–784, 134 pp.

PUBLICATIONS (continued):

129. Bentz, B.J., Allen, C.D., Ayres, M., Berg, E., Carroll, A., Hansen, M., Hicke, J., Joyce, L., Macfarlane, W., Munson, S., Negron, J., Paine, T., Powell, J., Raffa, K., Regniere, J., Reic, M., Romme, B., Seybold, S.J., Six, D., Tomback, D., Vandygriff, J., Veblen, T., White, M., Witcosky, J., Wood, D.L. 2009. Bark beetle outbreaks in western North America: Causes and consequences. University of Utah Press, 42 pp.

130. Utley, C., Cranshaw, W., Seybold, S.J., Graves, A. D., Leslie, C. A., Jacobi, W., and Tisserat, N. 2009. Susceptibility of *Juglans* and *Carya* species to *Geosmithia*; a cause of thousand cankers disease [Abstract]. *Phytopathology* 99:S133.

131. Coleman, T.W. and Seybold, S.J. 2009. Striking gold in southern California: Discovery of the goldspotted oak borer and its central role in oak mortality. pp. 12-16, *in* K. A. McManus and K. W. Gottschalk (eds.). Proceedings, 20th U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2009, January 13-16, 2009; Gen. Tech. Rep. NRS-P-51. 114 pp., Newtown Square, Pennsylvania: USDA, Forest Service, Northern Research Station, December 2009.

132. Coleman, T.W. and Seybold, S.J. 2010. GSOB ≠ SOD: Tree Mortality from the goldspotted oak borer in oak woodlands of southern California. pp. 58–63, *in* Frankel, S.J.; Kliejunas, J.T.; Palmieri, K.M., tech. cords. 2010. Proceedings of the Sudden Oak Death Fourth Science Symposium. Gen. Tech. Rep. PSW-GTR-229, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 378 pp.

133. Seybold, S.J., Coleman, T.W., and Flint, M.L. 2010**.** Burn it, chip it, or tarp it, but just don't move it: Managing oak firewood infested with the goldspotted oak borer, *Agrilus coxalis auroguttatus*. pp. 365–369, *in* Frankel, S.J.; Kliejunas, J.T.; Palmieri, K.M., tech. cords. 2010. Proceedings of the Sudden Oak Death Fourth Science Symposium. Gen. Tech. Rep. PSW-GTR-229, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 378 pp.

134. Klepzig, K.D., Poland, T.M., Gillette, N.G., Haack, R.A., Keena, M.A., Miller, D.R., Montgomery, M.E., Seybold, S.J., and Tobin, P.C. 2010. Forest Service R&D—Invasive insects: Visions for the future. pp. 13-21, *in* Dix, M.E. and Britton, K. (eds.). A Dynamic Invasive Species Research Vision: Opportunities and Priorities 2009-29. USDA Forest Service Gen. Tech. Rep. WO-79, Washington, D.C., May 2010, 130 pp.

135. Leslie, C. A., Seybold, S. J., Graves, A. D., Cranshaw, W., and Tisserat, N. 2010. Potential impacts of thousand cankers disease on commercial walnut production and walnut germplasm conservation. pp. 431-434, in D. L. McNeil (ed.). 6th International Walnut Symposium, 25-27 February 2009, Melbourne, Australia, *Acta Hort*. 861: 431-434.

136. Seybold, S.J. and Coleman, T.W. 2010. Goldspotted oak borer: A surprising primary mortality agent on oaks in southern California, p. 374, *in* J.A. Parrotta and M.A. Carr (eds.). Forests for the Future: Sustaining Society and the Environment. XXIII IUFRO World Congress; August 23-28, 2010, Seoul, Republic of Korea. *The International Forestry Review* 12(5): 374, 508 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

137. Seybold, S.J., Grulke, N.E., Graves, A.D., and Coleman, T.W. 2010. Drought and forest insects: Interacting stressors on forest ecosystem health, p. 357, *in* J.A. Parrotta and M.A. Carr (eds.). Forests for the Future: Sustaining Society and the Environment. XXIII IUFRO World Congress; August 23-28, 2010, Seoul, Republic of Korea. *The International Forestry Review* 12(5): 357, 508 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

138. Seybold, S.J., Liu, D.-G., Venette, R.C., Flint, M.L., Munson, A.S., Bulaon, B.M., and Jorgensen, C.L. 2010. Detection of low density invasive populations of the Mediterranean pine engraver, *Orthotomicus erosus*, in California with pheromone-baited traps, p. 368, *in* J.A. Parrotta and M.A. Carr (eds.). Forests for the Future: Sustaining Society and the Environment. XXIII IUFRO World Congress; August 23-28, 2010, Seoul, Republic of Korea. *The International Forestry Review* 12(5): 368, 508 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

PUBLICATIONS (continued):

139. Seybold, S.J. and Coleman, T.W. 2010. The goldspotted oak borer: An overview of a research program for "California's emerald ash borer," pp. 123—127, *in* K. A. McManus and K. W. Gottschalk (eds.). Proceedings, 21st U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2010, January 12-15, 2010; Gen. Tech. Rep. NRS-P-75. 156 pp., Newtown Square, Pennsylvania: USDA, Forest Service, Northern Research Station, December 2010.

140. Seybold, S.J., Graves, A.D., and Coleman, T.W. 2010. Walnut twig beetle: Update on the biology and chemical ecology of a vector of an invasive fatal disease of walnut in the western U.S., pp. 55—57, *in* K. A. McManus and K. W. Gottschalk (eds.). Proceedings, 21st U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2010, January 12-15, 2010; Gen. Tech. Rep. NRS-P-75. 156 pp., Newtown Square, Pennsylvania: USDA, Forest Service, Northern Research Station, December 2010.

141. Zerillo, M.M., Woeste, K., Freeland, E., Seybold, S.J., Cranshaw, W., and Tisserat, N. 2011. Population structure of *Geosmithia morbida* in the United States is complex. *Phytopathology* 101:S201.

142. Yaghmour, M.A., Nguyen, T.L., Roubtsova, T.V., Hasey, J., DeBuse, C., Fichtner, E.J., Hoenisch, R., Seybold, S.J., and Bostock, R.M. 2013. Thousand cankers disease in California English walnut: Incidence, distribution, and characterization of *Geosmithia morbida*. *Phytopathology* 103:S2.163.

143. Seybold, S.J., Nelson, L.J., Dallara, P.L., Graves, A.D., Bostock, R.M., Gries, R., and Francke, W. 2014. Chemical ecology of the walnut twig beetle, a pest of significance to international cultivation of walnut for nut and timber production, pp. 337-338, *in* J.A. Parrotta, C.F. Moser, A.J. Scherzer, N.E. Koerth, and D.R. Lederle (eds.). Sustaining Forests, Sustaining People: The Role of Research. XXIV IUFRO World Congress; October 5-11, 2014, Salt Lake City, UT, USA. *The International Forestry Review* 16(5): 337-338, 578 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

144. Dallara, P.L., Reboletti, D., Munson, A.S., and Seybold, S.J. 2014. Life history of the walnut twig beetle, *Pityophthorus juglandis*, in California and Utah, p. 338, *in* J.A. Parrotta, C.F. Moser, A.J. Scherzer, N.E. Koerth, and D.R. Lederle (eds.). Sustaining Forests, Sustaining People: The Role of Research. XXIV IUFRO World Congress; October 5-11, 2014, Salt Lake City, UT, USA. *The International Forestry Review* 16(5): 338, 578 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

145. Hishinuma, S.M., Flint, M.L., Bostock, R.M., and Seybold, S.J. 2014. Host colonization behavior of the walnut twig beetle, *Pityophthorus juglandis* (Coleoptera: Scolytidae): Implications for the worldwide cultivation of walnut trees, p. 482, *in* J.A. Parrotta, C.F. Moser, A.J. Scherzer, N.E. Koerth, and D.R. Lederle (eds.). Sustaining Forests, Sustaining People: The Role of Research. XXIV IUFRO World Congress; October 5-11, 2014, Salt Lake City, UT, USA. *The International Forestry Review* 16(5): 482, 578 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

146. Parker, C. Flint, M.L., Nadler, S.A., Graves, A.D., and Seybold, S.J. 2014. Flight activity, life history, and host selection behavior of the walnut twig beetle in its native range in the southwestern United States, p. 488, *in* J.A. Parrotta, C.F. Moser, A.J. Scherzer, N.E. Koerth, and D.R. Lederle (eds.). Sustaining Forests, Sustaining People: The Role of Research. XXIV IUFRO World Congress; October 5-11, 2014, Salt Lake City, UT, USA. *The International Forestry Review* 16(5): 488, 578 pp. Commonwealth Forestry Association, www.cfa-international.org. (Abstract).

147. Seybold, S.J. and Coleman, T.W. 2015. The goldspotted oak borer: Revisiting the status of an invasive pest six years after its discovery, pp. 285–305, *in* R.B. Standiford and K.L. Purcell (tech. coords.). Proceedings of the Seventh California Oak Symposium: Managing Oak Woodlands in a Dynamic World. November 3–6, 2014, Visalia, California, USDA Forest Service General Technical Report, PSW-GTR-251, 579 pp.

PUBLICATIONS (continued):

148. Chen, Y., Flint, M.L., Coleman, T. W., Doccola, J.J., Grosman, D.M., Wood, D.L., and Seybold, S. J. 2015. Effects of the goldspotted oak borer, *Agrilus auroguttatus*, on the health of coast live oak, *Quercus agrifolia*, in southern California before and after treatment with two systemic insecticides, pp. 345–347, *in* R.B. Standiford and K.L. Purcell (tech. coords.). Proceedings of the Seventh California Oak Symposium: Managing Oak Woodlands in a Dynamic World. November 3–6, 2014, Visalia, California, USDA Forest Service General Technical Report, PSW-GTR-251, 579 pp.

