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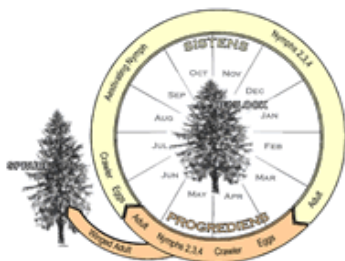
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Hemlock Woolly Adelgid Life Stages

Below you will find images and brief descriptions of hemlock woolly adelgid life stages. Images come from the Maine Forest Service unless otherwise noted. Select the image to see a larger version. More images can be found on the hemlock woolly adelgid pages of [Bugwood Network's Insect Images Website](#), ([off-site, opens in new window](#)).

Life Cycle



Hemlock woolly adelgids are all female in northeastern North America. They develop parthenogenetically (asexually) and have six stages of development: egg, four nymphal instars and adult. There are two overlapping generations per year. The overwintering generation (or sistens) is present from early summer through mid spring, and the spring generation (or progrediens) is present from early spring through mid summer.

Wool (Instars 2 through 4, adults and eggs)



Hemlock woolly adelgids secrete a waxy material from pores covering their bodies. The material is wool-like in appearance, and is perhaps the most recognizable feature of this insect. HWA are covered with wool from their 2nd instar through the adult stage. The wool-like secretions of the hemlock woolly adelgid are visible throughout most of the year, and are generally between 1/16th and 1/8th inch across. The woolly masses increase in size as each generation matures. In late summer and early fall they can be hard to see because the adelgids are not producing wool, they are aestivating. Heavy rains during aestivation can wash off wool from previous generations. Aestivating nymphs have only a slight halo of wool (see below) and are not generally visible with the naked eye. The overwintering generation resumes feeding and wool production in Mid to Late October in southern Maine. The adult lays her eggs behind her in the wool, making the ovisacs (wool) appear very puffy.

Eggs

Eggs of the hemlock woolly adelgid are reddish in color. They are protected by waxy wool-like material secreted by the developing adelgid. Eggs can be found by pulling apart the woolly masses and are generally present between early March and late July in southern Maine. The wool is somewhat sticky, and can be picked up by passing animals, resulting in the movement of eggs. These eggs have the potential to establish HWA in new areas. The overwintering generation can produce up to 300 eggs per adult, the spring generation adults are less fecund and generally produce 75 or fewer eggs. Each small white mass found on a hemlock twig in April has the potential to represent up to 300 individual insects!

Crawlers



The hemlock woolly adelgid hatches from eggs into what is called the crawler stage. This stage is minute, highly mobile, easily moved and abundant. In southern Maine crawlers are generally present between Mid March through the end of July. There is a time in that period when crawlers are not present, but because of the overlap in generations it is best to consider the whole period

as potentially having mobile crawlers. Crawlers and eggs can be easily spread and cause new areas of adelgid infestation. Other life-stages require the movement of live hemlock material (such as nursery stock or seedlings) to become established.

Settled First Instar Nymphs



Crawlers search for good feeding sites then insert their mouthparts into hemlock twigs near the base of a needle. Once a spot is chosen, the insect will not move for the rest of its life (except to withdraw its mouthparts during molting). In the spring (progreadiens) generation, the adelgid develops quickly from a settled first instar nymph to a second instar nymph. However, the overwintering generation (sistens) undergoes a period of inactivity during the summer months known as aestivation. During this time the nymph has a barely discernable ring of wool surrounding it's body and looks somewhat like a minute black sesame seed. A hand lens or other magnification source is generally needed to see this stage of the adelgid.