

On the Agromyzidae (Diptera) in Norway, Part 4

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The present paper is the last in a series of four on the fauna of Agromyzidae in Norway, and deals with the genera *Melanagromyza* Hendel, 1920, *Ophiomyia* Braschnikov, 1897, *Amauromyza* Hendel, 1931, *Aulagromyza* Enderlein, 1936, *Cerodontha* Rondani, 1861, *Chromatomyia* Hardy, 1849, *Liriomyza* Mik, 1894, *Metopomyza* Enderlein, 1936, *Napomyza* Westwood, 1840 and *Phytomyza* Fallén, 1810. Ninety-six species are reported of which seventeen are reported new to the Norwegian fauna: *Melanagromyza aeneoventris* (Fallén, 1823), *M. cunctans* (Meigen, 1830), *M. pubescens* Hendel, 1923, *M. submetallescens* Spencer, 1966, *Ophiomyia curvipalpis* (Zetterstedt, 1848), *O. ranunculicaulis* Hering, 1949, *Chromatomyia syngenesiae* Hardy, 1849, *Metopomyza interfrontalis* Melander, 1913, *M. xanthaspioides* (Frey, 1946), *Phytomyza cecidonomia* Hering, 1937, *P. cirsii* Hendel, 1923, *P. clematidis* Kaltenbach, 1859, *P. fennoscandiae* Spencer, 1976, *P. isais* Hering, 1937, *P. origani* Hering, 1931, *P. pulsatillae* Hering, 1924 and *P. socia* Brischke, 1881. In addition, new regional data is given for eighty species previously reported from Norway. The biology of the larva, when known, and the distribution in Norway and Europe are commented on species new to Norway. The Norwegian checklist for Agromyzidae now consist of 256 species.

Key words: Agromyzidae, *Amauromyza*, *Aulagromyza*, biology, *Cerodontha*, *Chromatomyia*, Diptera, distribution, *Liriomyza*, *Melanagromyza*, *Metopomyza*, *Napomyza*, Norway, *Ophiomyia*, *Phytomyza*.

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Introduction

The larvae of Agromyzidae mine in leaves, stems, seeds and roots of plants. Accordingly, many Agromyzidae species are important pests in cultural plants. During the last 25 years, some data have been published on the Norwegian fauna of Agromyzidae (Andersen & Jonassen 1994, Bland 1995, Bland & von Tschirnhaus 1998, Andersen *et al.* 2004, Gibbs & von Tschirnhaus 2005, Andersen 2011, 2012, 2013, 2016, Hansen & Bjureke 2012), but still the Norwegian fauna of this family is poorly known.

Agromyzidae is represented in Norway by sixteen genera belonging to two subfamilies, with 240 species recorded so far. This paper is the

fourth in a series on the fauna of Agromyzidae in Norway (Andersen 2012, 2013, 2016), and presents new data from the genera *Melanagromyza* Hendel, 1920, *Ophiomyia* Braschnikov, 1897, *Amauromyza* Hendel, 1931, *Aulagromyza* Enderlein, 1936, *Cerodontha* Rondani, 1861, *Chromatomyia* Hardy, 1849, *Liriomyza* Mik, 1894, *Metopomyza* Enderlein, 1936, *Napomyza* Westwood, 1840 and *Phytomyza* Fallén, 1810.

Materials and methods

The present paper deals with material collected during several projects and collecting trips in many parts of Norway. This include long-term

experiments measuring the effects of reduced tillage on the Agromyzidae fauna (Andersen 2003), a project on the biodiversity of Agromyzidae in biologically and conventionally grown spring barley and grass (Andersen *et al.* 2004), and a study on species richness of Agromyzidae in hay meadows (Andersen 2011). If a species has been found more than once in the same district or EIS (European Invertebrate Survey) square, only detailed data from the first record is given. This was done to avoid all the details when the same locality was visited more than once. In such cases, the total number of specimens studied is indicated in parenthesis. The author netted most of the flies, but in some cases yellow water traps or a Malaise-trap was used. The material has been stored in 70% ethanol in the author's private collection. However, a large part of the collection has been donated to the Natural History Museum in Oslo. Localities are given using the revised Strand-system (Økland 1981) and the EIS system (Endrestøl 2005). Distribution (including maps) and biology is given only for the seventeen species new to Norway.

During identification, the flies were kept in 70% ethanol in small Petri dishes and handled with needles and soft tweezers. In most cases, the identification was done by using the tables and drawings of genitalia in Spencer (1976).

The species

Species not previously recorded from Norway are marked with an asterisk (*). If nothing else is noted, the material has been collected by the author.

GENUS *MELANAGROMYZA* HENDEL, 1920

* *Melanagromyza aeneoventris* (Fallén, 1823) (Figure 1)

Material. VE, Horten: Steinsnes (EIS 19) 21 June 2017, 2♂♂.

Distribution and biology. *M. aeneoventris* was found in only one location in southeast Norway. It is widespread and common in most European countries, including Fennoscandia

and Denmark (Spencer 1976, Martinez 2017). The larva is an internal stem-borer in *Cirsium*-, *Senecio*- and *Carduus*-species (Asteraceae) (Pitkin *et al.* 2017).

* *Melanagromyza cunctans* (Meigen, 1830)

(Figure 2)

Material (n = 2). VE, Horten: Løvøya (EIS 19) 12 June 2017, 1♂.

Distribution and biology. *M. cunctans* was found in only one location in southeast Norway. It is widespread in Europe and found in Sweden, but most common in Mediterranean areas (Spencer 1976, Martinez 2017). The larva is forming a slender stem-gall in *Lotus corniculatus* (Fabaceae) (Spencer 1976, Pitkin *et al.* 2017).

Melanagromyza nigrissima Spencer, 1976

New material (n = 2). VE, Sande: Klevjerhagen (EIS 28) 25 May 2000, 1♂. This specimen was also mentioned in Andersen *et al.* (2004), but without all the details.

* *Melanagromyza pubescens* Hendel, 1923

(Figure 3)

Material. VE, Horten: Bastøy (EIS 19) 14 June 2009, 1♂1♀.

Distribution and biology. *M. pubescens* was found in only one location in southeast Norway. It is present in many countries in Europe, including Fennoscandia and Denmark, mainly in the east (Spencer 1976, Martinez 2017). The host-plant is unknown (Pitkin *et al.* 2017).

* *Melanagromyza submetallescens* Spencer, 1966 (Figure 4)

Material. VE, Sande: Sande (EIS 28) 27 June 2000, 1♂2♀♀.

Distribution and biology. *M. submetallescens* was found in only one locality in south-eastern Norway. It has been found in only a few countries in northeast Europe, including Finland (Spencer 1976, Kahanpää 2014, Martinez 2017). The host-plant is unknown, but the larvae is almost certainly an internal stem-borer (Spencer 1976).

GENUS *OPHIOMYIA* BRASCHNIKOV, 1897

* *Ophiomyia curvivalpis* (Zetterstedt, 1848)

(Figure 5)

Material (n = 5). **VE**, Horten: Steinsnes (EIS 19) 19 July 2017, 3♂♂.

Distribution and biology. *O. curvivalpis* was found in only one locality in south-eastern Norway. It is widespread in most of Europe, including Sweden and Denmark (Spencer 1976, Martinez 2017). The larva produces a narrow, inconspicuous stem-mine mainly in plants of Asteraceae, but also in some Fabaceae and Lamiaceae (Spencer 1976, Pitkin *et al.* 2017).

Ophiomyia melandryi de Meijere, 1924

New material. **VE**, Sande: Sande (EIS 28) 3 June 2000, 1♂. This specimen was also mentioned in Andersen *et al.* 2004, but without further details.

Ophiomyia orbiculata (Hendel, 1931)

New material (n = 11). **VE**. Horten: Vollane (EIS 19) 20 June 2017, 6♂♂.

* *Ophiomyia ranunculicaulis* Hering, 1949

(Figure 6)

Material. **AK**, Bærum: Ostøya (EIS 28), 30 May–10 June 1984, 1♂; **VE**, Horten: Bastøy, Buvika (EIS 19), 31 May 2009, 1♂; **TEI**, Seljord: Svartdal, Laukereini (EIS 26), 20 May 2011, 1♂; **AAV**, Grimstad: Indre Maløy (EIS 6), 3 June 2011, 1♂.

Distribution and biology. *O. ranunculicaulis* was found in several locations in south-eastern Norway. It is present in many European countries, including Sweden, but lacking in the Mediterranean area (Spencer 1976, Martinez 2017). The larva is forming a stem-mine spiralling down the stem of several *Ranunculus* species (Ranunculaceae), pupating in the end of the mine (Spencer 1976, Pitkin *et al.* 2017).

