The fauna of the opomyzoid families Clusiidae, Acartopthalmidae, Anthomyzidae, Opomyzidae, Stenomicridae, Periscelididae, Asteiidae (Diptera) in the Gemer area (Central Slovakia)

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Abstract. A synopsis of the fauna of seven families of Opomyzoidea (Diptera) in the Gemer area (Slovakia) is given. Clusiidae (8 species), Acartopthalmidae (2 species), Anthomyzidae (9 species), Opomyzidae (8 species), Stenomicridae (1 species), Periscelididae (1 species) and Asteiidae (5 species) are treated on the basis of previously published records and material examined. Each species is listed with comments about its general distribution, biology and faunistic and/or nature conservation importance. Podocera soniae (Merz & Roháček, 2005) (Stenomicridae) is the most interesting species because it was originally partly described from specimens (paratypes) discovered in the area. Other significant faunal elements include Clusia tigrina (Fallén, 1820), Clusiodes caledonius (Collin, 1912), Hendelia beckeri Czerny, 1903, (Clusiidae) and Leiomyza curvinervis (Zetterstedt, 1838) (Asteiidae), all endangered or vulnerable species associated with well-preserved forests, and Anthomyza neglecta Collin, 1944, A. paraneglecta Elberg, 1968 (Anthomyzidae), Geomyza apicalis (Meigen, 1830), G. hackmani Nartshuk, 1984, vulnerable species of wetland and grassland habitats.

Key words. Diptera, Clusiidae, Acartopthalmidae, Anthomyzidae, Opomyzidae, Stenomicridae, Periscelididae, Asteiidae, faunistics, nature conservation, Slovakia, Gemer

Introduction

The majority of species of the opomyzoid acalyptate families dealt with in this contribution were formerly recorded from the Gemer area. The Clusiidae from this territory were treated within Roháček’s (1995a) revision of the Czech and Slovak representatives of the family; similarly Anthomyzidae were recorded from the area by Roháček (1983, 1986a), Opomyzidae by Martinek (1976, 1984, 1985, 1986) and Martinek & Mocek (1995), Stenomicridae by Roháček (1983), Periscelididae by Máca (1986) and Roháček (1987) and Asteiidae by Roháček (1985, 1986b). Thus, only Acartopthalmidae are reported here from the Gemer area for the first time. The material sources for records published in the above papers originate from the collecting efforts by V. Zeman (who collected in the area in 1956), R. Rozkošný (in 1968), V. Martinek (in 1971), M. Kozánek and J. Máca (both in 1979), B. Mocek (in 1985) but predominantly J. Roháček (in 1980-1984). Additional recent material from the Gemer territory has been obtained by J. Ševčík in 2008-2012 (besides the netted material also including specimens from his Malaise traps in the localities of the Muránska planina Mts), by L. Vidlička (a few specimens from Malaise trap operated in Paseky nr. Tisovec in 2001), J. Máca (from single collecting trip in 2008) and by the author (from collecting trips in 2010-2012). This recently acquired material not only significantly contributed to the knowledge of the hitherto poorly studied Muránska planina National Park but also added records of several rare or otherwise important species formerly unknown from the whole of the Gemer region. The present study of opomyzoid flies belongs to a series of papers devoted to Diptera of the Gemer area (cf. Ševčík & Kurina 2011a,b; Roháček & Ševčík 2011; Roháček 2011; Ševčík 2011).

Material and methods

The present account of species of the above opomyzoid families in the Gemer area is based on critical review of all published records, supplemented by data obtained from the material collected recently in this
territory, identified by the author and external specialists and deposited in SMOC (unless mentioned otherwise). The nomenclature used here follows the most recent Checklist of Diptera of the Czech Republic and Slovakia, electronic version 2 (see Jedlička et al. 2009). Species significant from the biogeographical, ecological or nature conservation point of view are marked by “*” preceding the species’ name. Abbreviations used in text: MT = Malaise trap, SMOC = Slezské zemské muzeum, Opava, Czech Republic.

Study area

The Gemer area is here understood as the territory of three national parks in central Slovakia – Muránska planina National Park (= NP), Slovenský raj NP and Slovenský kras NP. A part of the material presented in this study was collected within the framework of the All Taxa Biodiversity Inventories project (ATBI, see www.atbi.eu) organized by Workpackage 7 (WP7) of the “European Distributed Institute of Taxonomy” (EDIT, see www.e-taxonomy.eu). All three national parks represent well-preserved karst areas with both montane and thermophilous species included, including several endemic. The results of the species inventory within the ATBI project are available at http://www.atbi.eu/gemer/.

Three Malaise traps were operated in the area – one at Fabova hoľa Mt. in 2009, the second in the Hrdzavá dolina valley in 2010 and the third in Poľudnica res. in 2011. For more detail see Ševčík & Kurina (2011a). In 2012 two additional Malaise traps were operated, one at the top plateau of Šinance res. (48°46'11''N, 20°04'14''E, 1000 m), the other near Muránska Lehota, in the Lehotský potok valley (48°42'58''N, 20°00'16''E, 455 m).

Synopsis of species

CLUSIIDAE

This small acalyptrate family includes only 14 species from Europe and adjacent island areas (Roháček & Merz 2007), 9 of which have been recorded from Slovakia (Roháček 2009b). Species of Clusiidae preferentially live in forests with a rich supply of dead wood because their larvae develop in decaying wood of fallen trunks and stumps; adults can be observed sitting or walking on dead tree trunks. No information about Clusiidae had been published from the Gemer area prior to Roháček (1995a). In the latter paper all available material of the family from the whole of Slovakia was revised, including also specimens from the Gemer area (largely those collected in the area by the author in years 1980-1984) and 5 species were recorded. These formerly published records are reviewed here and supplemented by new data obtained thanks to the collecting efforts by J. Ševčík, J. Roháček and J. Máca in 2008-2012. Altogether 8 species of Clusiidae are now known from the territory under study.

