Section 5 Abstracts: Chestnut Tree Ecology

Effect of Mortality in Oaks Due to Gypsy Moth on the American Chestnut Population in Pennsylvania. Frederick Hebard. American Chestnut Foundation, Wagner Research Farm, Meadowview, VA 24361, USA

The oaks *(Quercus* spp.) on hundreds of square miles of Pennsylvania forests have been killed by gypsy moth defoliation during drought years, removing 25-100% of the canopy. The American chestnut sprouts in the understory have been released, and shortly there will be a large fruiting population of chestnut in Pennsylvania for the first time since the original blight pandemic between 1910 and 1930. There almost assuredly also will be an extensive epidemic of chestnut blight, again for the first time since the original pandemic. Many of the chestnut trees growing at the time of the original pandemic were salvaged for lumber at that time, as indicated by large areas with chestnut stumps. Thus, there was not as much selection for blight resistance among the original population of American chestnut as one might suppose. The current wave of chestnut growth and blight may reveal a fairly large number of trees with low levels of blight resistance. There may be significant amounts of natural selection for blight resistance. Additionally, the large, long-living population of the chestnut blight fungus that develops on these trees probably will be invaded by hypovirulence-causing agents. This will relax the selection pressure and prolong the nut-bearing period; it may result in a population of chestnut that fruits continuously.

The front wave of gypsy moths has now advanced down the Blue Ridge past Staunton, Va. Similar levels of oak mortality and chestnut regeneration over a large area may well occur in Virginia.

Some activities of humans can affect this process. It might be helpful not to perform regeneration or salvage cuts on a large fraction of the afflicted areas more than two or three years after the death of the oaks; they might impair chestnut regeneration and fruiting. It would be detrimental to replant afflicted areas or to select against hardwood regeneration with prescribed burning or herbicides. It may not be wise to intervene further in this process, but it would be instructive to monitor it.