

Michael Ian Jones

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EDUCATION

Bachelors of Science (2010): Environmental Biology and Management
University of California at Davis, College of Agricultural and Environmental Science, Davis, CA

Relevant Course Work

Behavioral Entomology, Botany (Lab), Microbiology (Lab), Chemistry (Lab), Ecology, Ecological Physiology, Environmental Science and Policy, Ornithology (Lab), Physics (Lab), Statistics, Soil Science (Lab), Wildlife Conservation and Taxonomy (Lab), Zoology (Lab)

RESEARCH EXPERIENCE

Staff Research Associate I, Department of Entomology, University of California at Davis, Davis, CA, October 2012- August 2013, Principal Investigator: Dr. Mary Louise Flint.

- Continuation of a collaborative field research position with the Department of Entomology, UC Davis and the USDA Forest Service, Forest Health Protection, Southern California. Collaborator: Dr. Tom W. Coleman.
- Wood borer projects
 - Goldspotted oak borer (GSOB), *Agrilus auroguttatus*
 - For the second year of work with GSOB, our objectives were to continue long-term monitoring of tree injury from GSOB and to continue experimental application of insecticides to determine the efficacy in preventing GSOB-caused tree mortality. We initiated a new study to measure callus tissue growth in response to GSOB feeding.
 - I conducted long-term tree health assessments in order to monitor the progression of tree injury from GSOB in California. Adult beetle trapping was also conducted to monitor the spread of the exotic woodborer.
 - I applied cover and systemic insecticide treatments to prevent tree mortality from GSOB. Lab feeding and preference tests were conducted to determine the efficacy of insecticide treatments and host preference and host suitability. Leaf tissue was collected to determine the concentration of systemic insecticides.
 - Bark tissue cores were collected to measure callus tissue growth in response to GSOB larval feeding.
 - I conducted tree health surveys in infested and non-infested stands to determine tree mortality related to GSOB (Coleman, T.W., A.D. Graves, M. Hoddle, Z. Heath, Y. Chen, M.L. Flint, and S.J. Seybold. 2012. Forest Stand composition and impacts associated with *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae) and *Agrilus coxalis* Waterhouse in oak woodlands. For. Ecol. and Manage. 276, 104-117.).

- Defoliator projects
 - Douglas-fir tussock moth (DFTM), *Orgyia pseudotsugata*
 - This project was designed to monitor DFTM populations during an outbreak, the levels of injury on white fir from DFTM, and predict the risk of DFTM in additional areas of southern California.
 - I established plots and recorded forest stand data to monitor the impact of the first DFTM outbreak in southern California.
 - Plot assessments continued in 2012 and data was analyzed for publication (T.W. Coleman, **M.I. Jones**, M. Woods, A.D. Graves, and M.L. Flint. (*In prep.*) Forest stand impacts associated with the first recorded Douglas-fir tussock moth outbreak in southern California.
 - Fruittree leafroller (FTLR), *Archips argyrospilia*
 - The objective of this work was to determine the life cycle of FTLR in southern California, record the level of predation, monitor the flight period, and assess the level of injury across several host species.
 - I monitoring adult flight activity in infested and non-infested forest stands with baited pheromone traps.
 - Pinyon Needle Scale (PNS), *Matsucoccus acylptus*
 - This project collected data on the first recorded outbreak of PNS in four-needle pinyon.
 - Life history of the scale was determined by sampling the population at different stage of development using yellow sticky cards, beat sheets, collecting egg masses, and sampling the foliage.
 - I established plots and recorded stand data to monitor the spread of the scale and to determine other susceptible forest stands.
- Bark Beetle/Ambrosia beetle projects
 - Polyphagous shot hole borer, *Euwallacea sp.*
 - The objective of this work was to determine the impact of the exotic ambrosia beetle in the native forests of southern California and delimit its distribution.
 - I established long-term plots to monitor host susceptibility and population levels from this new invasive ambrosia beetle on the National Forests in southern California.
 - Monitoring for native bark beetle species continued via Lindgren funnel traps and hand collecting adult populations to assess efficacy of baits and to determine genetic differences within a species across its native range.
- I continued to develop my ability to identify different wood borer, defoliator, and bark beetle species.