149. Venette, R.C., Coleman, T.W., and Seybold, S.J. 2015. Assessing the risks posed by goldspotted oak borer to California and beyond, pp. 317–329, *in* R.B. Standiford and K.L. Purcell (tech. coords.). Proceedings of the Seventh California Oak Symposium: Managing Oak Woodlands in a Dynamic World. November 3–6, 2014, Visalia, California, USDA Forest Service General Technical Report, PSW-GTR-251, 579 pp.

150**.** Grulke, N.E., Herzenach, M.K, and Seybold, S. J. 2015. The role of abiotic and biotic stressors in pine susceptibility to bark beetles. Abstract of Oral Presentation by NEG in Session 5 "Biogeochemistry and multiple stressors, *IUFRO Nice 2015 - Global Challenges of Air Pollution and Climate Change to Forests*, Joint Meeting of International Union of Forest Research Organizations - Research Group 7.01 and COST Action FP1204 GreenInUrbs, Nice, France, June 4, 2015, P. 90, http://iufro-nice2015.com/Docs/Programme%20and%20Abstracts%20IUFRO%20Nice%202015.pdf.

151. Lundquist, J.E., Fettig, C.J., Negrón, J.F., McCollum, D.W., Cain, R.J., Seybold, S.J., Lynch, A.M., Smith, E.L., and Progar, R.A. 2015. *Impacts of bark beetles on ecosystem values in western forests*. USDA Forest Service, Western Wildland Environmental Threat Assessment Center, Prineville, OR, 96 pp. Summary report available at http://www.fs.fed.us/wwetac/.

152. Roubtsova, T.V., Nguyen, T.L., Yaghmour, M.A., Seybold, S.J., and Bostock, R.M. 2015. Nonpathogenic *Geosmithia* species associated with the walnut twig beetle, *Pityophthorus juglandis*, in California walnut orchards. *Phytopathology* 105:S4.121.

153. Audley, J.P., Dallara, P.L., Francke, W., and Seybold, S.J. 2016. Behavioral chemical disruption of the host selection behavior of the walnut twig beetle: A chemical ecological approach. XXV International Congress of Entomology, Orlando, Florida, Sept. 26, 2016 (poster presentation by JPA). Abstract #D3103. https://doi.org/10.1603/ICE.2016.114667.

154. Chen, Y., Poland, T.M., Coleman, T.W., Jones, M., and Seybold, S.J**.** 2016. Nutritional role of host plants in adult feeding preference of two invasive wood borers. XXV International Congress of Entomology, Orlando, Florida, Sept. 30, 2016 (oral presentation by YC). Abstract #4476. https://doi.org/10.1603/ICE.2016.94870.

155. Lona, I., Miller, D.G., Hatfield, C., Rosencrance, R.C., and Seybold, S.J. 2016. Landing rate of the walnut twig beetle, *Pityophthorus juglandis*, on two western North American walnut species, *Juglans californica* and *J. major***.** XXV International Congress of Entomology, Orlando, Florida, Sept. 30, 2016 (poster presentation by IL). Abstract #D3768. https://doi.org/10.1603/ICE.2016.113745.

156. Oren, E., Klingeman, W., Lambdin, P., Moulton, J., Coggeshall, M., Seybold S.J., and Hadziabdic, D**.** 2016. Rapid molecular detection of thousand cankers disease. XXV International Congress of Entomology, Orlando, Florida, Sept. 26, 2016 (poster presentation by EO). Abstract #D3025. https://doi.org/ 10.1603/ICE.2016.113092.

157. Seybold, S.J., Penrose, R.L., and Graves, A.D. California, USA: A hotbed for invasive bark and ambrosia beetles on conifers and hardwoods. Oral presentation to 80 participants by SJS in: Seybold, S.J. and Faccoli, M. Symposium Organizers: *Invasive bark and ambrosia beetles: A pest problem of worldwide significance*. Symposium (3 hrs, 11 speakers) for the XXV International Congress of Entomology, Orlando, Florida, Sept. 29, 2016. Abstract #3103. https://doi.org/10.1603/ICE.2016.94476.

PUBLICATIONS (continued):

Extension Publications:

158. Johnson, W.S., Seybold, S.J., and Graham, K.G. 1998. Preservative-treated Wood in the Landscape, University of Nevada Cooperative Extension Fact Sheet FS-98-29, 4 pp.

159. Donaldson, S.G. and Seybold, S.J. 1998. "Bark Beetle Blues." A four-page newsletter that answers frequently asked questions about bark beetles. Distributed to ~7,300 households in the Tahoe Basin.

160. Donaldson, S.G. and Seybold, S.J. 1998. Bark Beetles in the Lake Tahoe Basin, University of Nevada. Cooperative Extension Fact Sheet FS-98-40, 4 pp.

161. Donaldson, S.G. and Seybold, S.J. 1998. Thinning and Sanitation: Tools for the Management of Bark Beetles in the Lake Tahoe Basin, University of Nevada Cooperative Extension Fact Sheet FS-98-42, 4 pp.

162. Seybold, S.J. and Donaldson, S.G. 1998. Pheromones in Insect Pest Management, University of Nevada, Cooperative Extension Fact Sheet FS-98-41, 2 pp.

163. Cabrera, B.J., Lewis, V.R., and Seybold, S.J. 2000. Berkeley research on deathwatch beetle finds potential traps, enemies, *PCOC- The Voice of Pest Control Operators in California*, Winter Issue, pp. 11-12.

164. Hahn, J., Krischik, V., and Seybold, S.J. 2000. Forest tent caterpillar in Minnesota. Minnesota Extension Service Folder FO-7563-B.

165. Lewis, V.R., Cabrera, B.J., and Seybold, S.J. 2001. Update on wood-destroying beetle study: New discoveries, PCOC - The Voice of Pest Control Operators of California, Spring Issue, pp. 12-15.

166. Warren, J., Gandhi, K.K.J., Gilmore, D., Seybold, S.J., and Zasada, J. 2001. Research projects initiated in the blowdown--vegetation and insect monitoring along the Gunflint Trail, Minnesota Extension Service, *Forest Tree Notes* 1 (2): 4-5.

167. Cervenka, V.J., Skalbeck, T.C., Kyhl, J.F., Blackford, D.C., Juzwik, J.J., and Seybold, S.J. 2001. How to identify common nitidulid beetles associated with oak wilt mats in Minnesota. USDA Forest Service North Central Research Station, HT-71, 16 pp.

168. Kyhl, J.F., and Seybold, S.J. 2002. Powderpost and other wood-destroying beetles in Minnesota structures. Minnesota Extension Service, Yard and Garden Brief E609P, http://www.extension.umn.edu/projects/yardandgarden/ygbriefs/e609powderpost.html.

169. Seybold, S.J., Albers, M.A., and Katovich, S.A. 2002. Eastern larch beetle. USDA Forest Service, Forest Insect and Disease Leaflet 175, 12 pp.

170. Ambourn, A.K., and Seybold, S.J. 2002. Naturally produced attractants of the small oak bark beetle, a potentially important vector of the oak wilt fungus in Minnesota. Minnesota Department of Natural Resources Forest Insect and Disease Newsletter, November 18, 2002.

171. Albers, M.A., and Seybold, S.J. 2002. Management of spruce beetle in Minnesota: Guidelines for professional land managers. Minnesota Department of Natural Resources Forest Insect and Disease Newsletter, August 7, 2002.

172. Gandhi, K.J.K., Gilmore, D.W., Seybold, S.J., and Zasada, J.C. 2002. Vegetation and insect monitoring along the Gunflint Trail. Minnesota Extension Service, *Forest Tree Notes* 3(1): 1-2.

173. Dodds, K.J. and Seybold, S.J. 2005. Forest tent caterpillar. USDA Forest Service, Pest Alert, NA-PR-04-05, 2 pp.

174. Lee, J.C., Smith, S.L., and Seybold, S.J. 2005. The Mediterranean pine engraver, *Orthotomicus erosus*. USDA Forest Service, Pest Alert, R5-PR-016, 4 pp. (Peer reviewed).

PUBLICATIONS (continued):

175. Lee, J.C., Negrón, J.F., McElwey, S.J., Witcosky, J.J., and Seybold, S.J. 2006. Banded elm bark beetle, *Scolytus schevyrewi* (Coleoptera: Scolytidae). USDA Forest Service, Pest Alert, R2-PR-04-06, 2 pp.

176. Lee, J.C., Haack, R.A., Negrón, J.F., Witcosky, J.J. and Seybold, S.J. 2007. Invasive bark beetles. USDA Forest Service, Forest Insect & Disease Leaflet No. 176, 12 pp. (Peer reviewed).

177. Liu, D.-G., Bohne, M.J., Lee, J.C., Flint, M.L., Penrose, R.L., and Seybold, S.J. 2007. New introduction in California: The redhaired pine bark beetle, *Hylurgus ligniperda* Fabricius. USDA Forest Service, Pest Alert, R5-PR-07,November 2007, 3 pp. http://www.fs.fed.us/r5/spf/fhp/index.shtml or http://www.fs.fed.us/r5/spf/publications/pestalerts/HylurgusPertAlert.pdf.

178. Coleman, T.W. and Seybold, S.J. 2008. New pest in California: The goldspotted oak borer, *Agrilus coxalis* Waterhouse. USDA Forest Service, Pest Alert, R5-RP-022, October 28, 2008, 4 pp. (Peer reviewed).

179. Seybold, S.J., Paine, T.D., and Dreistadt, S. H. 2008. Bark beetles: Integrated pest management for home gardeners and landscape professionals. University of California Statewide Integrated Pest Management Program, Agriculture and Natural Resources Pest Notes, Publication 7421, Oakland, California, November 2008, 7 pp. (Peer reviewed).

