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**2000 ANNUAL REPORT  
Restoration of the American Chestnut Tree  
Miami University Task Order 009**

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### Introduction

This report summarizes the progress of the American chestnut restoration project, specifically during the fall of 1999 and through 2000. During this time, seedlings and seeds were directly planted in the fall and in the spring. Therefore, field activities in 2000 focused on plant establishment and growth. Inventory of tree survival and condition was recorded in June of 2000.

### Pedigree of Plantings

The original scope of work called for the use of seeds provided from the American Chestnut Foundation (ACF). As detailed in the 1999 annual report, several difficulties arose during the cultivation of the original seed source. These problems resulted in a low number of viable seedlings for further research. Also, since the start of the project, additional sources became available. Therefore, the ACF seeds were supplemented with several other varieties of seeds and seedlings. Three sources are now being used: The ACF, the American Chestnut Council (ACC), and Oikos. Hybrid seeds obtained from the ACF are designated as: OPCL 53, OPCL 112, OPCL 149. Also obtain from the ACF were seeds produced by a naturally blight resistant American chestnut, Ellinghoe. The types designated by: D-150-N, F-013-N, O-030-N are products of the ACC. Hybrid seedlings, ranging from 18-24 inches, were procured from Oikos. Purebred seeds of both *Castanea dentata* and *Castanea mollissima* were also planted.

### Planting Time and Methods

Thirty-six seeds and twenty-eight seedlings were planted in the fall. After planting, six to eight inches of mulch was used to cover the areas to help prevent freezing; the mulch was removed in the spring. One hundred and five hybrid varieties and the pure types were planted in the spring.

In concordance with the literature, mesh wire was placed around the seeds and trees, extending a few inches below and above the ground in order to detour rodents, such as voles. Though planting in the fall can risk freeze killing of the seeds, no difference in the germination or survival was discerned between the two plantings. Therefore, the remainder of the report will be concerned with the types themselves, not the time of planting.

### Germination and Survival

Survival rates and "unlocated" individuals are noted in figure one. Due to the tall grass and other herbaceous plants in the plot (ranging up to six feet in height), sixteen percent of seeds and seedlings could not be located. The vegetation cover appeared to reduce damage from browsing, as the deer couldn't easily locate the saplings. We are hopeful that the survival rates reported here will increase when the plot is surveyed in the spring. Overall survival (*not including the unlocated plantings*) was seventy-five percent. With hybrid type survivability as follows: D-150-N 54%, F-013-N 64%, O-030-N 76%, OPCL 53 71%, OPCL 112 65%, OPCL 149 85%, Oikos 92%, Ellinhoe 100%.

Although a fence was established around the plot, it did not prove effective in keeping deer out, and browsing was prevalent among the germinated nuts and the seedlings. Twenty percent of the trees recorded as "alive" showed heavy deer browsing, if such browsing continues it will severely decrease growth, overall biomass, and the survivability of the seedlings. Also, browsing can lead to the development of compact seedlings, with unequal growth, large branches and small leaf biomass.

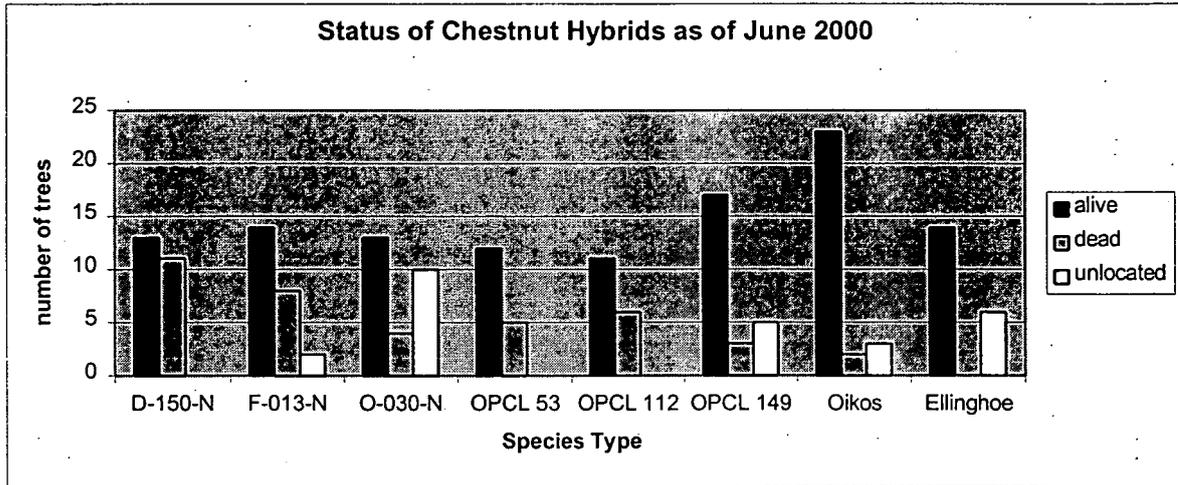


Figure 1

**Recommendations and 2001 Plans**

Inoculation of the chestnut blight fungus can not take place until the seedlings reach approximately one centimeter in diameter. In the spring of 2001 seedlings will be fertilized and maintained as needed to obtain sufficient size. In order to detour competitive vegetation a method of suppression, a type of fabric mat, will be placed in the plot. As described above, the vegetation in the Chestnut plot is dense and as the seedlings grow they will become more restricted by such competition. But before one can suppress the vegetation, leaving the seedlings more vulnerable to deer browsing, deer proof fencing is required. A stronger deer deterrent fence will be installed in spring 2001. Two sections of 4-foot woven wire fence will be attached to 12-foot wooden posts. The Ohio Department of Natural Resources recommends this design as the most effective deer deterrent fencing system available. An additional wire strand will be installed above the top section of woven wire to provide over nine feet of protection.