

Western Bark Beetle Research Group

Accomplishments Report: Jan. 2007-Dec. 2008

Group Products

Publications

- (1) **Bentz, B. J., Fettig, C. J., Gillette, N., Hansen, E. M., Hayes, J. L., Kelsey, R. G., Lundquist, J. E., Lynch, A. M., Negrón, J. F., Niwa, C., Progar, R. A., and Seybold, S. J. 2008.** USDA Forest Service Research and Development Western Bark Beetle Research Group, Briefing Paper, 2 pp.
- (2) **Bentz, B. J., Fettig, C. J., Hansen, E. M., Hayes, J. L., Hicke, J., Kelsey, R., Lundquist, J. E., Negrón, J. F., Bentz, B. J., Fettig, C. J., Gillette, N. G., Hansen, E. M., Hayes, J. L., Kelsey, R., Lundquist, J. E., Progar, R., Régnière, J., Seybold, S. J., and Vandygriff, J. 2008.** Climate Change and Western Bark Beetles: Rapid Threat Assessment, Report to the Western Wildlands Environmental Threat Assessment Center, September 2008, 79 pp., <http://www.fs.fed.us/wwetac/projects/bentz.html>
- (3) **Fettig, C. J., Klepzig, K. D., Billings, R. F., Munson, A. S., Nebeker, T. E., Negrón, J. F., and Nowak, J. T. 2007.** The effectiveness of vegetation management practices for prevention and control of bark beetle outbreaks in coniferous forests of the western and southern United States. *Forest Ecology and Management* 238:24–53.
- (4) **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, p. 306, in R.F. Powers (ed.). Restoring fire-adapted ecosystems: Proceedings of the 2005 National Silviculture Workshop. Gen. Tech. Rep. PSW-GTR-203, USDA Forest Service, Pacific Southwest Research Station, Albany, California.
- (5) **Lee, J. C., Haack, R. A., Negrón, J. F., Witcosky, J. J. and Seybold, S. J. 2007.** Invasive bark beetles. Forest Insect & Disease Leaflet No. 176, 12 pp.
- (6) **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. *Journal of Forestry* 106:325–331.
- (7) **Shepherd, W. P., Huber, D. P. W., Seybold, S. J., and Fettig, C. J. 2007.** Antennal responses of the western pine beetle, *Dendroctonus brevicomis* (Coleoptera: Curculionidae), to stem volatiles of its primary host, *Pinus ponderosa*, and nine sympatric nonhost angiosperms and conifers. *Chemoecology* 17:209–221.

Technical Conferences and Workshops Organized

- (1) **Fettig, C. J., Hayes, J. L., and Negrón, J. F. Co-Organizers:** “Inaugural Meeting of the Western Bark Beetle Research Group,” January 2007, Stevenson, Washington.
- (2) **Lundquist, J. E. Organizer:** The Western Bark Beetle Research Group: A Unique Collaboration with Forest Health Protection. 2007 Society of American Foresters National Convention, October 25, 2007, Portland, Oregon.
- (3) **Seybold, S. J., Venette, R. C., and Negrón, J. F. Co-organizers:** Member Symposium: The Millennium Challenge: Invasive Bark Beetles in the Forests of the United States. Annual Meeting of the Entomological Society of America, December, 2007, San Diego, California.
- (4) **Shaw, D. and Progar, R. Co-organizers:** Healthy Forests and Management: Forestry in a Climate of Change, 2008 Society of American Foresters National Convention, November 6, 2008, Reno, Nevada.

Contributed and Invited Presentations and Posters at Scientific Meetings and Workshops

- (1) **Bentz, B. J., Fettig, C. J., Gillette, N., Hansen, E. M., Hayes, J. L., Kelsey, R. G., Lundquist, J. E., Lynch, A. M., Negrón, J. F., Niwa, C., Progar, R. A., and Seybold, S. J.** Formation of the Western Bark Beetle Research Group-USDA Forest Service Research and Development. 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho; the 56th Annual Meeting of the California Forest Pest Council, November 13, 2007, Woodland, California; the Annual Meeting of the Entomological Society of America, December 11, 2007, San Diego, California; and the 59th Annual Western Forest Insect Work Conference, April 8-10, 2008, Boulder, Colorado; (poster presentations by Bentz-Boise, and Seybold-Woodland, San Diego, and Boulder).
- (2) **Hansen, E. M., Gillette, N. E., Mori, S., and Stein, J. D.** Verbenone-releasing flakes reduce attack on whitebark pines by mountain pine beetle. 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation by Hansen).
- (3) **Hayes, J. L. and Kelsey, R.** Problem Area 5. Understanding and managing forest insects and pathogens: accomplishments and future directions. PNW and WO Program Review of Managing Disturbance Regimes Program, February 2008, Portland, Oregon.

(4) **Lee, J. C., Hamud, S. M., McElwey, S., Negrón, J. F., Munson, A. S., Witcosky, J. J., and Seybold, S. J.** The banded elm bark beetle: A new exotic species displacing an established exotic species. Annual Meeting of the Entomological Society of America, December 11, 2007, San Diego, California (oral presentation by Lee).

(5) **Lee, J. C., Aguayo, I., Aslin, R., Durham, G., Hamud, S. M., Moltzan, B., Munson, A. S., Negrón, J. F., Peterson, T., Ragenovich, I., Witcosky, J. J., and Seybold, S. J.** Tale of two invasives: Banded and European elm bark beetle. 56th Annual Meeting of the California Forest Pest Council, November 13, 2007, Woodland, California (poster presentation by Lee) and the 59th Annual Western Forest Insect Work Conference, April 8-10, 2008, Boulder, Colorado (poster presentation by Seybold).

(6) **Lundquist, J. E. and Bentz, B. J.** Bark beetles in a changing climate. Symposium: The Western Bark Beetle Research Group: A Unique Collaboration with Forest Health Protection. 2007 Society of American Foresters National Convention, October 25, 2007, Portland, Oregon (invited).

Environmental Protection Agency Product Registrations

(1) **Gillette, N. E. and Hansen, E. M.** 2008. Disrupt Microflake MCH, Hercon Environmental, EPA registration number 8730-72.

(2) **Gillette, N. E., Pederson, L., Mehmel, C., and Hansen, E. M.** 2008. Disrupt Microflake Verbenone, Hercon Environmental, EPA registration number 8790-68.

