

LEICESTERSHIRE & RUTLAND ENTOMOLOGICAL SOCIETY

Oak leaf-miners

Sue Timms
suetimms@clara.co.uk



LESOPS 61 (October 2023)

ISSN 0957 - 1019

Introduction

Leaf-mining is a specialised form of larval feeding on plants. For at least part of their life, the larva of some species of moths, flies, sawflies and beetles live and feed within a leaf, usually between the upper and lower epidermis; some may also pupate within the leaf. For many the pattern of feeding and deposition of frass may be unique to that species and, in combination with the host plant and characteristics of the larvae or pupae, allows the species to be named. Many are rarely recorded as adults with most being difficult to identify and requiring dissection. Knowledge of the distribution of many leaf-mining species in Leicestershire & Rutland (VC55) is incomplete such that recording leaf-mines will help to fill in some of the gaps.

Important!

Not all leaf-mines can be identified. Sometimes it is necessary to rear the larvae to adults. Leaf-mining is an aspect of a species' behaviour and can vary in many ways. Environmental factors and condition of the host plant affect behaviour and larvae can mine unexpected hosts.

- **ALWAYS** record the host plant – all keys and websites start with the host.
- **ALWAYS** include the word "**MINE**" in your comments otherwise it may be taken as the adult organism or gall-causer.
- **Be careful of sources** – there are a lot of hopeful or misidentified photographs on the internet.
- **Retain a specimen** of any rarities or County firsts so that they can be verified by an expert because it is not always possible from an image.
- **Take a photograph** of the fresh specimen with back-lighting to show the frass pattern. If you can, dissect out the larva/pupa and photograph.
- **Note** whether it is a tenanted or vacated mine e.g. "TM on Oak", "VM on Holm Oak".

Most of the leaf-miners on Oak are moths but in VC55 there are three species of weevil and one sawfly that also mine oaks. There are no oak leaf-mines in the UK caused by flies.

Identification of some species can be challenging, but oaks also have some readily identified species that are probably under-recorded locally. I hope that this account will prompt more recording. The Belvoir area, Charnwood Forest and the north-west and former coalfield area, the Soar Valley and area south of Leicester to Hinckley are fairly well recorded in comparison to the rest of the two counties.

Oak trees in VC55

We have two native species of deciduous oaks. **English** or **Pedunculate Oak** (*Quercus robur*) is a very common plant in VC55 being found throughout in hedgerows, parks, open spaces, woodlands and plantations. **Sessile Oak** (*Quercus petraea*), as a native species, is almost confined to the Charnwood Forest with only scattered records across the rest of our area. It has occasionally been planted outside its natural area. As a native species, it prefers shallow acid soils being often found in association with acid-neutral or heath-grassland.

Sessile Oak can be identified in the field by the combination of long petiole, the lack of 'ears' or lobed auricles at the base of the leaf, which is either cuneate or cordate, and the sessile

acorns. Pedunculate Oak has auricles, a short petiole, and acorns on stalks.

The **Hybrid Oak** (*Quercus x rosacea*) between our two native species may be quite common. Hybrids are variable but intermediate in all the above characters; some leaves that look very like Sessile Oak have slight auricles at the leaf-base which probably indicates hybridisation. The leaves of Pedunculate Oak vary considerably in degree of lobing, length of petiole, and general leaf-shape, and can also have longer petioles. If in doubt, a check with a good hand-lens or microscope may reveal the stellate hairs on the underside of the leaf that indicate Sessile Oak.

We have three non-native species that are widely planted and naturalised in VC55. **Turkey Oak** (*Quercus cerris*) is easily identified by the long scales on the acorn-cup and whiskery stipules around the buds. It is well naturalised in Charnwood Forest sometimes at the expense of the native oaks. **Holm Oak** (*Quercus ilex*) is an evergreen oak, with leaves that are occasionally slightly spiny, commonly planted in parks, cemeteries and churchyards. It grows into a large tree and will occasionally self-set. **Red Oak** (*Quercus rubra*) is a North America species that is frequently planted and occasionally naturalised; the large leaves have pointed lobes, are matt on the under-surface and often turn red in autumn.

Lucombe or **Spanish Oak** (*Quercus x crenata* – syn. *Q. x hispanica*) is a semi-evergreen oak being a hybrid between Turkey Oak and Cork Oak (*Quercus suber*). It is occasionally planted, but is rare in VC55. Stace (2019) lists two other species which may be present in VC55 (*Q. coccinea* and *Q. canariensis*); other ornamental species may be grown in parks and tree collections.

A fastigiate form of our native Pedunculate Oak ('Fastigiata', sometimes called 'Cypress Oak') is occasionally planted, and there are also weeping or cut-leaved cultivars ('Pendula' and 'Filicifolia').

Oak species preferences

The leaves of Sessile Oak are often larger, more regular in shape, thinner and (in my experience) often appear less affected by galls, leaf-miners and other insects – but I am not aware of any systematic study of this. Preference for Pedunculate or for Sessile Oak is not usually given in sources. My own observations suggest that the moth *Heliozela sericiella* prefers Pedunculate Oak, while *Phyllonorycter lautella* may prefer Sessile Oak – but I have not found enough mines of either species to feel certain that there is a correlation or preference.