GENUS *AMAUROMYZA* HENDEL, 1931

Amauromyza monfalconensis (Strobl, 1909)

New material. **BV**, Røllag: Gvammen (EIS 35), 23 May 2011, 1♂2♀♀.

Amauromyza labiatarum (Hendel, 1920)

New material. **AK**, Oslo: Botanical garden (EIS 28), 18 June 2014, 1♂.

GENUS *AULAGROMYZA* ENDERLEIN, 1936

Aulagromyza buhri (de Meijere, 1938)

New material (n = 3). **VE**, Horten: Rørestrand (EIS 19), 21 June 2017, 2♂♂.

GENUS *CERODONTHA* RONDANI, 1861

Subgenus *Poemyza* Hendel, 1931

Cerodontha (P.) atra (Meigen, 1830)

New material (n = 3). **HOI**, Kvinnherad: Ølve kirke (EIS 31), 1 May 2014, 1♂; **NSY**, Nesna: Kvithella (EIS 118), 29 June 2016, 1♂.

Cerodontha (P.) incisa (Meigen, 1830)

New material (n = 3). **HOI**, Kvinnherad: Geitaknottane (EIS 31), May 1998, 1♂. This record was also mentioned in Thunes *et al.* (2004), but without all the details.

Cerodontha (P.) muscina (Meigen, 1830)

New material (n = 33). **Ø**, Aremark: Bøen sætre (EIS 21), 23 May 2012, 1♀; **AK**, Nannestad: Søndre Kringer (EIS 37), 26 May 2012, 1♀; **BØ**, Kongsberg: Ullebergåsen (EIS 27), 21 May 2011, 1♀; **VE**, Horten: Bastøy, Buvika (EIS 19), 4 June 2010, 1♂1♀; **TEY** Bamble: Valle, Hovbukta (EIS 11), 23 August 2002, 1♀; Skien: Vestre Marker (EIS 18), 14 May 2011, 1♀; **RY**, Vindafjord: Skjold kirke (EIS 23), 29 April 2014, 1♂; **FN**, Porsanger: Laksvåg (EIS 174), 24 June 2004, 2♀♀.

Subgenus *Butomyza* Nowakowski, 1967

Cerodontha (B.) scirpi (Karl, 1926)

New material. **VE**, Horten: Borrevann, Søndre Vik (EIS 19), 25 June 2017, 3♂♂.

Subgenus *Xenophytomyza* Frey, 1946

Cerodontha (X.) venturii Nowakowski, 1967

New material (n = 17). **AK**, Aurskog-Høland:

Mikkelrud (EIS 29), 15 June 2012, 1♂5♀♀; **BØ**, Hurum: Rokkestad (EIS 28), 26 May 2002, 4♂♂2♀♀; **TEY**, Skien: Vestre Marker (EIS 18), 6 June 2012, 2♂♂.

Subgenus *Icteromyza* Hendel, 1931

***Cerodontha (I.) capitata* (Zetterstedt, 1848)**

New material (n = 4). **VE**, Horten: Borrevann, Søndre Vik (EIS 19), 2 June 2014, 1♂; **TEY**, Skien: Vestre Marker (EIS 18), 28 June 2012, 1♂.

Subgenus *Phytagomyza* Hendel, 1920

***Cerodontha (P.) flavocingulata* (Strobl, 1909)**

New material. **NTI**, Steinkjer: Kvam, Guin vestre (EIS 101), 27 June 2016, 3♂♂.

Cerodontha s. str.

***Cerodontha (C.) denticornis* (Panzer, 1806)**

New material (n = 4). **NTI**, Steinkjer: Kvam, Guin vestre (EIS 101), 27 June 2016, 1♂; **NSY**, Nesna: Kvithella (EIS 118), 29 June 2016, 1♂; **Meløy**: Ørnes (EIS 125), 2 July 2016, 1♂.

***Cerodontha (C.) fulvipes* (Meigen, 1830)**

New material. **TEY**, Skien: Vestre Marker (EIS 18), 28 June 2012, 1♂1♀.

Subgenus *Dizygomyza* Hendel, 1920

***Cerodontha (D.) bimaculata* (Meigen, 1830)**

New material (n = 13). **AK**, Nannestad: Søndre Kringler (EIS 37), 26 May 2012, 1♂1♀; **VAY**, Flekkefjord: Hydra, Rasvåg (EIS 4), 4 September 2017, 4♂♂. **HOY**, Os: Vaktdal (EIS 31), 2 May 2014, 1♂; **HOI**, Kvinnherad: Varaldsøy, Gjuvlandsli (EIS 31), 4 May 2014, 3♂♂3♀♀.

***Cerodontha (D.) fasciata* (Strobl, 1880)**

New material. **HOI**, Etne: Lauareid (EIS 23), 29 April 2014, 1♂.

***Cerodontha (D.) iraeos* (Robineau-Desvoidy, 1851)**

New material. **VE**, Horten: Borrevann, Knudsrød (EIS 19), 19 June 2017, 1♂.

***Cerodontha (D.) luctuosa*, (Meigen, 1830)**

New material (n = 8). **Ø**, Aremark: Bøen sætre (EIS 21), 7 June 2012, 1♂; **TEI**, Seljord: Svartdal, Laukereini (EIS 26), 20 June 2010, 1♂; **NNV**, Flakstad: Selfjordhytta (EIS 133), 6 July 2017, 1♂. In most Norwegian specimens the abdomen is all black.

***Cerodontha (D.) morosa* (Meigen, 1830)**

New material (n = 10). **VAY**, Flekkefjord: Hydra, Veisdal (EIS 4), 3 September 2017, 2♂♂; **HOI**, Kvinnherad: Varaldsøy, Gjuvlandsli (EIS 31), 4 May 2014, 6♂♂; **NTI**, Høylandet: Tverråa (EIS 107), 18 June 1987, 1♂. The last specimen was by mistake published as *Cerodontha (Dizygomyza) ireos* in Andersen & Jonassen (1994).

GENUS *CHROMATOMYIA* HARDY, 1849

***Chromatomyia ciliata* (Hendel, 1935)**

New material (n = 4). **NSY**, Bodø: Ausvika (EIS 131), 14 June 2002, 3♂♂.

***Chromatomyia fuscula* (Zetterstedt, 1838)**

New material (n = 170). **VE**, Skien: Vestre Marker (EIS 18), 14 May 2011, 1♂20♀♀; **MRI**, Sunndal: Svisdalshaugene (EIS 79), 5 July 2011, 27♂♂44♀♀; **HOI**, Kvinnherad: Varaldsøy, Gjuvlandsli (EIS 31), 4 May 2014, 1♂; **NSY**, Nesna: Skog (EIS 118), 29 June 2016, 3♂♂; **Træna**: Husøya (EIS 121), 30 June 2016, 3♂♂; **Lurøy**: Stokkvågen (EIS 122), 29 June 2016, 4♂♂; **FØ**, Sør-Varanger: Elveli (EIS 160), 8 July 2012, 1♂10♀♀; **Sør-Varanger**: Sandnes (EIS 168), 5 July 2012, 1♂; **Sør-Varanger**: Ropelv (EIS 169), 30 June 2012, 1♂.

***Chromatomyia horticola* (Goureaux, 1851)**

New material (n = 54). **Ø**, Sarpsborg: Greåker (EIS 20), 6 August 2002, 1♂1♀; **Eidsberg**: Slitu (EIS 29), 19 July 1999, 2♂♂; **AK**, Enebakk: Haugstein (EIS 29), 15 June 1998, 1♂; **Nittedal**: Gjelleråsen (EIS 36), 9 August 1995, 2♂♂2♀♀ hatched from leaves of *Pisum sativum sativum*; **BV**, Sigdal: Tempelseter (EIS 35), 4 September 1999, 1♂; **HES**, Ringsaker: Moelv (EIS 54), 29 July 2002, 1♂; **BØ**, Lier: Sandaker gartneri

(EIS 28), 21 June 2003, 3♂♂; **ON**, Nord-Fron: Gålåvatnet, Heggelåa (EIS 62), 24 June 2016, 1♂; **VE**, Larvik: Gutterød gartneri (EIS 12), 25 June 2003, 2♂♂; Horten: Bastøy, Buvika (EIS 19), 23 July 2015, 2♂♂ hatched from leaves of *Sonchus arvensis*; Sande: Sande (EIS 28), 16 June 2000, 1♂; **TEI**, Bø: Bø (EIS 18), 13 June 2004, 1♂; **AAV**, Grimstad: Landvik (EIS 6), 7 July 2003, 1♂; **VAY**, Flekkefjord: Hidra, Veisdal (EIS 4), 3 September 2017, 1♂; **RY**, Hå: Brusand (EIS 3), 29 April 1996, 1♂1♀; **HOY**, Lindås: Eikangervåg (EIS 40), 6 May 1996, 1♂; **STI**, Meldal: Kløvsteinbakken (EIS 86), 23 July 1985, 1♂; **NTI**, Stjørdal: Værnes (EIS 92), 12 June 1995, 6♂♂.