Media Recognition

(1) **Bentz, B. J., Fettig, C. J., and Seybold, S. J.** Drought, beetles killing forests: More than 10,000 oaks in S.D. County affected, October 25, 2008, The San Diego Union-Tribune, Article authored by Mike Lee.

Individual Member Products

Publications

- (1) **Ager, A. A., McMahan, A. J., Hayes, J. L., and Smith, E. L. 2007.** Long term simulation of potential bark beetle impacts and stand-level fire behavior on thinned versus unmanaged forest landscapes. *Landscape and Urban Planning* 80:301–311.
- (2) **Barbour, R. J., Hayes J. L., and Hemstrom M. 2007.** The Interior Northwest Landscape Analysis System: A step toward understanding integrated landscape analysis. *Landscape and Urban Planning* 80:333–344.
- (3) **Bentz, B., Alston, D., and Evans, T. 2008. Great Basin Insect Outbreaks. IN Chambers, J.C., Devoe, N., Evenden, A. (eds), pp. 45-48,** Collaborative management and research in the Great Basin — examining the issues and developing a framework for action. Gen.Tech. Rep. RMRS-GTR-204. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 66 p.
- (4) **Bentz, B. J., Pfrender, M., Bracewell, R., and Mock, K. 2007.** Genetic architecture of differences in fitness traits among geographically separated *Dendroctonus ponderosae* populations, pp. 25-26, *in* B. J. Bentz, A. I. Cognato, and K. F. Raffa (tech eds.). Proceedings from the Third Workshop on Genetics of Bark Beetles and Associated Microorganisms. RMRS-P-45. USDA, Forest Service, Rocky Mountain Research Station. Ft. Collins, Colorado, 51 pp.
- (5) **Bentz, B. J. and Schen-Langenheim, G. 2007.** The mountain pine beetle and whitebark pine waltz: has the music changed? Proceedings of the Conference Whitebark Pine: A Pacific Coast Perspective. www.fs.fed.us/r6/nr/fid/wbpine/papers/2007-wbp-impacts-bentz.pdf
- (6) **Brunelle, A., Rehfeldt, G., Bentz, B. J., and Munson, A. S. 2008.** Holocene records of *Dendroctonus* bark beetles in high elevation pine forests of Idaho and Montana, USA. *Forest Ecology and Management* 255:836–846.
- (7) **Bull, E. L., Nielsen-Pincus, N., Wales, B. C., and Hayes, J. L. 2007.** The influence of disturbance events on pileated woodpeckers in northeastern Oregon. *Forest Ecology and Management* 243:320–329.
- (8) **DeGomez, T., Fettig, C. J., McMillin, J. D., Anhold, J. A., and Hayes, C. 2008.** Managing slash to minimize colonization of residual leave trees by *Ips* and other bark beetle species following thinning in southwestern ponderosa pine. Tucson, AZ: University of Arizona, College of Agriculture and Life Sciences Bulletin. 21 p.
- (9) **Dudley, N., Stein, J. D., Jones, T., and Gillette, N. E. 2007.** Semiochemicals provide a deterrent to the black twig borer, *Xylosandrus compactus* (Coleoptera: Curculionidae, Scolytinae), pp. 34, *in* K. W. Gottschalk (ed). Proceedings, 17th U.S.

Department of Agriculture Interagency Research Forum on Gypsy Moth and Other Invasive Species 2006; Gen. Tech. Rep. NRS-P-10. Newtown Square, Pennsylvania: USDA, Forest Service, Northern Research Station.

(10) **Erbilgin, N., Mori, S. R., Sun, J. –H., Sun, Stein, J. D., Owen, D. R., Merrill, L. D., R. Campos Bolaños, R., Raffa, K. F., Méndez Montiel, T., Wood, D. L., and Gillette, N. E. 2007.** Response to host volatiles by native and introduced populations of *Dendroctonus valens* (Coleoptera: Curculionidae, Scolytinae) in North America and China. *Journal of Chemical Ecology* 33:131–146.

(11) **Erbilgin, N., Gillette, N. E., Mori, S. R., Stein, J. D., and Wood, D. L. 2007.** Acetophenone as an antiattractant for western pine beetle, *Dendroctonus brevicomis* (Coleoptera: Scolytidae). *Journal of Chemical Ecology* 33:817–823.

(12) **Erbilgin, N., Gillette, N. E., Owen, D. R., Mori, S. R., Nelson, A. S., Uzo, F., and Wood, D. L. 2008.** Acetophenone superior to verbenone for reducing attraction of western pine beetle, *Dendroctonus brevicomis*, to its aggregation pheromone. *Agricultural and Forest Entomology* 10:433–441.

(13) **Fettig, C. J. 2007.** Western pine beetle attack studied. *The Jill Poke* 12: 10–11.

(14) **Fettig, C. J. 2008.** Bark beetle responses to silviculture at Blacks Mountain. Redding, CA: Pacific Southwest Research Station, USDA Forest Service Leaflet. 2 p.

(15) **Fettig, C. J., Borys, R. R., McKelvey, S. R., and Dabney, C. P. 2008.** Blacks Mountain Experimental Forest: bark beetle response to differences in forest structure and the application of prescribed fire in interior ponderosa pine. *Canadian Journal of Forest Research* 38:924–935.

(16) **Fettig, C. J., Dabney, C. P., McKelvey, S. R., and Huber, D. P. W. 2008.** Nonhost angiosperm volatiles and verbenone protect individual ponderosa pines from attack by western pine beetle and red turpentine beetle (Coleoptera: Curculionidae, Scolytinae). *Western Journal of Applied Forestry* 23:40–45.

(17) **Fettig, C. J., Hanula, J. L., and Foltz, J. L. 2007.** Bark beetle responses to burning and thinning treatments of the Fire and Fire Surrogate Study: a multi-site approach. pp. 370, in *Proceedings, 2006 Fire Ecology and Management Congress*, November 12-16, 2006, San Diego, California.

(18) **Fettig, C. J., McKelvey, S. R., Dabney, C. P., and Borys, R. R. 2007.** The response of *Dendroctonus valens* (Coleoptera: Scolytidae) and *Temnochila chlorodia* (Coleoptera: Trogositidae) to *Ips paraconfusus* (Coleoptera: Scolytidae) pheromone components and verbenone. *The Canadian Entomologist* 139:141–145.

