

Propagation of *Cypripedium reginae* for Restoration of the Species to Its Natural Habitat

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Cypripedium species, or lady's slipper orchids, are terrestrial plants found in temperate climates. Habitat loss and degradation have caused three of the *Cypripedium* species to become critically endangered in New England. Our research goal is to prevent further population decline by efficiently growing large numbers from seeds. We have chosen one of the three endangered species, *Cypripedium reginae*, as our model for restoration to the wild since it is particularly sensitive to habitat disturbance, and takes up to ten years to complete a life cycle in its natural habitat. Using axenic seed culture techniques, we have grown over 5,000 *Cypripedium reginae* seedlings. Over the past three years, various vernalization methods were tested. The most successful method of vernalization was stratifying seedlings in compost over the winter and planting those seedlings the following spring. In the fall of 2013, we vernalized over 200 seedlings. The seedlings were stratified in compost and stored at 5°C for 3 to 5 months. After vernalization, seedlings were planted outdoors in composted soil in a cold frame. Specifically, 33 groups of two to three orchids were planted throughout the cold frame and their growth and development were monitored. Twenty-seven plants grew healthy leaves with seedlings ranging in size from 1 to 95mm in height. We expect that these two-year old seedlings will flower in one to two more years in the cold frame. Our propagation method reduces the life cycle from over ten years in the wild to 4 years.