Chromatomyia luzulae (Hering, 1924)

New material (n = 2). **VE**, Horten: Borrevann, Søndre Vik (EIS 19), 16 June 2015, 1♂.

Chromatomyia nigra (Meigen, 1830)

New material (n = 76). **TEI**, Seljord: Svartdal, Nord-Blika (EIS 26), 19 June 2012, 1♂; **NTI**, Steinkjer: Kvam, Guin vestre (EIS 101), 27 June 2016, 4♂♂; **NSY**, Nesna: Nesna (EIS 118), 29 June 2016, 52♂♂; Træna: Husøya (EIS 121), 30 June 2016, 11♂♂; Lurøy: Stokkvågen (EIS 122), 29 June 2016, 2♂♂; Meløy: Ørnes (EIS 125), 2 July 2016, 2♂♂.

Chromatomyia opacella (Hendel, 1935)

New material (n = 26). **OS**, Sør-Fron: Harpefoss, Enge (EIS 62), 21 June 2016, 3♂♂; **TEI**, Seljord: Svartdal, Laukereini (EIS 26), 13 June 2011, 1♂; **STI**, Røros: Sølendet (EIS 88), 25 June 2016, 2♂♂; **NSY**, Træna: Husøya (EIS 121), 30 June 2016, 1♂; **TRY**, Tromsø: Holt (EIS 162), 21 June 2004, 2♂♂; **FV**, Alta: Elvestrand (EIS 173), 22 June 2004, 3♂♂; **FN**, Porsanger: Lakselv (EIS 174), 24 June 2004, 2♂♂; Porsanger: Olderfjord (EIS 181), 24 June 2004, 3♂♂; **FØ**, Sør-Varanger: Sandnes (EIS 168), 2 July 2012, 1♂; Sør-Varanger: Skrukkebukta (EIS 169), 2 July 2012, 1♂.

Chromatomyia periclymeni (de Meijere, 1922)

New material (n = 6). **BØ**, Kongsberg: Ullebergåsen (EIS 27), 6 June 2009, 1♂; **VE**,

Horten: Bastøy, Buvika (EIS 19), 4 June 2010, 1♂; **FN**, Porsanger: Lakselv (EIS 174), 24 June 2004, 3♂♂.

Chromatomyia ramosa (Hendel, 1923)

New material (n = 12). **AK**, Aurskog-Høland: Mikkellrud (EIS 29), 30 May 2012, 5♂♂; **ON**, Skjåk: Bråtå (EIS 69), 14 July 2017, 1♂; **TEI**, Skien, Vestre Marker (EIS 18), 6 June 2011, 1♂; **STI**, Røros: Sølendet (EIS 88), 25 June 2016, 4♂♂.

* *Chromatomyia syngenesiae* Hardy, 1849

(Figure 7)

Material. **TEY**, Kragerø: Jomfruland (EIS 11), 25 August 2002, 1♂.

Distribution and biology. *C. syngenesiae* is widespread and common all over Europe, including Fennoscandia and Denmark (Spencer 1976, Martinez 2017). The larva forms a whitish linear mine, pupating in the leaf at the end of the mine. More than 70 plant species in Asteraceae are hosts of this species, and it also infests *Daucus*-species in Apiaceae and *Pisum*-species (Fabaceae) (Pitkin *et al.* 2017).

GENUS *LIRIOMYZA* MIK, 1894

Liriomyza equiseti de Meijere, 1924

New material (n = 4). **VE**, Horten: Vollane (EIS 19), 3 June 2016, 3♂♂.

Liriomyza flaveola (Fallén, 1823)

New material. **ON**, Skjåk: Bråtå (EIS 69), 14 July 2017, 1♀; **NSY**, Nesna: Nesna (EIS 118), 29 June 2016, 3♀♀; Træna: Husøya (EIS 121), 30 June 2016, 1♂3♀♀; **NNV**, Flakstad: Selfjordhytta (EIS 133), 6 July 2017, 4♂♂.

Liriomyza phryne Hendel, 1931

New material. **OS**, Sør-Fron: Harpefoss, Enge (EIS 62), 21 June 2016, 1♀.

GENUS *METOPOMYZA* ENDERLEIN, 1936

Metopomyza scutellata (Fallén, 1823)

New material (n = 7). **VE**, Horten: Borrevann, Søndre Vik (EIS 19), 16 June 2015, 2♂♂.

*** *Metopomyza interfrontalis* Melander, 1913**

(Figure 8)

Material. VE, Horten: Borrevann, Kongsodden (EIS 19), 30 May 2014, 3♂♂; STI, Røros: Sølendet (EIS 88), 25 June 2016, 1♂.

Distribution and biology. *M. interfrontalis* was found in one location in south-eastern Norway and one in Central Norway. It is widespread but not common in north-eastern Europe, including Sweden and Finland (Spencer 1976, Martinez 2017). The host of the larva is unknown, but most likely *Carex* (Cyperaceae). (Spencer 1976, Ellis 2017).

***Metopomyza xanthaspioides* (Frey, 1946)**

New material. AK, Aurskog-Høland: Mikkelerud (EIS 29), 30 May 2012, 1♂.

*** *Metopomyza xanthaspis* (Loew, 1858)**

(Figure 9)

Material (n = 2). VE, Horten: Vollane (EIS 19), 20 June 2017, 1♂.

Distribution and biology. *M. xanthaspis* was found in only one locality in south-eastern Norway. It is widespread but not common in Europe, including Fennoscandia and Denmark (Spencer 1976, Martinez 2017). The larva makes a leaf-mine in *Carex* species. Initially it is formed on the lower leaf surface, running towards the apex, but later continuing down towards the leaf base on the upper surface (Spencer 1976, Pitkin *et al.* 2017).

GENUS *NAPOMYZA* WESTWOOD, 1840***Napomyza achilleanella* von Tschirnhaus, 1992**

New material (n = 146). Ø, Råde: Store Sletter (EIS 19), 28 August 1999, 1♂; Aremark: Bøen sætre (EIS 21), 12 June 2011, 2♂♂3♀♀; AK, Ås, The University (EIS 28), 16 June 2003, 1♂; Enebakk: Orderud (EIS 29), 24 August 1998, 1♂; Nannestad: Søndre Kringler (EIS 37), 16 June 2011, 2♂♂; OS, Sør-Fron: Gållå (EIS 42), 4 July 1997, 2♂♂; ON, Dovre: Dombåshaugen (EIS 71), 4 July 2011, 1♂; BØ, Lier: Kjellstadveien 42 (EIS 28), 21 June 2003, 1♂; BV, Rollag: Solberg gård (EIS 35), 23 May 2011, 2♂♂; VE, Andebu: Askjemvannet, Nesengen (EIS 19), 22 June

1996, 1♂; TEY, Kragerø: Jomfruland (EIS 11), 25 August 2002, 4♂♂; TEI, Seljord: Svartdal, Nord-Blika (EIS 26), 20 May 2011, 1♂; AAY, Grimstad: Landvik (EIS 6), 7 July 2003, 1♂; VAY, Flekkefjord: Hidra, Husøya (EIS 4), 3 August 2003, 1♂; VAI, Sirdal: Tonstad (EIS 8), 13 June 2004, 1♂; MRI, Sunndal: Svidalshaugene (EIS 79), 5 July 2011, 1♂1♀; STI, Røros: Sølendet (EIS 88), 27 July 2011, 1♂1♀; NSY, Nesna: Nesna (EIS 118), 29 June 2016, 1♂; Meløy: Ørnes (EIS 125), 2 July 2016, 3♂♂; Bodø: Straumøy, Seines (EIS 131), 16 June 2002, 6♂♂1♀; NSI, Skjærstad: Vesterli (EIS 127), 16 June 2002, 2♂♂.

***Napomyza elegans* (Meigen, 1830)**

New material (n = 38). AK, Oslo: Botanical garden (EIS 28), 18 June 2014, 1♀; VE, Horten: Borrevann, Søndre Vik (EIS 19), 2 June 2014, 1♂; NTI, Steinkjer: Kvam, Guin vestre (EIS 101), 11 July 2017, 2♀♀; NSY, Nesna: Nesna (EIS 118), 29 June 2016, 1♀.