180. Graves, A.D., Coleman, T.W., Flint, M.L., and Seybold, S.J. 2009. Walnut twig beetle and thousand cankers disease: Field identification guide, UC-IPM Website Publication, 2 pp., Nov. 21, 2009, http://www.ipm.ucdavis.edu/PDF/MISC/thousand_cankers_field_guide.pdf.

181. Graves, A.D., Flint, M.L., Coleman, T.W., and Seybold, S.J. 2010. Thousand cankers disease of walnuts: A new disease in California, UC-IPM Website Publication, 4 pp., http://www.ipm.ucdavis.edu/EXOTIC/thousandcankers.html.

182. Bostock, R., Tisserat, N. A., Hasey, J., Cranshaw, W., and Seybold, S. J. 2010. Update on Thousand Cankers Disease. Western Pest Diagnostic Network Newsletter, February 2010, Volume 3, Number 1, 1 pp., https://www.wpdn.org/common/newsletters/wpdn/WPDN%20Newsletter%202010-02.pdf.

183. Flint, M.L., Graves, A.D., and Seybold, S.J. 2010. Thousand cankers disease of walnuts spreads in California. CAPCA Advisor Magazine, June 2010, 8(3):36-39.

184. Lewis, V.R., and Seybold, S.J. 2010. Wood-boring beetles in homes. University of California Statewide Integrated Pest Management Program, Agriculture and Natural Resources Pest Notes, Publication 7418, Oakland, California, June, 2010, 4 pp. (Peer reviewed).

185. Hasey, J.K. and Seybold, S.J. 2010. What's happening with thousand cankers disease of walnut in California. Diamond Grower News, Summer 2010, 5-6.

186. Owen, D.R., Smith, S.L., and Seybold, S.J. 2010. The red turpentine beetle. USDA Forest Service, Forest Insect & Disease Leaflet No. 55, June 2010, 8 pp. http://www.fs.fed.us/r6/nr/fid/fidls/fidl-55.pdf.

187. Hishinuma, S., Coleman, T. W., Flint, M. L., and Seybold, S. J. 2011. Goldspotted oak borer: Field identification guide, University of California Agriculture and Natural Resources, Statewide Integrated Pest Management Program, 6 pp., Oakland, California, January 13, 2011, http://www.ipm.ucdavis.edu/PDF/MISC/GSOB_field-identification-guide.pdf.

188. Seybold, S. J. 2011. Invasive Woodboring Beetles. Western Pest Diagnostic Network Newsletter, June, 2011, Volume 4, Number 2, 1 pp., https://www.wpdn.org/common/newsletters/wpdn/WPDN%20Newsletter%202010-02.pdf.

PUBLICATIONS (continued):

189. Burnside, R.E., Holsten, E.H., Fettig, C.J., Kruse, J.J., Schultz, M.E., Hayes, C.J., Graves, A.D., and Seybold, S.J. 2011. The northern spruce engraver. USDA Forest Service, Forest Insect & Disease Leaflet No. 180, September 2011, 12 pp. (Peer reviewed).

190. Flint, M.L., Coleman, T.W., and Seybold, S.J. 2011. Goldspotted oak borer threatens California oaks. CAPCA Advisor Magazine, Sept. 2011, 14(5): 22–23.

191. Flint, M.L., Coleman, T.W., and Seybold, S.J. 2012. California oaks threatened by invading wood borer. The Western Front, Newsletter of the Western Integrated Pest Management Center, February 2012, p. 1 and 8.

192. Seybold, S.J., Dallara, P.L., Hishinuma, S.M., and Flint, M.L. 2013. Detecting and identifying the walnut twig beetle: Monitoring guidelines for the invasive vector of thousand cankers disease of walnut, University of California Agriculture and Natural Resources, Statewide Integrated Pest Management Program, Oakland, California, 13 pp., March 13, 2013, http://www.ipm.ucdavis.edu/PMG/menu.thousandcankers.html

193. Seybold, S.J., Dallara, P.L., Hishinuma, S.M., and Flint, M. L. 2013. Quick guide: Installing, maintaining, and servicing walnut twig beetle pheromone-baited traps, University of California Agriculture and Natural Resources, Statewide Integrated Pest Management Program, Oakland, California, 2 pp., March 13, 2013, http://www.ipm.ucdavis.edu/PDF/MISC/WTBtrapping_quickguide.pdf, http://www.ipm.ucdavis.edu/thousandcankers.

194. Flint, M.L., Jones, M.I., Coleman, T.W., and Seybold, S.J. 2013. Goldspotted oak borer. University of California Statewide Integrated Pest Management Program, Oakland, California, Agriculture and Natural Resources Pest Notes, Publication 74163, Oakland, California, January 2013, 7 pp. http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74163.html.

195. Seybold, S.J., Haugen, D., O'Brien, J., and Graves, A.D. 2013. Thousand cankers disease. USDA Forest Service, Northeastern Area State and Private Forestry Pest Alert, NA-PR-02-10, originally published May, 2010, reprinted Aug. 2010, Oct. 2011, and Feb. 2013, 2 pp., http://www.na.fs.fed.us/pubs/detail.cfm?id=5225.

196. Fichtner, E.J., Wilson, K., and Seybold, S.J. 2014. Woodpiles are reservoirs for walnut twig beetle. *West Coast Nut Grower Guide*, January 2014, p. 20 and 22.

197. Fichtner, E., Michailides, T., Browne, G., Bhat, R., Bostock, R.M., Hasey, J., and Seybold, S.J. 2014. Emerging diseases threaten walnuts. *Western Fruit Grower* April 2014: 8-12.

198. Seybold, S.J., Roubtsova, T.V., Nyugen, T., Keener, J.A., and Bostock, R.M. 2014. Demonstration of a field technique for detecting *Geosmithia morbida* with walnut branches baited with the aggregation pheromone of the walnut twig beetle. Appendix 11, USDA Forest Service/USDA APHIS Thousand Cankers Survey Guidelines for 2014, April 2014, 10 pp. + Appendices. http://www.aphis.usda.gov/plant_health/plant_pest_info/tcd/downloads/TCD_Survey_Guidelines.pdf

199. Laćan, I. and Seybold, S.J. 2014. Thousand Cankers Disease of Walnuts. UC IPM Green Bulletin 4, 2-3. http://www.ipm.ucanr.edu/PDF/PUBS/greenbulletin.2014.dec.pdf.

200. Laćan, I. and Seybold, S.J. 2015. Thousand Cankers Disease of Walnuts, January 12, 2015, http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=16412

201. Coleman, T.W., Jones, M.I., Smith, S.L., Venette, R.C., Flint, M.L., and Seybold, S.J. 2015. Goldspotted oak borer, *Agrilus auroguttatus*. USDA Forest Service, Forest Insect & Disease Leaflet No. 183, March 2015, 16 pp. (Peer reviewed). http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3833276.pdf

PUBLICATIONS (continued):

xxx. Seybold, S.J., et al. 2017. UC IPM Pest Management Guidelines: Walnut, University of California Agriculture and Natural Resources, Statewide Integrated Pest Management Program, Oakland, California, 13 pp., Month, date, 2016, http://www.ipm.ucdavis.edu/PMG/menu.xxxx.html
Led the writing for the section on walnut twig beetle and contributed to other sections on fall webworm, Pacific flatheaded borer, and thousand cankers disease.

xxx. Graves, A.D., Coleman, T.W. and Seybold, S.J. 2017. The Walnut Twig Beetle, *Pityophthorus juglandis*, and Thousand Cankers Disease, *Geosmithia* sp., in California. USDA Forest Service, Pest Alert, R5-RP-xxx, December, 2014, 6 pp. (In Prep, Peer reviewed).

PATENT APPLICATIONS AND PATENTS:

1. Seybold, S. J., Dallara, P. L., Nelson, L. J., Graves, A. D., Hishinuma, S. M., and Gries, R. 2011. Methods of monitoring and controlling the walnut twig beetle, *Pityophthorus juglandis*. Provisional Patent filed with the U.S. Patent and Trademark Office, U.S. Dept. of Commerce, July 15, 2011, U.S. Provisional Application No. 61/508.441, 22 pp.

2. Seybold, S. J., Dallara, P. L., Nelson, L. J., Graves, A. D., Hishinuma, S. M., and Gries, R. 2012. Methods of monitoring and controlling the walnut twig beetle, *Pityophthorus juglandis*. Patent application filed with the U.S. Patent and Trademark Office, U.S. Dept. of Commerce, July 13, 2012, U.S Patent Application No. 13/548.319, 38 pp. + 7 Figs.

3. Seybold, S. J., Dallara, P. L., Nelson, L. J., Graves, A. D., Hishinuma, S. M., and Gries, R. 2013. Methods of monitoring and controlling the walnut twig beetle, *Pityophthorus juglandis*. Patent application filed with the U.S. Patent and Trademark Office, U.S. Dept. of Commerce, January 17, 2013, U.S Patent Publication No. 2013/0014428A1,12 pp. + 7 Figs.

4. Seybold, S. J., Dallara, P. L., Nelson, L. J., Graves, A. D., Hishinuma, S. M., and Gries, R. 2015. Methods of monitoring and controlling the walnut twig beetle, *Pityophthorus juglandis*. United States Patent No. US 9,137,990 B2, 12 pp. + 7 Figs., September 22, 2015.

PRESENTATIONS (More than 400 scientific presentations since 1986 at scientific meetings, workshops, and symposia, including 86 invited presentations, which are listed below):

Invited Presentations:

1. "Development of stereospecific chemical attractants and inhibitors for pine bark beetles (Coleoptera: Scolytidae)." Paper presented at the 199th American Chemical Society National Meeting, Boston, Massachusetts, April, 1990.

