

PARASITIC HYMENOPTERA BRED FROM THE FAMILY
AGROMYZIDAE (DIPTERA) WITH SPECIAL
REFERENCE TO SOUTH FLORIDA¹

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ABSTRACT

Five families of hymenopterous parasites including 19 genera and 31 species were reared from the leafminer family Agromyzidae (Diptera) during a survey for these leafminers especially from south Florida.

In early 1963, I commenced a survey for those agromyzid flies associated with grasses, weeds, truck crops, ornamentals, shrubs, and trees of south Florida. All agromyzid determinations were by Kenneth A. Spencer of London, England. Unknown host plants were determined by the late Erdman West, by D. B. Ward (both of the University of Florida), or by Kenneth Langdon (Division of Plant Industry, Florida Department of Agriculture).

During this period of intensive rearing of agromyzid adults from their host plants, I was continually confronted with hymenopterous parasites which prevented some of my rearings of the desired Agromyzidae adults. The parasites were associated with the immatures of these leafminers and in some cases I had to repeat my rearings several times to obtain the specific leafminer associated with a given host. To date, all of the hymenopterous parasites have been determined by C. F. W. Muesebeck, B. D. Burks, or P. M. Marsh (systematic entomologists, U. S. National Museum). I would like to thank these entomologists for their help in making this paper possible, as well as B. D. Burks and George C. Steyskal for critically reviewing this manuscript.

Numerous references on the agromyzid parasites in Florida are reported by Muesebeck et al. (1951), Krombein (1958), and by Krombein and Burks (1967). Many of these references are not cited in this paper as these were too many clarifications to be made especially in the genus *Liriomyza* Mik. Further, numerous new agromyzid species described by K. A. Spencer and currently being reported by Spencer and Stegmaier (in press) contain data which are unpublished.

Agromyza pusilla (Meigen) is actually *Liriomyza pusilla* and this species has been erroneously reported by several authors as the host for various hymenopterous parasites. *Liriomyza pusilla* (Meigen), in part Steyskal (personal communication) reported that *Liriomyza munda* covers most of the old records of *L. pusilla* (Stegmaier 1968b). Moreover, *L. pusilla* is a European species and not known to be in the United States.

Much more intensive research is needed on the host plant range of the Agromyzidae throughout the United States. Our basic knowledge of the

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grass-infesting agromyzids in the United States and the associated parasites is extremely poor. When more intensive research on the host plant range is conducted and when we have obtained a better knowledge of the needed taxonomic clarifications, we will be able to develop a better understanding of the effective hymenopterous parasites associated with the family Agromyzidae throughout the United States.

The purpose of this paper is to report on the known hymenopterous parasites bred from determined Agromyzidae which were reared from known host plants from Florida. All collections, except where noted, are those of the author.

Studies on the parasites of the *Liriomyza* species have been reported by Webster and Parks (1913), Crawford (1913), Gahan (1917), Tilden (1950), Hills and Taylor (1950), Oatman (1959, 1960), and Harding (1965). Cameron (1939) and Kulp (1968) reported on the *Ilex* associated *Phytomyza* spp., and some of their parasites. Griffiths (1956, 1964, 1966a, 1966b, 1967, 1968a, 1968b) reported on some braconid parasites of the Agromyzidae in Europe. Some information on the parasites of the cambial miners in the genera *Phytobia* and *Dendromyza* are reported by Barnes (1933), Greene (1914), Hanson and Benjamin (1967), Kangas (1935), and Pitcher (1955).

BRACONIDAE

Neopius cubitalis Fischer: 1 adult, det. C. F. W. Muesebeck. Reared from *Liriomyza sorosis* (Williston) infesting *Panicum* sp., Hialeah, Fla., 6 VI 66. Muesebeck et al. (1951) reported a rearing of *Neopius carinaticeps* Gahan from *Agromyza* sp., mines in *Hordeum* from North Dakota and New Jersey.

