

The family Anthomyiidae (Diptera) of the Bohemian Forest

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Abstract

Altogether 397 male specimens of the family Anthomyiidae representing 76 species were found in 9 localities in the Bohemian Forest (Antýgl, Boubín, Horská Kvilda, Kyselovský Les, Malá Niva, Nová Hůrka, Rokytecká Slat, Trojmezna, and Zhůřské Slatě) situated at different altitudes from 725 to 1170 m a.s.l. Five species (*Anthomyia mimetica*, *Chirosia betuleti*, *Paradelia brunneonigra*, *Pegomya fuscinata* *Zaphne proxima*) were first recorded from the Czech Republic and records of five species (*Alliopsis brunneigena*, *Alliopsis conifrons*, *Phorbia nuceicornis*, *Phorbia nuditibia* and *Zaphne caudata*) were the first records from Bohemia.

Key words: Anthomyiidae, Šumava Mts., Czech Republic, faunistics

INTRODUCTION

The Anthomyiidae is a relatively abundant, diverse and economically important family of Diptera with worldwide distribution. They are the typical calyptate flies of small to medium size, predominantly grey or black but sometimes with yellow coloration, and with holoptic males and dichoptic females in most cases. The most distinct characteristic in which anthomyids differ from the related families (Muscidae, Fanniidae) is the extended anal wing vein (A1) reaching the wing margin. The family Anthomyiidae belongs to extremely difficult groups with incomplete identification keys for males and lacking keys for most females. Reliable male identification usually needs examination of the terminalia.

The anthomyiid larvae are primarily phytophagous (species of the genera *Delia*, *Strobilomyia*, *Phorbia*, *Pegomya*) and several species are known as agricultural, horticultural or forest pests. Although phytophagy dominates, many species have larvae with different type of diet. The larvae of some species may be found in fungi (*Botanophila* spp., *Pegomya* spp.), whilst other develop in decaying organic material (*Hylemya urbana*, *Mycophaga testacea*) or in the excrements of mammals or in birds' nests. A few larvae are parasitoids (*Acyglossa* spp.) or cleptoparasites (*Eustalomyia* spp., *Leucophora* spp.).

Approximately 600 species inhabit Europe (MICHELSEN 2005) and of these, 227 species have been recorded in the Czech Republic (KOMZÁKOVÁ 2006, KOMZÁKOVÁ & BARTÁK 2007). The basic manual for species identification is Hennig's monograph in Lindner's "Die Fliegen der palaearktischen Region" (HENNIG 1966–1976).

No reliable data concerning the family Anthomyiidae from the Czech part of the Bohemian Forest (Šumava Mts.) are available with the exception of a very recent paper by KOMZÁ-

KOVÁ & BARTÁK (2007). From the Bavarian part of the Bohemian Forest, 30 species of Anthomyiidae were listed by BARTÁK (1998).

Peat-bog fauna of diptera in the Bohemian Forest was thoroughly studied only recently by ROHÁČEK and BARTÁK, the results have been partly published (ROHÁČEK et al. 1998, BARTÁK & ROHÁČEK 1999, ROHÁČEK & BARTÁK 1999a,b, KUBÍK et al. 1999, ŠIFNER et al. 1999, BARTÁK & ROHÁČEK 1999, 2000, ČERNÝ et al. 2004) and by BARTÁK and KUBÍK (result partly published: BARTÁK & VUJÍČ 2004, BARTÁK 2004) and the present paper represents the continuation of the series.

MATERIAL AND METHODS

The material was obtained in the years 1997, 1999, 2003 and 2004 by means of sweeping vegetation, yellow and white pan water traps, and Malaise traps.

The following localities were studied (locality codes in parentheses): Antýgl (A), Boubín (B), Horská Kvilda (HK), Kyselovský Les (KL), Malá Niva (MN), Nová Hůrka (NH), Rokytecká Slat' (RS), Trojmezna (T), and Zhůřské Slatě (ZS).

