

Hemlock Message Part 3: Hope for Hemlocks in the Forest

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Picture yourself standing on top of a mountain and gazing over a seemingly endless sea of deep green rolling hills and lush valleys – hundreds of thousands of acres populated by millions of Hemlock trees (among others). Now suppose something bad is out there quietly killing the Hemlocks, and you desperately want to save as many of them as possible.



Would you have enough manpower and money to tackle such a problem? Would you be able to reach into the vast expanses of inaccessible, rugged terrain? Would you be able to treat all the Hemlocks? And would you be able to do any of this before time runs out for them? Tough questions, and the answers are not easy.

The managers of our national forests and state lands and other scientific experts agree that it is not possible to completely eradicate the Hemlock woolly adelgid (HWA). The goal, instead, is to control this pest to the point that Hemlocks can survive and hopefully thrive again in the future. And basic math makes it clear that there simply aren't enough resources and time to help every Hemlock tree. Therefore, the approach must be one of immediate triage and long-range planning.

Let's talk triage. Fortunately our public land managers have taken important steps on the national forest to designate key stands of Hemlocks as Hemlock Conservation Areas (HCAs), with the goal of protecting the beauty and accessibility of recreation areas, maintaining the environmental and ecological roles the Hemlocks play, and preserving sufficient genetic diversity for future repopulation. Each HCA has been designated for chemical treatment and/or the release of bio-control agents.



Chemical controls. The primary type of chemical treatment involves the careful application of a pesticide containing the active ingredient Imidacloprid, a mild nicotine-based derivative, to individual trees by means of soil injection, soil drench, or water soluble tablets placed in the soil around the base of the trees where Hemlocks have their feeder roots. These methods are highly effective, provide a residual protection period averaging five years, do not harm local wildlife, and based on a two-year study by the U.S. Forest Service are safe to use even close to waterways.

Bio controls. The main bio-control agents being used at present are several species of predatory beetles that feed only on adelgids. These beetles are being reared by several university-based labs for release on selected Hemlocks in conservation areas. From the release sites they multiply and migrate throughout the forest, feasting on adelgids as they go. So what's the problem? First, in Asia where the adelgids originated, the Hemlocks and beetles and adelgids have evolved together for thousands of years so the beetles there exist in sufficient quantity to maintain a predator-prey balance keeping the adelgids from doing serious harm to the Hemlocks. In the eastern U. S., however, the adelgids have proven to be an incredibly prolific pest, and there aren't enough predator beetles in our forests yet to control this menace. Second, rearing the beetles is scientifically demanding, time-consuming, and very expensive (\$2 – \$5 per beetle), but our southeastern beetle labs are working hard in hopes of turning this situation around over time.

Other long-range efforts. A number of other long-term efforts are ongoing. One being conducted by Raleigh-based Camcore through a cooperative agreement with the USDA Forest Service includes seed banking and the establishment of conservation reserves (seed orchards) in regions of the world suitable for growing hemlock but where HWA does not occur. The overall goal of the project is to preserve hemlock gene pools in perpetuity until a time when effective HWA management strategies are in place and conserved seed resources can be utilized to repopulate depleted hemlock ecosystems. Should adelgid control remain elusive, the seed banks and conservation reserves will serve as a genetic base for breeding HWA resistant stock for future reforestation.



Additional research is being done with different kinds of predator insects, cross-breeding and genetic modification of hemlocks to create resistance to the adelgids, and the search for naturally resistant hemlocks.

Progress report. The chemical treatments in the HCAs are going well and showing good results. Hundreds of thousands of beetles have been released on conservation areas and a few other sites; some are showing significant progress such as reproduction in the wild, and a few have achieved pest control to the extent that chemical treatments are not needed. On private property, however, chemical treatment is still recommended as the best approach for effective, long-lasting, economical control.

How you can help. Take care of your own Hemlocks either by treating them yourself or hiring a professional to do so. Learn more about the problem and solutions and share your knowledge and skills with others. Volunteer through your public land managers and local environmental/conservation organizations and garden clubs. For more information on how you can help, please visit www.savegeorgiashemlocks.org to learn more or call the Hemlock Help Line 706-429-8010.