Some moths mine the leaves of Holm Oak as well as native oaks. *Acrocercops brongniardella* and *Phyllonorycter messaniella* are both occasional on this species in VC55. *Stigmella suberivora* and *Ectoedemia heringella* have only been found on Holm Oak in VC55 but the latter is now being found on other species of oak including the semi-evergreen *Q. x crenata*.

The British Leafminers website (<http://www.leafmines.co.uk>) lists several species that mine Turkey Oak, and I have recorded *Caloptilia* and *Phyllonorycter* leaf mines on this species in VC55. I have occasionally recorded the sawfly *Profenusa pygmaea* mines in Red Oak and Turkey Oak, but have only rarely found the weevil *Orchestes hortorum* mine on Holm Oak.

Most species on oak are monophagous (i.e. only mine *Quercus*) but a few are polyphagous. For example, *Phyllonorycter messaniella* mines are often found in VC55 on beech (*Fagus sylvatica*) or Sweet Chestnut (*Castanea sativa*), and can also mine other species including Hornbeam or Lime.

In the accounts below, 'Oak' refers to Pedunculate/Sessile Oak unless otherwise stated.

The Oak leaf-mining calendar

Leaf mines can be found almost all year starting in Spring with the new oak leaves. Oak leaves do not rot down very quickly and, therefore, some mines can be found in fallen leaves over winter – particularly a good way of recording the Oak *Phyllonorycter* moths.

- **April and May** – over-wintered *Coleophora flavipennella/lutipennella* cases on oak buds; *Orchestes hortorum* larvae in mines; *Dyseriocrania subpurpurella* mines.
- **June and July** – *Acrocercops brongiardella* larvae in mines, *Orchestes quercus* mines appear in early June, *Profenusa pygmaea* larvae in mines, first generation of *Stigmella* mines; *Caloptilia robustella* leaf-cones.
- **July and August** – *Tischeria ekebladella*, *Heliozela sericiella*.
- **September to November** – *Ectoedemia* and second generation of *Stigmella* mines; cocoons in *Tischeria ekebladella*; young *Coleophora* cases.
- **November and December** – *Phyllonorycter* mines can be collected from leaf litter to examine pupae. *Bucculatrix ulmella* and *Heliozela sericiella* mines still evident in dead leaves.
- **November to April** – *Ectoedemia heringella* larvae in mines on evergreen Holm Oak over winter

The list of known leaf-miners of Oaks recorded in VC55 is presented in Appendix 1 with some example distribution maps for micro-moths included in the text.

Types of mines

Photographs taken in VC55 of most of these mines can be found on the NatureSpot website <https://www.naturespot.org.uk/>

Gallery mines

Galleries are linear mines caused by the larvae feeding in a line which is often sinuous or contorted. The gallery usually gets progressively wider as the larva grows.

Classic gallery mines are produced by ***Stigmella*** moths in the Nepticulidae family. There are eight species found on native deciduous Oaks in VC55 but, apart from *Stigmella basiguttella*, they cannot be identified from the mine alone.

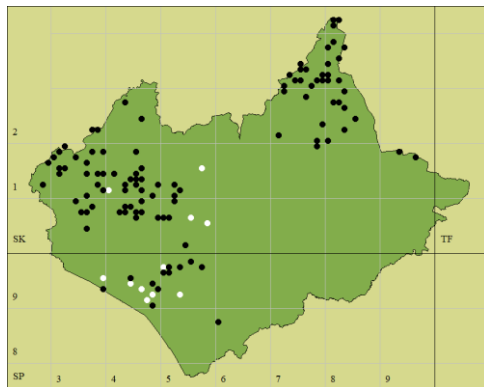


Figure 1. *Stigmella basiguttella*

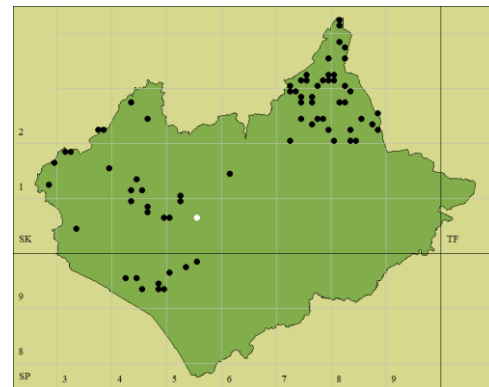


Figure 2. *Stigmella atricapitella*

Stigmella basiguttella (Figure 1, Map 1) mines have sinuous curves filled with greenish frass and seems fairly frequent in my recording patch (north-west quadrant of VC55). For the other species, careful examination of the frass pattern, larva and egg position is needed. Frass can be coiled, linear or dispersed, or a combination, depending on the stage of the larva in the mine. A shining black or opalescent egg can be seen with a hand lens on the upper or under leaf surface at the narrow start of the mine and the larval characteristics may help confirm the identification. For example, ***Stigmella atricapitella*** mines (Figure 2) start as a narrow frass line that becomes dispersed later; the yellow larva with dark prothoracic sclerites, which can usually be seen on the larva inside the mine, and the egg is usually on the underside.



