THE IDENTIFICATION OF LEAF-MINING LEPIDOPTERA

INTRODUCTION

The aim of this booklet is to enable the user to identify most of the leaf-mining lepidoptera that are found in Britain. It is not possible to cover all the leaf-mining species in such a small booklet, however over 90% of the true mining species should be identifiable with its use.

The guide has been kept as simple as possible. Along with the usual keys I have added a chart on hawthorn to assist with the identification of the Nepticulidae. Much of the information contained herein is gleaned from volumes 1 and 2 of "The Moths and Butterflies of Great Britain and Ireland" with some addition notes supplied by A. Maitland Emmet along with the occasional modifications, additions and updates as new species are discovered in Britain. I have also included within the birch feeding miners a key written by David Manning on the Eriocraniidae.

A word of warning before you start to look at mines, some flies, beetles, wasps and sawflies also produce larvae that mine leaves, so it is possible that these could be mistaken for lepidopterous mines. A good guide is that the larvae of the Nepticulidae usually leave their frass, droppings, in a continuous line and the larvae of the Gracillariidae usually pile their frass in a particular place inside the mine; there are, of course, a few exceptions to this. Generally flies etcetera leave their frass in irregular patches and usually there is much less frass in the mines of flies compared to those produced by lepidoptera. A further guide is to look at the list of foodplants which follows, if the plant you have found a mine in is not in this list it is quite likely that it will not be a lepidopteran mine.

Once you have found a mine the next stage is to decide which family it belongs to. The Nepticulidae (**Stigmellas** and **Ectoedemias**) are the largest group of true miners, making a tunnel in the leaf in which all the parenchyma is consumed leaving behind the larva a trail of frass. The mines of the Stigmellas usually mine tunnel fashion away from the egg, sometimes leading to a blotch or false blotch. The Ectoedemias often start with an irregular mine in close proximity to the egg; the mine then becomes a tunnel, which often leads to a blotch mine. Tenanted Ectoedemia mines can be found in fallen leaves as late as November.

The Gracillariidae (**Caloptilias**, **Parornix** and **Phyllonorycters**) either fold over a leaf edge, make a 'blister' on the surface of the leaf or consume the parenchyma making a blotch. All the Gracillariidae feed on sap until the third instar and are virtually impossible to identify at this early stage. The Parornix finish their feeding under a folded leaf edge with the exception of P. anglicella, which makes a cone. The Phyllonorycters form a blotch on the surface of the leaf and all species pupate inside the blotch. It is possible to identify several of the Phyllonorycters by microscopic examination of the pupal case.

The **Tischeriidae** make a blotch mine on top of the leaf, which is lined with silk. The way the silk is placed in the mine depends on the species. It is used by the larva as an aid to facilitate movement within the mine. They also make a slit in the upper epidermis through which they eject their frass.

The **Heliozelidae** and the **Antispila** feed as miners and then cut an oval hole from the blade of the leaf, which is used to construct a cocoon.

The **Bucculatrix** start feeding as leaf-miners and then most species leave the mine as they develop to feed externally. While feeding externally the larva eats out small windows in the leaf, generally from below, leaving the upper epidermis intact.

The **Eriocraniidae** mine in the spring from May to July eating out large areas of the parenchyma of their host leaf leaving long strings of frass in the mine making them easily distinguishable from the mines of other species.

I have included the **Momphidae** that feed on Enchanter's Nightshade and Rock-rose, but have not found it possible to write a simple key for those species that feed on Willowherbs, so I refer the reader to the literature for those species.

A few members of the following families are also included, **Incurvariidae**, **Lyonetiidae** and **Yponomeutidae**. However, many members of these families are not miners. There are a few other species of lepidoptera that do mine leaves that are not covered in this booklet. Many of these only mine for the first instar before they start to feed externally, so most of them should present no problem as they are unlikely to be confused with the true miners.

There is a very common moth whose mines can be confused with those of the Nepticulidae by the inexperienced. This is Lyonetia clerkella, which mines many different plants. The commonest being members of the Rosaceae, but it can also be found on birch, hawthorn, apple and laurel. However, the mine can be readily distinguished from that of a Nepticulidae by the following. Firstly the egg is laid inside the leaf. The female pierces the lower epidermis before laying, whereas the female Nepticulidae lay their eggs on the surface of the leaf. Secondly, the mine is very long, often spreading over most of the leaf in any direction, whereas the Nepticulidae have relatively short mines, which often follow a set pattern.

The numbers which follow the description in the key that are in square brackets [ ] refer to the months when the mines should be occupied by larva. (e.g. [7+9-10] refers to July and September to October, showing that this species is bivoltine). There may be some variation in this depending on the season and which part of Britain the mines are found. The Bradley number is placed in ( ) brackets and are followed by the number in Agassiz *et al*. The nomenclature follows Agassiz *et al*. with updates as published in the entomological journals.

There have been several changes to the nomenclature in recent years. Some species have been synonymised with other species and others have been deleted because of misidentification, so be aware that if you compare the following with previous lists there may be discrepancies.

Barry Dickerson
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FOODPLANTS

Agrimony	Cotoneaster	Loosestrife	Rowan
Alder	Cowberry	Lungwort	St. Johns Wort
Apple	Dogwood	Maple	Salad Burnet
Ash	Dropwort	Meadowsweet	Sallows
Aspen	Elm	Medick	Sea Aster
Azalea	Enchanters Nightshade	Mountain Avens	Selfheal
Beech	Fat Hen	Mugwort	Small Scabious
Bindweed	Goosefoot	Norway Maple	Snowberry
Bilberry	Gorse (stems)	Oak	Sorrel
Birds-foot Trefoil	Guelder-rose	Orache	Strawberry
Birch	Hairy Greenweed	Ox-eye Daisy	Sweet Chestnut
Blackthorn	Hawthorn	Pear	Sycamore
Bog Myrtle	Hazel	Pine	Tormentil
Brambles	Honeysuckle	Plum	Viper's Bugloss
Broom	Hop	Poplars	Water Avens
Buckthorn	Hornbeam	Privet	Wayfaring-tree
Bush Vetch	Horse-chestnut	Pyracantha	Whitebeam
Cherry	Laburnum	Rock-rose	Wild Service Tree
Clover	Laurel	Quince	Willows
Cinquefoils	Lilac	Restharrow	Wood Avens
Comfrey	Lime	Ribwort Plantain	Yarrow
Cornelian Cherry	London Plane	Rose	

AGRIMONY

Nepticulidae

Mine gallery throughout frass with clear margins [5-6+7-8+10-3] ……
……Stigmella aurella (50) 4.045

Mine gallery leading to blotch, which may be occupied by several larvae, pupa in mine [8-11] ……..…….Ectoedemia agrimoniae (26) 4.093

Mine gallery leading to blotch, pupa external [7+9-11] ..……....
……..Stigmella aeneofasciella (55) 4.049

ALDER

Nepticulidae

Mine in buds or twig bark [?-5] ……..……Bohemannia quadrimaculella (19) 4.072

Mine a gallery in the leaves with linear frass filling only one third of mine [7+9-10] ……
……..….. Stigmella alnetella (115) 4.009

Mine a gallery in the leaves frass dispersed or linear, filling two thirds of the mine; larvae with dark prothoracic plate [7+9-10] …….……...Stigmella glutinosae (114) 4.008

N.B. Extreme forms of each mine should be easy to determine, but mines of an intermediate form could belong to either species. Tenanted mines should present no problem, but the dark prothoracic plate is not always easy to see.

Heliozelidae

Mine in midrib, inconspicuous, then into a lateral vein and across leaf back into midrib finally cutting out a hole in leaf blade approximately 5 x 3mm [6-9] ……
……...……..…….Heliozela resplendella (156) 6.004

Bucculatricidae

Mine long, narrow almost filled with black linear frass beside a vein, later the larvae leaves the mine from upperside and eats out windows from the underside of the leaf [8-9] ……...……..…….……..Bucculatrix cidarella (272) 14.008
N.B. early mine can be confused with that of a Nepticulidae, but egg matt black and rough in appearance.

Gracillariidae

1 Mine on upperside of leaf…….……..……2
Mine on underside of leaf…….……..3

2 Mine sub oval contracting into a tube, about 10mm long, upper cuticle silvery, flecked with brown frass, later the larva feeds in a rolled leaf [6-7] ……...
……..…Caloptilia elongella (282) 15.004
Mine sub circular with strong central crease, but remaining flat, cuticle pale green, sometimes discoloured brown, not flecked with brown frass [7+9-10] ……..….
……..……..……. Phyllonorycter stettinensis (357) 15.079
(N.B. mines that do not have cease are hymenopterous)

3 Mine on leaf margin about 10mm long with brownish lower cuticle. Larvae feeding later in folded leaf-edge [7-8] ……..……..….. Caloptilia falconipennella (289) 15.011
Mine usually away from leaf-margin and more than 10mm long; lower cuticle green; larvae mine throughout ……..……..…….4

4 Mine very large, extending from midrib almost to leaf margin; larva grey; pupa in a cocoon without frass in centre of mine [9-10]…Phyllonorycter froelichiella (358) 15.080
Mine smaller, not exceeding 20mm in length; larvae whitish……..……..5

5 Mine lower epidermis with central crease, upper epidermis mottled, pupae in a cocoon edged with frass, larva with pale greenish tinge [7+9-10]…….…
……Phyllonorycter rajella (345) 15.067
Pupae in a cocoon not edged with frass…….…….6

6 Always on Grey Alder; pupa usually in middle of mine [7+9-10] ……..
…….……..Phyllonorycter strigulaella (344) 15.066

Usually on other Alder species; mine with several longitudinal creases, pupa usually at one end of mine, larva with pale yellowish tinge [9-10]……..
……Phyllonorycter kleemannella (360) 15.082

ALDER BUCKTHORN

Bucculatricidae

Mine starts as a tightly wound spiral staining leaf blackish violet; then the mine straightens with no staining; after leaving mine larva eats out windows from below [8-9] ……..……..……..…..Bucculatrix frangulella (270) 14.006

APPLE

Nepticulidae

1 Mine terminating in a blotch ……..……..……..……2
Mine forming a gallery throughout, though sometimes ending in a false blotch …….….4

2 Blotch small, generally in an angle of veins; larva yellow [6-7+10-11] ……
…….……Stigmella incognitella (78) 4.053
Blotch larger, generally on leaf margin ……..……3