2. "The future impact of biotechnology on forest entomology." Invited speaker in Workshop on Graduate Student Concerns in Forest Entomology. Paper presented at the North American Forest Insect Work Conference, Denver, Colorado, March 27, 1991.

3. "Aggregation behavior of the pine engraver beetle, *Ips pini* (Say), in response to enantiomerically pure ipsdienol." Invited speaker in Workshop on Semiochemicals—Application and Potential. Paper presented at the North American Forest Insect Work Conference, Denver, Colorado, March 27, 1991.

4. "Aggregation behavior of the pine engraver beetle, *Ips pini* (Say), in response to enantiomerically pure ipsdienol." Invited speaker in Division of Agrochemical Young Scientists Symposium. Paper presented at the 201st American Chemical Society National Meeting, Atlanta, Georgia, April 17, 1991.

INVITED PRESENTATIONS (continued):

5. "Analytical and preparative separation of the enantiomers of the aggregation pheromone components of *Ips* spp." Poster presentation, Division of Organic Chemistry, 203rd American Chemical Society National Meeting, San Francisco, California, April 8, 1992.

6. "The role of chirality in the aggregation behavior of pine engraver beetles in the genus *Ips*." Invited speaker at Aburahi Laboratories, Shionogi & Co. Ltd., Kokagun, Shiga, Japan, July 10, 1992.

7. "Chemotaxonomic studies of the pine engraver beetle, *Ips pini* (Say) (Coleoptera: Scolytidae)." Invited symposium speaker at the 11th Annual Meeting of the International Society of Chemical Ecology, Syracuse, New York, June 6, 1994.

8. "Ecology of Sierra Nevada Conifer Bark Beetles." Invited speaker for University of Nevada, Reno, Biology Club, December 1994 and 1996.

9. "*De novo* biosynthesis of the aggregation pheromone components ipsenol and ipsdienol by the pine bark beetles, *Ips paraconfusus* Lanier and *Ips pini* (Say)." Invited seminar speaker, University of Gothenburg, Sweden, September 18, 1995.

10. "The chemical ecology of the pine bark beetle *Ips pini* (Say): A study in the evolution of pheromone variation." Invited seminar speaker , University of Nevada, Reno, Department of Ecology, Evolution & Conservation Biology Seminar Series, September 28, 1995.

11. "The origin of bark beetle aggregation pheromones: New approaches, new results." Invited symposium speaker at the 14th Annual Meeting of the International Society of Chemical Ecology, Vancouver, British Columbia, July 13, 1997.

12. "The origin of bark beetle aggregation pheromones: Biochemical studies with ecological and evolutionary implications." Invited speaker for the Department of Environmental Science, Policy, and Management Seminar Series, University of California at Berkeley, Berkeley, California, December 1, 1997.

13. "Recent results in the research on bark beetle pheromones." Invited speaker at the Institute of Organic Chemistry, University of Hamburg, Hamburg, Federal Republic of Germany, March 27, 1998.

14. "The origin of bark beetle aggregation pheromones: Biochemical studies with ecological and evolutionary implications." Invited speaker for Session IV, Chemistry of Pheromone Communication at the 2nd International Symposium on Insect Pheromones, Wageningen, The Netherlands, April 2, 1998.

15. "Conifer-feeding bark beetles: Biogenesis of aggregation pheromones." Invited speaker at the Max Planck Institute of Chemical Ecology, Jena, Federal Republic of Germany, September 11, 1998.

16. "The biochemical and molecular basis for the regulation and production of aggregation pheromones by pine bark beetles." Invited speaker for the Section B Symposium: Pheromone Biochemistry, 1998 Annual Meeting of the Entomological Society of America, Las Vegas, Nevada, November 11, 1998.

17. "Forest health in the Lake Tahoe Basin of the Sierra Nevada: A program of public education and research on conifer-feeding bark beetles." University of Minnesota Forest Resources Seminar Series, St. Paul, Minnesota, November 18, 1998.

18. "The production and regulation of isoprenoid pheromones by pine bark beetles: Biochemical and molecular approaches." University of Minnesota Department of Biochemistry, Molecular Biology, and Biophysics Seminar Series, St. Paul, Minnesota, June 2, 1999.

19. "The production and regulation of isoprenoid pheromones by pine bark beetles: Biochemical and molecular approaches." Department of Biological Sciences Seminar Series, Simon Fraser University, Burnaby, British Columbia, September 23, 1999.

INVITED PRESENTATIONS (continued):

20. "Invited Outside Reviewer, Informal Conference on Breeding Sitka Spruce for Resistance to White Pine Weevil." Sponsored by B.C. Ministry of Forests, Cowichan Lake, British Columbia, April 4-5, 2001.

21. "Chemical ecology of pine bark beetles in the Sierra Nevada mixed conifer forest: Molecular biology to community ecology." Department of Forest Sciences Seminar Series, University of British Columbia, Vancouver, British Columbia, April 2, 2001.

22. "Pine bark beetles: Chemical ecology and host plant biochemical interactions." Department of Entomology Seminar Series, North Dakota State University, Fargo, North Dakota, October 25, 2001.

23. "Pine bark beetle pheromones: Biosynthesis and regulation." Department of Entomology Seminar Series, University of California, Davis, California, January 16, 2002.

24. "Recent progress in the biochemistry and molecular biology of isoprenoid pheromone production in bark beetles (Coleoptera: Scolytidae)." 2002 Annual Meeting of the Entomological Society of Canada, Winnipeg, Manitoba, October 9, 2002.

25. "The origin and activity of isoprenoids in pines and pine bark beetles." XXth Conference on Isoprenoids 2003, Liberec, Czech Republic, September 17, 2003.

26. "Implications of exotic insects and diseases for forest ecosystems of Minnesota." Invited keynote presentation to the Annual Minnesota Society of American Foresters Meeting, Mankato, Minnesota, February 15-16, 2005.

27. "Pines, monoterpenoids, and pine bark beetles: A marriage of convenience for defense and chemical communication." Invited oral presentation at the Terpnet meeting, Wageningen, The Netherlands, April 20-23, 2005.

28. "Bark beetle ecology and trophic interactions." Invited oral presentation (30 minutes) at the Bark Beetle Symposium: Causes and Consequences of Recent Outbreaks in Western North America, sponsored by the Ecology Center, Utah State University, Snowbird, Utah, November 16, 2005.

29. "Recent research on the chemical ecology of bark beetles in western North America: pheromone biosynthesis, detection of invasive species, and application of semiochemicals for management." Invited departmental seminar presentation to the Department of Entomology, University of California, Riverside, Riverside, California, November 28, 2005.

30. "Pheromones and the future: What tools, techniques, and advances might we witness in the decades to come?" SERG International and Forest Service Workshop, Use of Pheromones in Forestry: Release, Dispersion and Effects, Banff, Alberta, Canada, February 13, 2006.

31. "Chemical ecology of bark beetles in California's urban forests." 5th Annual Meeting of the California Conference on Biological Control, Riverside, California, July 27, 2006.

32. "Invited External Advisor," "Identification, synthesis and application of host Yunnan Pine compounds in the management of the Yunnan pine weevil, *Pissodes yunnanensis* (Coleoptera: Curculionidae)." The project is funded (2007-2010) by the Chinese National Forestry Administration, with significant involvement of personnel from the Chinese Academy of Forestry (Beijing), the Guizhou Provincial Academy of Forestry and Guizhou University (both in Guiyang). The invitation resulted in a site visit to Beijing, Guizhou Province, and Yunnan Province (June 26 to July 12, 2007). During the visit, the incumbent presented eight lectures on the theory and application of chemical ecology methods to the management of forest insects to faculty scientists, graduate students, and undergraduate students [Chinese Academy of Sciences, Chinese Academy of Forestry (both in Beijing), Beijing Forestry University, Guizhou University and Guizhou Academy of Forestry (in Guiyang, Guizhou Province), and the Yunnan Academy of Forestry (Kunming, Yunnan Province], June 26 to July 12, 2007.

INVITED PRESENTATIONS (continued):

33. "Pheromones of pine bark beetles: Small molecules with big consequences." Invited departmental seminar presentation to the Department of Chemistry, Sacramento State University, Sacramento, California, March 14, 2008.

34. "Chemical ecology and biodiversity of North American pine and spruce bark beetles." Invited departmental seminar presentation to the Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, Colorado, April 11, 2008.

35. "Chemical ecology of forest insects in South China." Invited departmental seminar presentation to the Department of Entomology, University of California, Davis, Davis, California, May 21, 2008.

36. "Recent invasive bark beetles and woodborers in the western U.S." 2008 Annual Gypsy Moth Review, Sponsored by the National Gypsy Moth Management Board, Tacoma, Washington, November 4-6, 2008.

37. "The walnut twig beetle, *Pityophthorus juglandis* Blackman, and thousand cankers disease in California Hinds walnut." Invited internet presentation at the Midwest Exotics Project Webinar, Sponsored by the USDA Forest Service Northern Area Forest Health Protection Unit, St. Paul Field Office, and the Michigan Department of Agriculture, December 11, 2008.

38. "It's getting harder to be a hardwood: Thousand cankers disease/walnut twig beetle and the goldspotted oak borer in the western U.S." 15th Annual Forest Health Monitoring Workgroup Meeting, Georgia Forestry Commission and the USDA Forest Service, Forest Health Monitoring Program, Savannah, Georgia, February 23-27, 2009.

39. "Host colonization behavior of bark beetles: A perennially fruitful area for basic and applied research in forest entomology." Invited presentation, Department of Forest Sciences, Faculty of Forestry, University of British Columbia, Vancouver, BC, Canada, March 20, 2009.