***Napomyza lateralis* (Fallén, 1823)**

New material (n = 143). AK, Enebakk: Haugstein (EIS 29), 2 September 1998, 5♂♂3♀♀; TEY, Skien: Vestre Marker (EIS 18), 13 June 2011, 6♂♂; NTI, Steinkjer: Kvam, Guin vestre (EIS 101), 27 June 2016, 4♂♂; NSY, Nesna: Nesna (EIS 118), 29 June 2016, 2♂♂2♀♀; Træna: Husøya (EIS 121), 30 June 2016, 3♂♂3♀♀; Meløy: Ørnes (EIS 125), 2 July 2016, 1♂; FØ, Sør-Varanger: Neiden kapell (EIS 168), 6 July 2012, 2♂♂1♀; Sør-Varanger: Bjørnstad (EIS 169), 5 July 2012, 3♂♂7♀♀; Sør-Varanger: Bugøyfjord (EIS 177), 6 July 2012, 1♂1♀.

***Napomyza plumea* Spencer, 1969**

New material. FØ, Sør-Varanger: Sandnes (EIS 168), 5 July 2012, 1♂.

GENUS *PHYTOMYZA* FALLÉN, 1810***Phytomyza adjuncta* Hering, 1928**

New material. TEI, Seljord: Svartdal, Laukereini (EIS 26), 27 May 2012, 1♂; VAY, Flekkefjord: Hidra, Hågåsen, (EIS 4), 2 September 2017, 1♂.

***Phytomyza affinis* Fallén, 1823**

New material. NSY, Nesna: Kvithella (EIS 118), 29 June 2016, 1♂; FØ, Sør-Varanger: Sandnes (EIS 168), 5 July 2012, 1♂.

***Phytomyza albiceps* Meigen, 1830**

New material. BØ, Kongsberg: Ullebergåsen (EIS 27), 21 June 2008, 1♂; NSY, Bodø: Hunstad (EIS 131), 13 June 2002, 1♂1♀.

***Phytomyza angelicae* Kaltenbach, 1872**

New material (n = 11). Ø, Eidsberg: Slitu (EIS 29), 27 May 1999, 1♂1♀; VE, Horten: Borrevann, Søndre Vik (EIS 19), 2 June 2014, 1♂; TEY, Bamble: Valle, Hovbukta (EIS 11), 23 August 2002, 3♂♂; TEI, Hjartdal: Ambjørndalen (EIS 26), 1 June 2010, 1♂; AAY, Grimstad: Indre Maløy (EIS 6), 25 June 2011, 1♂.

***Phytomyza angelicastroi* Hering, 1932**

New material. Ø, Eidsberg: Slitu (EIS 29), 15 July 1999, 1♂; AK, Enebakk: Haugstein (EIS 29), 18 August 1998, 1♂; VAY, Flekkefjord: Hidra, Veisdal, (EIS 4), 3 September 2017; MRI, Rauma: Staurset (EIS 7), 6 July 2011, 1♂; STI, Røros: Sølendet (EIS 88), 25 June 2016, 1♂; FN, Nesseby: 3.3 km west of Varangerbotn (EIS 176), 7 July 2012, 2♂♂; Nesseby: Varangerbotn (EIS 177), 7 July 2012, 2♂♂.

***Phytomyza artemisivora* Spencer, 1971**

New material (n = 13). Ø, Eidsberg: Slitu (EIS 29), 24 June 1999, 2♂♂1♀; VE, Horten: Bastøy, Buvika (EIS 19), 4 May 2007, 1♂; TEY, Kragerø: Kalstadkilen (EIS 11), 24 August 2002, 1♂; BØ, Hurum: Rokkestad (EIS 28), 26 May 2002, 1♂.

***Phytomyza buhriella* Spencer, 1969**

New material (n = 7). TEI, Seljord: Svartdal, Laukereini (EIS 26), 20 June 2010, 1♂; NSY, Bodø: Bertnes (EIS 131), 13 June 2002, 3♂♂1♀; NSI, Skjerstad: Oldereid (EIS 126), 16 June 2002, 1♂.

***Phytomyza calthivora* Hendel, 1934**

New material. AK, Aurskog-Høland: Mikkelerud (EIS 29), 15 June 2012, 2♂♂.

***Phytomyza calthophila* Hering, 1931**

New material. OS, Østre Toten: Apelsvoll (EIS 45), 28 May 1990, 1♂.

*** *Phytomyza cecidonomia* Hering, 1937**

(Figure 10)

Material. VAY, Flekkefjord: Hidra, Hågåsen (EIS 4), 2 September 2017, 2♂♂.

Distribution and biology. *P. cecidonomia* was found in only one location in southern Norway. It is widespread in western Europe, including Sweden and Denmark (Spencer 1976, Martinez 2017). The host of the larva is *Hypochoeris radiata* (Asteraceae). The larva is feeding on the midrib, which can swell basally and become gall-like. Probably the larva overwinter in the mine, and there are at least two generations per year (Spencer 1976, Pitkin *et al.* 2017).

***Phytomyza chaerophylli* Kaltenbach, 1856**

New material (n = 20). AK, Aurskog-Høland: Mikkelerud (EIS 29), 30 May 2012, 1♂; NTI, Steinkjer: Kvam, Guin vestre (EIS 101), 26 June 2016, 1♂; NSY, Meløy: Ørnes (EIS 125), 2 July 2016, 1♂; FN, Nesseby: 3.3 km west of Varangerbotn (EIS 176), 7 July 2012, 1♂; FØ, Sør-Varanger: Langvasseid (EIS 168), 6 July 2012, 1♂; Sør-Varanger: Indre Lanabukt (EIS 169), 5 July 2012, 6♂♂.

*** *Phytomyza cirsii* Hendel, 1923** (Figure 11)

Material. Ø, Rygge: Dilling, Bergerud gartneri (EIS 19), 19 June 2003, 1♂; VE, Larvik: Ula, Holtefjell (EIS 19), 17 August 2001, 1♂; Horten: Bastøy, Kalven (EIS 19), 9 June 2007, 2♂♂1♀.

Distribution and biology. *P. cirsii* was found in three localities close to the Oslo fiord in south-eastern Norway. It is widespread and common in most of Europe, including Fennoscandia and Denmark (Spencer 1976, Martinez 2017). The larva forms a whitish upper surface linear mine in leaves of *Cirsium*- and *Carduus*-species (Asteraceae) (Spencer 1976, Pitkin *et al.* 2017).

*** *Phytomyza clematidis* Kaltenbach, 1859**

(Figure 12)

Material. VE, Horten: Borrevann, Søndre Vik

(EIS 19), 12 June 2017, 1♂.

Distribution and biology. *P. clematidis* was found in only one location in southeast Norway. It is widespread in western Europe but has not previously been found in Fennoscandia or Denmark (Martinez 2017). The larva infests several species of Ranunculaceae (Pitkin *et al.* 2017).

Phytomyza continua Hendel, 1920

New material. BØ, Hurum: Tofte (EIS 28), 18 May 2002, 1♂; VE, Horten: Møringa (EIS 19), 12 June 2016, 1♂; NSY, Bodø: Bodøsjøen (EIS 131), 17 June 2002, 1♂.

Phytomyza crassiseta Zetterstedt, 1860

New material (n = 265). Ø, Aremark: Bøen sætre (EIS 21), 19 May 2011, 4♂♂1♀; AK, Aurskog-Høland: Mikklerud (EIS 29), 30 May 2012, 4♂♂; HES, Stange: Stange (EIS 46), 11 July 2003, 1♂; HEN, Åmot: Rena (EIS 55), 17 September 2003, 5♂♂; BØ, Kongsberg: Ullebergåsen (EIS 27), 6 June 2009, 2♂♂; VE, Horten: Bastøy, Buvika (EIS 19), 27 April 2007, 3♂♂2♀♀; TEY, Kragerø: Jomfruland (EIS 11), 16 July 2011, 1♂; Skien: Vestre Marker (EIS 18), 13 June 2011, 1♂; TEI, Hjartdal: Ambjørndalen (EIS 26), 20 June 2010, 2♂♂; AAY, Risør: Søndeled (EIS 11), 6 July 2003, 2♂♂; VAY, Flekkefjord: Hidra, Veisdal, (EIS 4), 12 June 2004, 1♂; NTL, Levanger: Sunndalen, Litløya (EIS 97), 15 July 2003, 2♂♂.

Phytomyza evanescens Hendel, 1920

New material. Ø, Eidsberg: Slitu (EIS 29), 24 June 1999, 1♂; TEY, Skien: Vestre Marker (EIS 18), 28 June 2012, 1♂.