Clusia flava (Meigen, 1830)

Literature: Muráň-Hrdzavá dolina, Slovenský kras-Drienovec (Roháček 1995a).


Remarks: Probably a Palaearctic species, common in Central Europe, living in various types of forests including coniferous.

*Clusia tigrina (Fallén, 1820) (Fig. 5)

Literature: Slovaký kras-Zádiel (Roháček 1995a, as Paraclusia).

Material: Muránska planina NP, Hrdzavá dolina, 460-500 m, sweeping undergrowth of beech forest, 7.x.2010, 1♂, J. Roháček leg. (SMOC); Muránska planina NP, Murňa castle, beech forest, on rotting beech wood, 1♂, 15.ix.2008, J. Máca leg. and coll.; same locality, sweeping, 4.ix.2010, 1♀, J. Ševčík leg.; Muránska planina NP, Šarkanica res., 48°47'19''N, 20°04'14''E, 1000 m, on stump of Acer pseudoplatanus, 7.x.2011, 8♂, J. Roháček leg.; Slovenský kras, Šilická Jablonica, sweeping, 31.x.2008, 1♂, J. Ševčík leg. (SMOC).
Remarks: A European species (formerly treated in *Paraclusia*, synonymized with *Clusia* by Lonsdale & Marshall 2008) associated with old forests with large dead stumps of beech, elm or oak, rarely other deciduous trees. It is treated as data deficient (DD) species in the Slovak red list of Diptera (Jedlička & Stloukalová 2001) and considered vulnerable (VU) in the Czech Republic (Roháček 2005a). Considering its frequency it can be considered a very characteristic species in beech (and mixed) forests (Fig. 6) of the Muránska planina NP. Its abundant occurrence on stumps (and fallen trunk) of *Acer pseudoplatanus* recorded in the Šiance reserve (only 8 specimens captured, some 15 more observed) is to be particularly noted because of the quite unusual tree species.

**Clusiodes albimanus** (Meigen, 1830)

**Literature:** Muráň-Hrdzavá dolina (Roháček 1995a).


**Remarks:** A European species, common in various types of forests from lowlands to mountains.

*Clusiodes caledonicus* (Collin, 1912)


**Remarks:** A temperate and North European woodland species. Formerly, it has only been recorded from the Chočské vrchy Mts (Roháček 1995a) and Poľana Mts (Roháček 2009k) in Slovakia and is considered the rarest species of Clusiidae in this country. It seems to prefer montane forests in Central Europe and was treated as endangered (EN) in the Czech Republic (Roháček 2005a).

**Clusiodes geomyzinus** (Fallén, 1823)


**Remarks:** A Palaearctic species restricted to northern and temperate belts. It is uncommon in Slovakia, preferably occurring in natural forests (Roháček 1995a). There is no previous record from the Gemer area.

**Clusiodes pictipes** (Zetterstedt, 1855)


**Remarks:** This North and Central European species seems to prefer old beech or beech-fir forests. It was treated as a data deficient (DD) species in the Slovak red list of Diptera (Jedlička & Stloukalová 2001). Although it is locally common in the Carpathians the species has not been recorded from the Gemer region up to the present.

**Clusiodes ruficollis** (Meigen, 1830)

**Literature:** Muráň-Hrdzavá dolina (Roháček 1995a).


**Remarks:** A widespread and common European species, frequently encountered also in Slovakia and living in various types of forests.

*Hendelia Beckeri* Czerny, 1903

**Literature:** Muráň-Hrdzavá dolina (Roháček 1995a).

Remarks: A Palaearctic species but restricted to northern and temperate areas. It occurs relatively frequently in Slovakia, particularly in submontane warm forests (Roháček 1995a) but was treated as a data deficient (DD) species in the Slovak red list of Diptera (Jedlička & Stloukalová 2001).

ACARTOPHTHALMIDAE

A minute acalyptrate family with only one genus _Acartophthalmus_ Czerny, 1902 and 4 extant species, 3 of which occur in Europe and were also recorded from Slovakia (Roháček 2009c). The relationships of the family is under discussion (most recently considered to be a member of Carnoidea, cf. Buck 2006) but is here retained in Opomyzoidea following previous convention. Adults of _Acartophthalmus_ species are minute dark flies (Fig. 1) encountered on decaying substrates, like fungi, carrion, dung and rotting vegetation, preferably in woodland habitats. No species of Acartophthalmidae was formerly recorded from the Gemer area but two species have been found during recent surveys.

_Acartophthalmus bicolor_ Oldenberg, 1910

**Material:** Muránska planina NP, Tisovec 3 km W, Furmanec valley, 48°41’23”N, 19°53’57”E, 490 m, on rotting tree trunks, 12.vii.2011, 1♂, J. Roháček leg. (SMOC).

**Remarks:** A Holarctic species, less common than _A. nigrinus_. Adults occur on carrion, rarely on decaying fungi. The specimen recorded above was probably associated with a rotting tree fungus.

_Acartophthalmus nigrinus_ (Zetterstedt, 1847) (Fig. 1)


**Remarks:** A widespread Holarctic species, the most common representative of the family. It is associated with woodland habitats where adults occur on decayed fungi and carrion.

ANTHOMYZIDAE

A small acalyptrate family (cca 100 species worldwide) having 32 species in Europe and adjacent island areas and 18 in Slovakia (Roháček 2006, 2009a,d). Adults are slender flies with short legs living in various humid habitats like damp meadows, swamps (Fig. 7), bogs and waterlogged forests with rich undergrowth. Larvae of the majority of species are phytosaprophagous and feed between the leaf sheaths of the tillers of graminoid plants (Poaceae, Cyperaceae, Juncaceae, Typhaceae), most often in those damaged by phytophagous insects or other enemies. A few species are associated with dicotyledonous plants; only species of the genus _Fungomyza_ develop in the sporocarps of fungi. Hitherto only 9 species are known in the Gemer area (4 recorded by Roháček 1983, 1986a; 5 added here) but up to 5-7 more species can be expected here.