Taxonomy and nomenclature used here are from HENNIG (1966–1976), MICHELSEN (2005, 2006a,b, 2007a,b,c, 2008, 2009), ACKLAND (1965a,b, 1969, 1970, 1972, 1989, 1995) and ACKLAND & MICHELSEN (1987).

Description of localities

Antýgl, spruce wood near brook (40°03' N, 13°30'23" E, 930 m a.s.l.). Vegetative corridor along the Vydra stream.

Boubín, montane spruce wood (48°59'39" N, 13°48'56" E, 1310 m a.s.l.). The sampling site was situated about 50 altitudinal m below top of the Boubín Mt.

Horská Kvilda, meadow near the village of Horská Kvilda near forest edge (49°03'23" N, 13°34'27" E, 1070 m a.s.l.).

Kyselovský Les, peat-bog (48°41'24" N, 14°03'25" E, 725 m a.s.l.). A valley peat-bog is one of the warmest peat-bogs in the mountain range. Many parts of this peat-bog were damaged by impounding of the Lipno reservoir, leaving only a narrow open strip (some 10 m width) just along its edge. Changes in water levels of the reservoir strongly influence the water regime of the peat-bog.

Malá Niva, peat-bog (48°54'34" N, 13°49'18" E, 750 m a.s.l.). A valley raised peat-bog situated about 3 km south-east of the village of Lenora. The peat-bog is surrounded by even-aged Norway spruce monocultures and the Vltava River flows in its close vicinity. The ecotones are damaged by picking and removing of dead wood by holidaymakers from the nearby standing camping site „Soumarský Most“. The whole peat-bog is sparsely overgrown by *Pinus rotundata*.

Nová Hůrka, peat-bog (49°09'17" N, 13°19'46" E, 880 m a.s.l.). This peat-bog is situated north of the village of Nová Hůrka. A part of the peat-bog was influenced by peat mining. The sampling site was situated between the central deforested part and the pine forest edge.

Rokytecká Slat', peat-bog (49°00'59" N, 13°25'06" E, 1107 m a.s.l.). A peat-bog situated east of the Rachel Mt. Climatic conditions are very cold, with patches of old snow present even in the beginning of June. The sampling site was situated in the central open part, near Rokytká brook and near the edge of *Pinus x pseudopumilio* growth.

Trojmezna, montane spruce forest (48°46' N, 13°50' E, 1300 m a.s.l.).

Zhůřské Slatě, peat-bog (49°04'30" N, 13°33'54" E, 1140 m a.s.l.). Two large watershed raised peat-bogs are situated north of the village of Horská Kvilda. Parts of them were influenced by peat mining; peat-bog was sparsely overgrown with dwarf pine and Norway spruce.

RESULTS AND DISCUSSION

List of species

Locality (for codes see Methods): date(s) of collecting (dd Mmm yy), number of recorded individuals (males). Asterisk (*) indicate interesting records (see notes).

