

# NONTARGET IMPACT OF *BACILLUS THURINGIENSIS KURSTAKI* IN CENTRAL APPALACHIAN MIXED BROADLEAF-PINE FORESTS: LONG-TERM EVALUATION OF ARTHROPODS

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## ABSTRACT

Current measures for gypsy moth (*Lymantria dispar* L.) control emphasize the use of pheromones, growth regulators, and biopesticides. One of the biopesticides, *Bacillus thuringiensis kurstaki* (*Btk*), will continue to be necessary for immediate control of gypsy moth and other forest lepidopteran outbreaks. Although *Btk* can be a highly effective control for gypsy moth and other forest lepidopteran pests, it is recognized to affect a wide array of foliage feeding lepidopterans. Natural enemies of spring caterpillars may also be indirectly impacted.

A 7-year field study of the nontarget impacts from applications of *Btk* to control gypsy moth is summarized. *Btk* treatments caused significant declines of lepidopterans, but *Btk's* impact was dependent on the caterpillar stage being exposed through feeding on treated foliage. Some indirect impacts on natural enemies of caterpillars directly impacted *Btk* treatments were also significant. Recovery of caterpillars significantly impacted by *Btk* to pretreatment levels required as much as 2 years.