_Anthomyza gracilis_ Fallén, 1823

**Literature:** Muráň, Jelšavská Teplica, Brzotín near Rožňava, Slavec, Plešivec, Turňa nad Bodvou, Drienovec, Hačavská dolina-Háj (Roháček 1983, 1986a).

**Material:** Michalová 3.5 km NW, 48°46’50”N, 19°44’17”E, 550 m, sweeping _Carex acuta_ in boggy meadow, 22.vi.2012, 1♂2♀; Muránska planina NP, Pohronská Polhora 4.2 km E, Zhojská chalet, 48°44’39”N, 19°51’11”E, 735 m, sweeping over pasture meadow, 5.ix.2012, 1♂; Muránska planina NP, Tisovec 2 km NW, Furmanec valley, 48°41’20”N, 19°54’59”E, 460 m, sweeping margin of forest, 12.vii.2011, 2♂3♀; Muránska planina NP, Tisovec 2.8 km WSW, Hlboký jarak res., 48°40’17”N, 19°54’27”E, 500 m, sweeping _Festuca arundinacea_ in pasture meadow, 23.vi.2012, 5♂7♀; Muránska planina NP, Tisovec 1 km S, nr. pond, 48°39’56”N, 19°56’30”E, 385 m, sweeping _Carex acuta_ in boggy meadow, 23.vi.2012, 4♂7♀; Muránska planina NP, Tisovec 1 km S, Vachtové jazierko res., 48°39’58”N, 19°56’34”E, 386 m, sweeping over boggy meadow, 23.vi.2012, 2♂3♀, Revúca NW margin, 48°41’18”N,
Figs 1-4: Some opomyzoid flies from the Gomer area. 1 – Acartophthalmus nigrinus (Zetterstedt), male, body length 2 mm (Acartophthalmidae); 2 – Geomyza apicalis (Meigen), female, body length 3.3 mm (Opomyzidae); 3 – Stiphrosoma sabulosum (Haliday), brachypterous female with mite attached to abdomen, body length 1.7 mm; 4 – Anthomyza paraneglecta Elberg, male, body length 2.6 mm (both Anthomyzidae). Photo by J. Roháček.
Anthomyza pleuralis Czerny, 1928

**Material:** Muránska planina NP, Šarkanica res., 48°42'39"N, 19°59'45"E, 490 m, sweeping over meadow, 8.ix.2011, 2♀; Muránska planina NP, Hrdzavá dolina res., 48°45'50"N, 19°59'00"E, 820 m, sweeping vegetation along brook, 4.ix.2012, 1♂; Muránska planina NP, Poľudnica res.-Suchý dol, 48°45'26"N, 20°02'32"E, 480 m, sweeping over meadow, 13.vii.2011, 1♂; Muránska planina NP, Muráň 2.6 km NE, 48°45'24"N, 20°04'19"E, 425 m, sweeping over meadow, 13.vii.2011, 3♂ 3♀; Muránska planina NP, Veľká lúka, 48°46'21"N, 20°03'41"E, 880 m, sweeping over pasture meadow, 24.vi.2012, 5♂ 2♀; Muránska planina NP, Mokrá Poľana res., 48°47'50"N, 20°06'33"E, 315 m, sweeping vegetation along path, 24.vi.2012, 6♂6♀; same, sweeping Carex sp. in boggy shore of a pond, 24.vi.2012, 10♂♂; same, sweeping Glyceria fluitans in boggy pond shore, 24.vi.2012, 25♂ 14♀; same, sweeping vegetation along brook, 26.vii.2012, 3♂ 4♀; Muránska planina NP, Patina gamekeeper’s lodge, 48°49'14"N, 19°56'07"E, 870 m, sweeping over meadow, 9.ix.2011, 2♂ 1♀, all J. Roháček leg. (SMOC).

**Remarks:** A very common and widespread Palaearctic species associated with various species of Poaceae, Juncaceae, Cyperaceae and Typhaceae in diverse grassland habitats.

*Anthomyza neglecta* Collin, 1944

**Material:** Michalová 3.5 km NW, 48°46'50"N, 19°44'17"E, 550 m, sweeping Carex acuta in boggy meadow, 22.vi.2012, 3♂; Muránska planina NP, Tisovec 1 km S, nr. pond, 48°39'56"N, 19°56'30"E, 385 m, sweeping Carex acuta in boggy meadow, 23.vi.2012, 2♂ 1♀, all J. Roháček leg. (SMOC).

**Remarks:** A Central and North European species, mainly associated with large Carex spp. and some other Cyperaceae. Although it was considered a vulnerable (VU) species in the Czech Republic (Roháček 2005d) it was recently found to be locally common in lowland marshy communities (Roháček 2009a). In Gemer uncommon because of scarce lowland waterlogged habitats.

