Hemlock and HWA Hunters Field Protocol

Objectives:

- Identify Eastern hemlock trees in the field
- Determine if hemlock woolly adelgid infestation is present or absent

www.nyshemlockinitiative.info

Eastern Hemlock (*Tsuga canadensis*) Identification:

Description: Coniferous, evergreen tree; broadly pyramidal silhouette; feathery appearance; drooping branches and rounded drooping top; can grow up to 175ft tall

Ecology: Often found grouped together in stands forming shady areas with open understory; often found along streams and on steep, north-facing slopes.

Bark: Furrowed, with wide ridges; grey to reddish-brown in color; younger trees will have greyish-brown smooth to scaly bark

Foliage: Feathery with small (1/2-inch) needles; older growth is deep green, newer spring growth is bright green; needles arranged opposite each other on twigs

Needles: Flat needles that won't roll between fingers; round tips; two distinct white parallel stripes on underside

Cones: Small (3/4-inch) cones; greenish-brown when emerging then brown when mature; rounded scales; cones reach maturity in early fall

Hemlock Woolly Adelgid (HWA, *Adelges tsugae*) Identification: May-October

Late Spring-Early Fall: HWA is not growing, they are in a dormancy period known as aestivation. This time of year HWA appears as small, black nymphs, called sistens, at the base of hemlock needles on tree's new growth. The sesame seed-shaped sistens will have a distinct white halo. Finding HWA at this time of year may require use of a magnifying glass or hand lens (7x or 10x magnification).

Tips: It may help to look at underside of twigs for HWA; remnants of wool from previous season may also be present.

HWA Identification: November-April

Late Fall-Early Spring: HWA goes through four development stages or "instars" as it secretes its "wool" then lays its eggs as an adult. During this time an infestation will be characterized by white, waxy masses that are secreted around the bodies of the insect, always clumped on twigs near the base of the hemlock needles.

Tips: Sometimes the infestation is best seen while looking at the underside of a hemlock twig. In the case of a lighter infestation you may only see one or two woolly masses present.

Other Clues of a Potential HWA Infestation:

Hemlock Borer: The reddish-purple inner bark of hemlocks is exposed by woodpeckers as they feed on hemlock borer, a native beetle that feeds on the juicy inner bark. The beetle attacks only weakened trees, often after prolonged exposure to HWA.

Weakened tree crown: A heavy or long-lived HWA infestation will cause crown damage and defoliation. Look up to check if the crown appears full and dense or thinning. Lots of dead branches and lack of needles could indicate an HWA infestation.

Greyish cast: HWA infestations can cause hemlock trees to appear greyish rather than a healthy deep green. Hemlock trees with a greyish appearance can easily be seen from a distance, like those located along shorelines. Boaters may be able to spot HWA infested trees from the water.

HWA Look-alikes and Other Hemlock Pests:

Elongate Hemlock Scale: appears as brownish, flat, oval-shaped insect attached to the underside of hemlock needles. EHS is also invasive, so report any sightings!

Spittle Bugs or Spider Egg Sacs: White clusters on hemlock branches may resemble HWA, but will not be woolly in texture, or may not be placed near the base of needles. Spittle bugs will appear foamy.

REPORTING AN INFESTATION: You can download the **iMapInvasives app** by going to **nyimapinvasives.org/mobile.** You may also report by sending a picture, a site description, and directions to site (and GPS coordinates if possible) to **nyshemlockintiative@cornell.edu.**