Map 1. *Stigmella basiguttella*



Map 2. *Stigmella roborella*

Two other species found in VC55 are very similar. ***Stigmella ruficapitella*** larvae have pale brown heads with the egg on the upperside and frass in a similar pattern to *S atricapitella*. ***Stigmella roborella*** (Map 2) mines have more or less linear frass and the larva does not have black prothoracic sclerites. ***Stigmella samiatella*** has dispersed frass. It is often recorded on Sweet Chestnut (*Castanea sativa*) and is the only *Stigmella* species recorded mining this non-native but long-established species. On oak, mines are similar to ***Stigmella svenssoni***, which has rarely been recorded in VC55. ***Stigmella suberivora*** is only found on Holm Oak, forming a broad gradually widening gallery with a narrow frass-free margin.

Apart from *Stigmella svenssoni*, *Stigmella* mines on Oak are bivoltine, i.e. they have two generations a year, so mines can be found in summer and autumn.

Bucculatrix ulmella (Map 3) is a small moth that makes a very short hook-shaped gallery mine in its early stage (Figure 3 left), but soon vacates the mine to feed freely on the leaf surface, causing 'windows'. The ribbed white cocoon (Figure 3 right) may be found on oak leaves in summer, surrounded by a curious 'palisade' of hairs, which may help to guide the larva as it spins its cocoon.

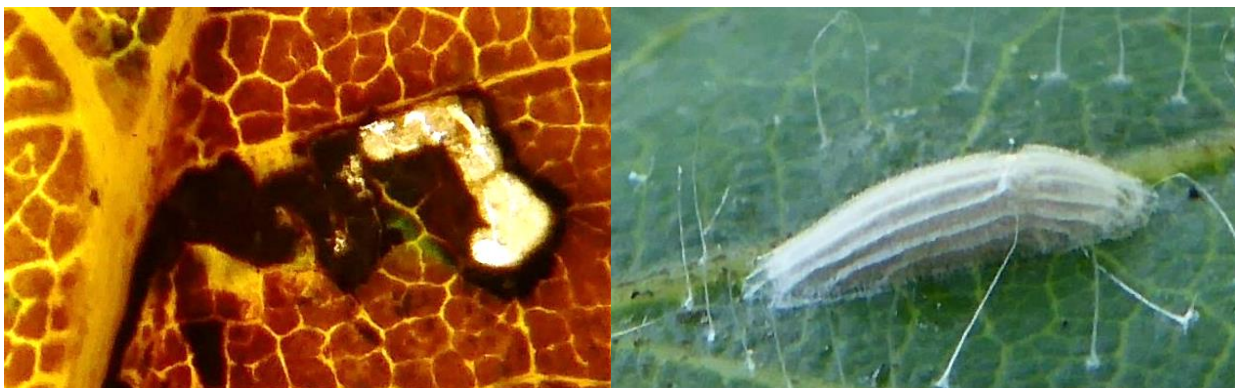
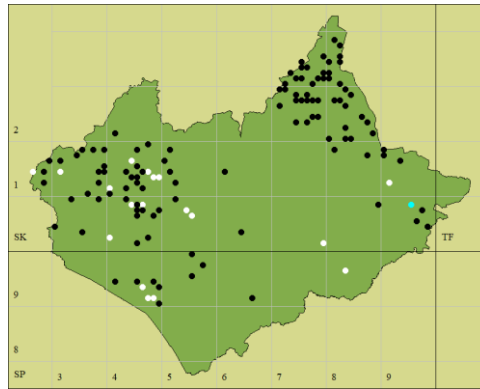


Figure 3. *Bucculatrix ulmella* mine (left) and cocoon surrounded by palisade (right)



Map 3. *Bucculatrix ulmella*

Blotch mines

Blotch mines are formed by the larvae feeding in a circular manner, in wide sweeping movements. The frass is gathered into one part of the mine or dispersed throughout.

Dyseriocrania subpurpurella is one of the earliest mines with the adult moths flying in Spring and mines appearing in young leaves in May. A narrow initial gallery is usually over-run by the succeeding blotch. As with all Eriocranidae, the frass is in spaghetti-like strings. A similar mine is made by the weevil *Orchestes pilosus*, with frass in short fragments. The adult weevil has been recorded in VC55, but not the mine.

The sawfly *Profenusa pygmaea* causes large irregular blotches which usually have a triangular start to the mine, packed with frass (Figure 4 left). The larvae are white with three prominent dark spots on the venter (Figure 4 right). They have stumpy front legs (being sawflies, there are no abdominal legs). I have occasionally found this on Turkey Oak and Red Oak where it can be very common indeed.

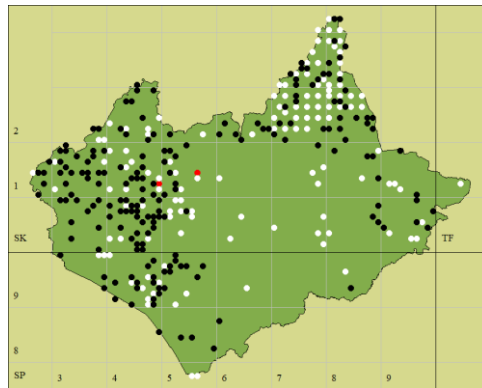


Figure 4. *Profenusa pygmaea* (left mine on Red Oak; right larva)

Tischeria ekebladella (Map 4) moth mines are frequent, creating large irregular creamy/pale brown blotches on the upper leaf surface (Figure 5 left). Frass is ejected from a slit at the edge of the mine. The pale yellow larva forms a disc-shaped cocoon in which it can be seen in a characteristic horseshoe resting position (Figure 5 right). They hibernate in fallen leaves, pupating in spring.