Opius dimidiatus (Ashm.): 25 adults, det. C. F. W. Muesebeck. Reared from *Liriomyza trifolii* (Burgess), infesting celery leaves, Belle Glade, Fla., 24 III 64, coll. E. D. Harris, Jr.; 5 adults, det. C. F. W. Muesebeck, reared from *L. trifolii* infesting peas, Hialeah, Fla., 3 II 64; 4 adults, det. C. F. W. Muesebeck, reared from *L. trifolii* infesting potato leaves, Belle Glade, Fla., 24 III 64, coll. E. D. Harris, Jr.; 4 adults, det. C. F. W. Muesebeck, reared from *L. trifolii* infesting leaves of *Piriqueta caroliniana* (Walt.) Urban, Hialeah, Fla., 24 I 64.

Muesebeck et al. (1951) reported the distribution of *O. dimidiatus* from N. Y. to Fla., west to S. Dak., Utah, Calif., and the West Indies. He reported the following insect hosts: *L. munda* Frick (as *Agromyza pusilla*), *Chlorops scutellata* (Fall.) as *A. scutellata*, and *Cerodontha* (*Cerodontha dorsalis* (Loew)). Muesebeck in Krombein (1958) recorded the species from Texas and Muesebeck in Krombein and Burks (1967) reported the species from *L. munda*. Kulp (1968) reported rearing the species from *Phytomyza opacae* Kulp.

Opius spp.: det. C. F. W. Muesebeck, reared from *Liriomyza trifolii*, Stegmaier (1966a); 7 adults, det. C. F. W. Muesebeck, reared from *Phytobia* (*Amauromyza*) *maculosa* (Malloch), Coral Gables, Fla., 28 I 64; 2 adults, det. C. F. W. Muesebeck, reared from *Phytobia* (*Calycomyza*) n. sp. infesting leaves of *Solidago* sp., Hialeah, Fla., 7 I 66; 1 adult, det. C. F. W. Muesebeck, reared from *Phytobia* (*Amauromyza*) *maculosa* from

leaves of *Erigeron strigosus* Muhl., Hialeah, Fla., 28 II 66; Kulp (1968) reported rearing *Opius* n. sp. from *Phytomyza verticillatae* Kulp; he recorded *Opius striatriventris* Gahan from *Phytomyza opacae*; and Cameron (1939) reported rearing *O. ilicis* Nixon from *Phytomyza ilicis* (Curt.).

Oenonogastra n. sp.: det. C. F. W. Muesebeck, 7 adults were reared from *Japanagromyza aequalis* Spencer (Spencer 1966) infesting leaves of *Vigna repens* Baker, Hialeah, Fla., 22 III 64. Muesebeck (personal correspondence, 66-16067) indicated that the new species was forwarded to G. T. Riegel who is revising the group.

EULOPHIDAE

Pnigalio spp.: Cameron (1939) recorded *P. felti* (Cwfd.) from *Phytomyza ilicis* Nixon; Kulp (1968) reported rearing *P. felti* from *Phytomyza verticillatae* Kulp and *Pnigalio guttiventris* (Girault) from *Phytomyza ilicicola* Loew and from *Phytomyza opacae*; *Pnigalio proximus* (Ashm.) from *Phytomyza ditmani* Kulp (Kulp 1968); and Stegmaier (1967c) reported rearing *Pnigalio* sp., from *Liriomyza brassicae* (Riley).

Diglyphus intermedius (Grlt.): Stegmaier (1971) reported rearing the species from *Phytomyza vomitoriae* Kulp; Burks in Krombein and Burks (1967) recorded the species from *Liriomyza propepusilla* Frost; however, Spencer (1965) stated that this leafminer may be a synonym of *Liriomyza munda* Frick.

Diglyphus pulchripes (Cwfd.): 1 ♀, det. B. D. Burks, reared from *L. trifolii* infesting leaves of *Bidens pilosa* L., Miami Springs, Fla., 26 III 63.

Diglyphus sp.: Stegmaier (1966a) reported rearing this species from *Liriomyza trifolii*.

Tetrastichus marylandensis (Grlt.): 1 ♀, det. B. D. Burks, reared from *Melanagromyza minimoides* Spencer from seed infestations of *Melanthera deltoidea* Michx., Sanford, Fla., 29 I 64, coll. G. W. Desin; Peck in Muesebeck et al. (1951) recorded the species from Mass., Md., D. C., Va., Mo., and Ill.