Junior Research Assistant II, Department of Entomology, University of California at Davis, Davis, CA. August 2010-October 2012. Principal Investigator: Dr. Mary Louise Flint.

- Collaborative field research position with the Department of Entomology, UC Davis and the USDA Forest Service, Forest Health Protection, Southern California. Collaborator: Dr. Tom W. Coleman.
- I developed the ability to identify different wood borer, defoliator, and bark beetle species that are a threat to forest health in southern California. Insect species were identified by observing adult and larval specimens, feeding behavior on host trees, appearance of frass, egg and larval gallery patterns, and emergence holes. I learned to identify native tree species and research protocols associated with forestry and forest entomology.

- Wood borer projects
 - Goldspotted oak borer (GSOB), *Agrilus auroguttatus*
 - I participated in numerous projects that assessed the impact of GSOB in non-native forests in California, monitored its distribution in southern California, examined the efficacy of insecticide applications, and followed the progression of GSOB in injured trees.
 - I collected tree injury data on GSOB-infested trees to assess the impact of the non-native pest in southern California forests. I collected and identified GSOB from other native wood borers, and determined sex of adults in trapping studies.
 - I assisted long-term tree health assessments and trapping procedures in order to monitor the progression of GSOB injury on individual trees.
 - Management options were developed to slow the spread of GSOB in infested firewood through mechanical grinding and chipping, solarization, and bark removal. I prepared this work for publication (**Jones et al. 2013**, see publications section)
 - Conducted experimental applications of systemic and topical insecticides to control GSOB populations. We tested the efficacy of the treatments with no-choice feeding assays and walking assays in the lab.
 - I established distribution traps to delimit the distribution of GSOB in southern California.
 - I travelled to Arizona and conducted field surveys on the Coronado National Forest in order to locate and sample native GSOB populations.
 - Emerald ash borer, *Agrilus planipennis*
 - Identified susceptible host tree species and established traps for monitoring on public land in southern California.
- Defoliator projects
 - Douglas-fir tussock moth (DFTM), *Orgyia pseudosugata*
 - The objective of this project was to monitor DFTM populations in an outbreak event and to determine the levels of injury on white fir.
 - Established plots to assess the impact of the outbreak on forest stands.
 - Measured tree mortality and defoliation levels within established plots.
 - Conducted egg mass surveys to predict levels of defoliation for the following years.
 - Wing traps were placed throughout the infestation to monitor adult male activity and population densities.
 - Fruittree leafroller (FTLR), *Archips argyrospilia*
 - The objective of this work was to follow the life cycle of FTLR, determine the level of predation, monitor the flight period, and assess the level of injury across several host species.
 - I conducted monitoring to determine life history and host tree species injured. The adult flight period was monitored with pheromone baited delta traps.
 - Data was collected on bud break and leaf development and I evaluated the degree of defoliation across several oak species.
- Seed and Cone insects
 - Our objective was to determine the impact of seed and cone pests on restoration efforts following widespread tree mortality and enhance ecological restoration efforts.
 - I sampled the seeds or cones of various *Pinus* and *Quercus* species with pole pruners and hand pruners. Insects were returned to the lab and reared from seeds then identified and counted.

- Bark Beetle projects
 - Native bark beetles
 - The objectives of these projects were to monitor population of native bark beetles in southern California National Forests. We collected adult populations through trapping and sampling infested trees to collect larvae and pupae. Work focused on western pine beetle, *Dendroctonus brevicomis*, red turpentine beetle, *D. valens*, and mountain pine beetle, *D. ponderosa*
 - I identified host trees and symptoms of infestation from bark beetles.
 - Trapped and collected adult populations using Lindgren funnel traps to monitor populations, determine flight periodicity, and for genetic analyses.
 - Established and monitored emergence cages on host trees for emerging adults.
 - I travelled to northern Baja California, Mexico to collect stand data in the Parque National Sierra de San Pedro Martir.
 - Walnut twig beetle, *Pityophthorus juglandis*
 - Identified infested trees at various injury levels from the walnut twig beetle.
 - Placed pheromone baited funnel traps to capture adults and determine flight periodicity.
 - Collected and sorted trap contents, and differentiated walnut twig beetle from similar looking ambrosia and bark beetle species.