Figure 5. *Tischeria ekebladella* mine (left); mine & cocoon (right)



Map 4. *Tischeria ekebladella*

The polyphagous Tortricid moth ***Gypsonoma dealbana*** is featured on leafmining websites, and is often found on oak. The larva does not mine the leaf but window-feeds, causing a blotch near the midrib, retreating into a frass covered silken tube on the underside of the leaf (Figure 6).



Figure 6 *Gypsonoma dealbana* feeding signs

Combined gallery/blotch mines

A broad gallery is made by the weevil ***Orchestes quercus***. The mine starts in the midrib leaving a brown oviposition scar (Figure 7 left); then the larva (Figure 7 right) starts mining the leaf tissue. The gallery gradually widens as it heads towards the leaf-tip before widening abruptly into a blotch on the leaf margin.

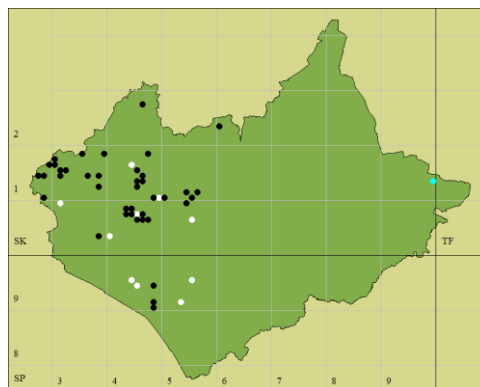


Figure 7. *Orchestes quercus* mine (left) and larva (right)

Early instars of the Gracillariid moth ***Acrocercops brongniardella*** (Figure 8, Map 5) make upper-surface silvery epidermal galleries, which coalesce into a large blotch which can cover most of the upper leaf. The larvae live communally in the blotch, and in common with many moth caterpillars, the last instars change colour to pink or red before they pupate.



Figure 8. *Acrocercops brongniardella* mine (left) and larva (right)



Map 5. *Acrocercops brongniardella*

Small blotches are made by ***Ectoedemia*** moths in the Nepticulidae family. Careful examination will show that the blotch is preceded by a very thin gallery along a vein or midrib, caused by the early instar's feeding.

Ectoedemia subbimaculella (Map 6) larvae cut a slit towards the base of the leaf, allowing some frass to fall out. The larva has a darkish head, whereas ***Ectoedemia albifasciella*** larvae have light-brown heads and the blotch is usually square-ish with no slit (Figure 9). A third species on native deciduous oaks is ***Ectoedemia heringi***, and is difficult to tell from *E. albifasciella* (Figure 9); the larval head-colour is described as dark or reddish-brown

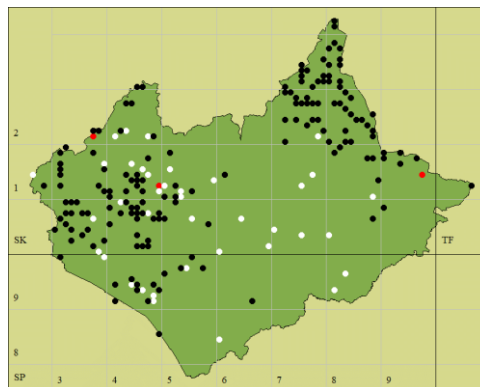
(Edmunds, 2019).



Figure 9. *Ectoedemia albifasciella*



Figure 10. *Ectoedemia heringella* on Holm Oak



Map 6. *Ectoedemia subbimaculella*

E subbimaculella and *E heringi* cause '**green islands**' in fallen leaves (Figure 11). The purpose of these is clear – to prolong the larval feeding on green nutritious tissue – but the exact mechanism is uncertain. Research shows that the green island has a high concentration of cytokinins, which are plant growth substances that promote cell division (Giron *et al*, 2007). The cytokinins may originate from the larvae or may be produced by the plant in response to a stimulus from the larva (Giron *et al*, 2007).



Figure.11. *Ectodemia subbimaculella* 'green islands'

Ectoedemia heringella is found on Holm Oak and some other non-native oaks, making a

frass-filled blotch preceded by thin gallery (Figure 10). It was found in the UK in 2002 in the Greater London area but is spreading northwards very quickly. The first record in VC55 was in 2012. It can now be very numerous indeed and the defoliation and loss of green leaf tissue must affect the health of the tree and, indeed, is threatening the survival of some trees in the UK. Tenanted mines can be found through the winter months (Edmunds, 2023).

Caloptilia alchimiella and ***Caloptilia robustella*** (moths in the Gracillariidae family) start life in a small inconspicuous gallery leading to a small blotch or tentiform mine. The larva soon vacates this and lives inside a folded leaf edge or 'leaf cone' formed by a double down-fold on a leaf tip or edge (Figure 12). Cocoons are later formed under a turned down leaf, in which the larva pupates.