*Anthomyza pallida* (Zetterstedt, 1838)

**Material:** Muránska planina NP, Veľká lúka, 48°46'21"N, 20°03'41"E, 880 m, sweeping over pasture meadow, 24.vi.2012, 2♂ 2♀; same, sweeping Brachypodium pinnatum at forest margin, 24.vi.2012, 19♂ 10♀; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49'14"N, 19°56'07"E, 870 m, sweeping over meadow, 24.vi.2012, 2♂ 2♀; same, sweeping Carex sp. in boggy shore of a pond, 24.vi.2012, 2♂ 2♀; same, sweeping Glyceria fluitans in boggy pond shore, 24.vi.2012, 1♂; Patina gamekeeper’s lodge, 48°47'10"N, 19°56'11"E, 800 m, sweeping Calamagrostis villosa in spruce forest margin, 6♂ 12♀; Muránska planina NP, Závadka nad Hronom, Hronec valley, 48°50'31"N, 19°55'42"E, 630 m, sweeping over meadow, 26.vii.2012, 1♂; Polomka 3.7 km W, Bucuška jelšina res., 48°50'30"N, 19°48'17"E, 560 m, sweeping over meadow, 26.vii.2012, 1♂; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49'14"N, 19°56'07"E, 870 m, sweeping Calamagrostis villosa in spruce forest margin, 5♂ 9♀; Muránska planina NP, Zlatno env., Havraník brook, 48°49'28"N, 20°04'28"E, 750 m, sweeping Brachypodium pinnatum in forest margin, 14.vii.2011, 2♂ 1♀, all J. Roháček leg. (SMOC).

**Remarks:** A Boreomontane Palaearctic species, in Central Europe usually found in larger grasses at higher altitudes of mountains. This is also the case in the Muránska planina NP.

*Anthomyza paraneglecta* Elberg, 1968 (Fig. 4)

**Material:** Michalová 3.5 km NW, 48°46'50"N, 19°44'17"E, 550 m, sweeping Carex acuta in boggy meadow, 22.vi.2012, 3♂ 1♀; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49'14"N, 19°56'07"E, 870 m, sweeping Carex sp. in boggy shore of a pond, 24.vi.2012, 2♂; same, sweeping Glyceria fluitans in boggy pond shore, 24.vi.2012, 2♂ 2♀; same, sweeping Scirpus spp. and some other Cyperaceae. Although it was considered a vulnerable (VU) species in the Czech Republic (Roháček 2005d) it was recently found to be locally common in lowland marshy communities (Roháček 2009a). In Gemer uncommon because of scarce lowland waterlogged habitats.

*Anthomyza pleuralis* Czerny, 1928

**Literature:** Muráň-Hrdzavá dolina (Roháček 1983, 1986a,d).

**Remarks:** A widespread Palaearctic species associated with dicotyledonous plants in damp undergrowth of shady forests, preferentially on banks of creeks and rivers.
Figs 5-7: 5 – *Clusia tigrina* (Fallén), male, body length 6.5 mm (Clusiidae); 6 – Muránska planina NP, Poľudnica res. (Suchý dol valley in foreground) and Hrdzavá dolina res. (in background), with characteristic woodland habitats of Clusiidae; 7 – Muránska planina NP, small pond at Stožky gamekeeper’s lodge, with wetland shore plant communities hosting various Anthomyzidae. Photo by J. Roháček.
**Paranthomyza nitida** (Meigen, 1838)


**Material:** Muránska planina NP, Fabova hoľa res., MT, 16.vi.-25.viii.2009; 2♂, J. Ševčík leg.; Muránska planina NP, Tisovec 3 km W, Furmanec valley, 48°41′23″N, 19°53′57″E, 490 m, sweeping vegetation along brook, 12.vii.2011, 3♂8♀; Muránska planina NP, Tisovec 3.6 km W, Suché doly res., 48°41′14″N, 19°53′44″E, 560 m, sweeping undergrowth of beech forest, 23.vii.2012, 2♂2♀; Muránska planina NP, Muránska Lehota env., MT, 24.v.-22.vi.2012, 1♂, 25.vii.-5.ix.2012, 1♀, J. Roháček & J. Ševčík leg.; Muránska planina NP, Šarkanica res., 48°42′45″N, 19°59′19″E, 580 m, sweeping vegetation along brook, 8.viii.2011, 2♂; Muránska planina NP, Poľudnica res.-Suchý dol, 48°45′26″N, 20°02′32″E, 480 m, sweeping vegetation along brook, 13.vii.2011, 1♂1♀, J. Roháček leg. (SMOC).

**Remarks:** A Eurosiberian species, very common in undergrowth of wet forests, preferentially developing in dicotyledonous plants.

**Stiphrosoma laetum** (Meigen, 1830)

**Literature:** Slovenský kras-Zádiel (Roháček 1983, 1986a, misidentified as Anthomyza cingulata).

**Material:** Muránska planina NP, Tisovec 2.8 km WSW, Hlbočý jarok res., 48°40′17″N, 19°54′27″E, 500 m, aspirated from tufts of grass Festuca arundinacea in pasture meadow, 23.vii.2012, 1♂; Muránska planina NP, Paseky nr. Tisovec, MT, 4.-6.vii.2001, 1♀, L. Vidička leg.; Muránska planina NP, Veľka lúka, 48°46′21″N, 20°03′41″E, 880 m, aspirated from tufts of grass, 7.vii.2011, 4♂; Muránska planina NP, Mokrá Poľana res., 48°47′67″N, 20°06′42″E, 890 m, sweeping over wet meadow, 7.vii.2011, 1♀; same, clearing in forest, B53 – reared ex Agrostis gigantea, emerged 25.vi.-16.vii.2012, 1♀; Muránska planina NP, Javorinkova saddle, 48°47′46″N, 20°08′06″E, 950 m, clearing in forest, B55 - reared ex Festuca pratensis, emerged 25.vi.-16.vii.2012, 9♂11♀; Muránska planina NP, Nižná Kľaková saddle, 48°46′03″N, 19°57′46″E, 1200 m, aspirated from tufts of grass, 4.vi.2012, 5♂3♀; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49′14″N, 19°56′07″E, 870 m, sweeping vegetation along brook, 26.vii.2012, 1♂; Muránska planina NP, Patina gamekeeper’s lodge, 48°47′10″N, 19°56′11″E, 800 m, on decayed grass heap, 26.vii.2012, 1♀; Muránska planina NP, Zlatno env., Havraník brook, 48°49′28″N, 20°04′28″E, 750 m, sweeping Brachypodium pinnatum in forest margin, 14.vii.2011, 1♂, all J. Roháček leg. (SMOC).