3 Blotch usually aborbing earlier gallery; frass black and linear; larva yellow feeding in June and July, exit hole on underside [6-7] ……..Bohemannia pulverosella (40) 4.071
Gallery usually along leaf-margin; frass brown, dispersed; larva greenish white with dark head and ventral spots (mines venter upwards); feeding late August to early October; exit hole on upperside [8-10] ……..…...Ectoedemia atricollis (29) 4.095

4 Frass, except at beginning of mine, dispersed; larva green feeding in September and October [9-10] .……...…….Stigmella oxyacanthella (100) 4.026
Frass linear throughout mine ……..……..5

5 Early mine more contorted; later gallery often with hairpin bends resulting in false blotches; larva green and often gregarious. Not recorded since the early 1900s [8-10]…..
…….....Stigmella desperatella (105) 4.029
Early mine less contorted; gallery widening considerably, but seldom forming a false blotch larva yellow and not gregarious [6-7+9-10]…….....Stigmella malella (97) 4.013

Lyonetiidae

Mine a fine gallery with reddish frass leading to a large blotch. The blotch may be separated from the mine, occasionally on a different leaf. The frass maybe dispersed in the mine or ejected through a hole in the lower epidermis where it may form chains if it becomes trapped in silk. [7-9] ……..……..…..…. Lyonetia prunifoliella (262) 21.002
Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf. [5+7+9-10] ..……..…...…..… Lyonetia clerkella (263) 21.001

Bucculatricidae

Mine short contorted, linear black, close to a major vein. Later the larva eats out windows from upperside [7-8]……..…..….Bucculatrix bechsteinella (275) 14.012

Gracillariidae

1 Mine on upperside of leaf……..……..…2
Mine on underside of leaf……..……..3

2 Mine usually between veins, about 10mm diameter, without central differently coloured patch; larva later feeds in folded leaf edge [7-8] ….…. Callisto denticulella (310) 15.022
Mine usually over a vein, about 20mm in diameter, with centrally differently coloured patch, larva mines throughout [7+9-10]…...….Phyllonorycter corylifoliella (332) 15.052
Mine over mid-rib, silvery [7+10-4]…….....Phyllonorycter leucographella (332a) 15.053

3 Mine with lower epidermis silvery white [7-8] ……..…Callisto denticulella (310) 15.022
Mine with lower epidermis green or brown……4

4 Mine subrectangular, both upper and lower epidermis brown; larva feeds later in a tight pleat resembling a mine in centre of leaf or in a folded leaf-edge [7+8-9] ..…….
……..……..……Parornix scoticella (305) 15.030
Mine with lower epidermis usually with several folds [6-7+9-10] ……..….
……..…..…..……Phyllonorycter hostis (327) 15.047
……..……...…….or Phyllonorycter blancardella (326) 15.046

N.B. It is impossible to distinguish between the mines of P. hostis and P. blancardella. The adults must be reared and preferably dissected to be certain of their identity.

Gelechiidae

Mine short near midrib, brown, irregular with scalloped edges, very little frass in mine, autumn only, larva feeds externally after hibernation [8-10] ……....
……..Recurvaria nanella (757) 35.156

ASH

Gracillariidae

Mine narrow, larval spinning causes leaf to fold downwards; after leaving mine larvae construct a cone by rolling leaf tip downwards; two cones are made; upper epidermis silvery [7-9] ……...…….... Caloptilia cuculipennella (280) 15.002
Mine narrow, often several parallel galleries which merge to form a large blotch; after leaving mine larvae construct a cone by rolling leaf tip downwards feeding gregariously; two cones are made; upper epidermis yellow or brown [6+8-9]…….
……..…..……Caloptilia syringella (293) 15.014

ASPEN & POPLARS

Nepticulidae

Mine wholly in leaf on Black and Lombardy Poplar [6-7+9-10]……..
……...……..Stigmella trimaculella (73) 4.039
On Aspen [8-10] ..…….. …….Stigmella assimilella (74) 4.040
Mine starts in petiole & finishes in leaf
On Aspen [7-11] ..……...…….…… Ectoedemia argyropeza (23) 4.085
On Grey Poplar [7-10] ……..…..…….Ectoedemia turbidella (24) 4.084

On Black Poplar or Lombardy Poplar [7-11] ….…Ectoedemia hannoverella (24a) 4.083

Gracillariidae

1 Mine an epidermal gallery, larva feeds later in a cone or blotch.……...2
Mine an epidermal gallery throughout, long and sinuous ……..……4

2 Epidermal gallery long, sometimes extending from mid-rib to leaf-margin; tentiform mine small about 10mm long; larva feeds later in a cone or fold on the leaf margin [7-9] ……..……Caloptilia stigmatella (288) 15.010
Epidermal gallery short, usually obscured by later blotch; tentiform mine larger, about 13mm long ……..…….3

3 On Aspen [6+8-9] ..…….……Phyllonorycter sagitella (366) 15.088
On White Poplar, Grey Poplar and occasionally other Poplar species [7-8+9-10] ..……..
……..…… Phyllonorycter comparella (365) 15.087

4 On Black Poplar or Lombardy Poplar, mine epidermal on the side the egg was laid. Difficult to see, looks as though a snail has crawled over leaf. No visible frass [6+8-9] ..……..…….Phyllocnistis unipunctella (368) 15.092
On White Poplar or Grey Poplar, snail trail like mine with dark central frass trail, preferring young plants and suckers [6-7+ 8-9] .……Phyllocnistis xenia (369) 15.093

AZALEA

Gracillariidae

Feeding starts in an irregular gallery which develops into a blotch, after leaving the mine the larva makes two successive cones rolling the tip of a leaf downwards [6+9] ……..
……..……Caloptilia azaleella (285) 15.007

BEECH

Nepticulidae

Gallery completely without coiled frass, egg on underside against mid-rib amongst hairs in angle with vein. Occasionally a lateral vein is used [6-7+8-10] ……..
……..……..…….Stigmella tityrella (77) 4.034
A section of coiled frass soon after start of gallery, egg on underside away from mid-rib [6+8-9]…….. Stigmella hemargyrella (81) 4.055

Gracillariidae

1 Mine on upperside of leaf……..…..2
Mine on underside of leaf……..…….3

2 Mine with creases, contracted (rare aberration) [7+9-10] ……..
……..……Phyllonorycter maestingella (341) 15.063
Mine a blister over midrib, occasionally over a major lateral vein, silvery [7+10-4?] …..
..……..……...…….....Phyllonorycter leucographella (332a) 15.053

3 Mine sub-rectangular, less than 9mm long lightly spun and a little arched; both upper and lower epidermis with veins showing as reticulation (network); larva feeds later in a folded leaf edge [7+9]……..Parornix fagivora (302) 15.026

Mine oval or elongate, more strongly spun and arched; lower epidermis green without reticulation; larva mines throughout ……..…….4

4 Mine a broad oval, about 12mm long, larva yellow; cocoon edged with frass [7+10] ..…. ……..…. Phyllonorycter messaniella (321) 15.040
Mine an elongate tube between veins or on leaf-margin, larva pale greenish yellow; cocoon to one side of frass which is piled neatly along middle of mine [7+9-10] …….. ……Phyllonorycter maestingella (341) 15.063

BILBERRY

Nepticulidae
Early mine highly contorted, becoming more direct, frass linear or broken linear leaving clear margins. May lead to a blotch often near leaf margin. Egg underside near mid-rib. Larva amber yellow, head brown [7+9-10] ……..…...Stigmella myrtillella (72) 4.036

BINDWEED

Lyonetiidae
Mine starts as a narrow gallery leading to a clear blotch. The larva frequently makes a new mine and sometimes changes leaf. Frass is ejected from the mine, but remains caught up in the silken web beneath the mine which the larva constructs for support when entering a new mine [7-8+9] …..…..……..…Bedellia somnulentella (264) 24.001

BIRCH

Eriocraniidae (May to July)
1 Mine begins well away from leaf edge, with a narrow gallery containing linear frass. This feature normally remaining visible when absorbed in the later blotch……..……...2
Mine begins at or near leaf edge. A short length of feeding, if present, widens abruptly into a blotch…….…….3

2 Early gallery, in centre of leaf, absorbed by an elongate oval blotch, leading to a large blotch on leaf edge. Larval feeding starts in May. Final instar larva white, with pale brown head and darker mouth parts, lateral projections on first abdominal segment [5-6] ……..……...…..Eriocrania salopiella (10) 2.005
Early gallery, in centre of leaf, somewhat angular and absorbed by narrow angular blotch leading to a larger blotch on leaf edge. Larval feeding starts in June. Final instar larva white, head brown with black lateral edges. On the prothorax (dorsal surface) are two cloudy brown spots [6-8] ….…….……Eriocrania sparrmannella (9) 2.004

3 The blotch, on the edge of the leaf, contains more than one, usually two or three pale watery-white larvae [5] ……..…..…Eriocrania cicatricella (11) 2.006
The blotch contains only a single larva…….…….4

4 Larva dark grey [4-5] ..…….……Eriocrania sangii (12) 2.008
Larva whitish…….…….…….5

5 Larva (final instar) with pale brown head. Lateral projections on first abdominal segment [4-5] ..……..…..…Eriocrania semipurpurella (13) 2.007

Larva (final instar) with dark brown head. The posterior points of the head-capsule show as two black spots. Lateral projections on second abdominal segment [4-5] ……
……..……...Eriocrania unimaculella (8) 2.003

Nepticulidae

1 Mine forming a blotch ……..……,……..2
Mine forming a gallery ……..…….…….3

2 Blotch with a conspicuous brown central spot [8-10].....Ectoedemia occultella (34) 4.099
Blotch without such a spot; but with the earlier contorted gallery in one corner [7-9] ..…
……..……Ectoedemia minimella (35) 4.100

3 Frass dispersed……..……...……..…… 4
Frass linear ……..……..……. 5

4 Mine starting from a brown spot; frass green without clear margins, turning brown with age. Larvae yellow appearing green in mine [6-7+9-10]..Stigmella continuella (64) 4.044
Mine not starting from a brown spot; frass coiled, black or brown, leaving narrow clear margins. Larvae yellow with conspicuous black ventral spots [7-10] ……
……..…….……Stigmella sakhalinella (113) 4.006

5 Mine long and angular with narrow linear frass in its second half…….…….. 6
Mine shorter and more contorted; frass broken linear and thicker ……..…….. 7