- (19) **Fettig, C. J., McKelvey, S. R., Dabney, C. P., Borys, R. R., and Huber, D. P. W. 2008.** Response of western pine beetle, *Dendroctonus brevicomis* LeConte (Coleoptera: Curculionidae), to different release rates of nonhost angiosperm volatiles and verbenone. *Journal of Applied Entomology* doi: 10.1111/j.1439-0418.2008.01317.x.
- (20) **Fettig, C. J., Munson, A. S., McKelvey, S. R., Bush, P. B., and Borys, R. R. 2008.** Spray deposition from ground-based applications of carbaryl to protect individual trees from bark beetle attack. *Journal of Environmental Quality* 37:1170–1179.
- (21) **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.
- (22) **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. *Forest Ecology and Management* 256:1825–1839.
- (23) **Hayes, J. L., Johnson, P. L., Eglitis, A., Scott, D. W., Spiegel, L., Schmitt, C., and Smith, S. 2008.** Woodboring beetles associated with western juniper and their response to host odors and wounding. *Western Journal of Applied Forestry*. 23:206–215.
- (24) **Hood, S. and Bentz, B. J. 2007.** Predicting post-fire Douglas-fir beetle attacks and tree mortality in the northern Rocky Mountains. *Canadian Journal of Forest Research* 37:1058–1069.
- (25) **Hood, S., Bentz, B. J., Gibson, K., Ryan, K., and DeNitto, G. 2007.** Assessing post-fire Douglas-fir mortality and Douglas-fir beetle attacks in the Northern Rocky Mountains. USDA For. Serv. RMRS-GTR-199, 32 pp.
- (26) **Huber, D. P. W., Erickson, M. L., Leutenegger, C. M., 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.
- (27) **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. J. Bentz, A. I. Cognato, and K. F. Raffa (tech eds.). Proceedings from the Third Workshop on Genetics of Bark Beetles and Associated Microorganisms. RMRS-P-45. USDA, Forest Service, Rocky Mountain Research Station. Ft. Collins, Colorado, 51 pp.
- (28) **Johnson, P. L., Hayes, J. L., Rinehart, R. E., Sheppard, W. S., and Smith S. E. 2008.** Characterization of two non-native invasive bark beetles, *Scolytus schevyrewi* and *Scolytus multistriatus* (Coleoptera: Curculionidae: Scolytinae). *The Canadian Entomologist* 140:527–538.

(29) **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.

(30) **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/pestaalerts/HylurgusPertAlert.pdf>

(31) **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.

(32) **Manter, D. K. and Kelsey, R. G. 2008.** Ethanol accumulation in drought-stressed conifer seedlings. *International Journal of Plant Science* 169:361–369.

(33) **McElwey, S. J., Negrón, J. F., and Withrow, J. R., Jr. 2007.** Height preference of *Scolytus schevyrewi* Semenov, the banded elm bark beetle of American elm, *Ulmus americana*. pp. 76, in K. W. Gottschalk (ed). Proceedings, 17th U.S. Department of Agriculture Interagency Research Forum on Gypsy Moth and Other Invasive Species 2006; Gen. Tech. Rep. NRS-P-10. Newtown Square, Pennsylvania: USDA, Forest Service, Northern Research Station.

(34) **McMahan, A. J., Ager, A. A., Maffei, H., Hayes, J. L., and Smith, E. L. 2008.** Modeling bark beetles and fuels on landscapes: a demonstration of ArcFuels, and a discussion of modeling pursuits, pp. 40–52, in R. N. Havis and N. L. Crookston (eds.). Third Forest Vegetation Simulator Conference. RMRS-P-54. USDA Forest Service, Rocky Mountain Research Station, Ft Collins, Colorado, 234 pp.

(35) **Mock, K. E., Bentz, B. J., O'Neill, E. M., Chong, J. P., Orwin, J., and Pfrender, M. E. 2007.** Landscape-scale genetic variation in a forest outbreak species, the mountain pine beetle (*Dendroctonus ponderosae*). *Molecular Ecology* 16:553–568.

(36) **Negrón, J. F., Allen, K., Cook, B., and Withrow, J. R., Jr. 2008.** Susceptibility of ponderosa pine, *Pinus ponderosa* (Dougl. ex Laws.), to mountain pine beetle, *Dendroctonus ponderosae* Hopkins, attack in uneven-aged stands in the Black Hills of South Dakota and Wyoming, USA. *Forest Ecology and Management* 254:327–334.

(37) **Raffa, K. F., Aukema, B. H., Bentz, B. J., Carroll, A. L., Hicke, J. A., Turner, M. G., and Romme, W. H. 2008.** Cross-scale drivers of natural disturbances prone to anthropogenic amplification: Dynamics of biome-wide bark beetle eruptions. *BioScience* 58:501–518.

- (38) **Régnière, J. and Bentz, B. J. 2007.** Modeling cold tolerance in the mountain pine beetle, *Dendroctonus ponderosae*. *Journal of Insect Physiology* 53:559–572.
- (39) **Ruiz, E. Hayes, J. L., Rinehart, J. E., and Zuniga, G. 2007.** Phylogeographic analysis of the Douglas-fir bark beetle *Dendroctonus pseudotsugae* Hopkins (Coleoptera: Curculionidae: Scolytinae), pp. 29–30, in B. J. Bentz, A. I. Cognato, and K. F. Raffa (tech eds.). Proceedings from the Third Workshop on Genetics of Bark Beetles and Associated Microorganisms. RMRS-P-45. USDA, Forest Service, Rocky Mountain Research Station. Ft. Collins, Colorado, 51 pp.
- (40) **Seybold, S. J., Paine, T. D., and Dreistadt, S. H. 2008.** Bark beetles: Integrated pest management for landscape professionals and home gardeners. University of California Agriculture and Natural Resources Pest Notes, Publication 7421, Oakland, California, November 2008, 8 pp.
- (41) **Six, D. L. and Bentz, B. J. 2007.** Temperature determines the relative abundance of symbionts in a multipartite bark beetle-fungus symbiosis. *Microbial Ecology* 54:112–118.
- (42) **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, Nevada. CD-ROM. Society of American Foresters, Bethesda, MD.
- (43) **Zhang, L. -W., Gillette, N. E., and Sun, J. -H. 2007.** Electrophysiological and behavioral responses of *Dendroctonus valens* to non-host volatiles. *Annals of Forest Science* 64:267–273.
- (44) **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.

