

Briefing Statement

Bureau: National Park Service
Issue: Response to Exotic Hemlock Woolly Adelgid Infestation
Park Site: Great Smoky Mountains National Park
Date: January 28, 2004

Background: The Hemlock Woolly Adelgid (ah-DEL-jid) or HWA is the Park's most recent invader with the first confirmed infestation detected in May 2002 in the 20-Mile area and more than 70 known sites discovered to date. Since its arrival in the U.S. in the 1920's this Asian relative of the balsam woolly adelgid rapidly colonized parts of New England and the Mid-Atlantic States, where it feeds on eastern hemlock. In the south, it also feeds on Carolina hemlock. HWA is easily dispersed by birds and wind but travels most rapidly as a hitchhiker on infested horticultural material. HWA has been on the Blue Ridge Parkway for about 10 years and in Shenandoah National Park since the late 1980s. In those areas infestation rates are around 80 percent of which most will die within a few years of infestation. HWA feeds at the base of hemlock needles, mass attacking it, and sometimes causing death in as little as one year. Infestations often start in large, mature hemlocks, but HWA also attacks and kills younger trees as well unlike the balsam woolly adelgid which only feeds on mature Fraser firs.

The Park contains about 8,500 acres that are primarily hemlock. Many of these areas were never harvested and hemlocks in these old growth stands are over 400 years old. In addition to these stands of hemlock, there are hemlocks scattered widely mixed with other species throughout the Park up to elevations of 5,000 feet. Hemlocks play an important role by providing deep shade along creeks, maintaining cool micro-climates critical to survival of trout and other cold water species. The impact of widespread loss of hemlock could trigger changes more significant as those that followed the demise of the American Chestnut in the 1930's and 40's.

There are three promising techniques which, used in concert, can be effective weapons to reduce the damage from the HWA. At the more accessible infestation sites, trees are treated using a soil-injected systemic pesticide and/or a soap spray. However, both of these are too labor intensive to undertake in more remote areas, but the treatments will buy time until a biological control can be introduced. As a biological control effort the Park has also released over 52,000 *Pseudoscymnus tsugae* (Pt) predator beetles to date. These tiny black beetles are native to the same areas of Asia from which the adelgid originated and feed exclusively on the adelgid at all stages of its existence. Park biologists are monitoring the effectiveness of the new predator on HWA densities in the treated stands.

Current Status: Obtaining a sufficient number of the Pt predator beetles to get them established in the Smokies is a huge challenge. Until 2004 there were only four facilities producing them – three in Pennsylvania and New Jersey and one at Clemson University. In the late fall of 2003 an interagency HWA Task Force consolidated \$270,000 from the NPS, USDA Forest Service, the University of Tennessee, and the Friends of the Smokies (\$100,000) to establish a rearing lab at UT to provide beetles for release in the spring of 2004. At full production the five rearing labs can expect to produce an estimated one

million beetles/year. The Park expects to receive funding from the NPS Natural Resource Preservation Program in FY '05-7 to continue beetle rearing at UT. Along with the supporting the beetle-rearing lab, the Friends have committed \$296,000 in 2004 to hire a four-person HWA Suppression Crew and to obtain the equipment to spray, inject and release beetles, to monitor the treatment results, and to scout new infestation sites. The Park has requested a base increase in FY 06 to support the long-term cost of HWA and other exotic pest control.

At best the beetle production and other control measures now beginning are expected to treat only an approximately 10% of the hemlocks in the Park. The estimated cost of all-out Park-wide HWA control program calls for seven million beetles and would cost approximately \$21 million. There is no immediate source for this amount of funding, so land managers have developed a prioritized plan to determine which infested sites are treated and with which method/s.

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