

---

## FOREWORD

Eastern hemlock, *Tsuga canadensis* (L.) Carriere, and Carolina hemlock, *T. caroliniana*, are shade-tolerant and long-lived tree species found in eastern North America. Both survive well in the shade of an overstory, although eastern hemlock has adapted to a variety of soil types and now extends from Nova Scotia across southern Ontario to northern Michigan and northeastern Minnesota, southward into northern Georgia and Alabama, and westward from central New Jersey to the Appalachian Mountains. Carolina hemlock is a relict species limited to a small area in the southern range of eastern hemlock.

Hemlock stands create an environment with many unique ecological and aesthetic characteristics, although due to their long life, they are susceptible to a number of insect pests, including hemlock woolly adelgid (*Adelges tsugae* Annand), elongate hemlock scale (*Fiorinia externa*), hemlock looper (*Lambdina fiscellaria*), and hemlock borer (*Melanophila flvoguttata*).

In recent years (from the 1980s to the present), hemlock mortality and widespread preemptive logging caused by the hemlock woolly adelgid has roused the issue of the future of hemlock. These hemlock forests will be replaced by hardwood species, and resulting local changes to the environment will have detrimental impacts for terrestrial and aquatic ecosystems.

In response to this threat to hemlocks in eastern North America, the U.S. Department of Agriculture Forest Service and numerous state, university, and private organizations have responded with the development of a coordinated effort to manage the hemlock woolly adelgid and other insect pests associated with hemlock.

There have been two recent symposia addressing all aspects of hemlock woolly adelgid: in 1995, First Hemlock Woolly Adelgid Review, Charlottesville, Virginia; and in 2002, Hemlock Woolly Adelgid in the Eastern United States Symposium, East Brunswick, New Jersey. The latest meeting, held in February of 2005, the Third Symposium on Hemlock Woolly Adelgid in the eastern United States, Asheville, North Carolina, also included the presentation of information on the biology and impacts of elongate hemlock scale and the balsam woolly adelgid. Articles and abstracts in these proceedings represent the range of recent and current studies addressing this ongoing concern.