**Remarks:** A species only known from North and Central Europe. It occurs rather frequently in tussocks of graminoids, usually near ground, preferably at higher altitudes in Central Europe.

**Stiphrosoma sabulosum** (Haliday, 1837) (Fig. 3)

**Material:** Muránska planina NP, Tisovec 2.8 km WSW, Hlbočý jarok res., 48°40′17″N, 19°54′27″E, 500 m, aspirated from tufts of the grass Festuca arundinacea in pasture meadow, 23.vii.2012, 2♂1♀ f.brach.; Muránska planina NP, Nižná Kľaková saddle, 48°46′03″N, 19°57′46″E, 1200 m, aspirated from tufts of grass, 4.vi.2012, 1♀ f.brach.; Muránska planina NP, Veľka lúka, 48°46′21″N, 20°03′41″E, 880 m, aspirated from tufts of grass, 25.vi.2012, 2♂ f.brach.; Muránska planina NP, Javorinka saddle, 48°47′46″N, 20°08′06″E, 950 m, clearing in forest, B55 - reared ex Festuca pratensis (collected 25.vi.), emerged 27.vii.-10.viii.2012, 1♀ f.brach., all J. Roháček leg. (SMOC).

**Remarks:** A common, widespread Holarctic terricolous species associated with clumps of grasses in meadows. Although it is wing polymorphic only brachypterous specimens (Fig. 3) were found in the study area.

**Typhamyza bifasciata** (Wood, 1911)

**Material:** Muránska planina NP, Tisovec 1 km S, nr. pond, 48°39′56″N, 19°56′30″E, 385 m, sweeping Typha latifolia in boggy meadow, 23.vi.2012, 5♂4♀, J. Roháček leg. (SMOC).

**Remarks:** A Eurosiberian species monophagous on Typha species (Roháček 2009a). It is not rare in reed-mace marshes in lowlands; locally it can also occur in submontane valleys. Hitherto only found in single locality in the Genner area.

**OPOMYZIDAE**

This small family (about 60 species worldwide) includes 33 species in Europe and adjacent areas as delimited in Fauna Europaea (van Zuijlen 2007; van Zuijlen & Roháček 2006); 17 of them have been recorded from Slovakia (Roháček 2009e). Opomyzidae are normally associated with grassland habitats (including cereal fields) but some species can also inhabit the grassy undergrowth of forests. The larvae are phytophagous, developing in stems of graminoid herbs and causing “dead heart” damage to grasses; several species are cereal pests. Only 8 species are known from the Genner area, 6 being recorded already by Martinek.

*Geomyza apicalis* (Meigen, 1830) (Fig. 2)

**Literature:** Muráň (Martinek 1976, 1986), Turňa nad Bodvou (Martinek 1985, 1986, both as *G. hendeli* Czerny, 1928; corrected by van Zuijlen & Roháček 2006).

**Remarks:** A Holarctic species; known only from North and Central Europe in the Palaearctic Region and from Canada in the Nearctic Region. The species was considered critically endangered (CR) in the Czech Republic (Migonek & Barták 2005) but this is probably not the case (cf. van Zuijlen & Roháček 2006) despite that it is sporadically collected both in the latter country and Slovakia.

*Geomyza hackmani* Nartshuk, 1984

**Material:** Muránska planina NP-Mokrá Poľana res., 48°47'57"N, 20°06'42"E, 890 m, sweeping over wet meadow, 7.ix.2011, 1♀; Muránska planina NP-Velká lúka, 48°46'21"N, 20°03'41"E, 880 m, sweeping over pasture meadow, 24.vi.2012, 1♀ 2♂; same locality, sweeping *Brachypodium pinnatum* at forest margin, 24.vi.2012, 1♂ 7♀; all J. Roháček leg. (SMOC, 2♂ 2♀ in coll. J. W. A. van Zuijlen, Waalwijk, The Netherlands).

**Remarks:** A poorly known species, hitherto only recorded from North and Central Europe and from Bulgaria. It seems to be associated with montane grasslands in Central Europe. It has been only recently recorded from Slovakia, viz., from Oravský Podzámok (Papp 2007) and several localities in the Poľana Mts (van Zuijlen & Roháček 2009). Its common occurrence in the grass *Brachypodium pinnatum* is noteworthy.

*Geomyza martineki* Drake, 1992

**Literature:** Plešivec (Martinek 1986, as *G. combinata* autct.)

**Material:** Michalová 3.5 km NW, 48°46'50"N, 19°44'17"E, 550 m, sweeping *Carex acuta* in boggy meadow, 22.vi.2012, 1♀; Muránska planina NP-Šarkanica res., 48°42'39"N, 19°59'45"E, 490 m, sweeping over wet meadow, 8.ix.2011, 1♂ 3♀; all J. Roháček leg. (SMOC, 1♀ in coll. J. W. A. van Zuijlen, Waalwijk, The Netherlands).

**Remarks:** A species (formerly treated as *G. combinata*) hitherto known only from Central Europe. Rather common in the eastern part of Central Europe (including Slovakia), more scarce in the western part.

*Geomyza paganettii* Strohl, 1909

**Literature:** Muráň, Plešivec (Martinek 1986)

**Remarks:** A widespread European species. It seems to be generally scarce, uncomonly also in Slovakia (Martinek 1986) and preferentially occurring in grassy undergrowth of warm forests.