Editorial Activity

Agricultural and Forest Entomology (J. L. Hayes)

Forest Ecology and Management (C. J. Fettig)

Forest Science (C. J. Fettig)

Journal of Chemical Ecology (S. J. Seybold)

Technical Conferences and Workshops Organized

- (1) **Bentz, B. J.** Organizer and Moderator: “High Elevation Ecosystems.” 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho.
- (2) **Fettig, C. J., Coyle, D. R., and Nowak, J. T. Co-Organizers:** “Forest Entomology Symposium: The Cost and Impacts of Exotic Invasions.” 55th Annual Meeting of the Entomological Society of America, December 2007, San Diego, California.
- (3) **Fettig, C. J., Coyle, D. R., and Nowak, J. T. Co-Organizers:** “Forest Entomology Symposium: Changes Impacting Our Discipline.” 56th Annual Meeting of the Entomological Society of America, November 16, 2008, Reno, Nevada.
- (4) **Gillette, N. E. Organizer and Moderator:** Efficacy of Verbenone for Control of Mountain Pine Beetle. 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho.
- (5) **Gillette, N. E. Organizer and Moderator:** Efficacy of Verbenone for Control of other Bark Beetle Species. 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho.
- (6) **Gillette, N.E., Slippers, B., and Elkinton, J. Organizers:** Symposium “Use of Molecular Techniques to Identify and to Trace the Origin and Spread of Invasive Forest Insects.” International Congress of Entomology, July 7-12, 2008, Durban, South Africa.
- (7) **Lundquist, J. E.** Track Chair: “Healthy Forests” track. Annual Meeting of the Society of American Foresters, October 23-27, 2007, Portland, Oregon.
- (8) **Lundquist, J. E.** Track Chair: “Healthy Forests” track. Annual Meeting of the Society of American Foresters, November 5-9, 2008, Reno Nevada.
- (9) **Seybold, S. J. Workshop Organizer and Moderator:** “The Interface of Atmospheric Processes and Forest Health (co-moderator with Iral Ragenovich) and Student Presentations, Section A.” 59th Annual Western Forest Insect Work Conference, April 8-10, 2008, Boulder, Colorado.
- (10) **Seybold, S. J. Organizer:** Late-Breaking Symposium: “The Walnut Twig Beetle and Thousand Cankers Disease: Will Native American Walnuts Go the Way of the American Chestnut and the American Elm?” Annual Meeting of the Entomological Society of America, November 16, 2008, Reno, Nevada.

Contributed and Invited Presentations and Posters at Scientific Meetings and Workshops

- (1) **Bentz, B. J.** Mountain pine beetle in whitebark pine ecosystems of the Greater Yellowstone Ecosystem. Greater Yellowstone Coordinating Committee, October 30, 2007, Bozeman, Montana (invited).
- (2) **Bentz, B. J.** Influence of a changing climate on western North American bark beetle species. Entomological Society of America, Annual Convention, December 11, 2007, San Diego, California (invited).
- (3) **Bentz, B. J.** Influence of a changing climate on western North American bark beetle species. WILD Departmental Seminar, Utah State University, February 13, 2008, Logan, Utah.
- (4) **Bentz, B. J.** Bark beetles and fire-injured trees: Considerations for prescribed fire burn plans. National Advance Fire and Resource Institute (NAFRI), Rx510 Applied Fire Effects, March 3-4, 2008, Tuscon, Arizona.
- (5) **Bentz, B. J.** Bark beetle research in the Rocky Mountain Research Station. USDA Forest Service, Chief's Review of Rocky Mountain Research Station, March 5, 2008, Reno Nevada.
- (6) **Bentz, B. J.** The mountain pine beetle and temperature. Laurentian Forestry Centre, Canadian Forest Service, September 30, 2008, Quebec, Quebec, Canada (invited).
- (7) **Bentz, B. J.** Bark beetles outbreak dynamics and ecosystem effects. Expert, Senate Hearing on Bark Beetle Impacts in Colorado, May, 2008, Washington, D.C.
- (8) **Bentz, B. J.** The mountain pine beetle and climate change. For The Forest Science meeting, December 11-12, 2008, Aspen, Colorado (invited).
- (9) **Bentz, B. J. and Hansen, E. M.** Influence of a changing climate on western North American bark beetle species, IUFRO WP 7.03.05, 7.03.06, 7.03.07, September 11, 2007, Vienna, Austria.
- (10) **Bentz, B. J., and Schen-Langenheim, G.** Mountain pine beetle phenology in high elevation whitebark pine ecosystems: Observations and predictions. 58th Meeting of the Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho.
- (11) **Bracewell, R., Mock, K., Bentz, B., and Pfrender, M.** Investigation of reproductive isolation in the mountain pine beetle, *Dendroctonus ponderosae* Hopkins. 58th Meeting of the Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation by Bracewell).