Tetrastichus sp.: 1 ♀, det. B. D. Burks, reared from an undetermined agromyzid infesting *Mikania batatifolia* DC., Hialeah, Fla., 28 IX 63.

Diaulinopsis callichroma Cwfd.: Stegmaier (1966c, 1967a, 1967b, 1967c, 1967d) reported rearing this species from *Liriomyza brassicae*, *Phytobia* (*Amauromyza*) *maculosa*, *Liriomyza sorosis* (Williston), *Liriomyza schmidti* (Aldrich), *Phytobia* (*Calycomyza*) *malvae* (Burgess), and *Phytobia* (*Calycomyza*) *ipomaeae* Frost. Peck in Muesebeck et al. (1951) recorded *D. callichroma* from Ind., Fla., Miss., and Arizona. He reported the host insects as *Chlorops scutellata* Panzer (as *Agromyza scutellata* Fall.), *Calycomyza artemisiae* (Khb.), *Cerodontha* (*Cerodontha*) *dorsalis* Loew, and *Liriomyza munda* (as *L. pusilla*). Burks in Krombein and Burks (1967) reported the species in Calif., Mexico, and the West Indies.

Zagrammosoma multilineatum (Ashm.): Stegmaier (1971) reported rearing the species from *Phytomyza vomitoriae*. Peck in Muesebeck et al. (1951) recorded the species from Md., D. C., S. C., W. Va., Fla., Ohio, Ind., La., and Ks. He reported the host insects as *Agromyza parvicornis* Loew, *L. munda* (as *A. pusilla*), *A. aquilegiae* Hardy, and *Chlorops scutellata* (as *A. scutellata*).

Zagrammosoma spp.: 1 ♀, det. B. D. Burks, reared from *Phytobia* (*Calycomyza*) *hyptidis* Spencer, Spencer and Stegmaier (in press) infesting leaves of *Hyptis pectinata* (L.) Poir, Hialeah, Fla., 26 XI 63; Stegmaier (1967d) reported rearing this from *Phytobia* (*Calycomyza*) *ipomaeae*.

Mirzagrammosoma lineaticeps Girault: Stegmaier (1966a) reported rearing this species from *Liriomyza trifolii*. Burks in Krombein and Burks (1967) recorded the species from Fla., Central America, and the West Indies. He reported *Liriomyza archboldi* Frost as host insect; however, the host plant for *L. archboldi* is not peas as stated by Frost (1962), but rather *Bidens pilosa* L. (Spencer and Stegmaier in press).

Closterocerus cinctipennis Ashm.: Stegmaier (1966a, 1966b, 1966c, 1971) reported rearing this parasite from *Liriomyza trifolii*, *L. munda*, *L. schmidti*, and *Phytomyza ilicicola* Loew, respectively; Peck in Muesebeck et al. (1951) recorded this parasite from Que., Conn., N. J., D. C., Fla., Mo., and from Iowa from cited insect hosts. Burks in Krombein and Burks (1967) reported the parasite from Wisconsin.

Closterocerus tricinctus (Ashm.): Peck in Muesebeck et al. (1951) reported this parasite from *Liriomyza melampyga* (Loew) (as *Agromyza melampyga* Loew), *A. parvicornis*, *Phytomyza aquilegia* Hardy, *P. ilicis*, and *P. obscurella* Fall.; Burks in Krombein and Burks (1967) recorded the species from Que., southward to Fla., west to Wisc., Iowa, and Mo. Kulp (1968) reported the species from *Phytomyza ditmani*, *P. ilicicola*, *P. ilicis*, *P. opacae*, and *P. verticillatae*; Stegmaier (1971) also reported rearing the parasite from *P. opacae*.

Chrysocharis majoriani (Grlt.): Stegmaier (1966d, 1967b) reported rearing this parasite from *Liriomyza commelinae* (Frost) and from *Liriomyza sorosis* respectively; 3 ♀, det. B. D. Burks, were reared from *Phytobia* (*Calycomyza*) *malvae*, Miami, Fla., 15 VIII 63; Burks in Krombein and Burks (1967) recorded the species from Fla., West Indies, Brazil, and it was introduced into Hawaii for biological control purposes.