6 First fourth of mine filled with cloudy green frass [6-7]…….……..…..
……..……Stigmella lapponica (116) 4.002
Frass black and linear throughout the mine [7-8]……Stigmella confusella (117) 4.003

7 Mine much contorted at the start, sides of mine scalloped, scallops are usually free of frass; larva yellow with pale brown head and without dark ventral spots; seldom gregarious [8-11] ..……..……..….. Stigmella luteella (112) 4.007
Mine less contorted at the start, mine edges more or less parallel; larva yellow with dark brown head and a chain of dark ventral spots; frequently gregarious [7+9] ……
……..…..……Stigmella betulicola (110) 4.005

Incurvariidae

Mine starts as a linear gallery expanding into a blotch. When full grown larva cut out an oval hole about 4mm long [7-8] ……...…....Phylloporia bistrigella (128) 8.005

Heliozelidae

Mine in pith of twig. When almost fully grown larva enters petiole of a leaf and then into midrib, it then cuts out an oval hole 5 x 2mm in the blade of the leaf [7-8] …….
…… ……...…….Heliozela hammoniella (157) 6.005

Lyonetiidae

Mine a fine gallery with reddish frass leading to a large blotch. The blotch may be separated from the mine, occasionally on a different leaf. The frass maybe dispersed in

the mine or ejected through a hole in the lower epidermis where it may form chains if it becomes trapped in silk. [7-9] ……..…….…. Lyonetia prunifoliella (262) 21.002
Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10]……..…….……..……..….Lyonetia clerkella (263) 21.001

Bucculatricidae

Mine narrow, often contorted at first, later following a vein, final chamber often at right angle to previous mine, frass filling mine. Later the larva eats out windows from either side of leaf [8] ..……..…..…….…..Bucculatrix demaryella (276) 14.013

Gracillariidae

1 Mine on upperside of leaf ……..…….2
Mine on underside of leaf ……..…….3

2 Mine occupying most of the leaf which eventually almost closes over it; larva mines throughout [7+9-10] ……....….Phyllonorycter corylifoliella f. betulae (332) 15.052
Mine small, less than 12mm long; larva feeds later in a rolled leaf [5+7]……..
……..……. Caloptilia betulicola (283) 15.005

3 Mine with lower cuticle brown; larva feeds later in a rolled or folded leaf ……..….4
Mine with lower cuticle greenish, turning brown with age; larva mines throughout….. 7

4 Larva completes growth in a folded leaf edge…….…….. 5
Larva completes growth in a rolled leaf …….…….. 6

5 Bivoltine, feeding June and August to September [6+8-9]..Parornix betulae (301) 15.025
Univoltine, feeding July to August [7-8]..……Parornix loganella (300) 15.024

6 Final leaf-roll longitudinal [7-8]…….…….…….Caloptilia populetorum (281) 15.003
Final leaf-roll transverse [5+7] ……....…..…Caloptilia betulicola (283) 15.005

7 Mine 15-20mm long; lower epidermis with 7-12 folds [9-10]……....
……Phyllonorycter cavella (338) 15.059
Mine 10-15mm long; lower epidermis with 1-6 folds …….…… 8

8 Mine almost exclusively on seeding birches, less than one metre tall, larva with dark brown head; pupa without a cocoon [7+9-10]…..Phyllonorycter anderidae (347) 15.069
Mine on seeding or mature birches, larva with brown head; pupa in a cocoon …….…...9

9 Mine with several folds which may appear as a single fold, larva pale yellowish green turning yellow before pupation, head pale brown [7+9-10] …….…….…….
……..…Phyllonorycter ulmifoliella (353) 15.075
Mine with strong central fold, larva body yellow, anterior segments opaque whitish yellow, head brown. Very rare on this host [7+10]……..……...
…….……Phyllonorycter messaniella (321) 15.040

BIRD'S FOOT TREFOIL

Nepticulidae

Slender galley terminating in blotch
Frass black, preferring a woodland biotype [6-9] ..……..Trifurcula cryptella (48) 4.065
Frass brownish, preferring a downland biotype [6-7+9-10] …….
……Trifurcula eurema (49) 4.066

Lyonetiidae

Mine a circular blotch without any gallery. The blackish frass is arranged in a spiral, spurs project from the blotch where feeding has taken place. Larva may move to a fresh leaf, more than once [5-6+7-8]..……..…Leucoptera lotella (259) 21.003

BLACKTHORN, PLUM and CHERRY

Nepticulidae

Mine a gallery with coiled green frass [7+9-10]…..…..Stigmella prunetorum (109) 4.011
Early gallery slender leading to a large blotch rounded with frass in centre [7+9-10]
..…..……...……...…… Stigmella plagicolella (67) 4.042
Early gallery highly contorted, with reddish frass, continues as an irregular gallery leading to an elongated blotch [7-10] ……...……Ectoedemia spinosella (27) 4.098

Lyonetiidae

Mine a fine gallery with reddish frass leading to a large blotch. The blotch may be separated from the mine, occasionally on a different leaf. The frass maybe dispersed in the mine or ejected through a hole in the lower epidermis where it may form chains if it becomes trapped in silk. [7-9] ……..……..…….. Lyonetia prunifoliella (262) 21.002
Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5-7+9-10] ……..……...……. Lyonetia clerkella (263) 21.001

Gracillariidae

1 On Bird Cherry [6-7+9-10] ……..…….Phyllonorycter sorbi (324) 15.044
On other Prunus species…….2

2 On Wild Cherry, Dwarf Cherry or cultivated cherry [7+9-4] ……
……..……..Phyllonorycter cerasicolella (330) 15.050
On Blackthorn or Wild Plum…….3

3 Mine about 12mm long; lower epidermis green; larva mines throughout overwintering in the mine, pupating in the spring [7+9-4] .....…Phyllonorycter spinicolella (329) 15.049
Mine small, about 8mm long; larva feeds later in a folded leaf edge…….……4

4 Larvae grey with black legs [6-7+8-10] …..…….. Parornix finitimella (308) 15.032
Larva whitish green with green legs [7-9] ….……Parornix torquillella (309) 15.033
Larva yellowish green with four black dots on first segment behind the pale brown head [6 + 7-9?]……..*Parornix atripalpella (308a) 15.0321

*N.B. At present only known from Kent. Although the imago has been recorded on several occasions since 2010, neither the mines nor larvae have been found in Britain. From continental material it appears that the mine is dirty white, large often covering most of the leaf. There is conflicting data with reference to the pupation site. It may pupate in the mine along the midrib or leaf apex; however other data suggests that the larva leaves the mine to pupate on a leaf.

Yponomeutidae

Mine a short contorted gallery with black frass, larva leaves the mine to construct a small white cocoon in which it overwinters [9-10]……..……..
……Paraswammerdamia albicapitella (440) 16.019

BOG-MYRTLE

Bucculatricidae

Mine long, narrow and yellowish brown almost filled with black linear frass alongside the mid-rib, later the larvae leaves the mine and eats out windows from the under side of the leaf [8-9]..……..……...……..Bucculatrix cidarella (272) 14.008

N.B. early mine can be confused with that of a Nepticulidae, but egg matt black and rough in appearance.

BRAMBLES

Nepticulidae

Mine long frass linear or if dispersed occupying only one third of mine width, often on Dewberry [7+9-10] ……..……..Stigmella splendidissimella (53) 4.047

Mine whitish edges often with a little purple staining [5-6+7-8+10-3] ……..……..……..
……... Stigmella aurella (50) 4.045

Mined area extensively stained purple straight following veins on evergreens [10-12] ….
……..….Ectoedemia erythrogenella (32) 4.092

Mine contorted little if any purple confined to start usually on deciduous [10] ……
……. Ectoedemia rubivora (31) 4.097

Early mine narrow, often following a vein with broken linear frass, broadening later, frass becoming dispersed linear, clear margins throughout. Often several mines in a leaf. Scotland [9-11]……..……..…….Stigmella pretiosa (54a) 4.048

Tischeriidae

Mine starts as a curved white gallery, which leads to a broader pale brown blotch. A tunnel of silk runs through the centre of the mine. Frass is ejected through a slit in the upper epidermis [7+9-3]……..…….Coptotriche marginea (125) 10.003

BROOM

Gracillariidae

Mine long, narrow and inflated, in the green bark usually near the end of a green twig, often on a sapling [9-5] …….. Phyllonorycter scopariella (340) 15.061

BUCKTHORN

Nepticulidae

Contorted galley will dispersed frass [6-7+9-10]…..…Stigmella catharticella (98) 4.014

Bucculatricidae

Mine starts as a tightly wound spiral staining leaf blackish violet; then the mine straightens with no staining; after leaving mine larva eats out windows from below [8-9] ……..……..Bucculatrix frangulella (270) 14.006

BUSH VETCH

Gracillariidae

Mine underside occupying whole of leaflet; lower surface contracted causing edges to curl downwards contorting leaf [7+9-10]..…..Phyllonorycter nigrescentella (349) 15.071

*** CHERRY see BLACKTHORN ***

CINQUEFOILS and TORMENTIL

Nepticulidae

1 Frass dispersed in the early gallery [8-10] ……..…..…Ectoedemia arcuatella (30) 4.096
Frass linear in the early gallery…….. 2

2 Early gallery slender, abruptly changing to a blotch; larva whitish green [7+9-11] ……..
……..…….Stigmella aeneofasciella (55) 4.049
Early gallery following leaf margin, widening considerably, but not abruptly becoming a blotch; larva yellow, ovum usually on upperside of leaf [7+9-10] ….……
……..…..Stigmella poterii f. serella (61) 4.051

CLOVER

Gracillariidae

Mine an opaque ochreous brown gallery along midrib with clearer branches where the larva has fed; larva changes leaves and pupates externally [4-5+6+7-8] ……..…..
…….……Parectopa ononidis (299) 15.001
Mine on underside of leaf; larva does not change leaves and pupates in the mine [7+9-10] ……..…….... Phyllonorycter insignitella (350) 15.072

CORNELIAN CHERRY

Heliozelidae

Mine starts as a short gallery usually along leaf edge, abruptly changing to a blotch, finally the larva cuts out an oval hole 4 to 5.5mm along the longer axis. [6-7+8-11] …… ……...……...…….Antispila treitschkiella (159a) 6.0021

COMFREY

Gracillariidae

Feeding starts in a small spiral gallery which soon develops into a blotch, frass linear, upper epidermis brown; often two or three larvae to a mine. Larva eventually turns scarlet and now frass is scattered in mine [7-9] …..…….…..Dialectica imperialella (311) 15.020
N.B. Mines with blackish discoloration of the upper epidermis are caused by flies.