*Geomyza tripunctata* Fallén, 1823


**Material:** Michalová 3.5 km NW, 48°46'50"N, 19°44'17"E, 550 m, sweeping *Carex acuta* in boggy meadow, 22.vi.2012, 1♂ 2♀; J. Roháček leg.; Muránska planina NP, Fabová hoľa res., MT, 16.vi.-25.viii.2009, 1♂, J. Ševčík leg.; Muránska planina NP, Pohronská Polhora 4.2 km E, Zbojská chalet, 48°43'39"N, 19°51'11"E, 735 m, sweeping over pasture meadow, 5.ix.2012, 1♂ 1♀; Muránska planina NP, Ťisovec 3.6 km W, Suché doly res., 48°41'14"N, 19°53'44"E, 560 m, sweeping undergrowth of beech forest, 23.vi.2012, 1♀; Muránska planina NP, Ťisovec 2.8 km WSW, Hlboký jarak res., 48°40'17"N, 19°54'27"E, 500 m, sweeping undergrowth of beech forest, 23.vi.2012, 1♂; Muránska planina NP, Ťisovec 1.8 km SW, Rejkovo, 48°40'08"N, 19°55'36"E, 400 m, sweeping over pasture meadow, 23.vi.2012, 1♂; Muránska planina NP-Šarkanica res., 48°42'39"N, 19°59'45"E, 490 m, sweeping over meadow, 8.ix.2011, 1♂ 1♀; Muránska Dlhá Lúka 2 km SE, 48°42'12"N, 20°05'51"E, 360 m, sweeping vegetation along brook, 3.ix.2012, 1♀; Muránska planina NP, Hrdzavá dolina res., upper part, 48°45'50"N, 19°59'00"E, 820 m, sweeping vegetation along brook, 4.ix.2012, 1♀; Muránska planina NP, Nižná Kľaková saddle, 48°46'03"N, 19°57'46"E, 1200 m, aspirated from tufts of grass, 4.ix.2012, 1♂; same, sweeping over pasture meadow, 1♂ 1♀; Muránska planina NP, Šiance res., top plateau, 48°46'11"N, 20°04'14"E, 1000 m, aspirated from tufts of grass, 7.ix.2011, 1♀ same, 4.ix.2012, 1♂ 1♀; same, sweeping over pasture meadow, 7.ix.2011, 1♂ 1♀; same, sweeping over pasture meadow, 24.vi.2012, 1♀; same, sweeping *Brachypodium pinnatum* at forest margin, 24.vi.2012, 1♂ 3♀; Muránska planina NP, Mokrá Poľana res., 48°47'67"N, 20°06'42"E, 890 m, sweeping over wet meadow, 7.ix.2011, 3♀; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49'14"N, 19°56'07"E, 870 m, sweeping *Glyceria fluitans* in boggy pond shore, 24.vi.2012, 2♂ 1♀; same, sweeping vegetation along brook, 26.vii.2012, 1♀, all J. Roháček leg. (SMOC).

**Remarks:** A very common and widespread Holarctic species; probably introduced in the Nearctic Region (Wheeler et al. 1999). Its larvae develop in various grasses and can cause damage also to cereals.
**Geomyza venusta** *(Meigen, 1830)*

**Material:** Muránska planina NP, Veľká lúka, 48°46'21"N, 20°03'41"E, 880 m, sweeping *Brachypodium pinnatum* at forest margin, 24.vi.2012, 1♂, J. Roháček leg. (SMOC).

**Remarks:** A European species, not rare in Slovakia but mainly recorded from lowland areas (Martinek 1986). Hitherto, it has not been reported from the Genera area. It is associated with grassland habitats.

**Opomyza florum** *(Fabricius, 1794)*


**Material:** Muránska planina NP, Fabova hoľa res.-MT, 15.v.-16.v.2009, 1♂1♀, 16.vi.-25.viii.2009, 7♂8♀, J. Ševčík leg.; Muránska planina NP, Tisovec 1.8 km SW, Rejkovo, 48°40'08"N, 19°55'36"E, 400 m, sweeping over pasture meadow, 23.vi.2012, 1♀, Muránska planina NP, Tisovec 2 km NW, Furmanec valley, 48°41'20"N, 19°54'59"E, 460 m, sweeping margin of forest, 12.vii.2011, 2♂; Muránska planina NP, Šarkanica res., 48°42'39"N, 19°59'45"E, 490 m, sweeping over meadow, 8.ix.2011, 2♂2♀; Muránska planina NP, Šarkanica res., 48°42'45"N, 19°59'19"E, 580 m, sweeping vegetation along brook, 8.ix.2011, 1♂; J. Roháček leg.; Muránska planina NP, Poľudnica res.-Suchý dol, MT 13.vii.-8.ix.2011, 1♂, J. Ševčík leg.; Muránska planina NP, Poľudnica res.-Suchý dol, 48°45'26"N, 20°02'32"E, 480 m, sweeping over meadow, 13.vii.2011, 1♂; Muránska planina NP, Muráň 2.6 km NE, 48°45'24"N, 20°04'19"E, 425 m, sweeping over meadow, 7.ix.2011, 1♀; Muránska planina NP, Muráňsa Huta-Šiance res., sweeping over meadow, 7.x.2010, 2♂; Muránska planina NP, Šiance res., top plateau, 48°46'11"N, 20°04'14"E, 1000 m, aspirated from tufts of grass, 4.ix.2012, 1♂1♀, all J. Roháček leg; same locality, MT 24.vi.-27.vii.2012, 1♀, J. Roháček & J. Ševčík leg.; Muránska planina NP, Veľká lúka, 48°46'21"N, 20°03'41"E, 880 m, aspirated from tufts of grass, 7.ix.2011, 2♂; same, sweeping *Brachypodium pinnatum* at forest margin, 24.vi.2012, 1♂; Muránska planina NP, Mokrá Poľana res., 48°47'67"N, 20°06'42"E, 890 m, sweeping over wet meadow, 7.ix.2011, 1♂; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49'14"N, 19°56'07"E, 870 m, sweeping vegetation along brook, 26.vi.2012, 1♂1♀; Muránska planina NP, Patina gamekeeper’s lodge, 48°47'10"N, 19°56'11"E, 800 m, sweeping *Calamagrostis villosa* in spruce forest margin, 1♂; Muránska planina NP, Zlatno, Zlatnica res., 48°49'29"N, 20°05'22"E, 770 m, sweeping over vegetation along brook, 23.vi.2012, 1♀; Polomka 3.7 km W, Bacúška jelšina res., 48°50'30"N, 19°48'17"E, 560 m, sweeping over boggy meadow, 9.ix.2011, 1♂2♀, all J. Roháček leg. (SMOC).

