Etiology of Endothia parasitica on Scarlet Oak

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In August 1963, a swollen butt condition of scarlet oak with multiple cankers was first noted on the James River and Warm Springs Ranger Districts of the George Washington National Forest. Swollen butt taper showed a diameter ratio of 2.2 basally to a height of 2.65 feet, as compared to 1.3 to 0.65 feet for healthy trees. Isolations from bright orange fans associated with inner bark necrosis yielded an *Endothia-like* fungus, tentatively identified as *Endothia* parasitica.

The disease has since been observed on all divisions of the Duke Forest, Durham, North Carolina, and elsewhere in the state. Consistent with these observations were pycnidia with rod-shaped conidiospores matching those of *Endothia* parasitica, which occurred sparsely in the bark fissures of all affected trees examined; excluding a recent find, perithecia were lacking. Known isolates of the fungus from chestnut duplicated the disease in scarlet oak 16 months after artificial inoculation of basally-wounded young forest trees with either mycelial or conidial inoculum. The number of infections (22 percent) thus obtained may be limited by tree age, as suggested by a subsequent ring-dating study of naturally infected trees 42 to 68 years old and averaging 13.7 cankers per tree (range 4 to 27 cankers), of which 76 percent were not infected until after age 25. Comparison of those trees with healthy individuals did not show significant growth reduction attributable to infection; however, the swollen butt condition, because of stain and bark inclusions, makes cull of that portion of the first log.