Chrysocharis spp.: Stegmaier (1966a, 1966b, 1966c, 1967a, 1967b, 1967d, 1971) reported this genus from *L. trifolii*, *L. munda*, *L. schmidti*, *Phytobia* (*Amauromyza*) *maculosa*, *L. sorosis*, *L. brassicae*, *Phytomyza vomitoriae*, *Phytobia* (*Calycomyza*) *malvae* and from *Phytobia* (*Calycomyza*) *ipomaeae*.

Derostenus agromyzae Cwfd.: Stegmaier (1966a, 1967b) recorded rearings of this parasite from *Liriomyza trifolii* and *L. sorosis*; 33 adults, det. B. D. Burks, were reared from *Phytobia* (*Calycomyza*) sp. infesting leaves of *Mikania batatifolia*, Hialeah, Fla., 28 IX 63; 1 ♀, det. B. D. Burks, was reared from *Agromyza proxima* Spencer, infesting leaves of *Echinochloa walteri* (Purch) Heller, Sweetwater, Fla., 24 VI 63 (Spencer and Stegmaier in press); Burks in Krombein and Burks (1967) recorded the distribution for this parasite as N. Y., south to Fla., west to N. Dak. and Arizona; he includes *Mantura floridana* Cr. and *Liriomyza sorosis* as insect hosts.

Derostenus diastatae (How.): 12 adults, det. B. D. Burks, reared from *Agromyza proxima* Spencer (Spencer and Stegmaier in press), Sweetwater, Fla., 24 VII 63; Peck in Muesebeck et al. (1951) recorded the parasite from Conn. to Fla., and Ks.; he reported the host insects as *L. munda*

(as *A. pusilla*), *Chlorops scutellata* (as *Agromyza scutellata*), *Diastata* sp. mining corn ears; dipterous miner of *Panicum dichotomiflorum* Michx., and *Fenusia pusilla* (Klug.).

Derostenus variipes Cwfd.: Getzin (1960) reported this parasite as the most important parasite of *Liriomyza munda* during 1958 and 1959 in Texas; Peck in Muesebeck et al. (1951) reported the parasite from *L. munda* (as *A. pusilla*) and *Phytomyza aquilegia*; Stegmaier (1966a, 1966c, 1967a) reported rearing the parasite from *Liriomyza schmidtii*, *L. trifolii*, and from *Phytobia (Amauromyza) maculosa*; Burks in Krombein and Burks (1967) recorded the species from N. Y., south to Florida, west to La. and Texas.

Derostenus spp.: Wene (1953, 1955) reported *Derostenus* sp. as the primary parasite of *L. munda*; Stegmaier (1966a, 1966b, 1967b, 1967d, 1971) reported rearing this from *L. trifolii*, *L. munda*, *Phytobia (Amauromyza) maculosa*, *P. (Calycomyza) jucunda* (Wulp), *P. (C.) ambrosiae* Frick, and *Phytomyza vomitoriae*.

Pediobius lithocolletidis (Ashm.): Kulp (1968) reported rearing this parasite from *Phytomyza ilicicola*, *P. opacae*, and *P. verticillatae*; Stegmaier (1971) reported rearing the species from *Phytomyza opacae*; Burks (1966) reported the species as a parasite of lepidopterous, dipterous, and coleopterous leafminers.

TORYMIDAE

Torymus sp.: 1 ♂, 1 ♀, det. B. D. Burks, reared from *Melanagromyza minimoides* Spencer infesting seed heads of *Melanthera deltoidea* Michx., Sanford, Fla., 29 I 64, coll. G. W. Desin.

PTEROMALIDAE

Halticoptera patellana (Dalman): Burks in Krombein and Burks (1967) reported this species as Holarctic; Oatman (1959, 1960) recorded this species as a dominant parasite of *Liriomyza munda* (as *L. pictella* (Thomson)); Stegmaier (1966a, 1966b) reported rearing this species from *L. trifolii* and *L. munda*.