**Remarks:** A common and widespread Palaearctic species developing in graminoid plants. It is a cereal pest.

**Opomyza germinationis** *(Linnaeus, 1758)*

**Literature:** Muráň, Zádiel (Martinek 1986).

**Material:** Muránska planina NP, Veľká lúka, 2.6 km NE, 48°45'24"N, 20°04'19"E, 425 m, sweeping over meadow, 7.ix.2011, 1♂; Muránska planina NP, Veľká lúka, 48°46'21"N, 20°03'41"E, 880 m, sweeping *Brachypodium pinnatum* at forest margin, 24.vi.2012, 1♂, all J. Roháček leg. (SMOC).

**Remarks:** A Holarctic species; widespread in Europe and introduced in Canada (Wheeler et al. 1999). Common in meadows but it may sometimes also attack cereals.

**STENOMICRIDAE**

A species-poor family with only four genera worldwide (Papp 2006) and two genera and three species in Europe (Merz & Roháček 2005); only one species is known from Slovakia (Roháček 1999). The family was erected for *Stenomicra* species by Papp (1984), but previously and often subsequently this group has been treated as a member of the Aulacigastridae or the Periscelididae, most recently as a subfamily of the latter. Adults are very minute delicate flies with yellow to grey body. Biology of Stenomicridae is largely unknown. The larvae probably develop in the water-holding leaf bases of plants, particularly monocotyledons. The adults of two European species were found (and even reared) from tussocks of large *Carex* and *Scirpus* species (see Roháček 2009) but *Podocera soniae* may be associated with dicotyledonous umbellifers (see Merz & Roháček 2005). This only Slovak representative of the family was already recorded from the Slovenský kras by Roháček (1983) under the name *Stenomicra delicata.*
*Podocera soniae* (Merz & Roháček, 2005)

**Literature:** Slovenský kras-Zádiel (Roháček 1983, 1986c, misidentified as *Stenomicra delicata*; Merz & Roháček 2005, 2♀ paratypes, as *Stenomicra (Podocera) soniae*).

**Remarks:** A little known species, hitherto only recorded from Bulgaria, Czech Republic, Germany, Romania, Slovakia and Switzerland (Merz & Roháček 2005). It was partly described from specimens (paratypes) collected by me at light in Zádiel on 15. and 16.vi.1981. Besides this finding the species was recorded from only one other locality in Slovakia (Bártfa (= Bardejov/; see Merz & Roháček 2005). Adults can be collected in open or semiopen habitats but usually only by means of Malaise or pan traps. The species is considered vulnerable (VU) in the Czech Republic (see Roháček 2005b).

**PERISCELIDIDAE**

Another small family (excluding the Stenomicridae, often considered a subfamily of Periscelididae), having about 50 species worldwide and 5 species (plus 1 subspecies) of the genus *Periscelis* Loew, 1858 (including the subgenus *Myodris* Lioy, 1864 sometimes treated as a genus) in Europe (Papp & Withers 2011) three of which are also known from Slovakia (Máca 2009). Adults of *Periscelis* species are small to minute flies with yellow and brown variegated legs and thorax and a pectinate arista. They are infrequently collected because of occurring on and around wounded deciduous trees usually at the height of the tree canopy and feed, like its larvae, on fresh exuding sap on the surface of bark. Only one species was recorded from the Gemer area (Máca 1986; Roháček 1987), then as a first representative of the family in Slovakia.

*Periscelis (Myodris) annulata* (Fallén, 1813)

**Literature:** Slovenský kras-Zádiel (Máca 1986; Roháček 1987).

**Remarks:** A widespread European species, also reported from the Nearctic Region. Although it is the most frequently recorded member of the family in Europe there are only two previous records from Slovakia, viz. the above from the Slovenský kras and that by Roháček (1995b) from the Bukovské vrchy Mts (Ruský Potok).

**ASTEIIDAE**

This opomyzoid family is represented by only 19 species and 4 genera in Europe and adjacent archipelagos (Carles-Tolrá 2007; Gibbs & Papp 2007). A total of 8 species are known to occur in Slovakia (Roháček 2009g). They belong to two genera representing also ecologically different groups. The *Leiomyza* species are mycophagous as larvae and develop in sporocarps of macrofungi in forested habitats, while species of *Asteia* have larvae obviously (phyto)saprophagous and adults occurring in open or semi-open habitats, often on flowers. Five species were previously recorded from the Gemer area (Roháček 1985, 1986b) based on material collected by me in 1980-1984.