- (12) **Bracewell, R., Bentz, B., Mock, K., and Pfrender, M.** Rapid evolution of hybrid male sterility in the phytophagous insect *Dendroctonus ponderosae*. 56th Annual Meeting of the Entomological Society of America, November 2008, Reno, Nevada (oral presentation by Bracewell).
- (13) **Cain, R. and Hayes, J. L.** Forest Conditions in Western Forests and the Formation of the Western Bark Beetle Research Group, 2007 Society of American Foresters Nation Convention, October 25, 2007, Portland, Oregon.
- (14) **Cox, D. L., Grosman, D. M., Fettig, C. J., Doccolla, J., Costky, S., Keese, R., and Driver, J.** Reaching to the sky to protect against insects that fly – an evaluation of emamectin benzoate tree injections against arboreal insects. 55th Annual Meeting of the Entomological Society of America, December 2007, San Diego, California.
- (15) **Davis, R. S., Bentz, B. J. and Hood, S.M.** Predicting delayed tree mortality and bark beetle-attack probability three years following prescribed and wildland fires. 55th Annual Meeting of the Entomological Society of America, December 11, 2007, San Diego, California (poster presentation by Davis).
- (16) **Dean, D. K., Collier, T. R., Legg, D., and Seybold, S. J.** Monitoring host selection behavior and progression of an infestation by the mountain pine beetle, *Dendroctonus ponderosae* Hopkins (Coleoptera: Scolytidae), in mixed stands of limber pine, *Pinus flexilis* James, and lodgepole pine, *Pinus contorta latifolia* Engelmann. 2007 Forest Health Monitoring Working Group Meeting, January 27-February 1, 2007, San Diego, California (poster presentation by Dean) and 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation by Seybold).
- (17) **Del Rio Mora, A.A., Gillette, N.E., Stein, J. D., and Mori, S. R.** Promising use of semiochemicals to protect pine cones from attack by *Conophthorus* spp. (Coleoptera: Curculionidae: Scolytinae). IUFRO Symposium, Natural Enemies and other Multi-Scale Influences on Forest Insects, September 9-14, 2007, Universität für Bodenkultur, Vienna, Austria (contributed oral Del Rio Mora).
- (18) **Downing, M., Koch, F., Borchert, D., Sapio, F., Seybold, S. J., Smith, B., Smith, S., Tkacz, B., Tuffly, M., and Venette, R. C.** The potential distribution of *Orthotomicus erosus* in the contiguous US. Second Annual Pest Risk Mapping Workshop. September 16, 2008, Bloomington, Minnesota (oral presentation prepared by Downing and delivered by Koch).
- (19) **Eifler, T., Wing, H. –S., Hishinuma, S., Lee, J. C., and Seybold, S. J.** Competition and interaction between two invasives: Banded vs. European elm bark beetle. 56th Annual Meeting of the California Forest Pest Council, November 13, 2007, Woodland, California (poster presentation by Eifler).
- (20) **Erbilgin, N., Gillette, N. E., Pederson, L., Schultz, D., Stein, J. D., and Webster, J. N.** Verbenone-releasing flakes protect lodgepole pines from attack by mountain pine

beetle. 2007 Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (oral presentation by Erbilgin).

(21) **Erbilgin, N., Gillette, N. E., Mori, S. R., Hansen, E. M., Stein, J. D., Webster, J. N., Owen, D. R., Fiddler, G. O., and Wood, D. L.** Efficacy of verbenone flakes for area-wide and individual tree protection from attack by mountain pine beetle in western North America. Symposium on Sustainable Forest Pest Management, 233rd National Meeting of the American Chemical Society, March 25-29, 2007, Chicago, Illinois (invited oral presentation by Erbilgin).

(22) **Fettig, C. J.** The effectiveness of vegetation management practices for prevention and suppression of bark beetle outbreaks in coniferous forests of the US. 58th Meeting of the Western Forest Insect Work Conference, Plenary Session, Silviculture, Entomology and the Current Status of Western North American Timber Industry, March 2007, Boise, Idaho (invited).

(23) **Fettig, C. J.** Bark Beetle responses to prescribed fire and other fuel management treatments in California. 91st Annual Meeting of the Pacific Branch of the Entomological Society of America, March 2007, Portland, Oregon (invited).

(24) **Fettig, C. J.** Drift resulting from ground applications of insecticides to individual trees. Northern California Society of American Foresters 2007 Summer Meeting Landscape Forestry Research in the 21st Century, August 2007, Placerville, California (poster presentation).

(25) **Fettig, C. J.** The Western Bark Beetle Research Group. USDA Bark Beetle Technical Working Group, November 2007, Portland, Oregon (invited).

(26) **Fettig, C. J.** My evolution in the field of forest entomology: lesson learned. Entomological Connections to Science, Innovation and Influence: Impacts and Professional Development. 55th Annual Meeting of the Entomological Society of America, December 2007, San Diego, California (invited).

(27) **Fettig, C. J.** Entomological updates on the success of the Fire and Fire Surrogate Study at Southern Cascades. Joint Fire Science Program Review, May 2008, Weed, California (invited).

(28) **Fettig, C. J.** R&D and Forest Health Protection. Washington Office review of Regions 1 and 4 FHP programs, June 2008, Missoula, Montana (invited).

(29) **Fettig, C. J.** Development of tools for protecting tree from bark beetle attack. 2008 Society of American Foresters National Convention, November 2008, Reno, Nevada.

(30) **Fettig, C. J.** Bark beetles, fires and fuel management treatments. 2008 Annual Meeting of the California Forest Pest Council, November 2008, Woodland, California (invited).

(31) **Fettig, C. J.** Factors influencing the abundance and severity of recent bark beetle infestations in coniferous forests of Western US. 2008 Annual Meeting of the California Forest Pest Council, November 2008, Woodland, California (invited).

(32) **Fettig, C. J., Allen, K. K., Borys, R. R., Christopherson, J., Dabney, C. P., DeGomez, T. E., Eager, T. A., Gibson, K. E., Grosman, D. M., Hebertson, E. G., Long, D. F., Munson, A. S., Shea, P. J., Smith, S. L., and Haverty, M. I.** Insecticides for protecting individual, high-value trees from bark beetle attack: an overview of some recent research efforts in the West. 58th Meeting of the Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation).

(33) **Fettig, C. J. and Aukema, B.** Factors influencing the abundance and severity of recent bark beetle infestations in coniferous forests of western U.S. and Canada: What can be done. U.S. Fish and Wildlife Service, March 2008, Sacramento, California (invited).

(34) **Fettig, C. J. and Huber, D. P. W.** Verbenone and the western pine beetle. 58th Meeting of the Western Forest Insect Work Conference, March 2007, Boise, Idaho (invited).

(35) **Fettig, C.J., McKelvey, S. R., and Huber, D. P. W.** Disruption of western pine beetle, *Dendroctonus brevicomis* (Coleoptera: Scolytidae) response to baited traps with angiosperm volatiles and verbenone. Northern California Society of American Foresters 2007 Summer Meeting Landscape Forestry Research in the 21st Century, August 2007, Placerville, California (poster presentation).

(36) **Fettig, C.J., S.R. McKlevey, C.P. Dabney, R.R. Borys, D.R. Cluck and S.L. Smith.** The effect of burn season on the amount of bark beetle-caused tree mortality in Eastside pine. 58th Meeting of the Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation).