* *Phytomyza fennoscandiae* Spencer, 1976

(Figure 13)

Material. FV, Alta: Aronnes (EIS 173), 22 June 2004, 7♂♂.

Distribution and biology. *P. fennoscandiae* was found in only one location in Northern Norway. It has been found in only Sweden and France (Spencer 1976, Martinez 2017). The host of the larva is unknown.

Phytomyza flavicornis Fallén, 1823

New material. Ø, Aremark: Bøen sætre (EIS 21), 23 May 2012, 1♀; VE, Sande: Galleberg (EIS 28), 3 June 2000, 1♀; TEY, Skien: Vestre Marker (EIS 18), 6 June 2012, 1♀.

Phytomyza flavofemorata Strobl, 1893

New material (n = 83). AK, Enebakk: Orderud (EIS 29), 18 August 1998, 1♂; BØ, Kongsberg: Ullebergåsen (EIS 27), 21 June 2008, 4♂♂; VE, Horten: Borrehaugene (EIS 19), 27 June 2012, 1♂; TEI, Seljord: Svartdal, Nord-Blika (EIS 26), 20 June 2010, 5♂♂1♀; AAY, Grimstad: Reddal (EIS 6), 7 July 2003, 1♂1♀; VAY, Flekkefjord: Hidra, Hummerås (EIS 4), 19 July 1995, 1♂; MRV, Tingvoll: Aksnes (EIS 85), 5 July 2011, 2♂♂5♀♀; NTL, Levanger: Sunndalen, Litløya (EIS 97), 15 July 2003, 1♂; NNV, Flakstad: Nusfjord (EIS 133), 5 July 2006, 3♂♂3♀♀; FØ, Sør-Varanger: Bjørnstad (EIS 169), 5 July 2012, 5♂♂.

Phytomyza glabra Hendel, 1935

New material. Ø, Eidsberg: Slitu (EIS 29), 16 June 1999, 1♂; ON, Nord-Fron: Fefor høyfjellshotell (EIS 62), 23 June 2016, 1♂; Sel: Mysusetter (EIS 71), 22 June 2016, 1♂.

Phytomyza glechomae Kaltenbach, 1862

New material. Ø, Moss: Jeløy, Røer gård (EIS 19), 9 May 2002, 1♂1♀; VE, Horten: Borrevann, Åkerholmen (EIS 19), 29 May 2014, 2♂♂.

Phytomyza heracleana Hering, 1937

New material (n = 4). BØ, Hurum: Tofte (EIS 28), 18 May 2002, 3♂♂.

Phytomyza ilicis Curtis, 1846

New material. HOY, Stord: Huglo, Brandvik (EIS 23), 1 May 2014. Leaves of *Ilex aquifolium* with feeding punctures of adult females and mines of larvae; HOI, Kvinnherad: Varaldøy, Gjuvlandsli (EIS 31), 4 May 2014. Leaves of *I. aquifolium* (Aquifoliaceae) with feeding punctures of adult females.

* *Phytomyza isais* Hering 1937 (Figure 14)

Material. VE, Horten, Steinsnes (EIS 19), 5

September 2016, 1♂.

Distribution and biology. *P. isais* was found in only one location in south-eastern Norway. It has been found mainly in some north-western European countries, including Denmark (Spencer 1976, Martinez 2017). The larva is feeding and pupating in the seed-heads of *Odontites rubra* (Spencer 1976, Pitkin *et al.* 2017).

Phytomyza melana Hendel, 1920

New material. VAY, Flekkefjord: Hidra, Hågåsen (EIS 4), 2 September 2017, 4♂♂; HOI, Kvinnherad: Varaldsøy, Gjuvlandsli (EIS 31), 4 May 2014, 1♂.

Phytomyza nigrifemur Hering, 1934

New material (n = 6). VE, Horten: Borrevann, Søndre Vik (EIS 19), 25 June 2017, 2♂♂; BV, Sigdal: Heiseteråsen (EIS 35), June–July 1999, 1♂. This specimen was mentioned without details in Thunes *et al.* 2004; FØ, Sør-Varanger: Skrukkebukta (EIS 169), 2 July 2012, 2♂♂.

Phytomyza nigripennis Fallén, 1823

New material (n = 12). Ø, Eidsberg: Slitu (EIS 29), 21 May 1999, 1♂; HOY, Os: Vaktal (EIS 31), 2 May 2014, 2♂♂6♀♀; HOI, Etne: Laureid (EIS 23), 29 April 2014, 2♂♂.

* *Phytomyza origani* Hering, 1931 (Figure 15)

Material. AK, Bærum: Ostøya (EIS 28), 30 May–10 June 1984, 2♂♂; 24 July–12 August 1984, 1♂.

Distribution and biology. *P. origani* was found in only one location in south-eastern Norway. It has been found widespread in Europe, including Denmark (Spencer 1976, Martinez 2017). The larva is forming an initial spiral, followed by a linear section to the margin of the leaf of its host plant *Origanum vulgare* (Lamiaceae), where a dark blotch is formed. The puparium normally remains in the mine (Spencer 1976, Pitkin *et al.* 2017).

Phytomyza pimpinellae Hendel, 1924

New material. AK, Nannestad: Søndre Kringler (EIS 37), 21 June 2012, 2♂♂2♀♀.

Phytomyza plantaginis Robineau-Desvoidy, 1851

New material (n = 8). Ø, Eidsberg: Slitu (EIS 29), 15 July 1999, 1♂; TEY, Skien: Vestre Marker (EIS 18), 28 June 2012, 2♂♂.

Phytomyza ptarmicae Hering, 1937

New material. AK, Oslo: Skullerud (EIS 28), 21 June 2003, 1♂; VE, Horten: Borrehaugene (EIS 19), 27 May 2010, 2♂♂4♀♀. These finds were by mistake published as *P. tanacetii* in Andersen (2013).

Phytomyza pullula Zetterstedt, 1848

New material (n = 327). Ø, Sarpsborg: Greåker, Nye Tindlundsvei (EIS 20), 6 August 2002, 3♂♂8♀♀; Aremark: Bøen sætre (EIS 21), 19 May 2011, 1♂; Eidsberg: Slitu (EIS 29), 21 May 1999, 1♂; AK, Enebakk: Haugstein (EIS 29), 15 June 1998, 1♀; ON, Nord-Fron: Gållåvatnet, Heggeslåa (EIS 62), 24 June 2016, 5♂♂; BØ, Hurum: Storsand (EIS 28), 18 May 2011, 23♂♂2♀♀; VE, Larvik: Ula, Holtefjell (EIS 19), 17 August 2011, 1♂; Horten: Bastøy, Nordbukta (EIS 19), 17 May 2007, 5♂♂3♀♀; Sande: Finstad gård (EIS 28), 14 August 1999, 1♂; TEY, Porsgrunn: Berg (EIS 11), 21 August 2002, 2♂♂; Skien: Vestre Marker (EIS 18), 14 May 2011, 1♂; AAY, Grimstad: Hesnesøy (EIS 6), 25 June 2011, 1♂; Risør: Søndeled (EIS 11), 6 July 2003, 2♂♂; VAY, Farsund: Lista fyr (EIS 1), 29 July 2003, 1♂; Flekkefjord: Hidra, Hågåsen (EIS 4), 2 September 2017, 2♂♂; HOY, Stord: Huglo, Brandvik (EIS 23), 1 May 2014, 1♂; HOI, Kvinnherad: Varaldsøy, Gjuvlandsli (EIS 31), 4 May 2014, 1♂; MRI, Rauma: Isfjorden (EIS 77), 6 July 2011, 1♂1♀; NSY, Brønnøy: Brønnøysund (EIS 114), 2 July 2006, 1♂; NSI, Beiarn: Storjord (EIS 126), 16 June 2002, 1♂3♀♀; Skjerstad: Kvikstad (EIS 131), 16 June 2002, 1♂; TRY, Tromsø: Kvaløya, Straumhella (EIS 162), 21 June 2004, 3♂♂; FV, Alta: Flaten (EIS 173), 22 June 2004, 8♂♂3♀♀; FN, Porsanger: Lakselv (EIS 174), 24 June 2004, 19♂♂14♀♀; Tana: Skiipagurra (EIS 176), 7 July 2012, 1♂; Porsanger: Olderfjord (EIS 181), 24 June 2004, 2♂♂2♀♀; FØ, Sør-Varanger: Neiden, Skoltebyen (EIS 168), 1 July 2012, 3♂♂1♀; Sør-Varanger: Indre Lanabukt (EIS 169), 5 July 2012,

6♂♂4♀♀. In most specimens of this species caught in Norway, the second antennal segment is darkened.