40. "Bark beetle host selection behaviour: The theory and practice behind protecting forest trees with repellent semiochemicals." Co-authored with A. D. Graves Abstract #15, pp. 12–14, Abstracts for the 93rd Annual Meeting of the Pacific Branch of the Entomological Society of America, March 30, 2009, San Diego, California

41. "The impact of invasive organisms on hardwoods in California urban landscapes with emphasis on the goldspotted oak borer." Co-authored with T. W. Coleman and A. D. Graves. Abstract #114, pp. 76–78, Abstracts for the 93rd Annual Meeting of the Pacific Branch of the Entomological Society of America, April 1, 2009, San Diego, California.

42. "Goldspotted oak borer survey and status." 2009 Annual Meeting of the Integrated Hardwood Range Management Program and Oak Woodland Conservation Workgroup, Blodgett Forest, Georgetown, California, May 20, 2009.

43. "Introductions and pathways of non-native forest insects and diseases in the western United States." Invited Keynote Speaker at the Continental Dialogue on Non-Native Forest Insects and Diseases. Fifth Dialogue Meeting, San Francisco, California, October 27, 2009.

44. "An overview of the walnut twig beetle and thousand cankers disease in California." Thousand Cankers of Black Walnut National Conference, St. Louis, Missouri, November 3, 2009.

45. "Walnut twig beetle: Update on the biology and chemical ecology of a vector of an invasive and fatal disease of walnut in the western U.S." 21st U.S. Department of Agriculture Interagency Research Forum on Invasive Species, Sponsored by the USDA Forest Service Research, the Agricultural Research Service, USDA APHIS and the USDA NIFA, Annapolis, Maryland, January 14, 2010.

46. "Biology and detection of the walnut twig beetle: The vector of thousand cankers disease." 85th Annual Central Plant Board Meeting, Minneapolis, Minnesota, March 9, 2010.

INVITED PRESENTATIONS (continued):

47. "Walnut twig beetle and thousand cankers disease: Characterizing an emergent threat to forest and agroecosystems in North America." Invited departmental seminar presentation to the Department of Entomology, University of California, Davis, Davis, California, May 19, 2010.

48. "Goldspotted Oak Borer: Overview of a Program of Research and Technology Development." Invited presentation at the Region 5, Forest Health Protection Review, Placerville, California, July 14, 2010.

49. "An update on the monitoring and detection of the walnut twig beetle." Annual National Plant Board Meeting, Indianapolis, Indiana, July 27, 2010.

50."Invasive forest insects in the western United States: An update on status and trends." Presentation in the D5 Working Group Technical Session, Forest Entomology and Pathology, Forest Health and Fire Track, Invasive Forest Insects and Disease in North America, R. Progar and D. Shaw, Organizers. The Society of American Foresters National Convention, Albuquerque, New Mexico, October 29, 2010.

51. "Walnut twig beetle and its aggregation pheromone: Developing a detection tool for the vector of thousand cankers disease." Presentation to the Thousand Cankers Disease Workshop co-sponsored by the Walnut Council, the USDA Forest Service Northern Research Station Hardwood Tree Improvement Research Center, and the USDA Forest Service Northeastern Area State and Private Forestry, Wright Forestry Center, West Lafayette, Indiana, March 31, 2011. (84 people from 17 states)

52. "Walnut twig beetle and thousand cankers disease: Status of the problem in California and the U.S." Invited departmental seminar presentation to the Department of Plant Pathology, University of California, Davis, Davis, California, April 4, 2011.

53. "Walnut twig beetle and thousand cankers disease: Framing the response to our valuable North American walnut resource." Workshop at the North American Forest Insect Work Conference, Portland, Oregon, May 11, 2011.

54. "Intracontinental Invasive Species: The Walnut Twig Beetle and Goldspotted Oak Borer as Case Studies of Emerging Threats to Forest and Agroecosystems in North America." Invited departmental seminar to the Department of Entomology, Pennsylvania State University, State College, Pennsylvania, July 8, 2011.

55. "The walnut twig beetle: An intracontinental invasive species that threatens *Juglans* in North America," Invited lecture at the 3rd Biennial Schatz Tree Genetics Colloquium, "Genetics, ecology and management of walnuts and butternut," July 11-12, 2011, Penn State Mont Alto, Mont Alto, Pennsylvania, July 11, 2011. (30 minute presentation to 75 attendees, including 55 from Pennsylvania and 20 from out-of-state, of which 25 were from academia, 10 from the federal government and 40 from the State of Pennsylvania or from the private sector).

56. "Describing and detection populations of the walnut twig beetle: The hyperactive vector of thousand cankers disease," Invited lecture at the 102nd Annual Meeting of the Northern Nut Growers Association, "Genetics, ecology and management of walnuts and butternut," July 17-21, 2011, Utah State University, Logan, Utah, July 19, 2011. (45 minute presentation to 75 attendees, including private nut growers from around the U.S. and about 10-15 scientists and specialists from academia and government service).

57."Basic research is leading to the development of an IPM program for the invasive goldspotted oak borer in southern California: A combined effort lead by Forest Service R&D and FHP." Presentation (with T.W. Coleman) in the D5 Working Group Technical Session, Forest Entomology and Pathology, Forest Health and Fire Track, Biosecurity: Partnerships between Research and Management to Mitigate the Impact of Invasive Species in the Western U.S., R. Progar, Organizer. The Society of American Foresters National Convention, Honolulu, Hawaii, November 4, 2011.

INVITED PRESENTATIONS (continued):

58. "1) Walnut Twig Beetle and Thousand Cankers Disease: A History of the Problem in the Western U.S. And 2) Walnut Twig Beetle: Origins of Invasive Populations and the Development of a Detection and Monitoring Tool." Two invited lectures at the Conference on Thousand Cankers Disease and Emerald Ash Borer in the Eastern United States, November 30-December 2, 2011, University of Tennessee, Knoxville, TN, Dec. 1, 2011 (Two 45 minute presentations to 120 attendees, including 16 federal, 87 state, 12 private, and 5 public scientists/specialists).

59. "Walnut twig beetle: Biology, chemical ecology, and demonstration of a detection system in the eastern and western U.S." 23rd U.S. Department of Agriculture Interagency Research Forum on Invasive Species, Sponsored by the USDA Forest Service Research, the Agricultural Research Service, USDA APHIS and the USDA NIFA, Annapolis, Maryland, January 10, 2012.

60. "Walnut twig beetle: Biology, chemical ecology, etc. status and thoughts on a five-year research plan." Presentation at the "Thousand Cankers Disease: Methods and Research and Development Needs Assessment," co-sponsored by the Walnut Council, the USDA Forest Service Northern Research Station Hardwood Tree Improvement Research Center, and the USDA Forest Service Northeastern Area State and Private Forestry, Holiday Inn Lafayette City Center, Lafayette, Indiana, April 26, 2012. (92 attendees from 15 states and Canada; 28 academic, 15 state and 19 federal agencies, 4 industry, 22 NGOs, and 4 misc.).

61. "Life history of the walnut twig beetle, *Pityophthorus juglandis*, and its association with *Geosmithia morbida*, causal agent of Thousand Cankers Disease in the United States." Presentation at the Special Session, "Thousand Cankers Disease: A Threat to Eastern Black Walnut Throughout Its Native Range and Beyond. Co-sponsored by the Walnut Council and the Walnut Council Foundation, 2012 American Phytopathological Society Annual Meeting, Providence, Rhode Island, August 7, 2012.

62. "Thousand cankers disease and eastern black walnut: How resilient will the native forests be?" Presentation in the D5 Working Group Technical Session, Forest Entomology and Pathology, Forest Health and Fire Track, Eastern Diseases and Forest Resilience, B. D. Moltzan, Organizer. The Society of American Foresters National Convention, Spokane, Washington, October 26, 2012.

63. "Walnut twig beetle population genetics: The origin of the problem." Co-authored with Rugman-Jones, P.F., Graves, A.D., and Stouthamer, R. Invited 25-minute presentation in a symposium entitled: The Walnut Twig Beetle and Thousand Cankers Disease: A Global View from Ground Zero in Knoxville, Tennessee, 60th Annual Meeting of the Entomological Society of America, November 14, 2012, Knoxville, Tennessee.

64. "Biology and host colonization behavior of the walnut twig beetle: A long-overlooked invasive pest of walnut trees in the United States." Presentation at an informal symposium on Insect-Plant-Fungus Interactions, Horticum, Faculty of Landscape Planning, Horticulture, and Agricultural Science, Svenska Landsbruket Universitat, Alnarp, Sweden, Nov. 29, 2012.

65. "Thousand cankers disease and walnut twig beetle: A threat to walnut trees that simply won't be ignored**."** Fifty-minute invited lecture to approx. 40 attendees at the Columbus and Wooster campuses of the Ohio State University in the Department of Plant Pathology Seminar Series, January 29, 2013.

66. "Refining a lure for the walnut twig beetle, *Pityophthorus juglandis* (Coleoptera: Scolytidae), based on the male-produced aggregation pheromone." Co-authored with Nelson, L J., Dallara, P.L., Hamud, S.M., and Graves, A.D. Invited 20-minute presentation in a symposium entitled: Semiochemicals and Release Rates Involved in Pest Monitoring and Control, 97th Annual Meeting of the Pacific Branch of the Entomological Society of America, April 9, 2013, Lake Tahoe, Nevada (oral presentation by SJS).

67. "The invasion history and impact of two indigenous exotic pests of hardwoods in California: Walnut twig beetle and goldspotted oak borer." Co-authored with Graves, A.D., and Coleman, T.W. Invited 20-minute presentation in a symposium entitled: Forest Entomology: Science for Sustainable Forests, 97th Annual Meeting of the Pacific Branch of the Entomological Society of America, April 10, 2013, Lake Tahoe, Nevada.

