

‘Host of the month’ is a series of information sheets and blogs that highlight a tree host and their associated priority pests and diseases that are best seen and recorded in that month. For June we’re looking at elm (*Ulmus* species) and Elm zigzag sawfly.

Elms were once a prominent part of the UK landscape and were a favourite subject in the paintings of John Constable. Besides aesthetic appeal elm also provided a versatile and durable wood which found uses in furniture, flooring, cladding, hockey sticks and musical instruments. Then came Dutch elm disease, first in the 1920s caused by the fungus *Ophiostoma ulmi*, and then in the 1960s with a second introduction of a more aggressive species of pathogen, *Ophiostoma novo-ulmi*.

The upgraded pathogen spread rapidly via *Scolytus* beetles and by the 1980’s mature elm trees were largely gone from the landscape. For more information on Dutch elm disease see [Dutch elm disease: Central and southern Britain](#). Elms have not disappeared though, several isolated pockets of mature trees survive and many elms can be found as young trees in hedgerows although they rarely survive more than 20 years before succumbing to disease.

Ulmus give their name to the botanical family *Ulmaceae* which they share with the *Zelkova*s (*Zelkova*) and five other genera. The taxonomy of elms is very much a work in progress but there are between 30 and 40 species spread across the northern hemisphere. Armstrong and Sell (1996) pithily sum up the situation with UK elms as “a legacy of taxonomic inalcitrance exacerbated by the vociferous disagreements of the two former elm specialists, Melville and R. H. Richens, so that elms are usually overlooked or regarded with despair”. Of the elms present in the UK only wych elm (*Ulmus glabra*) is considered truly native. The many other species, clones and cultivars are considered non-native although probably introduced thousands of years ago and collectively referred to as Field elm. With that in mind the focus here is on the characteristics of elm as a genus rather than individual species

Elms are deciduous trees with leaves arranged alternately on the shoots. Flowers (figure 2) are relatively inconspicuous, opening in late winter before the leaves for most species and these are followed in late spring by vibrant pale green winged fruits which can be visible from some distance before the leaves emerge and hide them. Although prolific seed producers, most of the seed produced by field elms is not considered viable



Figure 1: Typical ‘horned’ leaf found on some shoots on Wych elm (*Ulmus glabra*)

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although seed from wych elm is capable of germination and propagation is mainly vegetative via suckers. Overall leaf shape varies from ovate (egg-shaped – widest below the mid-point) through almost orbicular, to obovate (widest above the mid-point) with a bi-serrate margin. Leaf bases are often oblique (asymmetric), sometimes even hiding the leaf stalk (petiole) in wych elm (see fig. 2). Leaf texture varies from rough to smooth. Finally, the twigs of some species can develop corky ‘wings’ similar to those sometimes found on field maple (*Acer campestre*) and sweet gum (*Liquidambar styraciflua*).



Figure 2: Wych elm flowers in early spring (top left), circular winged Wych elm fruits in late spring (top right), oblique leaf base typical of elms (bottom left - Rob Routledge, Sault College, Bugwood.org), and ‘winged’ branchlets of English elm (bottom right, Robert Vidéki, Doronicum Kft, Bugwood.org)

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For more guidance on the identification of the taxonomy and identification of British elms see [Identifying British Elms *Ulmus* \(Eversham, 2021\)](#).

Priority pest - Elm zigzag sawfly (*Aproceros leucopoda*)

Elm zig-zag sawfly is a non-native pest originating in eastern Asia which is now found in many parts of Europe. The first signs of this species in the UK were seen in 2017 and in 2018 it was confirmed as being present in a wide area across South-east England and the East midlands. It is not known how it arrived here.

The potential for damage to UK elms is difficult to gauge; in some areas of Europe the zigzag sawfly has been responsible for severe or even complete defoliation (74 – 100%) of host trees whereas in others defoliation has been 1-2%. As yet there are no records of trees being killed by this pest but there are concerns regarding competition with other elm feeding invertebrates such as White-letter hairstreak butterflies.

Identification

Adult elm zigzag sawflies emerge from overwintering pupae in the leaf litter in late spring and lay eggs on the margins of fresh new elm leaves. The caterpillar-like larvae hatch after around 7 days and the characteristic zigzag feeding traces are soon visible (fig. 3). The zigzag traces can be obscured by feeding of older larvae which tend to eat large areas of leaf lamina leaving only the veins behind. Once mature the larvae weave a golden web-like cocoon on the underside of leaves where they pupate for four to seven days before adults emerge to start the process over again. In good conditions multiple cycles can be completed in a season leading to high numbers of larvae and associated high levels of defoliation.



Figure 3: Distinctive zigzag feeding traces made by the younger larvae of Elm zigzag sawfly (left), the more extensive feeding damage of older larvae (right) ©Crown copyright. Forest Research

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Figure 4: Vacated filigree cocoon (left) and adult sawfly (right). ©Crown copyright. Forest Research

Lookalikes

Many other invertebrates feed on elm leaves including the larvae of White-letter hairstreak butterflies, and the winter moths *Operophtera brumata* and *Erannis defoliara* but the presence of the zigzag feeding traces and the golden filigree cocoons distinguish damage by elm zigzag sawfly from other possible causes (fig. 5).

Elm leaf-miner (*Fenusa ulmi*) and *Stigmella lemniscella* are moth larvae that feed within the leaf leaving a tunnel that shows as a different coloured line or blotch on the leaf exterior. However, the upper and lower surfaces of the leaf remain intact (fig. 5).



Figure 5: Elm leaf-miner (left), and leaf damage by other invertebrates (right) ©Crown copyright. Forest Research

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Dutch elm disease is still active in the UK and symptoms start to appear in early summer. Clusters of leaves turn yellow and wilt before the turn brown and fall prematurely (fig. 6). Affected shoots die back from the tips, some of them curling to form 'Shepherds crooks'. More information is [available here](#).



Figure 6: Leaf yellowing, wilting, and browning (left ©Crown copyright, Forestry Commission) and subsequent dieback (right, ©Crown copyright, Forest Research) typical of Dutch elm disease.

Elm yellows is caused by a specialised type of bacterium called *Candidatus Phytoplasma ulmi* and was found on imported plants in England in 2013 and successfully eradicated. No further cases have been reported. As the name implies a prominent symptom is the yellowing of leaves, accompanied by much reduced leaf size, premature leaf-fall, dense clusters of growth ('witch's brooms') at twig and branch tips, and early opening of leaf buds in spring (fig. 7). More information is [available here](#).

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Figure 7: Yellowing of foliage (left) and 'witch's brooms' (right) as a result of infection by *Candidatus Phytoplasma ulmi*. Images by Eric Collin, IRSTEA.

Reporting

Elm zigzag sawfly is a priority pest in the UK so please report possible sightings via [TreeAlert](#). Healthy tree data is equally important so please do report those too.

For more information and resources on elm zigzag sawfly check the [Observatree website](#).

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