Halticoptera sp.: 1 ♀, det. B. D. Burks, was reared from *Phytobia (Calycomyza)* sp. infesting leaves of *Aster simmondsii* Small, Hialeah, Fla., 26 XI 63; 5 ♀, 1 ♂, det. B. D. Burks, were reared from *Japanagromyza desmodivora* Spencer infesting *Desmodium tortuosum* (SW.) DC., Miami, Fla., 17 X 63; Kulp (1968) reported rearing *Halticoptera* sp. from *Phytomyza ilicicola*.

Heteroschema punctata (Ashm.): 8 ♀, 6 ♂, det. B. D. Burks, were reared from *Melanagromyza minimoides* infesting seed heads of *Borrchia frutescens* (L.) DC., Miami, Fla., 3 III 66; 8 ♀, 2 ♂, det. B. D. Burks, were reared from *M. minimoides* infesting the seed heads of *Wedelia trilobata* Hitch., Miami, Fla., 14 XI 65; Stegmaier (1968a) reported rearing this parasite from a tephritid, *Paroxyna picciola* (Bigot) and from *Trupanea actinobola* (Loew), (Tephritidae); Steyskal (1972) reported rearing *H. punctata* from seed heads of *Bidens pilosa* L., which contained infestations of *Paroxyna picciola* and several other dipterous associates of *Bidens*.

Stegmaier (1968a) reported rearings of *Heteroschema punctata* from

Ophiomyia sp. and from *Melanagromyza* sp.; Peck in Muesebeck et al. (1951) recorded the parasite from Fla. and Ariz., he reported the following as insect hosts of *H. punctata*: *Paroxyna picciola* and *Melanagromyza virens* (as *Agromyza virens* Loew); Burks in Krombein and Burks (1967) recorded the species from Miss., Mo. and the West Indies.

Heteroschema spp.: Stegmaier (1967b) reported rearing this from *L. sorosis*; 1 ♀, det. B. D. Burks, was reared from *Phytobia (Calycomyza) mikaniae* Spencer (Spencer and Stegmaier in press) infesting leaves of *Mikania batatifolia*, Hialeah, Fla., 28 IX 63; 1 ♀, det. B. D. Burks, was reared from a tephritid, *Dyseuaresta mexicana* (Wiedemann), det. R. H. Foote, infesting seed heads of *Melanthera deltoidea* Michx., Miami, Fla., 29 IV 66; 2 adults, det. B. D. Burks, were reared from *Liriomyza sorosis* infesting leaves of *Heliotropium curassavicum* L., Miami, Fla., 8 VII 67.

Zatropsis sp.: 40 adults, det. B. D. Burks, were reared from *Melanagromyza virens* infesting stems of dog fennel, *Eupatorium capillifolium*, Hialeah, Fla., 7 VI 63. The only known host plants, confirmed to date for *M. virens* are *E. capillifolium* and *Heterotheca subaxillaris* (Lam.) Britt. and Rusby (Spencer and Stegmaier in press).

During October 1959 to March 1960, I was conducting rearings from seed heads of *Bidens pilosa* L. The dipterous fauna were listed by Steyskal (1972) and one of the interesting pteromalids found in his rearings was *Colotrechnus ignotus* Burks. He reported rearing 2 adults while I reared 9 ♂ and 1 ♀. Burks in Krombein and Burks (1967) stated that this parasite has been reared from seed heads of *Bidens* and other Compositae; he cites no host for the parasite but recorded it from N. C., Fla., Okla., Tex., Ariz., and Calif. My findings, as well as those of Steyskal (1972), indicate that the potential hosts for *Colotrechnus ignotus* may be any one of the following: Tephritidae (*Paroxyna picciola*, *Xanthaciura insecta* (Loew)); Cecidomyiidae (*Asphondylia bidens* Johannsen); Drosophilidae, only (*Cladochaeta nebulosa* Coquillett) (Steyskal 1972); Agromyzidae (*Melanagromyza bidentis* Spencer, *Melanagromyza floris* Spencer (Spencer and Stegmaier in press)). The true host for *C. ignotus* remains outstanding.