INVITED PRESENTATIONS (continued):

68. "Thousand cankers disease survey implementation." Hosted by the USDA Forest Service State & Private Forestry and Forest Health Protection, Hardwood Tree Improvement & Regeneration Center at Purdue University, Purdue University Department of Entomology, and the Walnut Council, Twenty-five minute webinar presentation to approx. 80 attendees largely from state and federal regulatory and natural resource management agencies, April 25, 2013.

69. "Thousand cankers disease of walnut: Trap and survey research." 89th Annual Central Plant Board Meeting, April 29, 2013, hosted by the Kansas Department of Agriculture, Plant Protection, and Weed Control, Manhattan, Kansas, Twenty minute oral presentation to approx. 60 attendees largely from state and federal regulatory agencies.

70. "Goldspotted oak borer in California." Forty-five minute invited lecture to approx. 20 attendees at the annual meeting of the Northern California Entomological Society, Davis, California, May 2, 2013.

71. "The goldspotted oak borer and other invasive woodboring beetles." National Plant Diagnostic Network, Collaborative and Enhanced Pest Detection Workshop. The University of California Davis Arboretum, Davis, California, August 2, 2013.

72. "Walnut twig beetle: Status of the national detection program and update on research in California." Invited presentation at the 62nd Annual Meeting of the California Forest Pest Council, Sacramento, California, November 20, 2013.

73. "Thousand cankers disease and walnut twig beetle research update." 90th Annual Central Plant Board Meeting, May 5, 2014, hosted by the South Dakota Department of Agriculture, Rapid City, South Dakota, Thirty minute oral presentation to approx. 60 attendees largely from state and federal regulatory agencies.

74. "Goldspotted oak borer: Diagnosis of the damage, impact on oaks, and risk to areas outside of California." 90th Annual Central Plant Board Meeting, May 5, 2014, hosted by the South Dakota Department of Agriculture, Rapid City, South Dakota, Thirty minute oral presentation to approx. 60 attendees largely from state and federal regulatory agencies.

75. "Looking for the polyphagous shot hole borer." Co-authored with T. W. Coleman. California Forest Pest Council Urban Forest Insect/Disease Workshop, September 30, 2014, Jasper Ridge Biological Station, Woodside, California (oral presentation by Seybold). Twenty-minute presentation to 48 private arborists, city foresters, and county agricultural extension staff from the South Bay and Monterey area.

76. "Interactions of the walnut twig beetle, *Pityophthorus juglandis*, with its hosts in the Juglandaceae." Co-authored with Dallara, P.L., Graves, A.D., and Hishinuma, S.M. Invited 20-minute presentation in a symposium entitled: Exploring Complex Interactions among Non-native Bark and Ambrosia Beetles, their Associated Fungi, and Naïve Hosts, 62nd Annual Meeting of the Entomological Society of America, November 18, 2014, Portland, Oregon.

77. "The goldspotted oak borer: Revisiting the status of an invasive pest seven years after its discovery." Co-authored with T. W. Coleman. Western Chapter International Society of Arboriculture, 81st Annual Conference and Trade Show. April 29, 2015, Fish Camp (Yosemite), California (invited oral presentation by SJS, 1 hr). Presented to about 100 arborists, resource managers, and scientists.

78. "Chemical ecology of subcortical insects in new contexts: The roles of climate change and invasion of naïve habitats." Invited symposium speaker at the 31st Annual Meeting of the International Society of Chemical Ecology, Stockholm, Sweden, June 30, 2015.

79. "Introduction to APACE Symposium on Chemical Ecology of Forest Insects." Symposium on Chemical Ecology of Forest Insects, 8th Asia-Pacific Chemical Ecology Conference, APACE 2015, Garden Grove, California, September 23-26, 2015 (Seybold, S.J. and Zhang, Z.).

INVITED PRESENTATIONS (continued):

80. **"**California black oak forest health challenges." Invited 20-minute presentation to approximately 200 participants in a symposium entitled: California Black Oak and Oregon White Oak Woodland Ecology and Management Symposium, UC Cooperative Extension, Eureka, California, November 12, 2015.

81. **"**Impact of walnut twig beetle on English walnut." Invited 20-minute presentation to approximately 275 participants at the UC Davis Department of Plant Sciences Fruit and Nut Research and Information Center, Advances in Walnut Production Short Course, Davis, California, November 18, 2015.

82. **"**Walnut twig beetle in California." Invited 20-minute presentation to approximately 20 resource managers and UCCE outreach specialists at the formative meeting of the Napa County Thousand Cankers Disease Task Force, Napa California, February 9, 2016.

83. **"**Invasive bark and ambrosia beetles in California Mediterranean forest ecosystems: Finding ecological spaces in already overcrowded habitats and *niches*?" Invited 50-minute presentation to approximately 75 students and faculty at the California State University Chico, Department of Biological Sciences Omicron Theta Epsilon Weekly Seminar Series, Chico, California, February 12, 2016.

84. **"**Here come the invasive woodborers: Goldspotted oak borer and polyphagous shot hole borer." California State Parks Natural Resources Training, Resource Management Natural Intermediate Course-2016, Tomales Bay, California, February 23, 2016 (invited oral presentation to 75 participants by SJS). Also included a 3 hour evening hands-on lab session.

85. **"**Tales of two hardwood borers: Polyphagous shot hole borer and goldspotted oak borer." National Plant Diagnostic Network, 4th National Meeting, Advancing Diagnostics for Emerging Pathogens and Pests Affected by Global Trade and Climate Change, Washington, D.C., March 9, 2016.

86. "Zoogeography and invasion ecology of arthropod vectors of plant pathogens and human/animal pathogens. A contrast of thousand cankers disease and tick borne diseases of vertebrates." In: Vector borne diseases: Parallels, opportunities, and challenges." UCD-TAMU Co-Hosted Vector Biology Workshop, College Station, Texas, October 17, 2016 (invited oral presentation by SJS, co-authored with P. Teel).

TEACHING EXPERIENCE:

1. "Introduction to Entomology." Lectures for Forestry 100A, Forestry Summer Camp, UC-Berkeley, June 1985, 1988, and 1990.

2. "Forest Insects and Diseases in the Tahoe Basin." Led field trip for Conservation and Resource Studies class CRS 106: Fire, Insects, and Diseases in Wildland Ecosystems, ten hours of lecture and discussion, UC-Berkeley, October 26 and 27, 1990.

3. "Chemical Ecology of Pine Bark Beetles." One-hour lecture delivered for "Chemical Ecology," Entomology 170, UC-Berkeley, November 26, 1991.

4. "Forest Insects and Diseases." University of California at Berkeley, Forestry 106, Teaching Assistant, delivered four, one-hour class lectures and weekly one-hour laboratory lectures. Prepared weekly three-hour laboratory sessions with quizzes. Co-led two-day field trip. UC-Berkeley, Spring Semester, 1991. [Also taught two lab sessions for same class during Spring Semester, 1993].

5. "Chemical Ecology of Pine Bark Beetles of the Sierra Nevada." Led two, one-hour field classes in June, 1994 and 1995 at the University of Nevada (UNR) Whittell Ecological Forest and delivered one, one-hour preparatory class lecture in June 1995 to University of Nevada Hughes Scholar Program. Also lectured to this program in July, 1996, 1997, and 1998 on techniques for presentation of scientific research. Delivered one, one-hour lecture and developed a three-hour laboratory titled "Laboratory Chemotaxis of Pine Bark Beetles" for UNR Biology 482 Animal Behavior Laboratory, Spring, 1995.

TEACHING EXPERIENCE (continued):

6. "Bioactive Natural Products." University of Nevada, Reno Biochemistry 793, delivered two lectures during this team-taught class: 1) Introduction to Chemical Ecology: Behavioral Chemicals and 2) Behavioral Chemicals of Scolytid Bark Beetles, October 17 and 19, 1995.

7. "Seminar in Chemical Ecology." University of Nevada, Reno Biochemistry 794Q, taught a weekly seminar course to twelve undergraduate and graduate students. Coordinated and funded the participation of five international experts in insect chemical ecology to provide the students with an inside view of the professional world of chemical ecology, August—December 1996.

8. "Metabolic Regulation." University of Nevada, Reno Biochemistry 417/617, taught two lectures on isoprenoid biosynthesis, prepared and graded quiz and exam questions, and proctored final exam for a class of thirty-five undergraduate and graduate students, November—December 1997.

9. University of Nevada, Reno, Department of Biochemistry (1994-1998). Directed or co-directed the research of three postdoctoral scientists, four graduate students, and eight undergraduate students on the molecular biology and biochemistry of pheromones and hydrocarbons of bark beetles at the University of Nevada.

10. "Forest Ecology." University of Minnesota FR 3104/5104, delivered one guest lecture, "The Impact of Insects on Forest Ecosystems," October 28, 1998.

11. "Field Silviculture." University of Minnesota Forest Resources 4611, Department of Forest Resources Cloquet Summer Course, Team-taught forest insects and forest diseases with R. Blanchette (Plant Pathology), May 24, 2000, June 1, 2001, June 6, 2003, and May 28, 2004.

12. "Forest and Shade Tree Entomology." University of Minnesota Entomology 4251, developed and taught a three-credit lecture and laboratory course to 22 to 27 students, Spring Quarter 1999, Fall Semesters 1999, 2000, and 2001. Course involved 29 lectures and 15 indoor and field laboratory exercises. The course had a web site which was an integral for student success in the course: http://www. entomology.umn.edu/classes/ent4251/

13. University of Minnesota, Departments of Entomology and Forest Resources (1998-2002). Directed or co-directed the research of two postdoctoral scientists, five graduate students, and eight undergraduate students on various topics in forest entomology, including the molecular biology and biochemistry of pheromones of bark beetles, wood products entomology, the effect of silviculture on managing the spruce budworm, the impact of natural and anthropogenic landscape-level disturbances on forest insect biodiversity, and the impact of nitidulid beetles as vectors of oak wilt.