* *Phytomyza pulsatillae* Hering, 1924

(Figure 16)

Material. VE, Horten: Bastøy, Kalven (EIS 19), 24 May 2012, 1♂.

Distribution and biology. *P. pulsatillae* was found in only one locality in south-eastern Norway. It is widespread in Europe, including Sweden and Denmark (Spencer 1976, Martinez 2017). The larva forms a whitish upper surface mine, beginning with a short-coiled section on the lower surface. *Pulsatilla pratensis*, *P. genus*, *Anemone slavica*, *A. coronaria* and *Clematis alpina* (Ranunculaceae) are known host-plants for the larva. *Pulsatilla pratensis* is a rare plant species in Norway but grows at Bastøy.

Phytomyza ranunculi (Schrank, 1803)

New material (n = 279). OS, Sør-Fron: Harpefoss, Enge (EIS 62), 21 June 2016, 2♂♂; BV, Sigdal: Prestfoss (EIS 27), 3 June 2002, 5♀♀; HOY, Bømlø: Stølo, Urangsvågen (EIS 22), 30 April 2014, 5♂♂8♀♀; Stord: Huglo, Brandvik (EIS 23), 1 May 2014, 2♂♂7♀♀; HOI, Kvinnherad: Varaldsøy, Gjuvlandslia (EIS 31), 4 May 2014, 39♂♂30♀♀; NTI, Steinkjer: Kvam, Guin vestre (EIS 101), 27 June 2016, 3♂♂; NSY, Nesna: Nesna (EIS 118), 29 June 2016, 4♂♂; Træna: Husøya (EIS 121), 30 June 2016, 10♂♂; NNV, Flakstad: Selfjordhytta (EIS 133), 6 July 2017, 10♂♂6♀♀; FØ, Sør-Varanger: Vaggatem (EIS 160), 8 July 2012, 8♂♂; Sør-Varanger: Langvasseid (EIS 168), 6 July 2012, 3♂♂2♀♀; Sør-Varanger: Indre Lanabukt (EIS 169), 5 July 2012, 7♂♂; Sør-Varanger: Bugøyfjord (EIS 177), 6 July 2012, 1♂.

Phytomyza ranunculivora Hering, 1932

New material (n = 34). Ø, Aremark: Bøen sætre (EIS 21), 12 June 2011, 2♂♂; AK, Aurskog-Høland: Mikkelerud (EIS 29), 30 May 2011, 1♂; Nannestad: Søndre Kringler (EIS 37), 1 June 2011, 1♂; TEY, Skien: Vestre Marker (EIS 18), 13 June 2011, 2♂♂; TEI, Hjartdal: Ambjørndalen (EIS 26), 20 June 2010, 4♂♂.

Phytomyza rapunculi Hendel, 1927

New material (n = 6). TEY, Bamble: Valle, Hovbukta (EIS 11), 23 August 2002, 3♂♂.

Phytomyza rhabdophora Griffiths, 1964

New material. ON, Skjåk: Bråtå (EIS 69), 14 July 2017, 1♂; TEY, Skien: Vestre Marker (EIS 18), 6 June 2012, 6♂♂.

Phytomyza rufescens von Roser, 1840

New material. VE, Horten: Bastøy, Buvika (EIS 19), 4 June 2010, 2♂♂1♀.

Phytomyza rydeni Hering, 1934

New material. VE, Horten: Borrevann, Bjerkerønningen (EIS 19), 12 June 2015, 1♂; TEY, Skien: Vestre Marker (EIS 18), 6 June 2012, 2♂♂; TEI, Seljord: Svartdal, Laukereini (EIS 26), 19 June 2012, 1♂; FØ, Sør-Varanger: Skrukkebukta (EIS 169), 2 July 2012, 1♂.

* *Phytomyza socia* Brischke, 1881 (Figure 17)

Material (n = 12). BØ, Kongsberg: Ullebergåsen (EIS 27), 30 May 2009, 3♂♂5♀♀.

Distribution and biology. *P. socia* was found in only one locality in south-eastern Norway. It is occurring in several east European countries and Sweden (Spencer 1976, Martinez 2017). The larva forms a blotch-mine which is apparently similar to that of *P. abdominalis*. There are at least two generations per year, and overwintering occur in the pupal stage outside the mine. *Hepatica* and *Anemone* species (Ranunculaceae) are hosts for the larva (Spencer 1976, Ellis 2017).

Phytomyza soenderupi Hering, 1941

New material. AK, Aurskog-Høland: Mikkelerud (EIS 29), 30 May 2012, 1♂.

Phytomyza solidaginis Hendel, 1920

New material. BØ, Kongsberg: Ullebergåsen (EIS 27), 6 June 2009, 1♂; NSY, Træna: Husøya (EIS 121), 30 June 2016, 2♂♂.

Phytomyza spinaciae Hendel, 1935

New material. AK, Enebakk: Haugstein (EIS 29), 18 August 1998, 1♂; VE, Horten: Borrevann, Søndre Vik (EIS 19), 25 June 2017, 1♂.

***Phytomyza spoliata* Strobl, 1906**

New material. Ø, Eidsberg: Slitu (EIS 29), 16 June 1999, 1♂; VE, Andebu, Askjemvannet, Nesengen (EIS 19), 10 June 2001, 1♂.

***Phytomyza subrostrata* Frey, 1946**

New material. AK, Aurskog-Høland: Mikkelrud (EIS 29), 30 May 2012, 1♂3♀.

***Phytomyza trolli* Hering, 1930**

New material (n = 3). FV, Alta: Smedhaugen (EIS 173), 22 June 2004, 1♂; FØ, Sør-Varanger: Skrukkebukta (EIS 169), 2 July 2012, 1♂.

***Phytomyza trolliivora* Hering, 1935**

New material (n = 7). AK, Aurskog-Høland: Mikkelrud (EIS 29), 15 June 2012, 2♂♂1♀; ON, Sel: Mysusetter (EIS 71), 22 June 2016, 1♂; FØ, Sør-Varanger: Indre Lanabukt (EIS 169), 5 July 2012, 1♂; Sør-Varanger: Bugøyfjord (EIS 177), 6 July 2012, 1♂.

***Phytomyza varipes* Macquart, 1835**

New material (n = 20). NSY, Meløy: Kilvik (EIS 125), 2 July 2016, 3♂♂1♀; FØ, Sør-Varanger: Elveli (EIS 160), 8 July 2012, 1♂; Sør-Varanger: Langvasseid (EIS 168), 6 July 2012, 2♂♂1♀; Sør-Varanger: Skrukkebukta (EIS 169), 2 July 2012, 2♂♂; Sør-Varanger: Bugøyfjord (EIS 177), 6 July 2012, 2♂♂1♀.

***Phytomyza virgaureae* Hering, 1926**

New material. Ø, Moss: Jeløy, Reierbukta (EIS 19), 3 September 1998, 2♂♂; BØ, Kongsberg: Ullebergåsen (EIS 27), 4 July 2008, 1♂; FØ, Sør-Varanger: Buholmen (EIS 168), 1 July 2012, 1♂.

***Phytomyza wahlgreni* Rydén, 1944**

New material. ON, Skjåk: Bråtå (EIS 69), 14 July 2017, 8♂♂10♀♀; Skjåk: Søre Kvåle (EIS 70), 14 July 2017, 26♂♂20♀♀; NSY, Meløy: Ørnes (EIS 125), 2 July 2016, 2♂♂1♀.

Conclusions

The known fauna of Norwegian Agromyzidae has

increased from 239 to 256 species when the species reported in this article are included. Still it is reasonable to assume that many species present in Norway has not been discovered. Already Spencer (1976) reported 385 Agromyzidae species from Denmark and Fennoscandia, and the most updated reports from the other Fennoscandian countries indicate 271 species from Denmark (Petersen & Meijer 2001), 279 from Finland (Kahanpää 2014) and 318 from Sweden (Dyntaxa 2017). In particular, many areas in western, central and northern Norway need more investigation. Also, mountainous areas are generally less investigated than coastal areas.

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APPENDIX 1. Distribution maps of 17 species of Agromyzidae in the genera *Melanagromyza* Hendel, 1920, *Ophiomyia* Braeschnikov, 1897, *Chromatomyia* Hardy, 1849, *Metopomyza* Enderlein, 1936 and *Phytomyza* Fallén, 1810. The distribution is given as EIS-grid maps (European Invertebrate Survey).

FIGURE 1. Distribution of *Melanagromyza aeneoventris* (Fallén, 1823) in Norway.

