

Shenandoah

National Park
National Park Service
U.S. Department of the Interior

THIS INSECT IS SUCKING THE LIFE OUT OF OUR HEMLOCK TREES

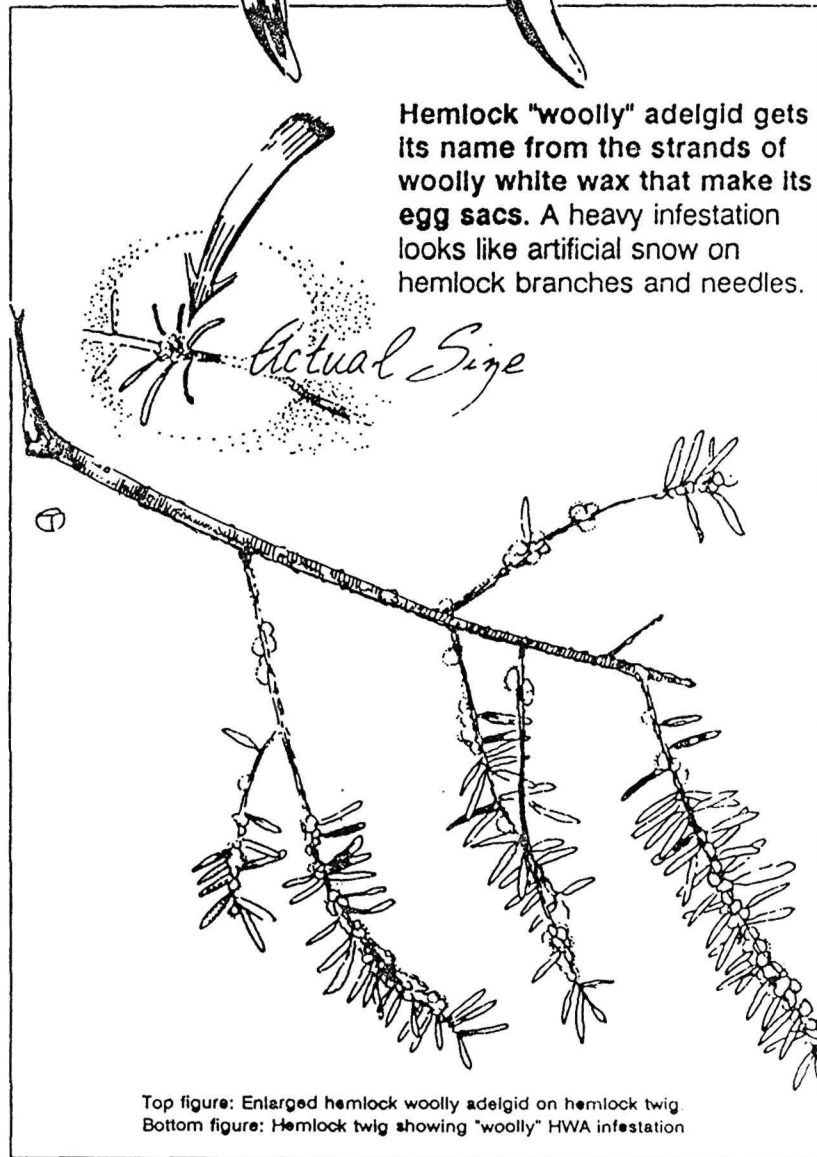
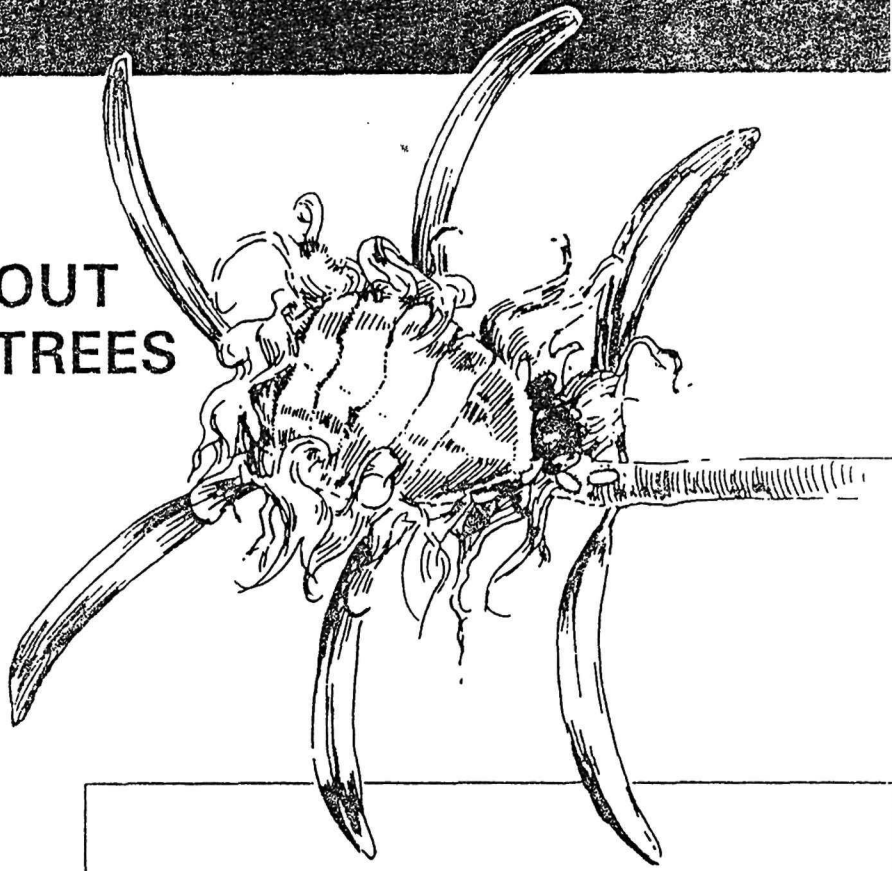
Hemlock woolly adelgid (HWA) sucks the sap from the base of young needles of the eastern hemlock. Feeding from late fall to early summer, HWA blights new growth and often kills mature needles.

