

Red-belted clearwing *Synanthedon myopaeformis*

The red-belted clearwing is a wood-boring insect that feeds on apple trees and other fruit and ornamental trees. Native to Europe, this exotic moth has been recently found infesting apple orchards in Washington and British Columbia. If it enters Michigan, it potentially poses a threat to tree fruit and nursery stock industries.

[Michigan risk maps for exotic plant pests.](#)

Other common names

small red-belted clearwing, apple clearwing, apple borer.

Systematic position

Insecta > Lepidoptera > Sesiidae > *Synanthedon myopaeformis* (Borkhausen)

Global distribution

Native to Europe, North Africa and Asia Minor.

Quarantine status

This insect was detected for the first time in North America in apple orchards of British Columbia, Canada, in 2005. Then it was subsequently found in Washington State in 2007 (NAPIS 2008). The insect's quarantine status is to be determined in the United States and Canada (Wong 2006).

Plant hosts

Trees of the Rosaceae family (genera of *Crataegus*, *Cydonia*, *Eriobotrya*, *Malus*, *Mespilus*, *Prunus*, *Pyrus*, and *Sorbus*) including a range of horticultural and ornamental trees. Apple is the primary host. Other less frequently infested hosts include apricots, cherries, crabapples, hawthorn, mountain ash, peaches, pears, plums and quince.

Biology

Females lay eggs singly in cracks and under scales of the host plant bark, anywhere from below the crown to main branches. The larvae feed on the cambium layer of trees for nearly two years. Mature larvae tunnel through the bark and chew out an exit hole before pupation in spring. The pupal stage lasts for about two weeks. Just before adult emergence, mobile pupae wriggle out of the exit hole protruding from the bark surface. The adults live for about one week and are active during daytime. Moth flight occurs from June to August. Generally, sesiid borers cause a slow decline and reduced yields over several years of infestation due to girdling resulting from feeding in the cambium layer.



Adults. (Photo: R. Nechvátal, BioLib.cz)



Larva. (Photo: H. Philip, wildwoodlabs.com)

Identification

- **Adult:** 20-25 mm wingspan; wasp-like in appearance; body long and slender, dark blue-black with a bright red band (fourth abdominal segment); wings clear with bluish-black scales along margins and veins.
- **Larva:** Up to 20 mm long; body grayish-white with a reddish-brown head.
- **Pupa:** 15 mm long, pale yellowish-brown.
- **Eggs:** flattened and whitish; laid singly.

Note: Other sesiids present in the United States (such as the peachtree borer, *Synanthedon exitiosa*) may look similar to the red-belted clearwing.



Larval gallery in the apple tree trunk. (Photo from INRA HYPPZ)

Signs of infestation

(British Columbia Ministry of Agriculture and Lands 2009)

- Empty pupal cases sticking out of bark. View photo at: <http://www.agf.gov.bc.ca/cropprot/tfipm/clearwing.htm>
- Holes (2-3 mm wide) at the base of trees.
- Tunnels under bark, especially in rootstocks that appear abnormally swollen.
- Moths resting on leaves during sunny days.

Management notes

In Europe, infestations of this insect are often reported in older, weakened and neglected orchards. Control options include sealing wounds in the bark and wrapping the base

of trees to reduce infestation risk; and mass trapping and mating disruption using attractants (Witzgall et al. 2004, British Columbia Ministry of Agriculture and Lands 2009). Delta or wing traps baited with peach tree borer pheromone attract male moths of the red-belted clearwing (British Columbia Ministry of Agriculture and Lands 2009).

Potential economic and environmental impacts to Michigan

In Europe, the red-belted clearwing is considered a serious economic pest of orchards. Larval feeding can damage or contaminate stems and roots of host plants. If the moth invades Michigan, it potentially poses a threat to tree fruit and nursery stock industries. Regulatory measures to control the moth may result in destruction of infested trees and replanting, increased pest control costs, interrupted integrated pest management, and restricted nursery stock sales. Because the larvae develop within trees, it may take a long time to achieve eradication.

Likely pathways of entry to Michigan

Importation of apple nursery stock originated from Europe.

If you find something suspicious on a susceptible host plant, please contact MSU Diagnostic Services (517-355-4536), your county extension office, or the Michigan Department of Agriculture (1-800-292-3939).

References

- Alford, D. V. 2007. Pests of fruit crops. Academic Press, Boston.
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- Wong, K. 2006. *Synanthedon myopaeformis* (Borkhausen) (Red-belted clearwing moth) in Canada. Canadian Food Inspection Agency. (<http://web.mac.com/idick/iWeb/Wildwoodlabs/ACID%20Watch%20Blog/716DFDCF-2F41-4234-A694-43175CDCA97D.html>)
- Link to more photos of the red-belted clearwing: <http://www.agf.gov.bc.ca/cropprot/tfipm/clearwing.htm>