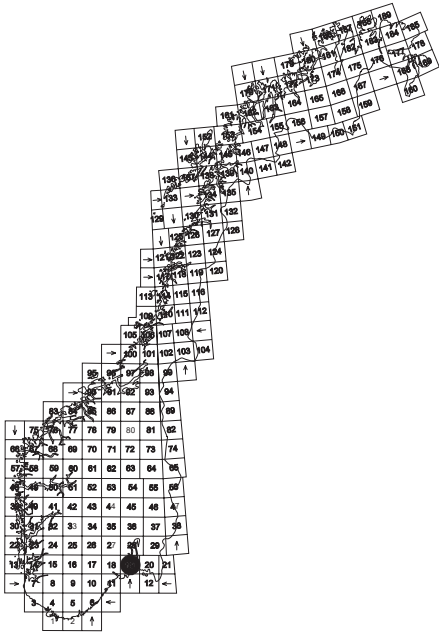


FIGURE 2. Distribution of *Melanagromyza cunctans* (Meigen, 1830) in Norway.

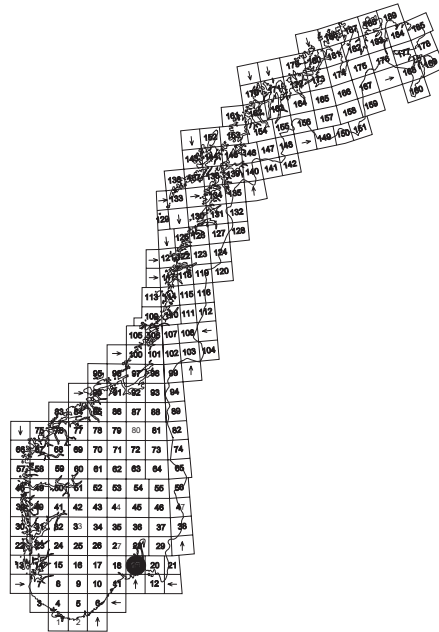


FIGURE 3. Distribution of *Melanagromyza pubescens* Hendel, 1923 in Norway.

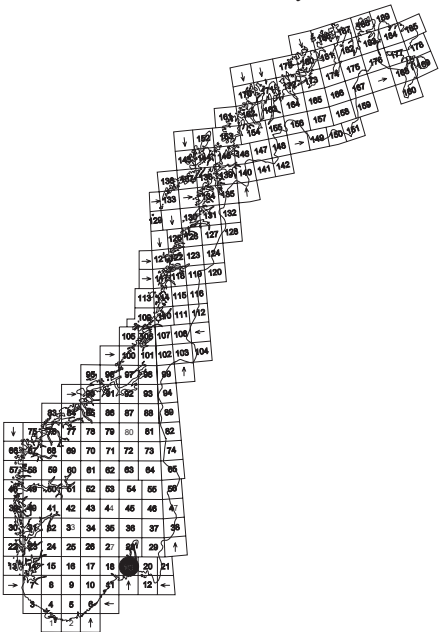


FIGURE 4. Distribution of *Melanagromyza submetallescens* Spencer, 1966 in Norway.

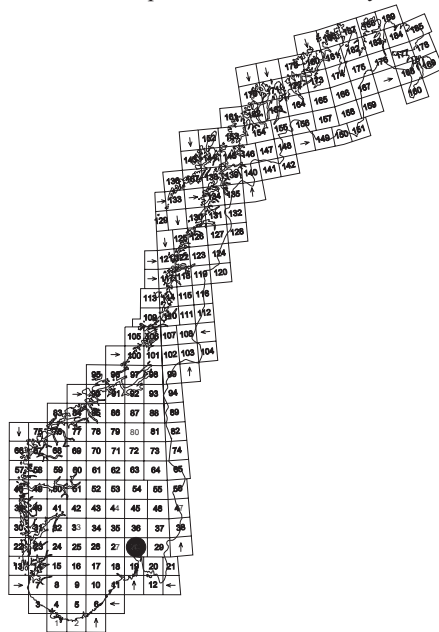


FIGURE 5. Distribution of *Ophiomyia curvipalpis* (Zetterstedt, 1848) in Norway.

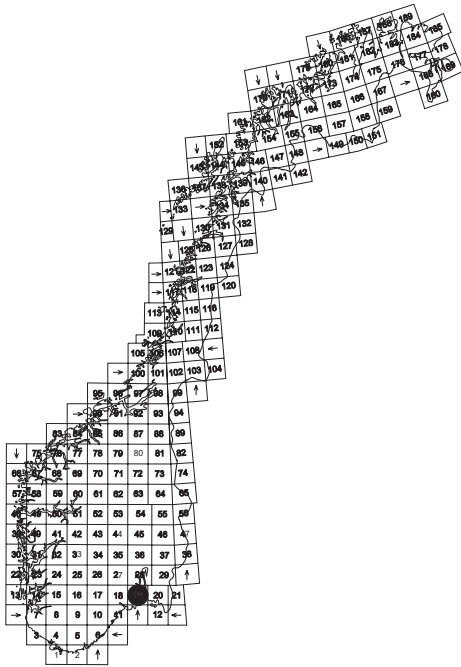


FIGURE 6. Distribution of *Ophiomyia ranunculicaulis* Hering, 1949 in Norway.

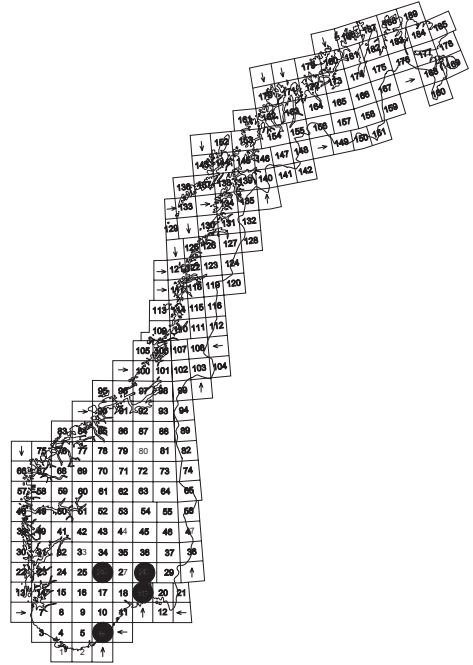


FIGURE 7. Distribution of *Chromatomyia syngenesiae* Hardy, 1849 in Norway.

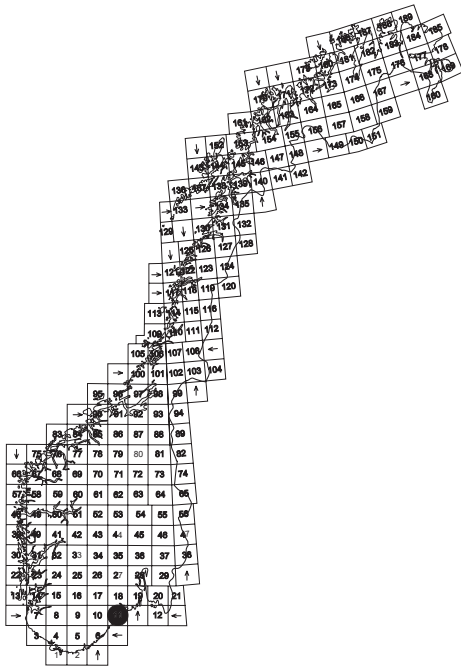


FIGURE 8. Distribution of *Metopomyza interfrontalis* Melander, 1913 in Norway.

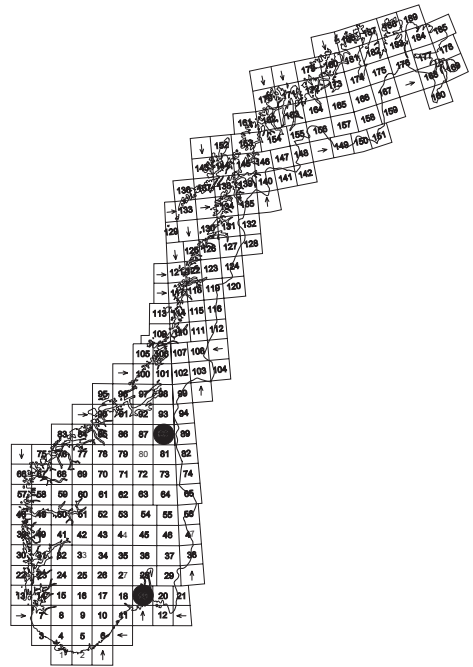


FIGURE 9. Distribution of *Metopomyza xanthaspis* (Loew, 1858) in Norway.

