

**Katherine Palmquist, Ph.D.**  
**Senior Scientist**

**Professional Profile**

Dr. Katherine Palmquist is a Senior Scientist in Exponent's EcoSciences practice and has a strong interdisciplinary background in environmental toxicology, biology, and ecology. Dr. Palmquist has technical expertise in ecological risk assessment and natural resource damage assessment (NRDA) at large complex sites in multiple states. She is experienced in assessing risks of aqueous and sediment-associated chemicals, such as metals, hydrophobic insecticides, and PCBs/ PAHs, to aquatic taxa, specifically benthic invertebrates. As a part of this, Dr. Palmquist has designed, implemented and evaluated field studies to determine potential effects on aquatic organisms and the health of aquatic community structure. In addition, she has technical experience in RCRA investigations, including regulatory compliance and remediation.

Dr. Palmquist also has extensive work experience in the field of pesticide toxicity and risk to non-target organisms. She has conducted pesticide registration work in both the United States and in the European Union, and has authored several papers on the susceptibility of non-target invertebrates to insecticides.

Dr. Palmquist has provided technical support for energy, petrochemical, agrochemical, manufacturing, and financial industry clients for projects located in Arkansas, California, Florida, New Jersey, New York, Oklahoma, and Michigan, as well as in Canada, Ecuador, Dominican Republic, and the United Kingdom.

**Academic Credentials and Professional Honors**

Ph.D., Toxicology, Oregon State University, 2007

B.S., Entomology, Washington State University, 2003

B.A., Communications (print journalism), Washington State University, 2003

Recipient of the Best Doctoral Student Presentation—Pacific Northwest Branch Society of Environmental and Molecular Toxicology, Port Townsend, WA, 2007

National Institute of Environmental Health Sciences Training Grant Recipient— Oregon State University, 2003–2007

Outstanding Senior—Washington State University, Department of Entomology, 2003

## **Publications**

Palmquist KR, Jenkins JJ, Jepson PC. Effects of dietary esfenvalerate exposure on three aquatic insect species representing different functional feeding groups. *Environ Toxicol Chem* 2008; 27(8): 8–14.

Palmquist KR, Jenkins JJ, Jepson PC. Impact of aquatic insects life stage and emergence strategy on sensitivity to esfenvalerate exposure. *Environ Toxicol Chem* 2008; 27(8):1–7.

Palmquist KR, Jenkins JJ, Jepson PC. Clutch morphology and timing of exposure impact the susceptibility of aquatic insect eggs to esfenvalerate. *Environ Toxicol Chem* 2008; 27(8):52–59.

Johnson KR, Jepson PC, and Jenkins JJ. Esfenvalerate-induced case-abandonment adversely impacts *Brachycentrus americanus* behavior and survival. *Environ Toxicol Chem* 2008; 27(2):397–403.

Johnson JD, Johnson KR. Hybrid poplar genotype affects attack incidence by the Poplar-and-Willow Borer (*Cyrtorhynchus lapathi*). *West J Appl For* 2003; 18: 276–280.

## **Selected Reports**

Duncan J, Hinchcliffe A, Palmquist K. Lot 5: Evidence of potential long term effects in (aquatic and terrestrial) invertebrates after short term pulsed exposure. Exponent report prepared for European Food Safety Authority, August 2009.

Brown K, Tomlinson J, Duncan J, Hinchcliffe A, Palmquist K. Lot 4 : Critical comparison of available and potential higher tier testing approaches for the risk assessment of plant protection products, considering at least field and semi-field experimental designs, extrapolation from dose-response relationships, and increased dosages (aquatic and terrestrial). Exponent report prepared for European Food Safety Authority, August 2009.

## **Presentations**

Palmquist KR, Jenkins JJ, Jepson PC. Impact of aquatic insect life stage and emergence strategy on sensitivity to esfenvalerate exposure. Presented at the Pacific Branch Society of Environmental Chemistry and Toxicology Meeting and at the North American Benthological Society Meeting, 2008.

Johnson KR, Jenkins JJ, Jepson PC. Clutch morphology and the timing of exposure impact the susceptibility of aquatic insect eggs to esfenvalerate. Presented at the Society of Environmental Chemistry and Toxicology 28th Annual Meeting, 2007.

