One funded MS student position

**Discipline Areas:** Forest Ecology, Entomology, Silviculture  
**Research Topic:** Balsam Woolly Adelgid Hazard Assessment and Sanitation  
**Start Date:** August 2020  
**Compensation:** 2 years of $18,500 annual stipend plus benefits (tuition, fees, and insurance)

Utah State University’s Department of Wildland Resources seeks an MS student to work on a project focused on identifying true fir (Abies spp.) hazard/risk to the invasive Balsam Woolly Adelgid (BWA, Adelges piceae). BWA is an invasive insect, and was introduced from Europe to the west coast of North America in the early 1920s. Since then BWA populations have dispersed eastward and were found throughout the range of true firs in Idaho by 1999, and were first detected in 2017 in Utah true fir forests (i.e., *A. lasiocarpa* and *A. concolor*) north of Salt Lake City. Rapid southward movement of BWA has continued, and infestations have been confirmed just south of Salt Lake City in 2018. While BWA is also found in Montana and Wyoming, it has not been confirmed in Colorado, New Mexico, or Arizona. BWA has the potential to cause widespread tree mortality in a relatively short time period, and silvicultural treatments for effective control are highly desirable.

Because BWA can infest and kill *Abies* spp. of all size classes, prioritizing its control, both direct and indirect, will require relatively rapid assessments of susceptibility (hazard), improved methods for early detection of infested trees, and appropriate guidelines for marking and removing infested trees. Because there are currently no agreed-on hazard ratings to guide the control of BWA in pole-size and larger trees, the student will be in charge of collecting data to verify, test, and develop a BWA hazard index. Furthermore, the students will help develop sanitation treatment guidelines and recommendations to serve the regions state, private, and federal land management stakeholders. While *A. lasiocarpa* is highly susceptible to BWA, less is known about *A. concolor*, and differentiating possible susceptibility between these hosts could also be a component of this study.

The MS student will work closely under the supervision of Dr. Justin DeRose ([http://qcnr.usu.edu/labs/derose/](http://qcnr.usu.edu/labs/derose/)), and in collaboration with another student that is collecting data focused on BWA life cycle timing and emergence. This may include time together in the field to collect data, with the help of 1 field assistant during the summers. The student will start in the fall semester of 2020 and is expected to finish in December 2022. The students will be expected to maintain clean, organized databases, make major contributions to reports due to the USDA Forest Service, and publish their work in peer-reviewed scientific journals. They will have opportunities to present their work to diverse audiences, including land managers, policymakers, and the scientific community. Ideal candidates should have earned a BS in a field related to forestry, entomology, or ecology, ideally with experience in silviculture; highly-qualified candidates with degrees in other fields will be considered. Preferred qualifications include quantitative skills and field experience. Review of applications will start immediately and continue until the position is filled.

To apply, please email the following to Justin DeRose (justin.deros@usu.edu): 1) a cover letter describing your experience and interests, 2) a CV or resume, 3) unofficial transcripts, 4) GRE scores, and 5) a list of three professional references and their contact information.