Undergraduate Research Assistant, Department of Plant Pathology, University of California at Davis, Davis, CA. August 2008- July 2010. Principal Investigator: Dr. David Rizzo.

- The main objective of this work was to assist with plant pathology research projects conducted in the lab and in the field.
- Gained experience using lab equipment, conducting experiments and building cooperative skills with other scientists. Learned methods for plant tissue sampling and to identify different types of culture growth and pathogens microscopically.
- Developed skills in field identification of plants and pathogens, collecting, and processing plant samples.

Honors Thesis, Department of Plant Pathology, University of California at Davis, Davis, CA. Spring Quarter, January 2010. Principal Investigator: Dr. David Rizzo.

- The title of my project was *Determining the environmental effects of pH and temperature in Phytophthora ramorum (causal agent of sudden oak death) infectability*.
 - I designed and conducted an independent research project in plant pathology experimentally evaluating the environmental effects on the aquatic ecology of pathogens.

Internship, Department of Plant Pathology, University of California at Davis, Davis, CA. Fall Quarter, August 2009. Advisor: Dr. David Rizzo.

- I designed a project that developed rhododendron propagation for field monitoring of *Phytophthora ramorum* spread and laboratory experimentation.

PUBLICATIONS

Haavik, L.J., T.W. Coleman, Y. Chen, **M.I. Jones**, R.C. Venette, M.L. Flint, S.J. Seybold. 2012. First occurrence of the goldspotted oak borer parasitoid, *Calosota elongata* (Hymenoptera: Eupelmidae), in California. The Pan-Pacific Entomologist: 88 (2): 374-376.

Jones, M.I., T.W. Coleman, A.D. Graves, M.L. Flint, and S.J. Seybold. 2013. Sanitation options for managing oak wood infested with the invasive goldspotted oak borer, *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae), in California. *J. of Econ. Entomol.* 106: 235-246.

Flint, M.L., **M.I. Jones**, T.W. Coleman, S.J. Seybold. 2013. Pest Note: Goldspotted Oak Borer. University of California, Integrated Pest Management Program. Pub. 74163.

Chen, Y., T.W. Coleman, **M.I. Jones**, M.L. Flint, and S.J. Seybold. (*In press.*). Nutrients explain goldspotted oak borer, *Agrilus auroguttatus* Schaeffer (Coleoptera: Buprestidae), adult feeding preference for four California oak species (*Quercus* spp.).

Coleman, T.W., **M.I. Jones**, B. Courtial, A.D. Graves, M. Woods, M.L. Flint, A. Roques, and S.J. Seybold. (*In prep.*). Impact of Douglas-fir tussock moth, *Orgyia pseudotsugata* McDunnough (Lepidoptera: Erebidiae: Lymantriinae), on white fir, *Abies concolor*, in southern California: The first recorded regional outbreak.

PRESENTATIONS

Jones, M.I., K. Aram, and D.M. Rizzo. "Determining the environmental effects of pH and temperature in *Phytophthora ramorum* (causal agent of sudden oak death) infectability." Oral Presentation. University of California, Davis. 22nd Undergraduate Research Conference, Davis, CA. April 2010.

Jones, M.I., G. Walter, M.L. Flint, S.L. Smith, B.L. Strom, and T.W. Coleman. Systemic and Contact Insecticide Trials for the Goldspotted Oak Borer. Poster Presentation. California Forest Pest Council, Sacramento, CA. November 2010.

Jones, M.I., G. Walter, M.L. Flint, and T.W. Coleman. Impact of Cone and Seed Pests on Restoration Efforts in Southern California. Poster Presentation. California Forest Pest Council, Sacramento, CA. November 2010.

Jones, M.I., T.W. Coleman, A.D. Graves, M.L. Flint, and S.J. Seybold. Sanitation Treatments for Oak Wood Infested with the Goldspotted Oak Borer. Poster Presentation. California Forest Pest Council, Sacramento, CA. November 2011.

Jones, M.I. and T.W. Coleman. Life Cycle and Impact of the Fruittree Leafroller in Southern California. Poster Presentation. California Forest Pest Council, Sacramento, CA. November 2012.

Jones, M.I., W. Woods, and T.W. Coleman. Impact of the First Recorded Douglas-Fir Tussock Moth Outbreak in Southern California. Poster Presentation. California Forest Pest Council, Sacramento, CA. November 2012.