*Asteia amoena* Meigen, 1830

**Literature:** Jelšavská Teplica, Slavec, Slovenský kras-Drienovce (Roháček 1986b).

**Material:** Revúca NW margin, 48°41'18''N, 20°06'33''E, 315 m, sweeping over boggy meadow, 27.vii.2012, 1♂; Muránska planina NP, Mokrá Poľana res., 48°47'67''N, 20°06'42''E, 890 m, sweeping over wet meadow, 1♀; Muránska planina NP, Stožky gamekeeper’s lodge, 48°49'14''N, 19°56'07''E, 870 m, sweeping Carex sp. in boggy shore of a pond, 24.vi.2012, 4♂1♀; same, sweeping *Glyceria fluitans* in boggy pond shore, 24.vi.2012, 1♂1♀, all J. Roháček leg. (SMOC).

**Remarks:** A widespread Palaeartic species, the most common representative of the genus in Central Europe. It preferentially occurs in open (grassy and shrubby) habitats.

*Asteia concinna* Meigen, 1830

**Literature:** Slovenský kras-Zádiel (Roháček 1986b).

**Material:** Muránska planina NP, Tisovec 2 km NW, Furmanec valley, 48°41'20''N, 19°54'59''E, 460 m, sweeping margin of forest, 12.vii.2011, 2♂4♀, J. Roháček leg. (SMOC).
Remarks: A Palaearctic species, mainly associated with more humid grassland habitats, most often in tall graminoid vegetation.

*Leiomyza curvinervis* (Zetterstedt, 1838)

**Literature:** Muráň-Hrdzavá dolina (Roháček 1985, 1986b).

**Remarks:** Although widespread in the Holarctic Region this species is uncommon and restricted to montane forests in Central Europe; it is considered vulnerable (VU) in the Czech Republic (Roháček 2005c). There are only a few records in Slovakia: Vysoké Tatry Mts, Poľana Mts (Ľubietovský Vepor) and the above locality from Muráň Mts (see Roháček 2009h).

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**Leiomyza dudai** Sabrosky, 1956

**Literature:** Muráň (Roháček 1986b).

**Material:** Slovenský kras, Drienovec res., sweeping, 5.ix.2008, 2♂, J. Ševčík leg. (SMOC).

**Remarks:** An Eurasian, mycetophagous species, common on fungi in woodland but also (less frequently) open habitats (pastures).

**Leiomyza scatophagina** (Fallén, 1823)

**Literature:** Muráň-Hrdzavá dolina, Slovenský kras-Zádiel (Roháček 1986b).

**Remarks:** A Holarctic species, but in the Palaearctic Region only known from North and Central Europe. It is uncommon on decayed fungi in various types of forest.

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**Discussion and conclusions**

Despite the fauna of the opomyzoid families treated here not being known satisfactorily (particularly when compared with that of the Poľana Biosphere Reserve, see in Roháček & Ševčík 2009) the present, although somewhat fragmentary, knowledge indicate that the Gemer area hosts interesting fly communities including species important from the faunistic, ecological, biogeographical or nature conservation point of view. *Podocera soniae* (Stenomicridae) was partly described from specimens originating from this territory, having there one of the two known localities in Slovakia, similarly as has *Periselis annulata* (Periscelididae); neither of these species has been recorded from the Poľana Biosphere Reserve. There are also several saproxylic and mycophagous species in the area characteristic of old montane or submontane forests (Fig. 6), viz. *Clusia tigrina* (Fig. 5), *Clusiodes caledonicus*, *Hendelia beckeri* (Clusiidae) and *Leiomyza curvinervis* (Asteiidae) all of which are under jeopardy in terms of nature conservation. On the contrary, *Geomyza apicalis* (see Fig. 2) and *G. hackmani* (Opomyzidae), another vulnerable species, are typical members of grassland communities. Although the marshland habitats are (particularly in lowland) generally scarce in the Gemer region, several species characteristic to them have been found, including two uncommon and vulnerable species, viz. *Anthomyza neglecta* and *A. para-neglecta* (Anthomyzidae, Fig. 4)

It is certain that further specially aimed fieldwork could reveal additional species of these and related families (e.g. Aulacigastridae) in the Gemer area, possibly also those formerly unrecorded from Slovakia. In this context additional biodiversity research is desirable in this interesting territory.

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References


Fauna opomyzoidních čeledí Clusiidae, Acartophthalmidae, Anthomyzidae, Opomyzidae, Stenomicridae, Periscelididae a Asteiidae (Diptera) v Gemerské oblasti (střední Slovensko)

Je podán přehled dvoukřídlých sedmi čeledí nadčeledí Opomyzoidea (Diptera) v Gemerské oblasti (Slovensko), která zahrnuje Národní parky Muránska planina, Slovenský raj a Slovenský kras. Na základě publikovaných údajů a studovaného materiálu je z této oblasti uvedeno 8 druhů čeledí Clusiidae, 2 druhy čeledí Acartophthalmidae, 9 druhů čeledí Anthomyzidae, 8 druhů čeledí Opomyzidae, po 1 druhu z čeledí Stenomicridae a Periscelididae a 5 druhů čeledí Asteiidae. Každý z těchto druhů je pojednán s informacemi o jeho celkovém rozšíření, faunistice na Slovensku, bionomii a významu pro ochranu přírody. Nejzajímavějším druhem je Podocera soniae (Merz & Roháček, 2005) (Stenomicridae) neboť jde o taxon částečně popsaný podle exemplářů (paratypy) objevených v této oblasti. Dalšími významnými faunistickými prvky jsou Clusia tigrina (Fallén, 1820), Clusiodes caledonicus (Collin, 1912), Hendelia beckeri Czerny, 1903 (Clusiidae) a Leiomyza curvinervis (Zetterstedt, 1838) (Asteiidae), vše ohrožené nebo zranitelné druhy vázané na zachovalé lesní porosty, nebo Anthomyza neglecta Collin, 1944, A. paraneglecta Elberg, 1968 (Anthomyzidae), Geomyza apicalis (Meigen, 1830) a G. hackmani Nartshuk, 1984, zranitelné druhy mokřadních a travnatých ekosystémů.

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