COTONEASTER

Lyonetiidae

Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10]……..……..…….…Lyonetia clerkella (263) 21.001

Gracillariidae

Blister over midrib, silvery [7+10-4] ..……...Phyllonorycter leucographella (332a) 15.053

COWBERRY

Nepticulidae

Mine long, slender gallery with linear black frass leaving clear margins leading to large blotch in centre of leaf, frass heaped in middle [8-5]…..…Ectoedemia weaveri (43) 4.077

Gracillariidae

Mine underside of leaf, drawing edges down arching upper surface, occupying most of leaf; upper surface mottled [7+10-4]……...….Phyllonorycter junoniella (328) 15.048

DOGWOOD

Heliozelidae

Mine starts as a short gallery along leaf edge, abruptly changing to a blotch, finally the larva cuts out an oval hole 5.5 to 7mm along the longer axis. N.B. before the egg is laid the female makes several 'practice' slits, which helps to separate this from the following species. The larva lacks the dark ventral spots of the following species [7-8] ……..... ……...Antispila metallella (158) 6.001

Mine as above, but oval hole in blade of leaf measuring 4 to 5.5mm along the longer axis. There are no 'practice' slits at the egg site. The larva has a row of black ventral spots [8-10]……..Antispila petryi (159) 6.002

DROPWORT

Nepticulidae

Mine starts as a relatively broad gallery, which usually follows the leaf margin mining towards the tip of the leaf almost filled with black frass. Once the tip has been reached the gallery broadens further and heads towards the stalk, usually filing the whole area between the leaf edge and the mid-rib [7+ 8-10] …….Stigmella filipendulae (57) 4.052

ELM

Nepticulidae

Mine under bark in small branches, giving vein like appearance along branch [possible two year life cycle] ……..…….…….Ectoedemia amani (41a) 4.081

Mine compressed into gut like arcs; larvae green (also see following note below) [8-9] ……...……..Stigmella viscerella (95) 4.019

Frass linear then variable; larvae green, egg underside usually close to a rib, exit hole underside of leaf [8-9] ..……...…..……..…….Stigmella ulmivora (80) 4.018

Frass dispersed, sometimes coiled; larvae yellow, egg either side of leaf, exit hole on top of leaf [7+9-10] ..…….……..…...……...…….Stigmella lemniscella (63) 4.043

N.B. S. lemniscella can also make mines similar to S. viscerella. To distinguish between these mines the initial S. viserella mine has a zigzag start whereas the mine of S. lemniscella starts with concentric circles. Also the colour of the larvae is different; S. viscerella is green and S. lemniscella is yellow.

Lyonetiidae

Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10]……..……..……..….Lyonetia clerkella (263) 21.001

Bucculatricidae

Mine a slender gallery with linear frass leaving clear margins; there are two to four frass free projections from gallery which end abruptly. After leaving mine larva eats out windows from underside of leaf [7-9] …….Bucculatrix albedinella (271) 14.007
Mine contorted at start filled with black frass, may double back on itself forming a small blotch. Mine then straightens, often along vein, finally turning away at an angle. After leaving mine larva eats out windows from underside [5-7+8-10] …(In Britain, at present it is found only at Farnham, Surrey) ……Bucculatrix ulmifoliae (274a) 14.011

Gracillariidae

Mine underside of leaf, subcircular, strongly inflated. Larvae yellow, gut green, pupae in a cocoon usually light green and cigar shaped loosely attached to upper epidermis, often becomes loose when mine opened [7+9-10]…. Phyllonorycter schreberella (352) 15.074
Mine underside tubular usually between two veins. Larvae pale whitish green, pupae in an olive green cocoon, remains firmly attached to lower epidermis when mine opened [7+9-10] ……..……Phyllonorycter tristrigella (356) 15.078

ENCHANTER'S NIGHTSHADE

Momphidae

Mine starts as an irregular gallery leading to a blotch with black frass. Larva changes leaf making a short gallery before returning to blotch feeding [6-7] ……..
……...……Mompha langiella (880) 40.011
Mine starts as a narrow gallery forming circles and/or semi-circles round egg site. Larva leaves mine making a new mine of large pale blotches on same leaf or adjacent leaf [8-9] ……..……..…….Mompha terminella (881) 40.014

FAT HEN, GOOSEFOOT AND ORACHE

Gelechiidae

Mine a contorted gallery which often forms a gut like formation with green or black frass. The gallery may merge with early workings forming a blotch. Egg on upperside of leaf, most probably near mid-rib. Larva can change leaves if original leaf completely mined out [7-8+9] ……...…….Chrysoesthia drurella (746) 35.035

Mine a slender gallery leading to a whitish blotch; most of the frass is ejected from the mine. Egg on underside of leaf. Larva can change leaves if original leaf completely mined out [6+9-10] ……..……..……..Chrysoesthia sexguttella (747) 35.036

GORSE

Gracillariidae

Mine long in epidermis of green bark of a thin twig, mine surface with longitudinal folds; very difficult to find [9-5] ……..…….... Phyllonorycter uliciolella (339)15.060

GUELDER ROSE

Gracillariidae

Mine underside between two lateral veins, a strong pucker in upperside of leaf, at first the lower epidermis is white changing to brown as it ages [7+9-4]……
……..……..……..……...Phyllonorycter lantanella (331) 15.051

HAIRY GREENWEED

Gracillariidae

Mine upperside, folding upwards resembling a pod almost concealing mine; frass packed at tip of leaf (Cornwall only) [5-6+7-8+9-10]……..…
……..……Phyllonorycter staintoniella (340a) 15.062

HAWTHORN

Nepticulidae

No.	Name	Position of egg	Mine	Larvae
4.020 (82)	Stigmella paradoxa	Underside - about 1mm form tip of lobe	A more or less circular blotch, with frass in a black central mass [7+10-4]	Greenish white; head dark brown.
4.054 (79)	Stigmella perpygmaeella	Usually on top beside the midrib. Difficult to find.	Gallery slender; broken linear frass following rib or leaf margin usually reverses direction; may go down petiole. Makes a false blotch, compact frass near the beginning of blotch, may be coiled. [7+10]	Pale yellow, head brown
4.026 (100)	Stigmella oxyacanthella	Underside, usually close to a rib.	Long slender gallery following rib or leaf margin with linear frass sometimes going down petiole. Mine becomes broad filled with coiled reddish frass. Mine long, not forming blotch, but often making hairpin bends. [9-10]	Bright green, head pale brown to dark grey.

4.023 (108)	Stigmella crataegella	Underside, usually near midrib at base of leaf.	Mine starts slender with linear frass, usually following rib or leaf margin or along petiole. Gallery broadens abruptly with now coiled frass filling the gallery, before finishing with a central line. Gallery doubles back on itself forming a false blotch. [6-8]	Bright green, head green.
4.030 (99)	Stigmella hybnerella	Almost always underside beside a vein away from the margin.	Starts as a slender more or less direct gallery, with black linear frass and narrow clear margins. Larva now changes to blotch feeding, usually near leaf margin. [5-6+8-9]	Whitish with faint yellow tinge, head brown.
4.022 (107)	Stigmella regiella	Underside near margin	Narrow gallery with reddish frass following leaf margin expands abruptly into blotch with blackish frass deposited irregularly in centre. Blotch often absorbing earlier workings. [8-11]	Yellow, head pale brown. Cephalic ganglia conspicuous.
4.095 (29)	Ectoedemia atricollis	Underside	Starts as an erratic gallery zigzagging to and fro in a small area near the egg. The mine then usually follows the leaf margin, filled with frass which leads to a blotch with the frass scattered. [8-10]	Whitish, gut dark green or reddish

Lyonetiidae

Mine a brown circular blotch with the frass forming darker spiral markings in the centre. Egg laid well away from margin [8-9]……..…Leucoptera malifoliella (260) 21.008
Mine a fine gallery with reddish frass leading to a large blotch. The blotch may be separated from the mine, occasionally on a different leaf. The frass maybe dispersed in the mine or ejected through a hole in the lower epidermis where it may form chains if it becomes trapped in silk. [7-9] ……..……..…..…. Lyonetia prunifoliella (262) 21.002
Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10] ……..…….Lyonetia clerkella (263) 21.001

Bucculatricidae

Mine short contorted, linear black frass, close to a major vein. Later the larva eats out windows from upperside [7-8]……..…….Bucculatrix bechsteinella (275) 14.012

Gracillariidae

1 Creased mine under leaf lower epidermis green (c. 9mm long) [7+9-10] ……..
……..……..…….. Phyllonorycter oxyacanthae (323) 15.043
Creased mine under leaf lower epidermis brown, (c. 6mm long) later edge of leaf turned under & silk visible, often both stages of mine on same leaf [7+8-9] .....
…….……..Parornix anglicella (303) 15.028
Blister on top of leaf ……2

2 Blister anywhere on upper surface of leaf, flecked with blackish frass [7+9-10] ……..…..
……..……..Phyllonorycter corylifoliella (332) 15.052
Blister over midrib, silvery [7+10-4] …..…..Phyllonorycter leucographella (332a) 15.053

HAZEL

Gracillariidae

Blister on top of leaf [7+9-10] ……..……. Phyllonorycter coryli (342) 15.064
Small subrectangular mine (c. 10mm long) larvae feeds later in a rolled leaf edge [7+9]...
……..…..……..Parornix devoniella (304) 15.029
Long mine between veins (15-20mm) with strong central fold [7+9-10]…….
……..……..Phyllonorycter nicellii (359) 15.081

HAZEL AND HORNBEAM

Eriocraniidae (May)

A blotch mine eating out all the parenchyma, frass black in long inter-twining threads, late April to early June [4-6] ……..…….Eriocania chrysolepidella (7) 2.002

Nepticulidae

Mine highly contorted, staining leaf brown, leading to large blotch with early mine in Corner [7-9]..……...……,…….…..Ectoedemia minimella (35) 4.100

Early mine with greenish frass later irregular and wider than larvae. Egg always laid on the underside in a vein axil with the larva feeding dorsum up [6-7+9-10]……
..……..……..…….. Stigmella floslactella (75) 4.032

