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Kansas Department of Agriculture

ENTOMOLOGICAL NEWS

Plant Protection and Weed Control

Insect Highlight

Elm Zigzag Sawfly (*Aproceros leucopoda*)

A new insect pest has arrived in North America within the last few years. The elm zigzag sawfly (EZS), *Aproceros leucopoda*, also known as the East Asian sawfly, was found in Quebec, Canada in 2020. Shortly after, the sawfly was confirmed in Virginia in 2021 and has since been found in four other states: New York, Pennsylvania, Maryland, and North Carolina. Due to its invasive nature, this insect may become a serious pest of elm trees in the United States.

Figure 1. *Feeding damage caused by elm zigzag sawfly larvae. The signature zigzag pattern is evident when larvae are young and damage is light.*

Figure 2. *Close-up view of an EZS larva (top) and an adult EZS (bottom). Larvae can be identified by the brown markings on their head and second and third pair of legs.*

EZS are destructive in their larval stage. Adult EZS lay their eggs on the edges of leaves, and the larvae chew their way from the edge of the leaf to the midvein. As the name implies, the larvae create a zigzag pattern in the leaf while feeding (Fig. 1). This pattern is less obvious as the larvae grow, and after extensive feeding, leaves may be found with only the veins remaining. The larvae are bright green and can be distinguished by the brown coloration on their head and legs, often described as "T-shaped" markings. Adult EZS are approximately a ¼-inch long and are black with cream-colored legs (Fig. 2).

Native to Asia, EZS came to Europe in 2003 and was labeled an invasive species. Already exasperated by Dutch Elm Disease, EZS spread rapidly and caused severe defoliation of elm across multiple countries.

Figure 3. *EZS larvae will spin their cocoons on a variety of surfaces. Older cocoons may look brown (top), while ones that are newly spun appear white (bottom).*

EZS is an excellent invasive species for several reasons. First, adult female EZS are parthenogenetic, meaning they can reproduce without a male. In fact, there is currently no record of male EZS. Thus, very few EZS are needed to start a population in a new area. Further, EZS are great fliers and can disperse 27–55 miles in a year. As larvae, EZS must undergo pupation before transitioning into adults. The larvae will attach their pupation cocoons to any object, moving or non-moving, making this normally sessile life stage mobile (Fig.3). Upon emergence from their cocoons, adult EZS do not need to feed, and they begin laying eggs almost immediately. Moreover, EZS can overwinter in their cocoons, resulting in early larval presence in spring. In the lab, most adults lived for two days, however, some sawflies laid up to 71 eggs during their short lifetime.

Field records in Hungary reported elm trees which had suffered nearly 100% defoliation from EZS produced new leaves in the same season. In addition, the severely defoliated elm trees recovered the following year with only a few branches exhibiting dieback.

EZS feeds on multiple host species, but shows a preference for Siberian elm, *Ulmus pumila*. In the United States, *U. pumila* is an invasive plant. Although it appears beneficial for EZS to feed on *U. pumila* in its non-native range, the presence of this elm may only perpetuate populations of EZS and encourage defoliation of other elm species.

Currently, the greatest issue with EZS is the aesthetic appearance of the elm tree, but, coupled with other issues such as Dutch Elm Disease, repeat defoliations, or drought, instances of elm mortality may become apparent.

References

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Locally…

Atchison County: While conducting surveys this year, an ash tree was discovered that had long been infested by emerald ash borer. The tree was dead, and its bark was breaking away from the trunk, revealing the intricate galleries the larvae created as they fed on the tree.

Emerald ash borer was first detected in Atchison County in 2016, but the damage the insect left behind can still be seen today.

For more information on pests, surveys, and current quarantine regulations, please visit agriculture.ks.gov/insects

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Spongy moth

Spongy moth caterpillar