HWA: another imported pest. Like the chestnut tree, the American elm and the oak, the eastern hemlock is threatened by a pest accidentally introduced into America's forests.

HWA was introduced into the Pacific Northwest in the 1920's, probably from Asia. HWA first appeared in eastern Virginia about 1950 and has now spread north to Massachusetts. The northward spread of HWA could endanger the vast hemlock stands in the northeastern United States and eastern Canada.

HWA is a death sentence for hemlocks already suffering from environmental stress. Healthy trees may survive HWA infestation temporarily. Hemlock trees in the Park are already suffering from the effects of drought and perhaps acid rain, and there is evidence that HWA seek out and thrive on these stressed trees. Once infested, trees seldom survive over four years, but can die within a year.

Loss of the eastern hemlock will change the forest forever. The hemlock thrives in the moist shallow soil of mountain hollows. Without its cooling shade, streams and soil could warm, causing habitat loss for plants and animals unique to the eastern hemlock's ecosystem.



Top figure: Enlarged hemlock woolly adelgid on hemlock twig
Bottom figure: Hemlock twig showing "woolly" HWA infestation



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The ghostly skeleton of a dead hemlock stands out against the dark green of a once healthy hemlock grove.

Sunlight streams through bare branches of an ancient hemlock that once shaded a mountain stream.

Can we save our hemlock trees?

Even if we manage to save a few trees, we may lose the hemlock forests. Aerial spraying, the technique most often used to control pests in large forested areas, doesn't work on HWA. HWA stays in one place to feed and has developed effective dispersal techniques, so pesticides must be applied to every branch and needle of a tree to eliminate the insect. Individual trees can be drenched using ground spraying equipment, but this is economically and environmentally costly to continue for many years. Trees can also be injected with pesticides, but this would be impossible in a large forest.

Wanted: A natural enemy. The ideal control for HWA would be a predator or a parasite that already thrives in our forests, or one that reduces HWA in its Asian homeland. Researchers have discovered a few midges, flies, lacewings, and one mite that attack HWA, but so far no predators have destroyed enough to stop it, or even slow it down.

What is the future of the eastern hemlock ecosystem? Biologists at Shenandoah are currently attempting to slow the HWA in Camp Hoover and a portion of the Limberlost with sprays and injections. Also, the health of the hemlock ecosystem is being determined by measuring the health of the hemlock trees and how many die each year.

Birds, mammals and plants unique to areas where hemlocks grow are being identified and monitored to detect changes in their occurrence and abundance. The results will tell us exactly how important the hemlock is to the forest and its inhabitants.

Shenandoah biologists have also joined in a multi-agency effort to develop long-term HWA control methods and preserve our eastern hemlock forests.

The loss of any native species alters the forest. The disappearance of the eastern hemlock from its unique place in the forest system will cause dramatic change in our eastern forests...forever.