Early mine with black linear frass tending to follow veins width of larvae. Egg laid on or near a vein, but not in the axil with the larva feeding ventral side up [6-7+9-11] .....
……..……...…..……..Stigmella microtheriella (111) 4.010

HORNBEAM

Gracillariidae

1 Mine on upperside of leaf [7+9-10] ……..…..…Phyllonorycter esperella (343) 15.065
Mine on underside of leaf ……..……...……2

2 Mine subrectangular, distinctly inflated with a strong central crease, epidermis mottled; all parenchyma consumed but nervures remain, larva feeds later in a folded leaf-edge usually making two such folds [6-7+9-10] ……Parornix carpinella (302a) 15.027

Mine elongate between veins usually not reaching leaf edge, strongly spun and arched; without reticulated appearance;lower epidermis green, larvae pale yellowish green with a light brown head [6-7+9-10…….Phyllonorycter tenerella (318) 15.037

Mine between two veins with a strong central crease varying in length depending on spacing of veins often with more thanone mine in a leaf; larvae yellow with anterior segments opaque whitish yellow with a brown head [7+10]..Phyllonorycter messaniella (321) 15.040

HONEYSUCKLE

Gracillariidae

Mine underside, large occupying whole of leaf, strong folds in lower epidermis puckering leaf [7+9-10] ……..…..Phyllonorycter emberizaepenella (354) 15.076

Mine underside, small, occupying part of leaf which is often twisted into a cone; also may produce a mine on upperside of leaf, but this is a rare aberration [3-4+7-8+10] ……. ……..……..…… Phyllonorycter trifasciella (361) 15.083

HOP

Gracillariidae

Mine with epidermal gallery on underside leading to a triangular blotch in angle of veins; larva feeds later in a cone on the leaf-margin [7+9]…… ……...……Caloptilia fidella (289a) 15.0115

Lyonetiidae

Mine a long sinuous gallery, often whitish in appearance, may cross midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10] ……...…….Lyonetia clerkella (263) 21.001

Cosmopteriginae

Mine an irregular gallery on midrib or other large vein with silk lined gallery inside mine, which larva uses as a shelter. From here the mine branches in all directions. Fresh mine yellowish-white, turning brown with age [8-5] ……Cosmopterix zieglerella (894) 34.005

HORSE-CHESTNUT

Gracillariidae

Mine a brown blotch, highly visible, usually many on a leaf, pupa within mine [5-10] …. ……...…..……Cameraria ohridella (366a) 15.089

LABURNUM

Lyonetiidae

Mine with green frass leading to a blotch with the frass now black and deposited in a spiral [6+7+9] ……..….Leucoptera laburnella (254) 21.004

LAUREL

Lyonetiidae

Mine a long sinuous gallery, often whitish in appearance, may cross midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10] ……..……...…….Lyonetia clerkella (263) 21.001

LILAC

Gracillariidae

Mine narrow, often several parallel galleries which merge to form a large blotch; after leaving mine larvae construct a cone by rolling leaf tip downwards feeding gregariously; two cones are made [5-6+7-8]…….…….…...…….Caloptilia syringella (293) 15.014

LIME

Nepticulidae

Contorted gallery early mine often under leaf [7+9-10] …..…. Stigmella tiliae (90) 4.004

Bucculatricidae

Mine an irregular gallery, may form a small blotch in angle of veins, frass linear or slightly dispersed; later larva eats out windows from below the leaf [7-8] ……. ……...…….. Bucculatrix thoracella (273) 14.009

Roeslerstammiidae

Egg laid on upperside. Mines as first instar larva then feeds externally. Mine small close to margin generally in tip of leaf, pupa in a turned down leaf edge in a white silk cocoon. [7+9-10] ……...…….……..…Roeslerstammia erxlebella (447) 13.002

LONDON PLANE

Gracillariidae

Mine underside, often making a fold in the leaf [7-11] ...……..... ……...…….Phyllonorycter platani (321a) 15.041

Mine on top, a blister over midrib, occasionally over a major lateral vein, silvery [7+10-4?] ...…….…..……...……...Phyllonorycter leucographella (332a) 15.053

LOOSESTRIFE

Gracillariidae

Mine usually on upperside leading to a blotch; on leaving mine larva cuts a strip about 30mm by 7mm from edge of leaf which it rolls downwards and secures with silk making an untidy cone. Two such rolls are made [7-9].…Calybites phasianipennella (296) 15.017

LUNGWORT

Gracillariidae

Feeding starts in a small spiral gallery which soon develops into a blotch, frass linear, upper epidermis brown; often two or three larvae to a mine. Larva eventually turn scarlet and now frass is scattered in mine [7-9] ……...……..Dialectica imperialella (311) 15.020
N.B. Mines with blackish discoloration of the upper epidermis are caused by flies.

MAPLES AND SYCAMORE

Nepticulidae

Mine in seeds, buds or adjacent bark
On Field Maple [6-8+10-4] ……...…..Ectoedemia louisella (22) 4.075
On Norway Maple [6+9-5]……..…Ectoedemia sericopeza (21) 4.074
On Sycamore [7+9] ..……..……..…Ectoedemia decentella (20) 4.076

Mine in leaves
Frass black clear margins usually on Sycamore [7-8+9-10] ..……..
……..…….Stigmella speciosa (65) 4.056
Frass green no margins on Field Maple or Norway Maple, frass turns brown with age. [6-7+8-9] ……...……...…Stigmella aceris (102) 4.012

Gracillariidae

Blotch mine, larva mines throughout
On Field Maple, often causing leaf edge to fold over [7+10] ……..….
……..…….. Phyllonorycter acerifoliella (362) 15.084
On Sycamore [7+10] ……...……...… Phyllonorycter geniculella (364) 15.086
On Norway Maple [7+10] ….…….. Phyllonorycter platanoidella (363) 15.085
N.B. If mine is close to the edge of the leaf or in a lobe then the mine may cause the leaf to fold over.

Blotch mine, larva feeds later in a rolled leaf or cone
1 A full depth transparent blotch, without internal spinning, on Sycamore; larva feeds later in a rolled leaf or cone ……..…….…….2
A full depth transparent blotch, without internal spinning, on Field Maple; larva feeds later in a rolled leaf or cone ……..…….…….3

2 Mine about 6mm long (very rare) [7-8] ……..…...Caloptilia hemidactylella (291) 15.013
Mine about 4mm long in angle between veins, after leaving mine three cones are made occasionally on the same leaf as mine, but often on an adjacent leaf [6-7] ……...
……..……..… *Caloptilia rufipennella (284) 15.006
* N.B. In 2017 Caloptilia honoratella was discovered in Surrey and has spread to Kent, Suffolk and Norfolk. It appears to be spreading west, so may colonise other counties in the near future. The mine and larval cones are similar to C. rufipennella. The imago is similar to C. hemidactylella, so dissection may be required to confirm species. At present the mines have not been found in Britain. The mines are probably occupied [7-9]……..
……..…… Caloptilia honoratella 15.0131

3 Mine tenanted in May, spinning in June; recorded from Isle of Wight only [5-6]…….. ..……..……...Caloptilia hauderi (295). A mis-identification. ……..……Now synonymize with Caloptilia semifascia (290)15.012
Mine tenanted in June, spinning in July; recorded from southern England and Wales [6-7] …...……...……Caloptilia semifascia (290) 15.012

MEADOWSWEET

Nepticulidae

Egg on top of leaf usually on a vein or near the leaf margin, mine long and winding, frass at first broken linear then in broader central line, larva yellow [6-7+9-10] ...……..…… …….…Stigmella ulmariae (58) now synonymize with Stigmella filipendulae (57) 4.052

MEDICK

Gracillariidae

Mine underside, occupies whole of leaflet, lower surface contracted causing leaf edges to curl down [7+9-10] ..……Phyllonorycter nigrescentella (349) 15.071

MOUNTAIN AVENS

Nepticulidae

Egg underside, mine narrow filled with black frass following leaf margin towards petiole for about 10mm, then reversing direction; mine widening into a broad blotch with frass deposited in piles along centre. Larva yellow. Northern Scotland [7+9-10] ……..…….. ……..……...……..…….…….Stigmella dryadella (56) 4.050

Gracillariidae

Mine starts on underside of leaf and develops into blotch often absorbing earlier workings; the larva then leaves the mine and changes leaf, the edges of which are spun together to form a pod (northern Scotland) [6-8] …… ……..…..…….Parornix alpicola (306) 15.031 or P. alpicola ssp. leucostola (307) 15.031

MUGWORT

Gracillariidae

Mine starts as a long gallery following vein or leaf margin which leads to an inflated blotch; black frass usually massed in centre. Upper epidermis mottled white, first turning yellow and then purplish [7+8-9]……..…. Leucospilapteryx omissella (314) 15.021

*** NORWAY MAPLE see MAPLE ***

OAK

Eriocraniidae (May to July)

Blotch mine, usually starting from leaf edge, frass black, long inter-twining threads [5-7] ……..……....….Eriocrania subpurpurella (6) 2.001

OAK cont…

Nepticulidae

Ectoedemia (blotch mines)

1 Mine on Evergreen Oak, highly contorted, November to April. Pupa in a cocoon on upper surface of leaf [11-4] ……..…….Ectoedemia heringella (36a) 4.088
Larva mining the green bark of small branches [9?-6] either……...
……..….Ectoedemia atrifrontella (41) 4.079 or Ectoedemia longicaudella (41b) 4.080
(It is not possible to separate the mines of these two species).
Mine on deciduous species forming a slender gallery terminating in a blotch.....….....2

2 Larva mine in green leaves ……..……3
Larva mines in 'green islands', often in fallen leaves in late October - November; the early gallery generally follows a vein inwards towards the midrib, or follows the midrib.....…….…….…….…….....4

3 Larva mines August to early September, invariably near leaf edge forming a blotch with two frass lines; larva green. So far only found in Devon [8-9]…….
……..……..Ectoedemia heckfordi (35a) 4.086
Larva mines from late August till early October; the early gallery generally follows a vein outwards from the midrib forming a blotch; larva white with very pale brown head [8-9]
……..…...…….....…….…Ectoedemia albifasciella (37) 4.089