Jones, M.I., T.W. Coleman, A.D. Graves, M.L. Flint, and S.J. Seybold. Sanitation Treatments for Oak Wood Infested with the Goldspotted Oak Borer. Poster Presentation. Entomological Society of America Annual Meeting, Knoxville, TN. November 2012.

Jones, M.I. "Identifying and distinguishing goldspotted oak borer caused injury from other common insect injury found on oaks in southern California." Oral Presentation. Idyllwild Nature Center. Technical Workshop: GSOB training for Federal, State, County, and Private Professionals, Idyllwild, CA. Jan. 2013.

QUALIFICATIONS

Basic First Aid

CPR/AED

Qualified applicators certificate (QAC) under the California Department of Pesticide Regulation. Certified in the categories of Forest (E) and Demonstration and Research (J) (Issued: 2012).

- QAC used in 2012 for GSOB research with Forest Health Protection.

Insect and Disease Field identification Training with the USDA Forest Service, Forest Health Protection, Southern California Region 5. August 2011.

- Training to identify hazard trees in recreational areas and causal pest infestations and pathogen infections.
- Hosted by Forest Health Protection and California Department of Forestry and Fire.

SKILLS

Field Work: Ability to identify, trap, and collect wood boring, defoliator, and bark beetle species; identification of tree species in California; identification and ranking of injury to plants caused by insects; plant and soil sample collection; identification of forest entomology plot establishment/protocol and survey; ability to photograph insects and associated injury; use of forestry tools, such as the loggers tape, clinometer, prisms, axe, and chainsaw; set-up and monitoring of insect traps: purple prism, panel, Lundgren funnel, yellow sticky card, delta, wing, and malaise traps.

Laboratory: Knowledge of basic lab organization, maintenance, equipment operation and safety in entomology and pathology focused labs.

- Entomology lab skills include: trap preparation and break down; sample sorting, preservation, and collecting techniques; identifications of GSOB, other wood borers, defoliators, and bark beetle species collected from traps; pinning insects for collections; experimental assays using GSOB and plant material containing insecticide.
- Pathology lab skills include: microorganism culture media preparation; pathogen identification and quantification; training for pathogen culture and identification (undergraduates, students, and visiting scholars); soil, litter and leaf tissue processing; soil nutrient analysis; autoclaving, data organization, and acid washing.

Computer: Proficiency in PC and MAC platforms, including Word, Excel, and Powerpoint. Basic knowledge of ArcGIS and the R platform for statistical analysis. Ability to use GPS.

Construction: use of hand and power tools, experience in using/handling chainsaws, basic repair of field equipment

ACADEMIC SERVICES

Undergraduate Peer Advisor for the Environmental Science and policy Dept., University of California at Davis, Davis, CA. Fall Quarter 2009-Spring Quarter 2010. Advisor: Kimberly Mahoney.

- Advised students on scheduling course loads, preparation for graduation, volunteer work, and internships.
- Participated in Freshman Orientation for the Environmental Science and policy Dept.

President, Environmental Science and Policy Club, Environmental Science and policy Dept., University of California at Davis, Davis, CA. Spring Quarter 2009-Spring Quarter 2010. Advisor: Dr. Marcel Holyoak.

- Developed and lead club meetings during school session.
- Organized volunteer projects and outdoor recreational activities.
- Hosted presentations from non-profit organizations and research seminars presented by faculty.

AWARDS

Certificate of Appreciation. 2011. "In Recognition of invaluable contributions to the GSOB program and Forest Health Protection." USDA Forest Health Protection, Southern California Shared Service Area.

ACTIVITIES AND INTERESTS

Member: Entomological Society of America, California Forest Pest Council, Southern California Forest Pest Council, Western Forest Insect Work Conference

Member: Cal Aggie Alumni Association

Volunteer: Loma Linda community league (Goal4Health) soccer coach

Interested in: backpacking, camping, carpentry, field research, hiking, entomology, pathology

REFERENCES

Dr. Mary Louise Flint
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Department of Entomology; Statewide IPM Program
University of California
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Dr. Tom W. Coleman
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USDA Forest Service, Forest Health Protection
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