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Norway Spruce Shoot Gall Midge, (*Piceacecis abietiperda*) (Diptera: Cecidomyiidae)

Damaged Norway spruce foliage cuttings were brought in to the CAES Insect Information Office by an arborist in Fairfield County in 2011. Growing tips had lost needles and diptera larvae were found in small galls at the base of the current year's growth and along twigs. Lorraine Graney, Diagnostic Services Manager, Bartlett Tree Experts, who was visiting at the time, identified the larvae as the cecidomyiid, *Dasyneura abietiperda*. She reported similar findings of the midge on Norway spruce from New England, New York and upper New Jersey. A European pest of Norway spruce, the Norway spruce shoot gall midge, since reclassified by Dr. Raymond Gagné, Agriculture Research Service, USDA, is now named *Piceacecis abietiperda.*

HOSTS AND DAMAGE: Norway spruce is the main host, with one sample known from a Colorado spruce that was growing near infested Norway spruces. Galls can be found in multiple locations on plant shoots (new growth), twigs, and branches. Most common are those found at the base of the current season's growth. Bends along new shoots and defoliated terminal twigs result from gall formation induced by the feeding of the midge larva (Figure 1). Loss of needles distal to twig galls is an indication of damage to the vascular system. This may be a result of larval feeding or gall induction. Lorraine Graney has isolated *Phomopsis sp.* from transitional tissue

Figure 1: Damage to Norway Spruce.
Upper photo, D. Swim, Savatree. Lower photo, CAES, R. Hiskes

associated with defoliated twigs and from fungal infested dead midge larvae within the distal galls. Species identification and pathogenicity of the isolated *Phomopsis* has not been investigated.

Repeated die-back of nearly all growing tips over several years can cause tree death.

DESCRIPTION: Galls are individual, having one insect each (Figure 2) as opposed to the Eastern spruce gall adelgid where multiple insects develop within one gall. Galls remain straw-colored blending in with twig tissue and can grow to about 3 mm. (Lorraine Graney, personal communication). Female adults are orange bodied and 1 – 2 mm in length with whitish fringed wings being 2 mm long (Figure 3). Wings have the reduced venation common to cecidomyiids. It is not known if the short-lived adults have functioning mouthparts. Legless larvae are orange and approximately 2 mm long at maturity. Following pupation within the gall, the pupa pushes out of the gall just far enough to allow unhindered emergence of the adult. The empty pupal skin can sometimes be seen protruding from the gall.

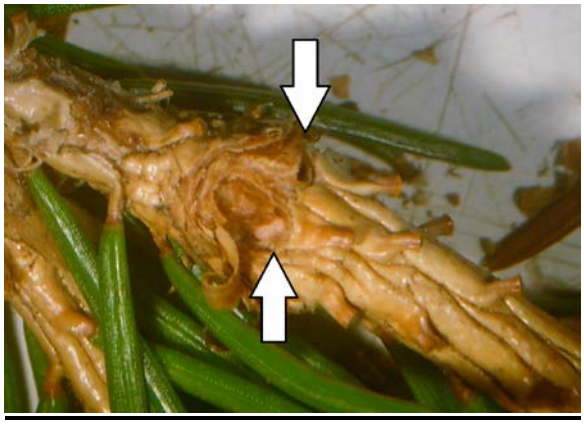

Figure 2. Empty gall above and exposed white pupa below. © CAES Rose Hiskes

LIFE CYCLE: According to Gagné there is one generation per year in New England. Partially grown larvae overwinter in galls and adults emerge in early spring and most likely do not feed. After mating, eggs are deposited on twigs or in bud scales. Larvae burrow into twig (shoot) and bud tissue, causing swelling and bending of twigs.

Figure 3. Adult female midge with protruding ovipositor. Photo by Lorraine Graney, Bartlett Tree Experts. Used with permission.

MANAGEMENT: Schneider mentions that in Austria high mortality in the first larval instar is due to a chalcid parasitoid. Susceptibility among Norway spruce appears to greatly vary; so selection for host resistance should be feasible.

Further research is needed on possible insecticide treatments. A foliar spray at the time of adult emergence in early spring with bifenthrin-containing products has been successful for managing related gall midges. Systemics often give poor control of stem gall forming insects and therefore are not recommended. (Rich Cowles, personal communication.)

REFERENCES:

Gagné, R. J. and Graney, L. 2014. *Piceacecis* (Diptera:Cecidomyiidae), a new genus for a non-native pest of Norway spruce from Europe and its North American relative. Proceedings Entomological Society of Washington, 116(4): 378-393.

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