4 Blotch with a slit in the lower leaf epidermis, allowing some of the frass to fall out; larva head dark brown [10-11]……..……...Ectoedemia subbimaculella (38) 4.090
Blotch without a slit in the epidermis; larva head red-brown [10-11] ……...…….
……..…….... Ectoedemia heringi (39) 4.091
Gallery highly contorted, occupying a small area, forming a false blotch; larva with dark roundish ventral spots, sheding them in final instar, feeding in a 'green island' often in fallen leaves in November [10-11] ……...…..... Ectoedemia quinquella (36) 4.087

Stigmella (gallery mines)

1 Mine on Evergreen species……..……..……2
Mine on Deciduous species..……3

2 Mine with a broad irregular gallery with a wide line of dark frass leaving narrow clear margins, larvae yellow [7-8+11-4] ……..…Stigmella suberivora (85) 4.057
Mine sinuous in regular curves, filled with coiled greenish frass difficult to see when fresh (frass turns brown with age); larvae green [6-7+9-10] ……...
……..Stigmella basiguttella (89) 4.058

3 Egg on underside.....……..…….…….....4
Egg on upperside usually away from margin…...…….……...…….4
Egg on upperside near margin, frass black [6-7+9-10]...Stigmella ruficapitella (84) 4.060

4 Mine sinuous in regular curves, filled with coiled greenish frass difficult to see when fresh (frass turns brown with age); larvae green [6-7+9-10] ……...
……..Stigmella basiguttella (89) 4.058

Mine irregular; frass leaving clear margins, blackish; larvae yellow ...……..…..……...5

5 Frass dispersed in separated grains in middle part of course ..……..……..…….....6
Frass forming a more or less continuous central line.....……..……..…….....7

6 Egg laid beside a vein; early course of mine leading away from vein more or less at right angles; mine the largest of the oak feeding Stigmella's univoltine, [7-8] .....…… ……..…….. Stigmella svenssoni (87) 4.059
Egg anywhere on leaf; early course variable; mine about the same size as that of Stigmella ruficapitella, frass more or less dispersed until last quarter of mine when it forms a thin central line; bivoltine, [6-7+9-10] ……..……Stigmella samiatella (88) 4.062

7 Mine relatively short and broad; frass at first in a narrow central line becoming dispersed in second half of mine; larva with dark sclerite plates on the prothorax [6-7+9-11] ……. ……... ……..……..……. Stigmella atricapitella (83) 4.061
Mine long and narrow; frass forming a fine central line; larva whitish yellow with light brown head without sclerites plates [6-7+10-11]..……. Stigmella roborella (86) 4.063

N.B. In the autumn all Stigmella mines are difficult to determine with the exception of S. basiguttella. If care is taken it should be possible to determine tenanted mines so long as the features mentioned in the key are adhered to.

Tischeriidae

Mine a flat whitish blotch on the top of a leaf, occasionally several mines can be found on one leaf. The mine is free of frass, which is ejected through a slit at the edge of the mine. The mine is lined with silk [9-4] …..……Tischeria ekebladella (123) 10.001
Mine a flat brownish blotch on top of a leaf with darker concentric rings on the upper surface of the leaf. No frass in mine which is ejected through a slit. The mine is lined with silk [9-4] ……...…….....Tischeria dodonaea (124) 10.002

Heliozelidae

Mine starts in twig proceeding into base of leaf via petiole. When almost fully fed it cuts out an oval hole in the base of the leaf measuring 4 x 2mm to 5 x 3mm.
Occasionally two larvae mine the same twig resulting in a hole being cut out from either side of the leaf [6-7] ……...… ...……..Heliozela sericiella (154) 6.003

Bucculatricidae

Mine short, often contorted close to midrib, frass black. After leaving mine larva eats out windows from underside of leaf [7+9-10] ……..…….Bucculatrix ulmella (274) 14.010

Gracillariidae

1 Mine with epidermal gallery on underside leading to a subquadrate blotch about 5mm across (triangular if in angle of veins); larva feeds later in a cone on the leaf-margin ...…2
Mine formed otherwise ……..…..…… 3

2 Univoltine; mine occupied July - August, cone September - October *…… ……..…... Caloptilia alchimiella (286) 15.008
Bivoltine; mine occupied May and August, cone June and September - October * ……. …….……..…… Caloptilia robustella (287) 15.009
*N.B. The second generation cones of C. robustella are indistinguishable from those of C. alchimiella.

3 Mine upperside, large and covering most of leaf ……..……..……4
Mine underside ……..……..…….5

4 Upper epidermis detached from parenchyma and silvery; mine slightly inflated [6] …….. ……..……...Acrocercops brongniardella (313) 15.019
Mine otherwise ……..Hymenoptera spp.

5 Larva mines only when young, feeding later in a cone on the leaf margin [6-9] …… ……..…..…….. Caloptilia leucapennella (292) 15.018
Larva mines throughout ……..……..……6

6 Mine on Evergreen Oak [3-4+7+10] ……...…Phyllonorycter messaniella (321) 15.040
Mine on deciduous species ……..……..…….. 7

7 Mine appearing to have no creases in lower epidermis ……..……..……8
Mine with visible creases in lower epidermis ……...……..……10

8 Mine less than 10mm long, usually in lobe or on edge of leaf (Autumn generation only) [7+9-10] ……..……...…Phyllonorycter heegeriella (317) 15.036
Mine more than 17mm long ……..……..……9

9 Pupa in cocoon attached to central green patch in the upper epidermis; mine 17-20mm long, strongly contorting leaf [7-8] ……..….Phyllonorycter roboris (316) 15.035
Pupa without a cocoon, but in a silken web; mine 22-28mm long, often several in one leaf causing leaf to distort considerably [7-9].…Phyllonorycter distentella (346) 15.068

10 Lower epidermis with numerous small creases ……..……11
Lower epidermis with a least one large crease ……..…….. 12

11 Very small mine usually in lobe or on edge of leaf, cocoon occupying most of mine (autumn generation only) [7+9-10] ……Phyllonorycter heegeriella (317) 15.036
Mine underside, small, usually on margin when leaf-edge folds right over almost concealing mine, preferring high branches; pupa in flimsy, lace like cocoon [7+9-11] …… ……..…..……Phyllonorycter kuhlweiniella (319) 15.038

12 Cocoon incorporating no frass ……13
Cocoon incorporating frass ……..14

13 Mine less than 14mm long; cocoon attached to both upper and lower epidermis [6-7+ 9-10] ..……..…..……. Phyllonorycter harrisella (315) 15.034
Mine more than 20mm long, almost always between veins extending from midrib, often

several mines in a leaf [7+9-10] ……...……Phyllonorycter lautella (351) 15.073

14 Mine 11mm or more long ……..……..……..15
Mine 10mm or less long, cocoon attached to both upper and lower epidermis (summer generation only) [7+9-10] ……..……. Phyllonorycter heegeriella (317) 15.036

15 Cocoon attached to upper epidermis only ……..……..16
Cocoon attached to both upper and lower epidermis ……..……..17

16 Cocoon completely covered in frass (summer generation only); mine irregular in shape positioned anywhere on leaf [7+9-10] …..…..Phyllonorycter quercifoliella (320) 15.039
Cocoon only lined with frass; a long mine between two veins and extending from midrib [7+9-10] ……..……..Phyllonorycter muelleriella (322) 15.042

17 Cocoon flimsy and only loosely attached to the upper epidermis, usually lined with only a little frass [3-4+7+10] ……..… Phyllonorycter messaniella (321) 15.040
Cocoon strong with frass edging giving a distinct U or V shape …….. 18

18 Mine with small patch of uneaten parenchyma on the upper leaf epidermis to which the cocoon is firmly attached (autumn generation only) [7+9-10] ……..…
……..Phyllonorycter quercifoliella (320) 15.039
Mine with a patch of parenchyma on upper epidermis usually left uneaten, frass either deposited on each side of pupa or pupa completely covered, attached to both upper and lower epidermis [6-7+9-10] ……..Phyllonorycter harrisella (315) 15.034

At present it is almost impossible to distinguish between several of the autumn mines of the oak feeding Phyllonorycters. Those presenting the most problems are Phyllonorycter quercifoliella, P. messaniella and P. heegeriella. However they can usually be determined by examination of the larva or the pupal case. It now appears that those mines that yield P. quercifoliella have the cocoon adhered very firmly to an uneaten patch of green on the upper leaf epidermis. Those yielding P. messaniella have no uneaten parenchyma at all and are only rather loosely attached to the upper epidermis, but these findings must be used with caution until they can be completely confirmed.

A description of the larva is as follows:
15.034 (315) P. harrisella: Head pale brown, body pale whitish green, posterior segments from 5-7 more yellowish. Larva turning yellowish prior to pupation.
15.036 (317) P. heegeriella: Head very pale greenish brown, body pale whitish green, gut darker.
15.039 (320) P. quercifoliella: Head light brown, body pale whitish green, gut darker green.
15.040 (321) P. messaniella: Head brown, body yellow, anterior segments opaque whitish yellow.
15.073 (351) P. lautella: Head very pale greenish brown, first anterior segment pale yellow, a yellow spot on the fifth abdominal segment and a blackish spot on eighth segment.

Breeding through Phyllonorycters is fairly easy and should be attempted wherever possible to determine the species.

N.B. Other species of insects also mine oak leaves especially Sawflies.

