Adelges tsugae Annand

Adelges tsugae is a small, aphid-like insect that has become a serious pest of eastern hemlock and Carolina hemlock; believed to be native to Japan and China it is currently found in the eastern United States. A. tsugae is reddish-purple in colour and covers itself with a white, waxy secretion. The most obvious sign of infestation is the presence of white, woolly egg masses on the underside of hemlock needles. Infested eastern North American hemlocks defoliate prematurely and will eventually die if left untreated. A. tsugae is a difficult insect to control as the white waxy secretion protects it from pesticides.

The secondary host of A. tsugae is hemlock (where the asexual cycle occurs), and spruce is the primary host where the sexual cycle occurs. It is dispersed to new habitats through the nursery trade and locally by wind, birds, mammals and humans.

A. tsugae is damaging hemlock ecosystems in eastern North America where both eastern hemlock (Tsuga canadensis) and Carolina hemlock (T. caroliniana) serve as hosts. Hemlock trees are ecologically important and provide a unique environment. The lifespan of an eastern hemlock can reach 900 years and this tree is a component of many old growth communities.

Infestation. Photo credit: Robert L. Anderson, USDA Forest Service

The hemlock forest also provides nesting sites and a foraging habitat for neo-tropical migratory bird species. Several threatened or endangered species of flora and fauna require hemlock forests to survive. These forests are normally stable and resistant to plant invasions, so the loss of hemlocks from such forests will greatly affect the microclimate and soil conditions. Large-scale hemlock die-offs will affect species diversity, vegetation structure, stand environmental conditions and ecosystem processes.

Reference:
Global Invasive Species Database (GISD), 2011. Adelges tsugae Annand [Link]