14. "History of Forest Entomology." University of California-Davis Entomology 291, led a two-hour seminar for 15 graduate students, Winter Quarter 2005, January 13, 2005.

15. "Indigenous Exotic Forest Insects in North American Forests: Supplemental Homegrown Biodiversity or Forest Management Nightmare." Invited teaching lecture, Forestry Sciences 495, Department of Forest Sciences, Faculty of Forestry, University of British Columbia, March 19, 2009, Vancouver, BC, Canada (invited oral presentation).

16. "Bark beetles and Woodborers as Forest Pests." University of California-Davis PLS-105, Introduction to Integrated Pest Management, lecture and two-hr laboratory exercise for 20 students, November 18, 2010.

17. "Forest Pest Outbreaks." University of California-Davis, ECL290, Seminar co-taught with A. Hastings, D. Rizzo, and N. Ross, October-December, 2011.

18. "Invited Chief Examiner (the Opponent) for the Ph.D. Dissertation Defense of Dr. Christian Schiebe, Attraction and Resistance in the *Picea abies-Ips typographus* System, Nov. 30, 2012, SLU, Faculty of Landscape Planning, Horticulture, and Agricultural Science, Division of Chemical Ecology, Alnarp, Sweden. This involved delivering a 30 minute presentation on the general topic of bark beetle host selection behavior followed by 1.5 hr of directed questioning of the student in a public format to probe the level of understanding of the thesis by Dr. Schiebe.

TEACHING EXPERIENCE (continued):

19. " International External Examiner" for Ph.D. student Oghiakhe, Sunday, Department of Entomology, University of Manitoba, Winnipeg, Manitoba, Canada, Ph.D., July/August 2014.

20. Guest Lecturer: "PLS230: Introduction to Forest Biology," Plant Sciences 230, October 22, 27, 29, and November 3, 2015. Prepared and delivered four lectures (each 80 minutes long) on the topics of Introduction to Forest Entomology, Introduction to Forest Pathology, Insect-fungal Interactions with Forest Trees, and Forest Insect-Fire Interactions. Class comprised of 7 graduate and undergraduate students and five instructors.

21. January 2017: Mentoring three graduate students (Jackson Audley, Stacy Hishinuma, and Corwin Parker) and two undergraduate students (Megan Siefker and Maia Lundy), all through the UC-Davis Dept. Entomology. Also providing technical input to and serving on the committee for the MS Thesis of Irene Lona, Dept. Biological Sciences, California State University, Chico, and recently provided technical input to and served on the committee for the Ph.D. thesis of Andrea Hefty (University of Minnesota Dept. of Entomology, graduated Aug. 2016).

EXTENSION/OUTREACH ACTIVITIES:

1. "Community-based Non-toxic Bark Beetle Management: Education, Research, and Implementation in the Tahoe Basin." Co-led this joint extension-research project on shade tree health and forest health at the University of Nevada (January 1997—September 1998) and developed the following products:

The Bark Beetle Discovery Trail. Conceived and built a seven-stop educational trail with realistic biological and IPM-based displays at Spooner Lake State Park, Incline Village, Nevada.

"Bark Beetle Blues." A four-page newsletter that answers frequently asked questions about bark beetles. Distributed to ~7,300 households in the Tahoe Basin. Co-written with S.G. Donaldson.

Bark Beetles in the Lake Tahoe Basin, Donaldson, S.G. and Seybold, S.J. 1998. University of Nevada. Cooperative Extension Fact Sheet FS-98-40, 4 pp.

Thinning and Sanitation: Tools for the Management of Bark Beetles in the Lake Tahoe Basin, Donaldson, S.G. and Seybold, S.J. 1998. University of Nevada Cooperative Extension Fact Sheet FS-98-42, 4 pp.

Pheromones in Insect Pest Management, Seybold, S.J. and Donaldson, S.G. 1998. University of Nevada Cooperative Extension Fact Sheet FS-98-41, 2 pp.

Conifer-feeding Bark Beetles in the Lake Tahoe Basin, delivered over 15 lectures and informal presentations to homeowners, Master Gardeners, school classes, and agency groups in the Tahoe Basin.

2. **"Wood Products Entomology."** Delivered lectures and led laboratory sessions for UC Cooperative Extension Programs in Bay Area of California (February 1988, September 1991, December 1992, March 1994, October 1994 and March 1995), for Nevada Cooperative Extension in Las Vegas and Reno (January 1997, 1998), and for Target Specialty Products in the following California cities: Anaheim (February 1997, 1998); Concord (March 1993); Ontario (October 1994, 1996, 1997, 1998, 1999); Sacramento(October 1996, 1997, 1998, 1999); San Diego (October 1988, 1994, January 1997, 1998); San Ramon (February 1998, 1999, 2000); Santa Clara (February 1999); Ventura (October 1994, 1996, 1997); Visalia (February 1995, 1997, 1998); and Mesa, Arizona (May 1996, February 1997, 1998). In 1997, 1998, 1999, and 2000 other lecture topics included "Insect Pheromones in Urban Entomology; Biology and Management of Bark Beetles in California Landscape Trees; Pine Pitch Canker Disease in California; and Impact and Management of Exotic Woodborers in Landscape Trees."

"Biology, Impact, and Management of Subterranean Termites in Minnesota." Presentation to Windom City Council Meeting, Windom, Minnesota, June 8, 1999.

EXTENSION/OUTREACH ACTIVITIES (continued):

"An Overview of North American Wood-Destroying Insects," USDA Forest Service: Forest Health Discussion Group, North Central Forest Experiment Station, November 17, 1999.

"Biology, Impact, and Management of Subterranean Termites in Minnesota." Presentation to the Division of Agronomy and Plant Protection, Minnesota Department of Agriculture and City of Windom, March, 2000.

"Wood Destroying Insects in Minnesota." Presentation at the Minnesota Structural Pest Management Conference, Brooklyn Center, Minnesota, March 6, 2001.

3. **"Forest Entomology."** Delivered lectures or led workshops in the following localities in Minnesota and California. Selected list is below:

"Forest Entomology at the University of Minnesota: Areas of Interest and Opportunities for Collaboration." Presentation at the USDA Forest Service Northeastern Area State and Private Forestry 1999 State Cooperators' Meeting, St. Paul, Minnesota, March 10, 1999.

"Impacts of Forest Insects Following Storm Damage." Presentation at Minnesota Extension Service Seminar, "Storm over the Family Forest," Gunflint Lodge, Grand Marais, Minnesota, August 28, 1999.

"Forest and Wood Products Entomology and the University of Minnesota: Areas of Interest and Opportunities for Collaboration." Presentation to the Division of Agronomy and Plant Protection, Minnesota Department of Agriculture, St. Paul, Minnesota, December 13, 1999.

"An Overview of Minnesota Tree and Shrub Insects." Presentation at the Minnesota Nursery and Landscape Association Convention and Trade Show, Minneapolis, Minnesota, January 7, 2000.

"Updates on Research in Forest Entomology at the U of MN." Coordinated four student presentations at the USDA Forest Service: Forest Health Discussion Group, North Central Forest Experiment Station, April 19, 2000.

"Life Cycle of the Spruce Budworm with an Emphasis on Host Synchrony and Dispersal." Presentation at the White Spruce Management Workshop, Cass Lake, Minnesota, July 11, 2000.

"Forest and Wood Products Entomology and the University of Minnesota: Areas of Interest and Opportunities for Collaboration." Presentation to the Minnesota Shade Tree Advisory Committee, St. Paul, Minnesota, July 20, 2000.

"Forest Insects and Diseases." Taught basic forest insect/pathogen issues to about one dozen elementary school classes at Conservation Education Days at the Cloquet Forestry Center (with Jim Warren), September 14, 2000.

"Assessing the Impact of Wind Disturbance on Forest Insect Populations in Northern Minnesota." Presentation to the North Central Forest Pest Workshop, Rhinelander, Wisconsin, September 26, 2000.

"Forest Insects and Diseases Training Session." Taught basic recognition and biology of forest health agents to about 25 personnel from MN State Parks (with Mike Albers, MN-DNR), Judge Magney State Park, October 3, 2000.

"Enemies of Evergreens." Delivered two presentations at the "Million Acres in Minnesota Conference for Woodland Owners and Users, Duluth, Minnesota, March 3, 2001.

"Distribution and Biology of the Eastern Spruce Budworm and its Effect on White Spruce Life Cycle of the Spruce Budworm with an Emphasis on Host Synchrony and Dispersal." Presentation at the White Spruce Management Workshop, Grand Rapids, Minnesota, March 13, 2001.

"Current Research on Forest Insects in Northern Minnesota: Silvicultural Management of Spruce Budworm in White Spruce, Insect Responses following the Boundary Waters Blowdown, and the Larch Beetle Outbreak." Presentation at the Forest Systems of the Upper Midwest: Research Review, Cloquet Forestry Center, Cloquet, Minnesota, January 10, 2002.

EXTENSION/OUTREACH ACTIVITIES (continued):

"Invited Outside Reviewer and Contributor, Five-year review of Minnesota Department of Natural Resources Forest Health Program." Cloquet, Minnesota, September 28-29, 2004.

"Insects are fun and exciting!" Davis Parent Nursery School, and Fairfield Elementary School, (joint oral presentations by Seybold, S.J. and DuCharme, D., the latter was the outreach specialist with the UC-Davis Bohart Insect Museum), May 12, 2006 and June 5, 2006.

"Invasive bark beetles in California urban forests." Pesticide Applicators Professional Association Seminar, Bakersfield, California, October 26, 2006.

"Frontalin: Production and response to an aggregation pheromone component by the red turpentine beetle, *Dendroctonus valens* LeConte (Coleoptera: Scoltyidae)." 2007 Blodgett Forest Research Station Workshop, Georgetown, California, February 2, 2007.