Figure 12. *Caloptilia* leaf-cone on oak in late June

Caloptilia larvae and mines lack distinguishing characteristics so that the two species found on oak cannot be separated. Early mines and leaf-cones from May to July are likely to be *C. robustella* as this species is bivoltine, i.e. has a Summer and an Autumn generation, unlike *C. alchimiella* which is univoltine with one autumn generation.

'Cut-out' mines

Two species make excisions at the end of the mine and seal the edges to make a small sandwich which drops to the ground and in which the larva pupates.



Figure 13. *Orchestes hortorum*

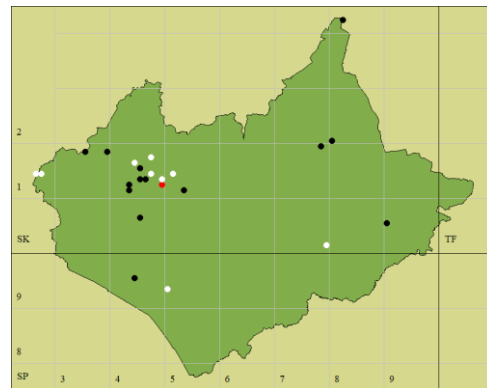
Orchestes hortorum (syn. *O. signifer*) (Figure 13) is a weevil that makes a broad gallery, usually along the leaf margin, ending in a circular excision in the leaf-blade. Mines are occasionally

on Holm Oak and other oak species. They are recorded on Hazel (*Corylus avellana*) in the UK but mines have not (to my knowledge) been found on Hazel in VC55.

Heliozela sericiella (Figure 14, Map 7) moth mines start in the twig then move into the leaf petiole. The larva then cuts an oval excision in the lower part of oak leaf. I have only ever found this on Pedunculate Oak, which may be related to the short petiole on this species. *Heliozela* are unusual in that the early larva feeding causes a gall in the leaf petiole or midrib; one of the very few examples of gall-causing moths. It is the later instars that start to feed on leaf-tissue and cause the mine.



Figure 14. *Heliozela sericiella*



Map 7. *Heliozela sericella*

Holes in oak leaves that are very similar to *Heliozela sericiella* can be caused by other insects or physical damage. The presence of the petiole gall and the connection between excision and midrib/petiole should be confirmed. The excision will also have a papery brown rim of leaf tissue. There are few VC55 records for *Heliozela sericiella*, being rarely recorded as the adult, but it may not be particularly scarce. It is hard to find but, after diligent searching, I have found it in several places including young planted trees. It can also be found in winter in fallen or dead leaves retained on young saplings.

Tentiform mines

Tentiform mines are caused by ***Phyllonorycter*** moths in the family Gracillariidae. The contraction of one surface of the leaf causes a blister to form in which the larva feeds and pupates, often within a protective cocoon. *Phyllonorycter* larvae start life as sap-drinkers, creating small and insignificant epidermal gallery and blotch mines. After three instars the larvae switches to feeding on the leaf tissue. This involves fundamental morphological changes, especially of the mouthparts. The larvae also begin to make silk, which causes the leaf to pucker into a cavity in which the tissue-feeding larvae live.

Phyllonorycter harrisella (Map 8), ***Phyllonorycter messaniella*** and ***Phyllonorycter quercifoliella*** (Figure 16, Map 9) make very similar mines, which have a single crease on the under epidermis when mature.

Phyllonorycter lautella causes large mines, strongly puckered while ***Phyllonorycter heegeriella*** has small mines, usually in a leaf lobe. ***Phyllonorycter messaniella*** can also be found on Beech (*Fagus sylvatica*), Sweet Chestnut, and on Holm Oak.

Species are difficult to identify from the mines alone. Most have two generations a year, and the summer and autumn generation mines may have different characteristics which make identification more difficult. For more details on the mine differences, the leafmine websites should be referred to.