Other parasites found from the seed heads of *Bidens pilosa* during October 1959 to March 1960 were: Pteromalidae (*Halticoptera aenea* (Walk.) 1 ♂, 6 ♀; *Heteroschema punctata* (Ashm.) 11 ♀; *Halticoptera* sp., 7 ♂, 1 ♀; Eulophidae; *Tetrastichus sobrius* Gahan, 1 ♀; and *Tetrastichus* sp., 2 ♀; all of the above parasites were determined by Dr. B. D. Burks and collections of these rearings were from Hialeah and Miami, Florida). Steyskal (1972) reported rearing 20 *Halticoptera* sp.; 5 *H. punctata* adults; 18 *Tetrastichus sobrius* Gahan and reported that this parasite has been reared from *Asphondylia websteri* Felt and from *Trupanea* sp. in other plants; and *Torymus anthomyiae* (Ashm.). Steyskal (1972) reported only 6 *Melanagromyza* sp., from the seed heads of *Bidens pilosa*, and the author can only suggest that the *Melanagromyza* population reported by him would have undoubtedly been much greater if it were not for the limiting parasites found associated with the seed feeding agromyzids. More research is needed on the parasites associated with the Diptera populations in the seed heads of *Bidens* and other Compositae throughout the United States.

CYNIPIDAE

Eucoilidea longicornis Ashm.: 1 adult, det. B. D. Burks, reared from *Melanagromyza chaptaliae* Spencer. Spencer (1966) reported this seed feeding agromyzid from the seed heads of *Chaptalia dentata* (L.) Cass., from collections of the author, Homestead, Fla., 22 I 64. I found no other insect associated with the seed heads of the sun bonnet and evidently this is the first report of the host insect for *Eucoilidea longicornis*. Peck in Muesebeck et al. (1951) cites a single male from Jacksonville, Fla., without host data. The species was described in 1887.

Trybliographa sp.: 3 ♀, det. B. D. Burks, reared from seed heads of *Wedelia trilobata* Hitch., Miami, Fla., 14 XI 65. The host for this parasite is *Melanagromyza minima* (Malloch) (Spencer and Stegmaier in press).

PARASITES LISTED BY AGROMYZID SPECIES

- Agromyza parvicornis* Loew. Eulophidae: *Closterocerus tricinctus* (Ashm.); *Zagrammosoma multilineatum* (Ashm).
- Agromyza proxima* Spencer. Eulophidae: *Derostenus agromyzae* Cwfd.; *Derostenus diastatae* (How.).
- Cerodontha (Cerodontha) dorsalis* (Loew). Braconidae: *Opius dimidiatus* (Ashm.); Eulophidae: *Diaulinopsis callichroma* Cwfd.
- Japanagromyza aequalis* Spencer. Braconidae: *Oenonogastra* n. sp.
- Japanagromyza desmodivora* Spencer. Pteromalidae: *Halticoptera* sp.
- Liriomyza brassicae* (Riley). Eulophidae: *Chrysocharis* sp.; *Diaulinopsis callichroma*; *Pnigalio* sp.
- Liriomyza commelinae* (Frost). Eulophidae: *Chrysocharis majoriani* (Grlt.).
- Liriomyza melampyga* (Loew). Eulophidae: *Closterocerus tricinctus*.
- Liriomyza munda* Frick. Braconidae: *Opius dimidiatus*; Eulophidae: *Chrysocharis* sp.; *Closterocerus cinctipennis* Ashm.; *Derostenus diastatae* (How.); *Derostenus* sp.; *Derostenus variipes* Cwfd.; *Diaulinopsis callichroma*; *Diglyphus intermedius* (Grlt.); *Zagrammosoma multilineatum* (Ashm.); Pteromalidae: *Halticoptera patellana* (Dalman).
- Liriomyza schmidti* (Aldrich). Eulophidae: *Chrysocharis* sp.; *Closterocerus cinctipennis*; *Derostenus variipes* Cwfd.; *Diaulinopsis callichroma*.
- Liriomyza sorosis* (Williston). Braconidae: *Neopius cubitalis* Fischer; Eulophidae: *Chrysocharis majoriani*; *Chrysocharis* sp.; *Derostenus agromyzae* Cwfd.; *Diaulinopsis callichroma*; Pteromalidae: *Heteroschema* sp.
- Liriomyza trifolii* (Burgess). Braconidae: *Opius dimidiatus* (Ashm.); *Opius* sp.; Eulophidae: *Chrysocharis* sp.; *Closterocerus cinctipennis*; *Derostenus agromyzae*; *Derostenus* sp.; *Derostenus variipes*; *Diglyphus intermedius* (Grlt.); *Diglyphus pulchripes* (Cwfd.); *Diglyphus* sp.; *Mirzagrammosoma lineaticeps* Grlt.; Pteromalidae: *Halticoptera patellana*.
- Melanagromyza chaptaliae* Spencer. Cynipidae: *Eucoilidea longicornis* Ashm.
- Melanagromyza minima* Malloch. Cynipidae: *Trybliographa* sp.
- Melanagromyza minimoides* Spencer. Eulophidae: *Tetrastichus marylan-*