"Recently developed semiochemical baits for managing native and exotic bark beetles in California. 56th Annual Meeting of the California Forest Pest Council, Woodland, California, November 13, 2007.

"Bark beetles in California's forests: Invasive species on the move." Plumas-Sierra Counties Weed Management Area and Plumas-Sierra Counties Department of Agriculture, Continuing Education Seminar in Pest Management, Quincy, California, January 29, 2008.

"Threats to California's urban and wildland forests by invasive bark beetles: A research update. USDA Forest Service Region 5 Regional Leadership Team Meeting, Sacramento, California, April 2, 2008.

"Goldspotted oak borer in Southern California. 57th Annual Meeting of the California Forest Pest Council, Woodland, California, November 18-19, 2008.

"Thousand cankers disease in walnuts." Solano/Yolo Walnut Meeting, Woodland, California, February 23, 2010.

"Thousand cankers disease: Background and update." Southern California Street Tree Seminar, Audubon Center at Debs Park, Los Angeles, California, May 20, 2010. (presentation to 25 urban forestry professionals from the Metropolitan Los Angeles).

"Update on monitoring and detection of the walnut twig beetle." Invited presentation at the Thousand Cankers Disease Workshop, Golden, Colorado, June 23, 2010. (presentation to 40 forest health, research, academic, and agricultural professionals from six states).

"Walnut twig beetle and thousand cankers disease: Status of the problem in California and the U.S." Invited presentation at the Annual Meeting of the Northern California Entomological Society, Concord, California, November 4, 2010 (presentation to 30 entomologists and pest management specialists from universities, government agencies, and the private sector) and the California Forest Pest Council, McClellan, California, November 17, 2010.

"Thousand Cankers Disease in California and the U.S." 42nd Annual Tri-County Walnut Day, Visalia, California, Feb. 3, 2011 (30 min presentation to 250 attendees).

"Development of an early detection tool for walnut twig beetle and impact of thousand cankers disease at the *Juglans* Collection of the ARS National Clonal Germplasm Repository." Annual Meeting of the National Plant Diagnostic Network, Winters, California, Nov. 9, 2011 (30 min field presentation to 25 attendees-plant diagnosticians, regulatory agents, and university faculty).

"Breakfast with the Scientists." UC-Davis Genetics Club, Davis, California, May 19, 2012 (10 min presentation and 1 hr small group discussion with 15 undergraduate students in biology and genetics).

EXTENSION/OUTREACH ACTIVITIES (continued):

"Update on walnut twig beetle and thousand cankers disease research." Combined Committee Meeting of the Genetic Improvement and Plant Pathology Work Groups of the Walnut Production Research Advisory Council (PRAC), Davis, California, July 12, 2012 (15 min presentation followed by discussion).

"Tree injury and mortality associated with the polyphagous shot hole borer in southern California." Co-authored with T.W. Coleman. Current Issues in Invasive/Emerging Pests and Diseases, Workshop sponsored by the National Plant Diagnostic Network, the California Center for Urban Horticulture, and Foundation Plant Services, UC-Davis, Davis, California, February 5, 2014.

"Thousand cankers disease and walnut twig beetle." Presentation to 125 tree care professionals at the meeting of the Western Chapter of the International Society of Arboriculture, Santa Rosa, California, March 6, 2014.

"Walnut twig beetle and thousand cankers disease." Presentation to approx. 50 growers, industry representatives, academic scientists, and UC cooperative extension personnel at the 2014 San Benito County Walnut Institute sponsored by UC Cooperative Extension, the San Benito County Agricultural Commissioner, and the California Walnut Board, Hollister, California, March 13, 2014 and March 13, 2015**.**

"Goldspotted oak borer biology and detection." California Forest Pest Council Field Meeting, Pine Valley Creek, Cleveland National Forest, Forty-five minute presentation to approx. 40 attendees from various federal, state, and regional resource agencies and private industry, San Diego County, California, July 29, 2014.

"Walnut Twig Beetle,"IUFRO World Congress, Forest Health Field Presentation, Center for Improving Perennial Plants for Food and Bioenergy. Co-presented with P.L. Dallara and S.M. Hishinuma. Forty-five minute field presentation to approx. 50 foresters, forest health specialists and scientists at an international meeting, Dayton Idaho, October 8, 2014.

"Ongoing research-A look at EIPD Strategic Initiative projects-thousand cankers disease and walnut twig beetle," published October-December 2014, California Agriculture 68(4): 105–108. Article authored by Hazel White.
http://californiaagriculture.ucanr.edu
This article was a popular summary of the following grant project:
"Thousand Cankers Disease and the Walnut Twig Beetle: A Rapidly Emerging Invasive Threat to Walnuts in California." University of California, Agriculture and Natural Resources Competitive Grants Program, ANR Competitive Grant No. 11-1025, $296,695 (Nov. 1, 2011—Oct. 31, 2014) (Co-PI with R. M. Bostock, Dept. Plant Pathology, UC-Davis).

"Walnut twig beetle and thousand cankers disease?" Thirty-minute presentation to approx. 60 growers, industry representatives, academic scientists, and UC cooperative extension personnel at the 2015 Lake County Walnut Update sponsored by UC Cooperative Extension, the Lake County Department of Agriculture, and the California Walnut Board, Lakeport, California, April 8, 2015.

"Field demonstration of biology, impact, and survey for walnut twig beetle and thousand cankers disease." 90 minute field presentation to approx. 20 growers and cooperative extension specialists and staff as the second half of the 2015 Annual Walnut Update. Co-presented with S.M. Hishinuma. Kelseyville, California, April 8, 2015.

"Thousand cankers disease recognition training session with orchard systems farm advisors and others." Wolfskill, USDA ARS, NCGR, Co-presented with R.M. Bostock, and J.K. Hasey (3 hours with eight participants), Winters, California, July 14, 2015.

"Invasive Bark Beetles and Woodborers in California." Field tour with Horst Delb, Freiburg, Germany, and C.J. Fettig, various sites in Butte, Colusa, and Solano Counties, California, July 30, 2015.

"Forest Insect Research Activities at PSW," 90th Anniversary Celebration of the Institute of Forest Genetics, Co-presented with S.M. Hamud and L.J. Nelson, Placerville, California, July 24, 2015.

"Annual Meeting of the Society for Freshwater Science," Co-presented with S.M. Hamud. Provided outreach to promote the mission of PSW and the USDA FS Experimental Forest System in an exhibit booth, 8:30 AM to 2:30 PM, approx. 900 people in attendance, Sacramento, California, May 23, 2016,.

"Field training session on walnut twig beetle and thousand cankers disease," Co-presented with R.M. Bostock and E.J. Fichtner to approximately 275 participants as part of the UC Davis Department of Plant Sciences Fruit and Nut Research and Information Center, Advances in Walnut Production Short Course, Davis, California. Four groups of participants were addressed at the UCD Dept. of Plant Pathology Armstrong Farm where the employee focused on the design and preliminary results of a walnut twig beetle systemic insecticide trial taking place at that location. 2.5 hr event, Davis, California, November 17, 2015.

"Field training session on impact of walnut twig beetle on English walnut." Presented to approximately 275 participants as part of the UC Davis Department of Plant Sciences Fruit and Nut Research and Information Center, Advances in Walnut Production Short Course. Four groups of participants were addressed at the UCD Nickels Soil Laboratory, where the focus was on the design and preliminary results of a walnut twig beetle tree-baiting trial taking place at that location supported by funding from the California Walnut Board. 2.5 hr event, Arbuckle, Colusa County, California, November 19, 2015.

PEER REVIEW EXPERIENCE:

Peer reviewer for scientific journals and grant programs including: *Agricultural and Forest Entomology, American Entomologist*, *Annals of the Entomological Society of America*, *Biological Invasions*, *Chemoecology*, *The Canadian Entomologist, Canadian Journal of Forest Research, Ecological Modelling, Ecology, Entomologia Experimentalis et Applicata*, *Entomological News*, *Environmental Entomology*, *Forest Science, Insect Molecular Biology, Journal of Agricultural and Food Chemistry*, *Journal of Chemical Ecology*, *Journal of Economic Entomology, Journal of the Entomological Society of Ontario*, *Journal of Insect Behavior*, *Micron, Naturwissenschaften, Oecologia, New Zealand Journal of Forestry Science*, *Pan-Pacific Entomologist, Physiological Entomology, Plant Disease, Plant Pathology, Plant Physiology*, *PLoS One, Proceedings of the Royal Society: Biological Sciences, The ISME Journal, Tree Physiology, Western North American Naturalist, Zookeys*, the Alberta Ingenuity Fund, The Leverhulme-Royal Society of Africa Awards Program, Formas (the Swedish Research Council for Environment, Agricultural Sciences, and Spatial Planning), FWF-Der Wissenschaftsfonds (the Austrian Science Fund), the USDA APHIS Plant Protection and Quarantine, the USDA Forest Service, the Natural Sciences and Engineering Research Council of Canada Competitive Grants Program, the National Science Foundation Competitive Grants Program (Integrative Animal Biology), and the USDA National Research Initiative Competitive Grants Program (now NIFA).

EDITORIAL BOARDS AND EDITORIAL POSITIONS:

Journal of Chemical Ecology (Board Member: January, 1999—January 2014; Associate Editor: January, 2005—March, 2012) and Associate Editor, *Journal of the Entomological Society of Ontario* (March, 2001—January, 2006). Guest Editor of *Journal of Chemical Ecology* (December, 2004) Special Issue on Molecular Biology. Subject Editor (Forest Entomology) *Journal of Economic Entomology* (January 2006—January 2008). *Acta Phytopathologica et Entomologica Hungarica* (Board Member, October 24, 2016-present).

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