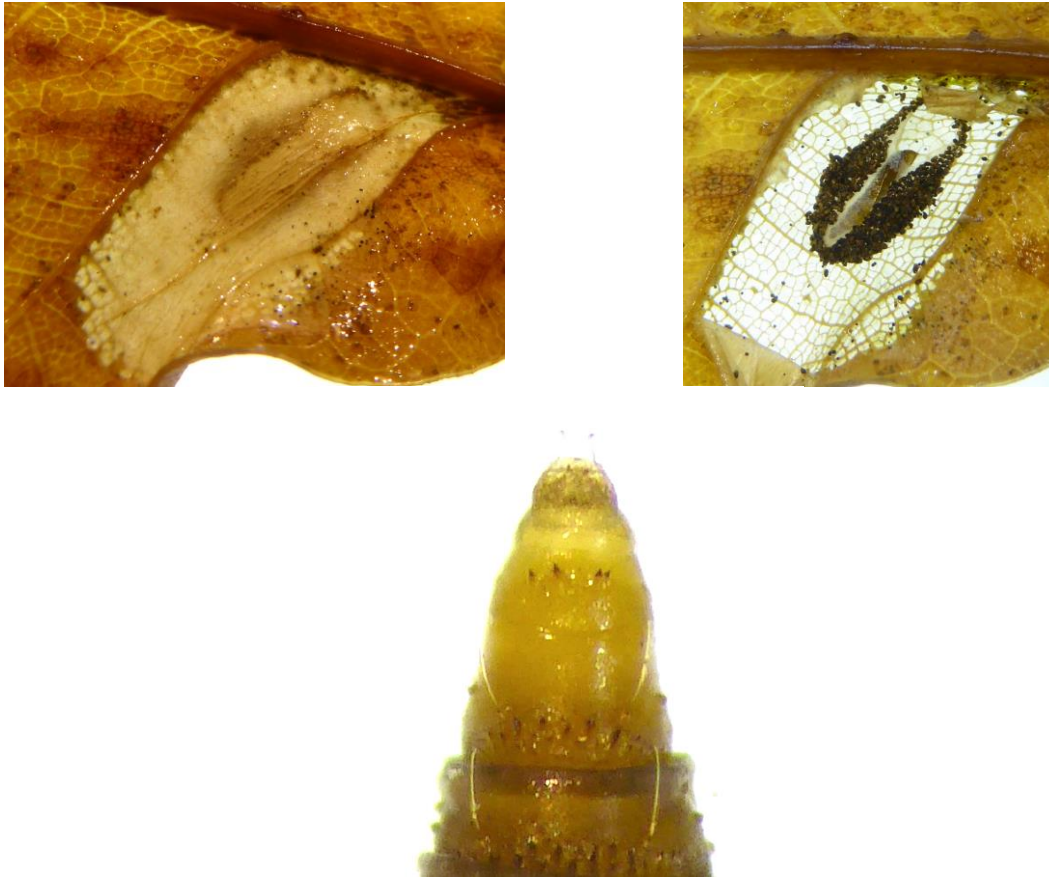
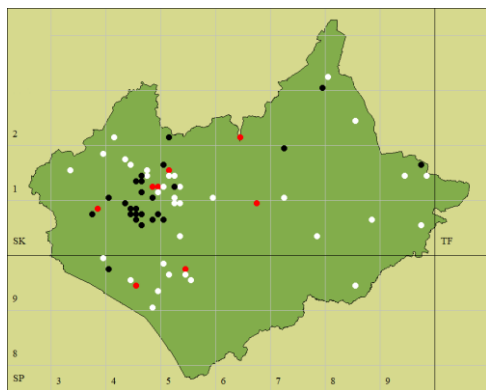
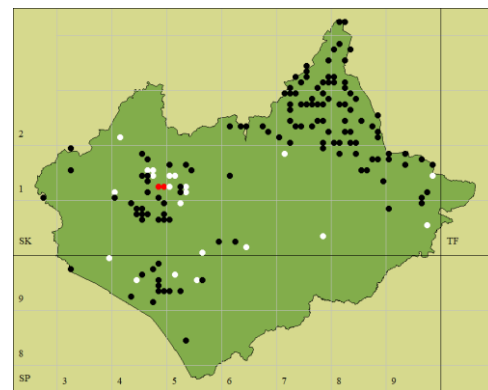


Figure 16. *Phyllonorycter quercifoliella* pupa in cocoon (top left), mine surrounded by U-shaped mass of frass (autumn generation, top right). Identity was confirmed by examination of the pupal cremaster (bottom).



Map 8. *Phyllonorycter harrisella*



Map 9. *Phyllonorycter quercifoliella*

Adult oak-mining *Phyllonorycter* can be identified with care from their wing markings, so it is worth trying to rear them. The number of aborted and parasitised mines can be very high, in my experience, so this is liable to be a frustrating experience. Alternatively, the species can also be identified by examining the pupae, especially the arrangement of hooks and spines on the cremaster at the end of the pupa (Figures 17-19) which when coupled with mine characteristics is diagnostic.

Pupae can be found inside mines in fallen leaves from November through December. The mines can be abundant but I have found that many mines either have dead or parasitised larvae or are empty. Oak *Phyllonorycter* seem particularly prone to parasitoids. (A parasitoid is an organism that causes the death of the hosts unlike a parasite which does not kill it.) The small black pupae of chalcid wasps in the Eulophidae family are particularly

common. Parasitoids numbers must fluctuate – in my part of the Vice-County (the north-west) in November and December 2022, I found that nearly 90% of all tenanted mines were abortive or parasitized; many more were empty. The percentage of viable mines was closer to 25% in the previous year.



Figure 17. *P. heegeriella*



Phyllonorycter cremasters

Figure 18. *P. lautella*



Figure 19. *P. harrisella*

Coleophora mines

Coleophora are small moths that make cases to protect their larvae. Two very similar species on oak are ***Coleophora flavipennella*** and ***Coleophora lutipennella***. The cases are light brown, tubular and made of silk and are very difficult to tell apart. The larvae start mining leaves in autumn, overwintering on oak twigs before resuming feeding in Spring on catkins. *C. flavipennella* creates its early case in autumn out of an excised leaf fragment and these cases and feeding pattern indicate the species. The case is later enlarged with silk but the leaf fragment remains near the anal end (Figure 20). The fragment is hard to find on older cases but, if found, it should indicate *C. flavipennella*. *C. lutipennella* constructs its case entirely of silk – but unfortunately, absence of the tell-tale leaf fragment in older cases does not always indicate *C. lutipennella* because it may have become lost or covered in silk. The two species are therefore usually recorded as a species aggregate (Edmunds, 2020).