ORACHE see FAT HEN

OX-EYE DAISY

Bucculatricidae

Mine a narrow gallery, starting from a small spiral, frass fine and linear. Larva can change leaf and continue mining; mines can follow leaf margin or go down petiole before returning to blade of leaf [1-4+7]……..……..Bucculatrix nigricomella (266) 14.002

PEAR

Nepticulidae

1 Mine gallery with dispersed frass leading to blotch [8-4] ……..……..…… ……..……..……Ectoedemia atricollis (29) 4.095
Mine formed otherwise ……..……..…..……..2

2 Mine irregular usually with linear frass, though some slight coiling may be present, broader in second half, larva green [6-7+8-9] ……... Stigmella minusculella (91) 4.028
Mine with dispersed or coiled frass in second half ……..……..……..…3

3 Mine relatively straight, extending across the leaf; larvae green with yellowish gut [9-10] ……..……..……..…... Stigmella oxyacanthella (100) 4.026
Mine strongly contorted and confined to a small area; larvae green with reddish gut [7+9] ……..……..……Stigmella pyri (101) 4.027

Lyonetiidae

Mine a brown circular blotch with the frass forming darker spiral markings in the centre. Egg laid well away from margin [8-9]……..…..…Leucoptera malifoliella (260) 21.008

Bucculatricidae

Mine short contorted, linear black, close to a major vein. Later the larva eats out windows from upperside [7-8]……Bucculatrix bechsteinella (275) 14.012

Gracillariidae

1 Mine on upperside of leaf ……..…… 2
Mine on underside of leaf ……..……. 3

2 Blister anywhere on upper surface of leaf, flecked with blackish frass [7+9-10] ……... ……..……..……. Phyllonorycter corylifoliella (332) 15.052
Blotch over midrib, silvery-white [7+10-4]..Phyllonorycter leucographella (332a) 15.053

3 Creased mine under leaf lower epidermis green [7+9-10] ……..
……Phyllonorycter oxyacanthae (323) 15.043

Mine long 20mm to 30mm, narrow between two lateral ribs with many longitudinal creases puckering the leaf [7+9-11] ……..….Phyllonorycter mespilella (325) 15.045

Gelechiidae

Mine short near midrib, brown, irregular with scalloped edges, very little frass in mine, autumn only, larva feeds externally after hibernation [8-10] ……..... ……..Recurvaria nanella (757) 35.156

PINES

Yponomeutidae + 1 x Gelechiidae

1 Mine within the needle of Scots or Lodgepole Pine feeding from the base towards the tip [4-5]……..……Cedestis gysseleniella (442) 16.021
Mine within the needle of various species of Pine starting at the tip or near the tip feeding towards the base ……..…..2

2 Mine on Scots Pine or Larch with some internal spinning and a hole at each end through which most of the frass is ejected. Larva head black/brown, body pinkish brown, feeds externally after hibernation [9-5]……..……..……..Exoteleia dodecella (760) 35.159
Larvae otherwise ……..……..……...3

3 On various species of Pine; larva head brown, body greenish feeding December to April [12-4] ……Cedestis subfasciella (443) 16.022
On Scots Pine; larva yellowish, brown when young, head black ……..4

4 Larva feeding April to May; pupa in a cocoon between 3 or 4 needles spun together [3-4] ……..……..…….Ocnerostoma piniariella (444) 16.023
Larva feeding December to March, June to July and occasionally September; pupa in a cocoon between 3 or 4 needles spun together [12-4+6-7+9]……..….. ……...Ocnerostoma friesei (445) 16.024

N.B. It is impossible to distinguish between the larvae and mines of the two Ocnerostoma species, however the different feeding times may give some indication as to which species is present, but to be certain adults should be reared and dissected.

*** PLUM see BLACKTHORN ***

*** POPLAR see ASPEN ***

PRIVET

Gracillariidae

Mine narrow, larval spinning causes leaf to fold downwards; after leaving mine larvae construct a cone by rolling leaf tip downwards; two cones are made; upper epidermis silvery [7-9] ..…….…….. Caloptilia cuculipennella (280) 15.002
Mine narrow, often several parallel galleries which merge to form a large blotch; after leaving mine larvae construct a cone by rolling leaf tip downwards feeding gregariously; two cones are made; upper epidermis yellow or brown [6+8-9]…….. ……..……...Caloptilia syringella (293) 15.014

PYRACANTHA

Lyonetiidae

Mine a long sinuous gallery, often whitish in appearance, may cross midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10] ……..……...…….Lyonetia clerkella (263) 21.001

Gracillariidae

Mine starts along midrib then produces a blister in centre of leaf, eventually drawing the edges of the leaf together [7+10-4] ……..... Phyllonorcyter leucographella (332a) 15.053

QUINCE

Lyonetiidae

Mine a fine gallery with reddish frass leading to a large blotch. The blotch may be separated from the mine, occasionally on a different leaf. The frass maybe dispersed in the mine or ejected through a hole in the lower epidermis where it may form chains if it becomes trapped in silk. [7-9] ……..……..…….. Lyonetia prunifoliella (262) 21.002
Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf. [5+7+9-10] ..……...…… Lyonetia clerkella (263) 21.001

RESTHARROW

Gracillariidae

Mine an opaque ochreous brown gallery along midrib with clearer branches where the larva has fed; larva changes leaves and pupates externally [4-5+6+7-8] ……..…..….....
……..…….Parectopa ononidis (299) 15.001
Mine tentiform on underside of leaf; larva does not change leaves and pupates in the mine [7+9-10] ……..…..…..…..Phyllonorycter insignitella (350) 15.072

RIBWORT PLANTAIN

Gracillariidae

Mine starts as long tortuous gallery in lower epidermis; then larva moves to upper epidermis and makes a large blotch astride midrib, spinning causes leaf to close over mine and finally almost conceal it [6-7+10-4]....Aspilapteryx tringipennella (294) 15.015

ROCK ROSE

Momphidae

Mine starts as a gallery almost filled with frass, larva then changes to blotch feeding occupying the whole leaf, larva may change leaf if required [10-4+6-7] ……
……..Lophoptilus miscella (884) 40.012

ROSE

Nepticulidae

Early gallery much contorted then widening ending in a blotch [9-11] ……..……
…….…….....Ectoedemia angulifasciella (28) 4.094

1 Early gallery relatively straight and not ending in a blotch, filled with greenish frass in first third of mine, darkening with age, frass then turns black and is either narrowly dispersed, or coiled, leaving clear margins, larva yellow with dark cephalic ganglia, head transparent to dark brown [7+10-12]..……..…...Stigmella anomalella (92) 4.015
Early gallery relatively straight with linear frass leaving clear narrow margins and not ending in a blotch ……..……..……..2

2 Found only on Rosa pimpinellifolia, larva bright amber, head dark brown [7+9]……...
……..……...…… Stigmella spinosissimae (94) 4.016
Found on various species of rose, larva yellow, head dark brown, frass in a central line, never coiled, leaving clear margins along total length of mine [6-7+9-10]…….…….…..
..……..……...…... Stigmella centifoliella (93) 4.017

N.B. The mines of all these species tend to overlap in structure, so it is only safe to record them when the characters match precisely the descriptions given above. Stigmella spinosissimae is rare and will only be found on Rosa pimpinellifolia, but the other two species also feed on the same foodplant.

Tischeriidae

Mine an inflated pale brown blotch on the top of the leaf causing the leaf to fold over which may conceal the mine [9-10]……..…Coptotriche angusticollella (127) 10.006

ROWAN, WHITEBEAM AND WILD SERVICE TREE

Nepticulidae

1 A slender sinuous galley leading to a large roundish blotch [6]……..……
……Stigmella sorbi (66) 4.041
A gallery throughout the whole of the mine ……..…..……..2

2 Mine on Wild Service tree ……..…..……3
Mine on Rowan ……..……..……..…...4

3 Mine starts relatively straight, slender gallery, becoming contorted with linear frass, later widening almost to a blotch, larva pale yellow. Last recorded in Britain c.1910 [7]……...
.....Stigmella torminalis (106) 4.021
Mine long and sinuous with dispersed frass, larvae green [9-10] ……
……..……. Stigmella oxyacanthella (100) 4.026

4 Mine narrow, less than 1.5mm, frass linear leaving clear margins, usually confined to a small area, but occasionally follows leaf margin [7-8]...Stigmella magdalenae (104) 4.024
Mine wider, more than 1.5mm, frass dispersed may be coiled, a long contorted gallery which may follow leaf margin [6-8] ……..……Stigmella nylandriella (103) 4.025

N.B. Intermediate forms of these mines do occur and these can be difficult to distinguish. It should also be noted that Stigmella oxyacanthella has also been known to feed on Rowan and has a mine similar to S. nylandriella, however occupied mines should present no problem as S. oxyacanthella feeds during September and October.

Lyonetiidae

Mine a brown circular blotch with the frass forming darker spiral markings in the centre. Egg laid well away from margin. On Wild Service tree [8-9] ……..…….. ……..……..Leucoptera malifoliella (260) 21.008

Mine a fine gallery with reddish frass leading to a large blotch. The blotch may be separated from the mine, occasionally on a different leaf. The frass maybe dispersed in the mine or ejected through a hole in the lower epidermis where it may form chains if it becomes trapped in silk. [7-9] ……..……..……. Lyonetia prunifoliella (262) 21.002

Mine a long sinuous gallery, often whitish in appearance and often crossing midrib. The egg is laid inside the leaf being injected through the epidermal layer. This feature helps to distinguish it from a Nepticulid mine where the egg is laid on the surface of the leaf [5+7+9-10] ……..……..…….Lyonetia clerkella (263) 21.001

Bucculatricidae

Mine short contorted, close to a major vein. Later the larva eats out windows from upperside …(on Rowan and Wild Service Trees) [7-8] …….……..... …….Bucculatrix bechsteinella (275) 14.012

Gracillariidae

1 Mine a blotch on upperside of leaf……..……2
Mine on underside of leaf ……..……..3

2 Blotch anywhere on upper surface of leaf, flecked with blackish frass [7+9-10] ……..….. ……..……..……..Phyllonorycter corylifoliella (332) 15.052
Blotch over midrib, silvery [7+10-4]…..…..Phyllonorycter leucographella (332a) 15.053

3 Mine approx 5-8mm long, lower epidermis turning grey or brown; larvae feeds later in a folded leaf or cone……..……..4
Mine narrow and approx 20-30mm long, lower epidermis remains green; larva mines throughout ……..……..5

4 Larva feeds later in a cone on the leaf margin; mainly on Wild Service-tree [7+8-9] ……. …… .Parornix anglicella (303) 15.028
Larva feeds later in a folded leaf edge or in a centrally placed tight pleat that resembles a mine. (On all three species) [7+8-9]……..…Parornix scoticella (305) 15.030

5 Mine on Wild Service-tree ……..……6
Mine on Rowan or Whitebeam ……..……7

6 Mine with lower epidermis having many longitudinal creases; pupae in very pale brown loose silken chamber; frass in a long line behind the cocoon (most common species on Wild Service-tree) [7+9-11] …….. Phyllonorycter mespilella (325) 15.045
Mine with lower epidermis with one large fold, pupa in a white silk lined chamber with the frass heaped behind the cocoon (rarely found on Wild Service-tree) [6-7+9-10] ……. ……..Phyllonorycter hostis (327) 15.047

