

**The New England Botanical Club
Graduate Student Research Awards
2017 AWARD WINNER**

Karl Fetter

Department of Plant Biology
University of Vermont
Burlington, VT

**Reduced hybrid fitness maintains species boundaries
in two fully compatible poplars**

Hybridization between distinct species is a widespread occurrence in nature and creates the opportunity for gene flow to erase species boundaries. Despite the ubiquity of hybridization and the fitness benefits of heterosis often experienced by F₁ hybrids, clear distinctions between species remain. In plants, decreased fitness of hybrids backcrossing to parental species may be a sufficient source of selection to maintain species boundaries. I will investigate the genomic basis of the species barrier between the balsam poplar (*Populus balsamifera*) and the eastern cottonwood (*P. deltoides*). I hypothesize that hybrids will accumulate genetic incompatibilities in disease-associated genes, reducing the efficacy of the immune system, and creating an opportunity for pathogens to decrease hybrid fitness. Results from this study will inform our understanding of the multi-genic nature of species barriers, as well as provide an important context for how ecological relationships maintain biodiversity.

The New England Botanical Club offers each year up to \$3,000 total in support of botanical research to be conducted by graduate students. The awards are made to stimulate and encourage botanical research on the New England flora, and to make possible visits to the New England region by those who would not otherwise be able to do so. It is anticipated that two awards will be given, although the actual number and amount of awards will depend on the proposals received. The awards are given to the graduate student(s) submitting the best research proposal dealing with systematic botany, biosystematics, plant ecology, or plant conservation biology.