

**The New England Botanical Club
Graduate Student Research Award
2009 AWARD WINNER**

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Biological Sciences
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**The Systematics and Evolution of the
Opuntia humifusa complex (Cactaceae)**

The *Opuntia humifusa* complex of the Cactaceae (Opuntioideae) represents a model for the study of cryptic species and polyploidy. Many of the taxa investigated thus far have undergone genome duplication (polyploidy), a common feature in the Cactaceae, and an extremely important evolutionary mechanism in all of the angiosperms. A phylogenetic study of these taxa will be carried out in order to understand their relationship to the rest of the genus, and to determine what role polyploidy has played in the diversification of this highly specialized, arid-adapted group of stem succulents, which is most common outside of desertified regions in the eastern United States. The *O. humifusa* complex is hypothesized to be a monophyletic group based on preliminary analyses, but the species for which the group is named, *O. humifusa* likely is composed of several taxa as currently circumscribed. Cryptic speciation and polyploidy may be major evolutionary forces accounting for much of the taxon diversity within the complex.

The New England Botanical Club offers each year up to \$2,000 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.