

Protecting our Hemlocks

Off-Target Impacts of Insecticide

By Caroline Marschner, NYS Hemlock Initiative, Cornell University

Dana Hall, Program Manager, Owasco HWA Suppression

February 2023

A question that often arises is “What are the unintended impacts of using insecticide to prevent Hemlock Woolly Adelgid (HWA) from killing hemlocks?” This is an important question that the HWA research community is taking very seriously. We cite here the work of a leading researcher on the subject: Elizabeth McCarty at the University of Georgia.

At the recent NYS HWA manager’s meeting, Dr. McCarty reported on more than ten years of in-forest observation and assessment. She has been studying imidacloprid movement after hemlock treatment for a wide range of potential off-target impacts, from insects and spiders living in the tree canopy, soil, and nearby water to residual imidacloprid amounts. Most of Dr. McCarty’s research has focused on soil application of imidacloprid, which is the most common method used outside of New York (here we usually apply it directly to the hemlock’s bark or inject it into the trunk). She found minimal off-target impacts, but there were some.

McCarty’s aquatic insect studies found no changes in aquatic insects after imidacloprid treatment. For the insects and arthropods in the tree canopy, she did see some reduction in some species after treatment, but all species continued to live on the hemlocks. If the hemlocks died, all those insects would lose their habitat.

Overall, the message from this work is that while there are small impacts to the ecosystem around treated hemlock, these effects are dwarfed by the impacts of losing the hemlock from our forests – which is what happens when they are not treated. That’s why we at Cornell and the Owasco Watershed Lake Association are so focused on conserving these hemlocks through treatments in the short term, and working to develop a biological control solution for the long term.

Please understand that in the Owasco Lake watershed, we are seeking to protect only the subset of hemlocks that professional foresters consider critical to continued good water quality. That means that by far the majority of Owasco’s hemlocks are not receiving insecticide treatment via the OWLA HWA suppression program. The mortality rate for untreated hemlocks is very high, nearing 100%. As a result, the pending loss of most hemlocks will extensively change the ecosystem and the character of the area. The small, targeted use of the world’s most widely used insecticide – the same class of chemical in agricultural seed coats, flea and tick treatments, and myriad other applications – is a small risk when weighed against the changes to our watershed if all of the hemlocks are lost.

Reference: McCarty, E. 2020. Environmental Risks to Arthropods from Imidacloprid Applications for Hemlock Conservation University of Georgia Warnell School Outreach Publication WSNR-20-88A. 11 Pages.

https://savehemlocksn.org/wp-content/uploads/2020/11/McCarty-2020_Enviro-Risks-to-Arthropods-from-Imid_WSNR-20-88A.pdf