THE MARYLAND HEMLOCK WOOLLY ADELGID MANAGEMENT PLAN

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Hemlocks are a limited resource in Maryland. Although they are relatively common ornamental trees in the Baltimore-Washington urban area, most natural stands of hemlock are found only in the northern and western parts of the state. Hemlocks are normally restricted to riparian areas, and it is estimated that they occur on approximately 50,000 acres in Maryland. Several stands in Garrett and other western counties are valued for their ecological uniqueness and recreational opportunities.

Hemlock woolly adelgids (HWA), *Adelges tsugae,* have been in Maryland since at least the mid-1980s. The first infestations in the state were found in the suburban ornamental hemlocks in the Baltimore-Washington area, and natural stands in the area became infested by 1990. The infestation steadily moved westward and native stands in Frederick and Washington Counties became infested in the early to mid-1990s. Infested hemlocks in Allegany County were found in 1999, and the first infested hemlock in Garrett County (the most western Maryland county) was found in December, 2001.

In areas where HWA has been recorded for 10-15 years, it has resulted in mostly light mortality, but significant hemlock decline. Areas that experienced drought in the late 1990s or have significant infestations of elongate hemlock scale have had the most decline and mortality.

During the past 15 years the Maryland departments of Agriculture and Natural Resources hve been involved in various HWA management activities. Statewide delimiting surveys were conducted in the early 1990s, impact plots were established, there have been several releases of biocontrol organisms, and several trees were injected with an insecticide.

Some high use recreation areas, such as Cunningham Falls State Park, have experienced hemlock mortality and decline. In 2003, a team was assembled to initiate a hemlock management and restoration plan for the Park. More than 50 trees in the Park were injected with imidacloprid, and approximately 50 hazard trees were felled.

In 2003, the Hemlock Woolly Adelgid Task Force was assembled to develop a more unified approach to statewide HWA management. The Task Force included members from the Maryland Department of Agriculture–Forest Pest Management (MDA), Maryland Department of Natural Resources, Maryland Forest Service, Wildlife and Heritage Program, Fisheries, State Parks, USDA Forest Service, and U.S. National Parks Service. After several meetings, the Task Force developed a Maryland Hemlock Woolly Adelgid Management Plan to slow the damage and minimize the impacts of HWA. The objectives of the Plan are to identify HWA infested stands, prioritize stands of highest resource value, and recommend actions in the highest priority stands. Additionally, the Plan is to serve as request for environmental review from the Department of Natural Resources to expedite approval of treatment options.

The first step in the Management Plan is to identify the resource. The experience and knowledge of MDA and other professionals was used to inventory the known hemlock stands throughout the state. MDA staff ground-checked many of the hemlock stands to estimate the hemlock component and describe its health. The Task Force then met to prioritize the hemlock stand treatment based on the recreation, fisheries, wildlife, heritage, and forestry value of each stand. In addition, each stand was assessed for hemlock health and HWA infestation levels. A priority rank was then assigned to each of 150 stands across Maryland. Each stand was digitized into a GIS, and information on rank, hemlock health, HWA levels was added to a database.

By the fall of 2004, the Management Plan was approved by a Department of Natural Resources Management Team. The top ranking 75 stands were then surveyed by MDA staff to assess HWA levels and assess the need for treatment. Two treatment options were selected for stands during the fall of 2004. Part of Rocky Gap State Park was chosen as a site for *Laricobius* beetle release. This part of the Park is inaccessible for other treatment types and is in a designated Wildlands Area. During the fall and early winter of 2004, approximately 150 trees in 15 stands were treated with imidacloprid. These trees were injected using the ArborJet Tree IV system using the IMAJet formulation.

In 2005, additional treatments are scheduled for the high priority sites. Tree injections, soil treatments, and biocontrol releases are treatment options being considered for these sites.