(37) **Fettig, C. J., McMillin, J. D., Anhold, J. A., Hamud, S. M., Borys, R. R., Dabney, C. P., and Seybold, S. J.** The effects of mechanical fuel reduction treatments on the activity of bark beetles infesting ponderosa pine. 58th Meeting of the Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation).

(38) **Fettig, C. J., McMillin, J. D., Ahhold, J. A., Hamud, S. M., Seybold, S. J., and Borys R. R.** The effects of hazardous fuel reduction treatments in the wildland urban interface on the activity of bark beetles infesting ponderosa pine. Northern California Society of American Foresters 2007 Summer Meeting Landscape Forestry Research in the 21st Century, August, 2007, Placerville, California (poster presentation by Fettig).

(39) **Fettig, C. J., Munson, A. S., Jorgensen, C. L., and Grosman, D. M.** Systemic insecticide injections for protection of western conifers from bark beetles - what have we

learned? 51st Annual Southern Forest Insect Work Conference, August 2008, Chattanooga, Tennessee (invited).

(40) **Fettig, C. J. and Nowak, J. T.** What's happened out there: Effects of public policies, management trends, forest conditions and other factors on bark beetle outbreaks in North America. 56th Annual Meeting of the Entomological Society of America, November 2008, Reno, Nevada (invited oral presentation).

(41) **Gillette, N. E. 2008.** Pheromone flakes: semiochemical sabotage of bark beetles. For the Forest, Aspen Institute, December 11, 2008, Aspen, Colorado (invited oral presentation).

(42) **Gillette, N. E., Erbilgin, N., Mori, S. R., Stein, J. D., Owen, D. R., Rudolph, C. R., Bischel, K. M., and Wood, D. L.** *Pityophthorus* spp. response to mixtures of pheromones and host/green leaf volatiles. 2007 Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (oral presentation by Gillette).

(43) **Gillette, N. E. Erbilgin, N., Owen, D. R., Mehmel, C. J., Hansen, E. M., Pederson, L., Uzoh, F., Stein, J. D., and Wood, D. L.** New pheromone formulations provide effective area-wide control of bark beetles. Symposium: Bark and Wood Boring Beetles: Innovations and Initiatives with the U.S. Forest Service, 2007 Annual Meeting of the Entomological Society of America, December 9-12, 2007, San Diego, California (invited oral presentation by Gillette).

(44) **Gillette, N. E., Erbilgin, N., Owen, D. R. Mehmel, C., Hansen, E. M., Eglitis, A., Pederson, L., Mori, S., Uzoh, F., Stein, J. D., and Wood, D. L.** Pheromone flakes: Semiochemical sabotage of bark beetles. IUFRO Meeting, New Advances in Forest Entomology Research, July 1-6, 2008, Pretoria, South Africa (contributed oral presentation by Erbilgin).

(45) **Gillette, N. E., Min, L., Sun, J. –H., Wingfield, M., Zhou, X., Six, D. L., and Owen, D. R. 2008.** Global change, globalization and beetle/fungal mutualisms: a case study with *Dendroctonus valens*." Symposium: Consequences of Environmental Change and Globalization on Insect-Microbe Symbioses: Anthropogenic Effects on Symbioses, International Congress of Entomology, July 7-12, 2008, Durban, South Africa (invited oral presentation by Gillette).

(46) **Gillette, N.E. and Munson, A. S.** Semiochemical-based strategies for bark beetle management. Symposium: The Western Bark Beetle Research Group: A Unique Collaboration with Forest Health Protection. 2007 Society of American Foresters National Convention, October 25, 2007, Portland, Oregon (invited oral presentation by Gillette).

- (47) **Gillette, N. E., Webster, J. N., Fiddler, G. O., Erbilgin, N., Mehmel, C. J., Owen, D. R., Mori, S. R., Eglitis, A., Wood, D. L., Uzoh, F., and Stein, J. D.** Pheromone flakes for control of western pine beetle. 2007 Western Forest Insect Work Conference March 5-9, 2007, Boise, Idaho (oral presentation).
- (48) **Graves A. D., Grulke, N. E., Rizzo, D. M., Demmig-Adams, B., Adams, W. W., and Seybold, S. J.** Defining a mechanistic link in Jeffrey pine among stand thinning, drought, and risk of mortality from Jeffrey pine beetle, *Dendroctonus jeffreyi* Hopkins. 59th Annual Western Forest Insect Work Conference, April 8-10, Boulder, Colorado; the Annual Meeting of the Entomological Society of America, November 18, 2008, Reno, Nevada ; and the 57th Annual Meeting of the California Forest Pest Council, November 19, 2008, Woodland, California (poster presentations by Graves).
- (49) **Graves, A. D., Hishinuma S. M., Hamud, S. M., Tisserat, N. A., and Seybold, S. J.** Host Colonization Behavior of the Walnut Twig Beetle, *Pityophthorus juglandis* Blackman, in California Hinds Walnut. 57th Annual Meeting of the California Forest Pest Council, November 18-19, 2008, Woodland, California (poster presentation by Hishinuma).
- (50) **Hamud, S. M., Liu, D.-G, Coleman, T. W., Bohne, M., Flint, M. L., and Seybold, S. J.** The impact of wildfire on invasive bark beetles in periurban forests of southern California. 56th Annual Meeting of the Entomological Society of America, November 18, 2008, Reno, Nevada (poster presentation by Hamud).
- (51) **Hayes, J. L.** Ongoing collaborative research and technology development projects. Blue Mountains Pest Management Service Center Annual Review, March 2007, La Grande, Oregon.
- (52) **Hayes, J. L.** Assessing the effective area of pheromone-baited trap for western pine beetle. La Grande Ranger District, April, 2007, La Grande, Oregon.
- (53) **Hayes, J. L.** The Westwide bark beetle and climate change project. Western Forest Disease Work Conference Part 2. Synthesizing climate and forest disease information. October 15, 2007, Sedona, Arizona.
- (54) **Hayes, J. L.** Bark beetles: How do they communicate and why it's important. Tree School East, sponsored by OSU Extension, FS, Eastern Oregon University, April 2008, La Grande, Oregon.
- (55) **Hayes, J. L., Scott, D. W., and Survis, P.** Update on IPM strategy for the Imnaha Wild and Scenic River Corridor, HCNRA, August, 2007, Enterprise, Oregon.
- (56) **Hayes, J. L., Smith S. E., and Halbrook, K.** Assessing the effective area of pheromone-baited trap for western pine beetle. Western Forest Insect Work Conference, March 5-8, 2007, Boise, Idaho and the Annual Meeting of the Pacific Branch

Entomological Society of America, March 25-28, 2007, Portland, Oregon (Poster presentations by Hayes).

