

A SEMINAR BY THE PLANT BIOLOGIST FACULTY CANDIDATE

**Dr. K. Waselkov**

Postdoctoral Fellow, Department of Biology, Kansas State University

**“The Young and the Restless: Evolutionary Explorations in the Plant Genera *Amaranthus* and *Phlox*”**



I study plant evolution at the inter- and intraspecific levels, using phylogenetics and population genetics to explore the effects of the processes of speciation, adaptation, hybridization, and genome duplication on morphological and molecular divergence. This seminar will cover my research on these processes in two very different plant genera. The genus *Amaranthus* is infamous for its weedy tendencies. A phylogenetic reconstruction of the genus shows that agricultural weeds are found in several different clades within the group, suggesting a lack of constraint on the evolution of agricultural invasiveness in *Amaranthus*. My population genetic work on a problematic Midwestern U.S. agricultural weed, *A. tuberculatus*, reveals the evolutionary origins of its invasion of crop fields in the 20th century and demonstrates that herbicide resistance is present outside of crop field populations of the species. The North American genus *Phlox* is much better behaved ecologically, but its phylogeny is complicated by extensive reticulation. Polyploidy plays a large role in the recent evolutionary history of many species of *Phlox*, making it an ideal study system to examine the consequences of genome doubling and/or hybridization for speciation and diversification. My postdoctoral work centers on three southwestern U.S. species complexes, all of which contain populations with different ploidy levels. I am using next-generation amplicon sequencing to identify the origins of the complexes' polyploid populations, as well as to resolve relationships in the broader genus. Through these two systems, I am able to study rapid, recent plant evolution and its implications for basic taxonomic research (in *Phlox*) and applied weed science (in *Amaranthus*).

**Wednesday, January 28, 2015**

3:00 – 4:00 PM

Science 2, room 109

For further information: [www.csufresno.edu/biology](http://www.csufresno.edu/biology). If you need a disability-related accommodation or wheelchair access, please contact Lindasue Garner at the Department of Biology at 278-2001 or e-mail [lgarner@csufresno.edu](mailto:lgarner@csufresno.edu) (at least one week prior to event).