Figure 20. Case of *C. flavipennella*



Figure 21. *Coleophora flavipennella/lutipennella* summer mines

Feeding of the mature larvae typically creates a pattern of small blotches, each with a tiny

circular hole in the middle (Figure 21). The larva feeds through the hole in the leaf surface, making short forays from the case into the leaf to feed before retreating into the case. The larva moves around in its case and makes new mines such that the blotches are often in clusters; a short search near the little blotch mines may reveal the cased larva itself.

Coleophora ibipennella and ***Coleophora kuehnella*** form 'pistol cases', with a curved end. *C. ibipennella* larvae graze on the leaf under-surface, causing a window-feeding pattern rather than the more typical blotches. *C. kuehnella* makes groups of tiny holes unlike the small blotch mines of other *Coleophora* species. Both species also have a mantle or 'pallium' of greyish or blackish silk that hangs down from the rear end. This reaches halfway down the case in *C. ibipennella* (Figure 22) but is complete in *C. kuehnella*. The cases are hard to find, and may be overlooked. The first VC55 record for the latter was found by Graham Finch in 2022 at Ketton.



Figure 22. *Coleophora ibipennella* case

Acknowledgements

Thanks to Graham Calow, Graham Finch, Pete Leonard and Mark Skevington for help with identification, distribution patterns and knowledge about leaf-miners in VC55. Access to VC55 records and mapping of data was courtesy of Mark Skevington on behalf of the VC55 Lepidoptera Recording Group.

Special thanks are due to Adrian Russell [1956 - 2022], Vice-County Recorder for Lepidoptera until his death in April 2022. He encouraged my interest in moths and leaf-miners with unfailing generosity, kindness and tact. The loss to his friends, family, colleagues and the recording community of VC55 is immense.

All photos are by the author.

Sources of information

Websites

<http://www.leafmines.co.uk>
<https://bladmineerders.nl>
<http://www.ukflymines.co.uk>
<https://www.naturespot.org.uk>

References

- Edmunds, R. (2019). Distinguishing between the commoner Oak *Ectoedemia* species. *British Leafminers Newsletter*, **36**. <http://www.leafmines.co.uk/pdfs/newsletter%2036.doc.pdf>.
- Edmunds, R. (2020). Species to look for in April: Oak *Coleophora* species at an early stage. *British Leafminers Newsletter*, **37**. <http://www.leafmines.co.uk/pdfs/newsletter%2037.pdf>.
- Edmunds, R. (2023). New host plant: *Ectoedemia heringella*. *British Leafminers Newsletter*, **42**. <http://www.leafmines.co.uk/pdfs/newsletter%2042.pdf>.
- Finch, G.L. (2021). *An Annotated Checklist to the Beetles of VC55* (Revised Jan 2021).
- Giron, D. *et al* (2007). Cytokinin-mediated leaf manipulation by a leafminer caterpillar. *Biological Letters*, **3**, 340–343.
- Heath, J. (ed.) (1976). *The Moths and Butterflies of Great Britain and Ireland*, **1**. Harley.
- Heath, J. & Maitland Emmet, A. (eds.) (1985). *The Moths and Butterflies of Great Britain and Ireland* **2**. Harley.
- Langmaid, J. R. *et al* (2018). *A Field Guide to the Smaller Moth of Great Britain and Ireland* British Entomological & Natural History Society. 3rd edition.
- Maitland Emmet, A (ed.) (1996). *The Moths and Butterflies of Great Britain and Ireland*, **3**. Harley.
- Smart, B. (2018). *Micro-moth Field Tips: a guide to finding the early stages in Lancashire and Cheshire*. Lancashire & Cheshire Fauna Society.
- Smart, B. (2021). *Micro-moth Field Tips: A guide to finding the early stages in Lancashire and Cheshire*, **2**. Lancashire & Cheshire Fauna Society.
- Stace, C. (2019). *New Flora of the British Isles*. C&M Floristics. 4th edition.
- VC55 Lepidoptera Recording Group. (2018). *Micromoth Verification Guidelines - VC55: Leicestershire & Rutland*.

Appendix 1: Summary of Oak leaf-miners in VC55 (Leicestershire & Rutland)

The table below lists the Oak leaf-miners recorded in VC55 up to the end of 2022, with thanks to Mark Skevington for information on distribution, status and numbers of records on the Vice-County Lepidoptera database. It is worth noting that status indications for many species of micro-moths are influenced by the relative lack of recorders, especially pre-2000. Recording leaf-miners has increased in recent years.