(57) **Hayes, J. L., Smith, S. E., Halbrook, K., Spiegel, L., Moffett, L., Hayes, C., and DeGomez, T.** Determining the effective area of pheromone-baited trap for western pine beetle. Ecological Society of America, August 5, 2008, Milwaukee, Wisconsin (poster presentation).

(58) **Huber, D. P. W., Dabney, C. P., McKelvey, S. R., Shepherd, W. P., Seybold, S. J., and Fettig, C. J.** Western pine beetle, *Dendroctonus brevicomis*, responses to nonhost volatiles and verbenone: from antennal responses to semi-operational trials. 58th Meeting of the Western Forest Insect Work Conference, March 2007, Boise, Idaho (poster presentation).

(59) **Johnson, P. L., Hayes, J. L., Rinehart, J. E., and Sheppard, W. S.** Genetic investigations of two non-native scolytids. Western Forest Insect Work Conference, March 5-8, 2007, Boise, Idaho and the Annual Meeting of the Pacific Branch Entomological Society of America, March 25-28, 2007, Portland, Oregon (Oral presentations by Johnson).

(60) **Jorgensen, C. L., Fettig, C. J., Munson, A. S., and Grosman, D. M.** Western bark beetle injection studies. 58th Meeting of the Western Forest Insect Work Conference, March 2007, Boise, Idaho (invited).

(61) **Kelsey, R.** Ethanol in stressed conifers and its influence on bark and ambrosia beetles. 55th Annual Meeting of the Entomological Society of America, December, 2007, San Diego, California (invited).

(62) **Liu, D., Lee, J. C., Flint, M. L., Hamud, S. M., and Seybold, S. J.** Invasive pine bark beetles (Coleoptera: Scolytidae): Flight dispersal and host range testing with tree species from Blodgett Forest and Russell Reservation Research Stations. 2008 Blodgett Forest Research Station Workshop, February 8, 2008, Georgetown, California (oral presentation by Seybold, who also served as co-moderator of the workshop).

(63) **Liu, D., Lee, J. C., Flint, M. L., Penrose, R. L., Bohne, M. J., and Seybold, S. J.** Flight responses of the redhaired pine bark beetle, *Hylurgus ligniperda* (Coleoptera: Scolytidae) to selected host semiochemicals. 56th Annual Meeting of the California Forest Pest Council, November 13, 2007, Woodland, California (poster presentation by Liu).

(64) **Liu, D., Venette, R. C., Flint, M. L., and Seybold, S. J.** The flight response and dispersal potential of marked beetles of the Mediterranean pine engraver, *Orthotomicus erosus* (Coleoptera: Scolytidae), a new invasive in California. Annual Meeting of the Entomological Society of America, December 9, 2007, San Diego, California (oral presentation by Liu).

(65) **Liu, D. –G., Venette, R. C., Munson, A. S., Bulaon, B., Flint, M. L., and Seybold, S.J.** Intrinsic dispersal capacity of the Mediterranean pine engraver, *Orthotomicus erosus*, an invasive bark beetle. The Annual Meeting of the Entomological Society of America, November 16, 2008, Reno, Nevada (oral presentation by Liu).

(66) **Lu, M., Zhou, X. D., Wingfield, M. J., Gillette, N. E., and Sun, J. -H. 2008.** Ophiostomatoid fungi associated with an invasive pest of pine in China, *Dendroctonus valens*. Ninth International Congress of Plant Pathology, August 24–29, 2008, Torino, Italy (poster presentation by Lu).

(67) **Lundquist, J. E.** History of bark beetles on the Kenai. Seward District Family Meeting, January 30, 2008, Seward, Alaska (invited oral presentation).

(68) **Lundquist, J. E.** Forest insects on the Kenai. University of Alaska, Fairbanks Field Course, May 16, 2008, Cooper Landing, Alaska (invited oral presentation).

(69) **Lundquist, J. E.** A history of spruce beetle in Alaska. Association of Consulting Foresters National Conference, June 30, 2008, Anchorage, Alaska (invited oral presentation).

(70) **Lundquist, J. E.** Life as an entomologist in Alaska. Youth Employment in the Parks Field Day, Muldoon Park, July 7, 2008, Anchorage, Alaska (invited oral presentation).

(71) **Lundquist, J. E.** Forest entomology in Alaska. Pacific Northwest Research Station Science Summit, October 2008, Hood River, Oregon (poster presentation).

(72) **Lundquist, J. E.** Spruce beetles in Alaska's changing climate. Alaska Region Leadership Team Meeting, December 10, 2008, Juneau, Alaska (invited oral presentation).

(73) **Luxová, A., Graves, A. D., Gries, R., Hamud, S. M., and Seybold, S. J.** Frontalin: Production and response to an aggregation pheromone component by the red turpentine beetle, *Dendroctonus valens* LeConte (Coleoptera: Scolytidae). 2007 Blodgett Forest Research Station Workshop, February 2, 2007, Georgetown, California (oral presentation by Seybold).

(74) **Lynch A.M., Falk D.A., and Wilcox C. P. 2008.** Ecology and management issues in mixed-conifer forests in the Pinaleño Mountains of Arizona. Southwestern Mixed-Conifer Conference, 20 February 2008, Santa Fe, New Mexico (invited presentation).

(75) **Lynch A.M. and Fitzgibbon R. A. 2008.** Forest insects in the Pinaleño mixed-conifer forest. Day-long field trip and poster presentation, Pinaleño Partnership, 27 September 2008, Safford Arizona.