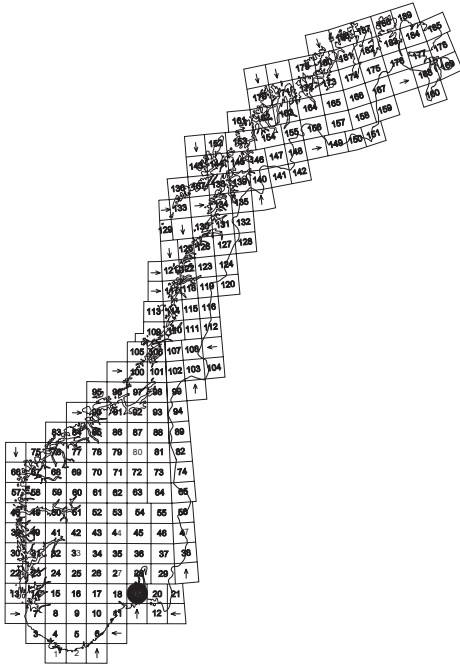


FIGURE 10. Distribution of *Phytomyza cecidonomia* Hering, 1937 in Norway.

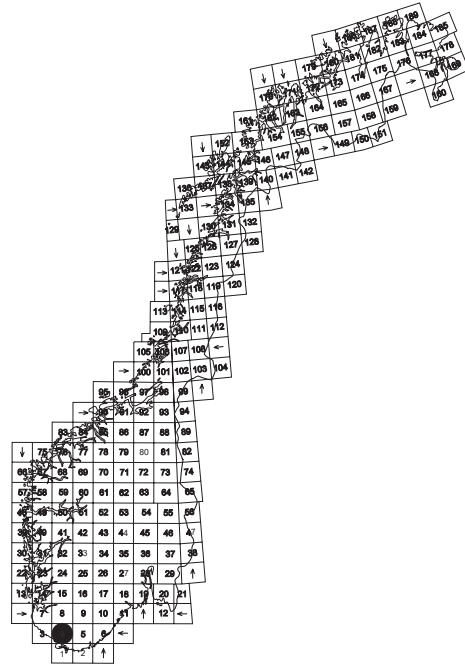


FIGURE 11. Distribution of *Phytomyza cirsii* Hendl, 1923 in Norway.

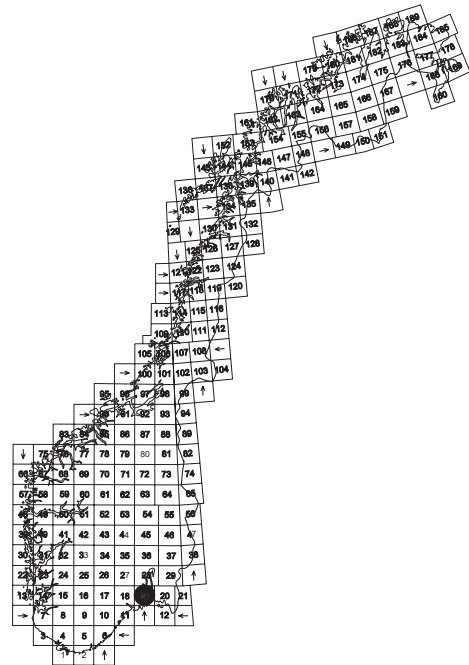


FIGURE 12. Distribution of *Phytomyza clematidis* Kaltenschach, 1859 in Norway.

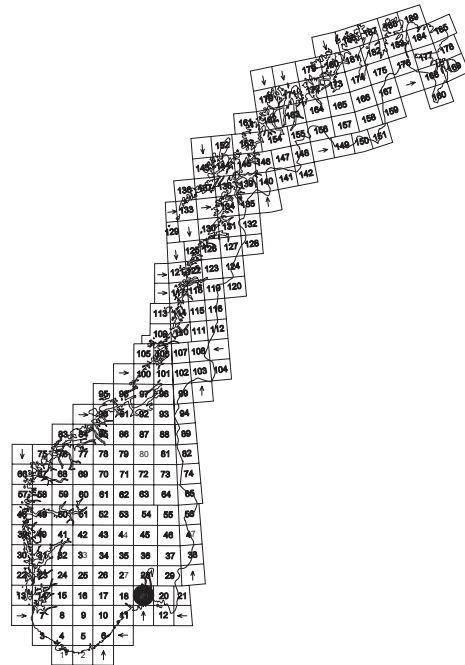


FIGURE 13. Distribution of *Phytomyza fennoscandiae* Spencer, 1976 in Norway.

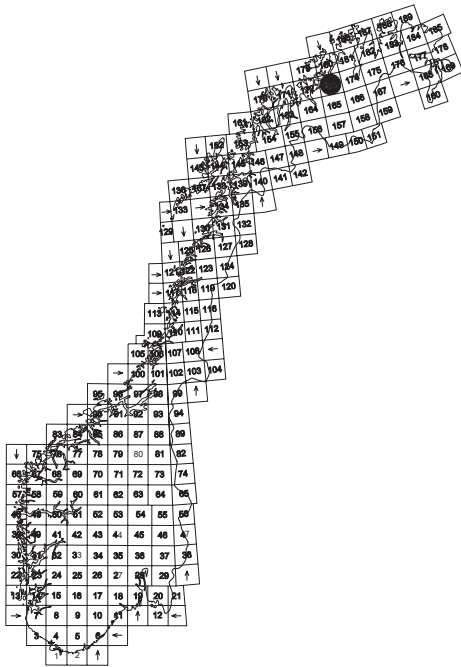


FIGURE 14. Distribution of *Phytomyza isais* Hering, 1937 in Norway.

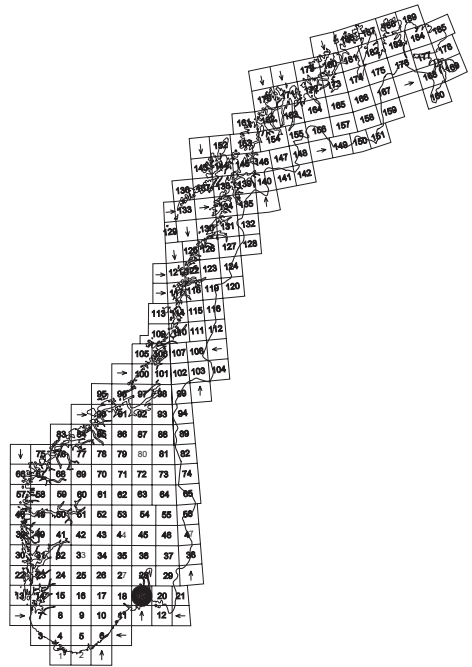


FIGURE 15. Distribution of *Phytomyza origani* Hering, 1931 in Norway.

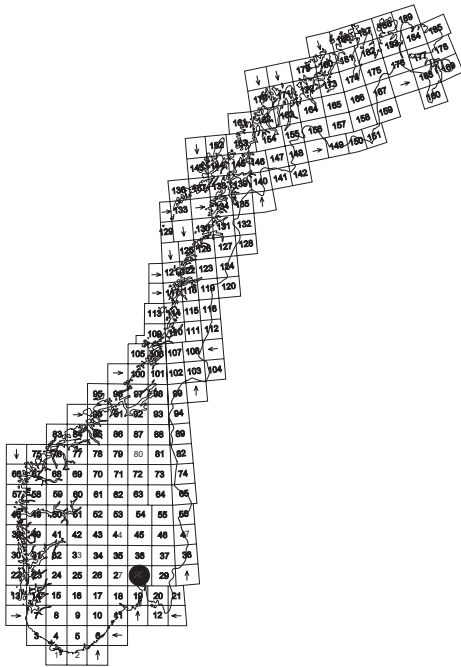


FIGURE 16. Distribution of *Phytomyza pulsatillae* Hering, 1924 in Norway.

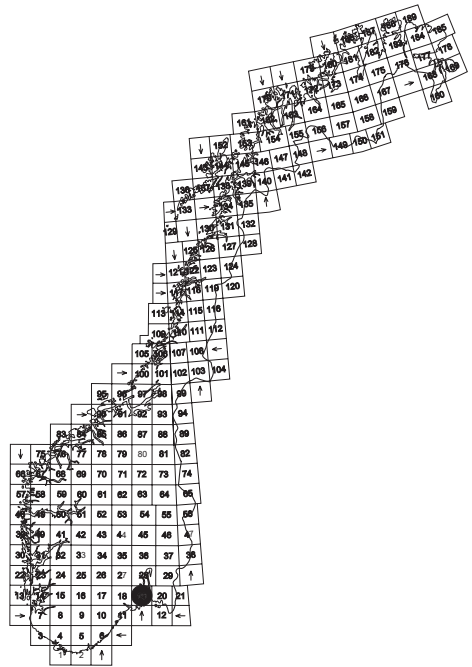


FIGURE 17. Distribution of *Phytomyza socia* Brischke, 1881 in Norway.