Family/species	Mine details	Comments
Coleoptera		
<i>Orchestes quercus</i>	Gallery/blotch leaf-edge	Occasional; may be common?
<i>Orchestes hortorum (signifer)</i>	Gallery leading to circular excision	Occasional?. Also on Holm Oak in VC55, and may be on Hazel
Hymenoptera		
<i>Profenusa pygmaea</i>	Blotch mine	Common – also Turkey Oak and Red Oak in VC55; may be on other species
Lepidoptera		
<i>Acrocercops brongniardella</i>	Gallery, large silvery blotch, communal	Frequent. Also on Holm Oak
<i>Bucculatrix ulmella</i>	Small hook-shaped gallery	Frequent
<i>Caloptilia alchimiella</i>	Small blotch; later leaf-cones	Few confirmed records
<i>Caloptilia robustella</i>	Small blotch; later leaf-cones	Frequent. Based on gen.dets. of adults, probably commoner than <i>C alchimiella</i>
<i>Coleophora flavipennella</i>	Small blotch, central hole	Few records, under-recorded. Tubular case of silk, v similar to <i>C lutipennella</i> ; often recorded as aggregate
<i>Coleophora ibipennella</i>	Small blotch, central hole	Scarce, few records. Pistol case + mantle (pallium) hallway down case
<i>Coleophora kuehnella</i>	Small blotch, central hole	Rare, first VC55 Ketton 2022 (G Finch). Pistol-case + mantle covering entire case
<i>Coleophora lutipennella</i>	Small blotch, central hole	Few records, under-recorded. Tubular case of silk, v similar to <i>C flavipennella</i> ; often recorded as aggregate
<i>Dyseriocrania subpurpurella</i>	Blotch at margin, frass in strings	Common
<i>Ectoedemia albifasciella</i>	Small blotch, narrow preceding gallery	Common
<i>Ectoedemia heringella</i>	Small blotch, narrow preceding gallery	Frequent. On Holm Oak and potentially other non-native European species.
<i>Ectoedemia heringi</i>	Small blotch, green island, narrow preceding gallery	Scarce. Possibly under-recorded because of similarity with <i>E albifasciella</i>
<i>Ectoedemia subbimaculella</i>	Small blotch near midrib, in green island, with slit	Frequent; may also be on Sweet Chestnut
<i>Heliozela sericiella</i>	Petiole gall and oval excision in base of leaf	Scarce. Probably under-recorded; may only on Pedunculate Oak in VC55
<i>Phyllonorycter harrisella</i>	Tentiform	Common. V similar mine to <i>P quercifoliella</i> and <i>messaniella</i> ; different cremaster
<i>Phyllonorycter heegeriella</i>	Tentiform; small, often in leaf lobe	Occasional. Cremaster similar to <i>P lautella</i> , but mine v different
<i>Phyllonorycter lautella</i>	Tentiform; large, very contracted	Scarce. prefers saplings and poss Sessile Oak. Cremaster similar to <i>P heegeriella</i>
<i>Phyllonorycter messaniella</i>	Tentiform	Frequent; also on Holm Oak. Polyphagous, inc. Beech and Sweet Chestnut
<i>Phyllonorycter quercifoliella</i>	Tentiform	Common. V similar mine to <i>P harrisella</i> and <i>messaniella</i> ; different cremaster
<i>Stigmella atricapitella</i>	Gallery; frass in line, larva dark head	Frequent
<i>Stigmella basiguttella</i>	Gallery sinuous filled by greenish frass	Common
<i>Stigmella roborella</i>	Gallery, frass in line, larva without dark head	Common
<i>Stigmella ruficapitella</i>	Gallery, frass, egg.	Scarce, probably under-recorded.
<i>Stigmella samiatella</i>	Gallery, dispersed frass	Scarce on oak, frequent on Sweet Chestnut
<i>Stigmella suberivora</i>	Gallery, broad, frass-filled apart from narrow margin	Scarce, only on Holm Oak
<i>Stigmella svenssoni</i>	Gallery, dispersed frass	Rare. 2 records, 1975 & 1993
<i>Tischeria ekebladella</i>	Blotch, cocoon in mine	Common, May also be on Sweet Chestnut

The following species that are known to be leaf-miners in the UK have not been recorded as leaf-miners in VC55. Some are present in neighbouring counties and may be worth searching for.

Coleoptera

Orchestes pilosus and *Orchestes fagi* have been recorded in VC55, but not as Oak leafminers. *Orchestes fagi* usually mines Beech but is listed as mining oak on 'UKflymines' website.

Lepidoptera

Coleophora currucipennella - polyphagous on various species

Ectoedemia heckfordi - very unlikely; only in a small area of Devon

Ectoedemia quinquella - records in adjacent counties

Phyllonorycter distentella - no records nearby

Phyllonorycter kuhlweiniella - one record in Warwickshire, recent records in Norfolk

Phyllonorycter muelleriella - Northamptonshire very close to border with VC55; said to be in ancient woodlands

Phyllonorycter roboris - Warwickshire very close to VC55 boundary)

Povolnya (Caloptilia) leucapennella – unlikely being rare; UK north and west

Tischeria dodonaea - records in Warwickshire

Zimmermannia atrifrontella/longicaudella - bark-miners; unlikely but must be under-recorded

Pammene splendidulana - referred to, but not featured, on the 'British Leafminers' website; there is a description on 'UKflymines' website but with a question-mark; it may not be a leaf-miner. It has been recorded in VC55 [1990].

Coleophora anatipennella and *Incurvaria masculella* – these polyphagous species have been recorded mining oak in Europe but not yet in UK. Both species occur in VC55.

Leicestershire & Rutland Entomological Society Occasional Publications Series (LESOPS)
covering

(a) detailed studies of insects and other invertebrates carried out by Society members and

(b) matters of historical entomological interest to VC55 Leicestershire & Rutland

Copyright of LESOPS publications remains with the author(s)

Editor: Ray Morris (ray@cactusbob.net)