- densis* (Grlt.); Torymidae: *Torymus* sp.; Pteromalidae: *Heteroschema punctata* (Ashm.).
- Melanagromyza virens* Loew. Pteromalidae: *Heteroschema punctata*; *Zatropsis* sp.
- Phytobia (Amauromyza) maculosa* (Malloch). Braconidae: *Opius* sp.; Eulophidae: *Chrysocharis* sp.; *Derostenus* sp.; *Derostenus variipes*; *Diaulinopsis callichroma*.
- Phytobia (Calycomyza) ambrosiae* Frick. Eulophidae: *Derostenus* sp.
- Phytobia (Calycomyza) artemisiae* (Khb.). Eulophidae: *Diaulinopsis callichroma*.
- Phytobia (Calycomyza) hyptidis* Spencer. Eulophidae: *Zagrammosoma* sp.
- Phytobia (Calycomyza) ipomaeae* Frost. Eulophidae: *Chrysocharis* sp.; *Diaulinopsis callichroma*; *Zagrammosoma* sp.
- Phytobia (Calycomyza) jucunda* (Wulp). Eulophidae: *Derostenus* sp.
- Phytobia (Calycomyza) malvae* (Burgess). Eulophidae: *Chrysocharis majoriani*; *Chrysocharis* sp.; *Diaulinopsis callichroma*.
- Phytobia (Calycomyza) mikaniae* Spencer. Pteromalidae: *Heteroschema* sp.
- Phytomyza aquilegia* Hardy. Eulophidae: *Closterocerus tricinctus*; *Derostenus variipes*; *Zagrammosoma multilineatum*.
- Phytomyza ditmani* Kulp. Eulophidae: *Closterocerus tricinctus*; *Pnigalio proximus* (Ashm.).
- Phytomyza ilicicola* Loew. Eulophidae: *Closterocerus cinctipennis*; *Closterocerus tricinctus*; *Pediobius lithocolletidis* (Ashm.); *Pnigalio guttiventris* (Grlt.); Pteromalidae: *Halticoptera* sp.
- Phytomyza ilicis* (Curt.). Braconidae: *Opius ilicis* Nixon; Eulophidae: *Closterocerus tricinctus*; *Pnigalio felti* (Cwfd.).
- Phytomyza opacae* Kulp. Braconidae: *Opius dimidiatus* (Ashm.); *Opius striatriveutris* Gahan; Eulophidae: *Closterocerus tricinctus*; *Pediobius lithocolletidis*; *Pnigalio guttiventris*.
- Phytomyza verticillatae* Kulp. Braconidae: *Opius* n. sp.; *Opius* sp.; Eulophidae: *Closterocerus tricinctus*; *Pediobius lithocolletidis*; *Pnigalio felti*.
- Phytomyza vomitoriae* Kulp. Eulophidae: *Chrysocharis* sp.; *Derostenus Diglyphus* sp.; *Zagrammosoma multilineatum*.

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