- (76) **Lynch A.M. and Fitzgibbon R. A. 2008.** Emerging insect pests in Southwestern forests: associations with temperature regimes and drought. Presentation. FIA Symposium 2008: Climate Change, Fire, and Other Hot Topics. 21-23 October 2008, Park City Utah.
- (77) **McMillin, J. L. and Fettig, C. J.** Bark beetle responses to vegetation management treatments. Symposium: The Western Bark Beetle Research Group: A Unique Collaboration with Forest Health Protection. 2007 Society of American Foresters National Convention, October 25, 2007, Portland, Oregon (invited).
- (78) **Parks, B. O., Gutierrez, A., Seybold, S. J., Liu, D., and Thistle, H. W.** Developing a portable DNA Amplification Device for species identification in the field. 18th USDA Interagency Research Forum on Gypsy Moth and other Invasive Species, January 9-12, 2007, Annapolis, Maryland (oral presentation by Parks and Gutierrez).
- (79) **Régnière, J. and Bentz, B. J.** Mountain pine beetle and climate change, 19th USDA Interagency Research Forum on Gypsy Moth and other Invasive Species, January 7-9, 2008, Annapolis, Maryland (invited oral presentation by Régnière).
- (80) **Régnière, J., Bentz, B. J., and Cooke, B. J.** Modelling cold tolerance in the mountain pine beetle, *Dendroctonus ponderosae*. Second International Symposium on the Environmental Physiology of Ectotherms and Plants, July 1-6, 2007, Dunedin, New Zealand.
- (81) **Ruiz, E., Hayes, J. L., Rinehart, J. E., and Zuniga, G.** Phylogeography analysis of the Douglas-fir bark beetle *Dendroctonus pseudotsugae* Hopkins (Coleoptera: Curculionidae: Scolytinae). Annual Meeting of the Pacific Branch of the Entomological Society of America, March, 2007, Portland, Oregon (Poster presentation by Hayes).
- (82) **Seybold, S. J.** 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) with eight invited presentations on the chemical ecology and management of bark beetles and other forest insects (invited).
- (83) **Seybold, S. J.** Pheromones of pine bark beetles: Small molecules with big consequences. Department of Chemistry Seminar Series, California State University Sacramento, Sacramento, California, March 14, 2008 (invited).
- (84) **Seybold, S. J.** Chemical ecology and biodiversity of North American pine and spruce bark beetles. Department of Bioagricultural Sciences and Pest Management

Seminar Series, Colorado State University, Fort Collins, Colorado, April 11, 2008 (invited).

(85) **Seybold, S. J.** Chemical ecology of forest insects in southwestern China. Department of Entomology Seminar Series, UC Davis, Davis, California, May 21, 2008 (invited).

(86) **Seybold, S. J.** Threats to California's urban and wildland forests by invasive bark beetles: A research update. USDA Forest Service Region 5 Regional Leadership Team Meeting, April 2, 2008, Sacramento, California (oral presentation by Seybold).

(87) **Seybold, S. J.** Research update on chemical ecology and fungal associates of invasive bark beetles in California. Report to Annual Technical Committee Meeting for Multi-state Research Project W-1187, April 7, 2008, Boulder, Colorado (Oral presentation).

(88) **Seybold, S. J.** Homegrown scolytids on the move: Do indigenous invasive bark beetles pose a risk to U.S. forests? Annual Meeting of the Entomological Society of America, December 11, 2007, San Diego, California.

(89) **Seybold, S. J.** 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, January 29, 2008, Quincy, California.

(90) **Seybold, S. J.** Recently developed semiochemical baits for managing native and exotic bark beetles in California. 56th Annual Meeting of the California Forest Pest Council, November 13, 2007, Woodland, California.

(91) **Seybold, S. J.** The Douglas-fir beetle in Minnesota: A sojourn of an "indigenous exotic." Presentation to the students, faculty, and staff of the UC-Davis Bohart Museum, February 14, 2007, Davis, California.

(92) **Seybold, S. J., Lee, J. C., Hamud, S. M., Wood, D. L., and Huber, D. P. W.** Refining the aggregation pheromone and testing interruption of flight of the California fivespined ips, *Ips paraconfusus*. 58th Annual Western Forest Insect Work Conference, March 5-9, 2007, Boise, Idaho (poster presentation by Seybold).

(93) **Strand, T. M., Graves, A. D., Lamb, B. K., Thistle, H. W., and Seybold, S. J.** Simultaneous evaluation of surrogate pheromone plume dispersion and flight response to pheromone by the pine engraver, *Ips pini* (Coleoptera: Scolytidae). 2007 NSF Integrative Graduate Education and Research Traineeship Project Meeting, May 13-15, 2007, Arlington, Virginia (poster presentation by Strand).

(94) **Sun, J. -H. and Gillette, N. E. 2007.** The impact and management of red turpentine beetle in China: A success story. Annual Meeting of the Entomological Society of America, December 11, 2007, San Diego, California (invited oral presentation by Gillette).

(95) **Venette, R. C., Seybold, S. J., Lee, J. C., and Walter, A. J.** Mediterranean pine engraver: California surfing across North America? Joint Meeting of the North Central Branch-Entomological Society and the Manitoba Entomological Society, March 26, 2007, Winnipeg, Manitoba (invited presentation by Venette).

(96) **Walter, A. J., Venette, R. C., Kells, S. A., and Seybold, S. J.** Potential host range of an invasive bark beetle, *Orthotomicus erosus*. The Annual Meeting of the Entomological Society of America, December 10, 2007, San Diego, California (oral presentation by Walter).

(97) **Zhang, Q. -H., Erbilgin, N., and Seybold, S. J.** GC-EAD responses of four bark beetle species associated with Monterey pine trees to common host, nonhost and bark beetle volatiles: Similarities and disparities. The Annual Meeting of the Entomological Society of America, December 9, 2007, San Diego, California (oral presentation by Zhang).

Media Recognition

(1) **Bentz, B. J.** Bark beetle impacts in Idaho, December 2007, Interview with Boise State President, NPR.

(2) **Bentz, B. J.** Winter and bark beetles, December 2007, NPR Weekend America.

(3) **Gillette, N. E.** Beetlemania: Analysis of mountain pine beetle impact, December 14, 2008, *Aspen Daily News*. Article authored by Andrew Travers.

(4) **Seybold, S. J.** Bark beetle epidemic escalates: Applying pheromones and injecting insecticides may help prevent bark beetles from decimating trees, December 22, 2008, *Chemical and Engineering News* 86 (51): 33–37. Article authored by Rachel Petkewich.