Johnson KR, Jenkins JJ, Jepson PC. Use of multiple life stages in assessing *Cinygmula sp.* mayfly nymph sensitivity to esfenvalerate. Presented at the Pacific Northwest Branch Society

of Environmental Chemistry and Toxicology Meeting, Port Townsend, WA and presented at the Pacific Branch Entomological Society of America 91st Annual Meeting, Portland, OR, 2007.

Johnson KR. Pesticide sub-lethal effects in non-target aquatic organisms. Presented at Washington State University Pesticide Re-certification short courses, Lacey & Vancouver, WA, 2007.

Johnson KR, Jenkins JJ, P.C. Jepson. Esfenvalerate and chlorpyrifos differentially affect native Pacific Northwest aquatic insects. Presented at the American Chemical Society 232nd Annual Meeting, San Francisco, CA, 2006.

Johnson KR, Jenkins JJ, Jepson PC. Life stage influences Pacific Northwest aquatic insect susceptibility to esfenvalerate. Presented at the North American Benthological Society 54<sup>th</sup> Annual Meeting, Anchorage, AK, 2006.

Johnson KR, Jenkins JJ, Jepson PC. Esfenvalerate induces case-leaving in the Pacific Northwest caddisfly *Brachycentrus americanus*. Presented at the Society of Environmental Toxicology and Chemistry 26th Annual Meeting, Baltimore, MD, 2005.

## **Project Experience**

Reviewed and evaluated available invertebrate community data associated with an NRDA site Midwest United States, and provided an independent reanalysis of the data. This evaluation incorporated a number of variables, including physio-chemical characteristics, microhabitat characteristics, and watershed-scale data.

Contributed to an NRDA evaluation located at an East Coast refinery site. This included review of benthic invertebrate and fish community data, and a comparison to historical biological data collected at multiple time points at the same site to determine any potential long-term population trends.

Reviewed historical benthic invertebrate data collected over decades at a large watershed in the Midwest United States. Performed evaluation of data reliability and determined potential long-term population trends.

Oversaw and managed the field sampling associated with a complex lead-contaminated site in California. This required coordination and cooperation with outside consultants, management of large amounts of data (200+ samples per day), and on-site lead analysis via X-Ray Fluorescence. Also, performed on-site evaluation of day-to-day conditions and adapted sampling program accordingly.

Planned and managed field sampling at a lead-contaminated site in Oregon on a short time-frame. Sampled matrices included surface water, soil and sediment. In addition, conducted habitat assessments along ~2 miles of aquatic ditch environment as a component of the project.

Prepared sampling and analysis plans and reviewed existing documentation for a number of infrastructure development projects in remote Latin American countries. This included a review of the available biological data to determine potential impacts to endangered species, and an evaluation of the logistic involved with biological sampling in remote areas.

Designed a preliminary ecological risk assessment plan for a landfill site in Washington State. Evaluated and selected appropriate ecological receptors and determined proximity of the site in relation to threatened/endangered species habitats.

Assisted client in responding to USEPA statements regarding the re-registration requirements for a number of commercially-marketed herbicides. Performed review of available ecotoxicological data in the literature and laboratory results from client-provided reports.

Worked with Exponent's Harrogate, UK office and assisted in the drafting of European Union pesticide registration dossiers for a number of international clients. As a part of this, performed a number of targeted risk assessments for birds, aquatic organisms, terrestrial invertebrates, and non-target plants, incorporating country-specific requirements.

Designed and coordinated laboratory experiments at Oregon State University to determine the impact of aquatic insect life history strategies and exposed life stage on pyrethroid insecticide sensitivity. Potentially sensitive life stages, morphologies and behaviors were explored during the course of these studies.

Performed lotic and lentic aquatic invertebrate samplings in Oregon and Washington states to obtain insect specimens for use in laboratory experiments and university collections, with proficiency in field and laboratory identifications of several aquatic insect taxa.

Assisted in agroecosystem insect sampling, species identification, and data collection for WSU research on the impacts of chemical and biological control methods on insect generalist predator populations in Washington State potato fields. Sampled surface- and canopy- active insects in both Oregon and Washington states.

### **Professional Affiliations**

- Society of Environmental and Molecular Toxicology (current member)
- North American Benthological Society (current member)
- Entomological Society of America (former member)
- American Chemical Society (former member)