7 Mine in Rowan ……..…….8

Mine on Whitebeam ……..…..….10

8 Pupa in a silk-lined chamber with out a real cocoon with very little frass ……..…..……9
Pupa in a strong whitish cocoon with the frass heaped near the middle of the mine; mine along midrib or leaf-edge strongly contorting leaf (commonest species on Rowan) [6-7+9-10] ……..…….……. Phyllonorycter sorbi (324) 15.044

9 Mine with lower epidermis having many longitudinal creases; pupae in very pale brown loose silken chamber; frass in a long line behind the cocoon (infrequent on Rowan) [7+9-11] ……..…..……Phyllonorycter mespilella (325) 15.045
Very rarely found on Rowan [7+9-4]……Phyllonorycter lantanella (331) 15.051

10Mine with lower epidermis having many longitudinal creases; pupae in very pale brown loose silken chamber; frass in a long line behind the cocoon (frequent on Whitebeam) [7+9-11] ……..…..… Phyllonorycter mespilella (325) 15.045
Pupa in a strong whitish cocoon with the frass heaped near the middle of the mine; mine along midrib or leaf-edge strongly contorting leaf (rarely found on Whitebeam) [6-7+ 9-10] ……..……..……. Phyllonorycter sorbi (324) 15.044

ST. JOHN'S WORT

Nepticulidae

Mine long slender gallery linear frass ending in blotch which often absorbs earlier workings, pupa in mine [7+10-12] ……..……..…Ectoedemia septembrella (42) 4.078

Gracillariidae

Mine forming an epidermal blotch with frass packed at one end; larva then forms a cone by spinning the tip of a leaf downwards [6+9-10]...Eucalybites auroguttella (297) 15.016

SALAD BURNET

Nepticulidae

First follows leaf margin then filling most of leaflet [6-7+9-10] ……..……..….
…….Stigmella poterii (59) 4.051

SALLOWS AND WILLOWS

Nepticulidae

Early mine in midrib, in leaf for last instar [7-11]…...…Ectoedemia intimella (25) 4.082
All mine in leaf blade – Sallow [6-7+9-11] ……..……..…..Stigmella salicis (68) 4.035
All mine in leaf blade – Willows [6-7+9-10] ……..……...Stigmella obliquella (70) 4.038

N.B. It is possible that S. salicis may feed on Willows

Gracillariidae

1 Mine small, about 8mm, tentiform; larva feeding later in a folded leaf or cone ….……..2
Mine over 15mm, tentiform; larva mines throughout ……..…….……..3
Mine otherwise ……..……..8

2 Rare mountain species, larva feeds later in a folded leaf [7-8] ..……
……Callisto coffeella (310a) 15.023

Common widespread species; larva feeds later in a cone [7-9]……
……..……Caloptilia stigmatella (288) 15.010

3 Mine on Creeping Willow [7+9-10] …..….Phyllonorycter quinqueguttella (348) 15.070
Mine on other willow species ……...4

4 Mine on smooth-leaved willow species ……5
Mine on rough-leaved willow species ……...7

5 Mine only on Osier; mine long and narrow, often near petiole; pupa naked in mine without a cocoon [7+9-10] ……..…….Phyllonorycter viminetorum (334) 15.055
Mine on various species of smooth-leaved willow……..…..6

6 Mine on Osier, White Willow, Crack Willow and occasionally other species; pupa in a cocoon [6-7+9-10] ……..……...Phyllonorycter viminiella (333) 15.054
Mine on underside with crease along lower epidermis, often extending from mid-rib to leaf edge, pupa in a flimsy cocoon with frass piled at opposite end [8-10]…..……
…….…….... Phyllonorycter pastorella (316a) 15.0862
7 Cocoon white or yellow and loosely woven [7+9-10] ……..……..
……..…..……..Phyllonorycter salicicolella (335) 15.056
Cocoon golden or light golden brown and strongly constructed ……..……..8

8 Outline of cocoon visible from outside the mine [7+9-10]……..…
……..……..……Phyllonorycter hilarella (337) 15.058
Outline of cocoon not or hardly visible from outside the mine [7+9-10] ……..…….
……..……Phyllonorycter dubitella (336) 15.057

N.B. Although the above key indicates which species of Phyllonorycter is most likely to be found on a given foodplant it is not conclusive. The characteristics of some mines vary and it is not certain as to the exact variety of willow that some Phyllonorycter species feed on, so to be certain of an identification it may be necessary to breed through to adult.

9 Mine starting in a leaf making an epidermal gallery ……..……..10
Mine starting in a stem of current year's growth ……..…….……...11

10Mine starts as an epidermal gallery on the side the egg was laid, frass in broad central line. Larva then mines petiole and into twig and finally back into leaf. Mine usually ends at leaf margin where larva pupates under a membrane [6+8-9]……
……Phyllocnistis saligna (367) 15.090

11Mine along stem, long, up to 30cm. At first greenish ochreous turning white with age, finally ending up in the petiole of a leaf, where a cocoon is spun at the base of the leaf. May have two or three cocoons on a single leaf. Usually on Grey Willow, but has been found on Sallow ……..…….……Phyllocnistis ramulicola (367a) 15.091
(New to science in 2006, life cycle uncertain, so far only found in Hampshire and Kent, England and in Portugal).

SEA ASTER

Bucculatricidae

Mine a long, narrow gallery; frass linear, black or reddish. Larva may mine throughout or may eat out 'windows' in leaf from below after initial mining phase [4-5+7-8] ……..…… ……..……..Bucculatrix maritima (267) 14.003

SELFHEAL

Nepticulidae

Slender gallery linear frass leading via petioles into second leaf stained purple [7-10] ….. ……..….Glaucolepis headleyella (44) 4.064

SMALL SCABIOUS

Gracillariidae

Mine underside, lower surface with several longitudinal folds, contracted downwards to form inflated blotch, epidermis tinged purple [7-8+10-4]……. ……..……..Phyllonorycter scabiosella (355) 15.077

SNOWBERRY

Gracillariidae

Mine underside, large occupying whole of leaf, strong folds in lower epidermis puckering leaf [7+9-10] ……..……...…..Phyllonorycter emberizaepenella (354) 15.076

Mine underside, small, occupying part of leaf which is often twisted into a cone; also may produce a mine on upperside of leaf, but this is a rare aberration [3-4+7-8+10] ……. ……..…….. Phyllonorycter trifasciella (361) 15.083

SORREL

Nepticulidae

Mine a spiral gallery round egg site turning this area bright red, larva pale yellow, gut greenish [5-6+8-10] ……..……..……...…..…… Enteucha acetosae (118) 4.001

Gracillariidae

Mine usually on upperside leading to a blotch; on leaving mine larva cuts a strip about 30mm by 7mm from edge of leaf , which it rolls downwards and secures with silk making an untidy cone. Two such rolls are made [7-9] ……... ……..Calybites phasianipennella (296) 15.017

STRAWBERRY

Nepticulidae

Mine gallery - frass linear [7+9-10] ……...Stigmella splendidissimella (53) 4.047
Mine gallery - frass dispersed [5-6+7-8+10-3] ……...…….. Stigmella aurella (50) 4.045
Early mine strongly contorted ending in blotch frass dispersed, brown [8-10] …..…… ……..……...……Ectoedemia arcuatella (30) 4.096
Early mine not contorted ending in blotch frass linear, black [7+9-11] ……..…… ……...……Stigmella aeneofasciella (55) 4.049

SWEET CHESTNUT

Nepticulidae

Egg usually on upperside, mine long, contorted, frass in thin central line at beginning of mine, widening, but leaving clear margins finishing with a fine central line, occasionally leading to a false blotch [6-7+9-10] …..….. Stigmella samiatella (88) 4.062

Tischeriidae

Mine a flat, whitish blotch on the top of a leaf, occasionally several mines can be found on one leaf. The mine is free of frass, which is ejected through a slit at the edge of the mine. The mine is lined with silk [9-4]…….……Tischeria ekebladella (123) 10.001
Mine a flat brownish blotch on top of a leaf with darker concentric rings on the upper surface of the leaf. No frass in mine, which is ejected through a slit. The mine is lined with silk [9-4] ……..…Tischeria dodonaea (124) 10.002

Gracillariidae

Mine on underside of leaf, often between two veins, sometimes causing the leaf to crease [3-4+7+10] ……..……..……Phyllonorycter messaniella (321) 15.040

*** SYCAMORE see MAPLE ***

*** TORMENTIL see CINQUEFOIL ***

VIPER'S BUGLOSS

Gracillariidae

Mine starts as a long narrow twisting gallery which abruptly widens into an elongated blotch mine with a wrinkled surface. The blotch is brown with white margins, purple staining of the galleries and blotch is characteristic. There may be two or three larvae in the blotch each having its own initial gallery mine ……
……..*Dialectica scalariella (311a) 15.0201
*N.B. At present the mines have not been found in Britain. The imago was initially discovered in Kent during September 2014 with a second found on St Marys, Isles of Scilly during August 2019.

WATER AVENS

Nepticulidae

Egg on either side of leaf. Mine long with dispersed frass leaving clear margins. Larva amber-yellow with yellowish brown head [5-6+7-8+10-3] …Stigmella aurella (50) 4.045
Egg on upperside of leaf. Early mine narrow, often following a vein with broken linear frass, broadening later, frass becoming dispersed linear, clear margins throughout. Often several mines in a leaf. Scotland [9-11]…….Stigmella pretiosa (54a) 4.048

WAYFARING TREE

Gracillariidae

Mine underside between two lateral veins, a strong pucker in upperside of leaf, at first the lower epidermis is white changing to brown as it ages [7+9-4]……
……..……..……..Phyllonorycter lantanella (331) 15.051

*** WHITEBEAM see ROWAN ***

*** WILD SERVICE TREE see ROWAN ***

*** WILLOWS see SALLOW ***

YARROW

Bucculatricidae

Mine in leaflet following margin, frass black linear; after leaving mine feeds from above leaving lower epidermis intact [4-5+7]……..…Bucculatrix cristatella (265) 14.001
Mine in leaflet eating all the parenchyma, frass black linear, after leaving mine feeds as B. cristatella (northern Scotland) [6-7] ……..…….Bucculatrix obscurella (268) 14.005

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It is recommended that this key is used in conjunction with the website http://www.leafmines.co.uk/ which has photographs of many mines, therefore greatly increasing the probability of a correct identification.

Further references:

The leaf and stem mines of British Flies and other insects.
http://www.ukflymines.co.uk/index.php

Leafminers and Plant Galls of Europe.
https://bladmineerders.nl/