**Alliopsis brunneigena* (Schnabl, 1915). MN: 29 Apr–16 Jun 99 (1).
**Alliopsis conifrons* (Zetterstedt, 1845). HK: 17 Jun–24 Jun 99 (1).
Alliopsis silvestris (Fallén, 1824). HK: 17 Jun–24 Jun 99 (1); MN: 29 Apr 99 (1); NH: 15 Jun–21 Jun 99 (2), 15 Jun 99 (1), 16 Jun–22 Jun 99 (1), 20 Jun–22 Jun 99 (1), 20–22 Jun 99 (1); ZS: 18 May–16 Jun 99 (1), 16 Jun–22 Jun 99 (1), 21 Jun–24 Sep 99 (1).
**Anthomyia mimetica* (Malloch, 1918). NH: 18 May–16 Jun 99 (1), 16 Jun–22 Jun 99 (1).
Anthomyia liturata (Robineau-Desvoidy, 1830). MN: 20 Jun 99 (1).
Anthomyia monilis (Meigen, 1826). NH: 20 Jun 99 (1).
Botanophila brunneilinea (Zetterstedt, 1845). B: Sep 04 (1), Jun 04 (1); T: 14 Jun–8 Aug 03 (5), 24 Jun–2 Jun 03 (3), 12–24 Jun 03 (1).
Botanophila fugax (Meigen, 1826). HK: 21 Jun–20 Aug 99 (1); NH: 15 Jun–21 Jun 99 (1), 20 Aug–24 Sep 99 (1); RS: 18–20 May 99 (1), 20 Aug–24 Sep 99 (1), 20–22 Aug 99 (2); T: 12–24 Jun 03 (2), 14 Jun–8 Aug 03 (1); ZS: 21 Jun–20 Aug 99 (3), 16 Jun–21 Jun 99 (1) .
Botanophila seneciella (Meade, 1892). RS: 16 Jun–21 Jun 99 (1).
Botanophila spinosa (Rondani, 1866). ZS: 21 Jun–21 Aug 99 (2), 20 Jun 99 (1).
Botanophila striolata (Fallén, 1824). KL: 21–23 Aug 97 (3); RS: 18 May–16 Jun 99 (1), 20–22 Aug 99 (1); ZS: 17 Jun 99 (1).
Botanophila varicolor (Meigen, 1826). B: 14 Jun 04 (1).
**Chirosia betuleti* (Ringdahl, 1935). B: 14 Jun 04 (1); T: 16 May–1 Jun 03 (5).
Chirosia simulata (Tiensuu, 1939). B: Jun 04 (2); MN: 29 Apr–16 Jun 99 (1).
Delia brunnescens (Zetterstedt, 1845). T: 16 May–1 Jun 03 (1).
Delia cardui (Meigen, 1826). B: Aug 04 (1); MN: 22 Jun 99 (1); RS: 20–22 Aug 99 (2), 20 Aug–24 Sep 99 (1); T: 14 Jun–8 Aug 03 (6), 24 Jun–2 Jun 03 (4); ZS: 2–22 Aug 99 (1), 21 Jun–21 Aug 99 (1), 21 Aug–24 Sep 99 (2).
Delia coarctata (Fallén, 1825). HK: 21 Jun–20 Aug 99 (1); RS: 16 Jun–22 Jun 99 (1).
Delia florilega (Zetterstedt, 1845). NH: 20–22 Jun 99 (1); ZS: 17 Jun 99 (1).
Delia lamellisetia (Stein, 1900). KL: 21–23 Aug 97(2).
Delia lineariventris (Zetterstedt, 1845). B: 14 Jun 04 (1); NH: 16 Jun–22 Jun 99 (2), 17 Jun 99 (1).
Delia platura (Meigen, 1826). B: Sep–Oct 04 (1); KL: 21–23 Aug 97 (3); NH: 15–17 Jun 99 (1); RS: 18 May–16 Jun 99 (1), 15–17 Jun 99 (1), 21 Jun–20 Aug 99 (3), 20 Aug–24 Sep 99 (3); ZS: 15–17 Jun 99 (1), 19 May 99 (1), 17 Jun 99 (5), 21 Jun–20 Aug 99 (2), 21 Aug–24 Sep 99 (1).
Delia radicum (Linnaeus, 1758). RS: 16 Jun–22 Jun 99 (1); ZS: 21 Jun–20 Aug 99 (1).
Delia tenuiventris (Zetterstedt, 1860). RS: 21 Jun 99 (1); T: 14 Jun–8 Aug 03 (2).
Emmesomyia grisea (Robineau-Desvoidy, 1830) B: Sep–10.04 (1).
Emmesomyia socia (Fallén, 1825). MN: 22 Aug–2 Oct 99 (1).
Eustalomyia festiva (Zetterstedt, 1845). NH: 16 Jun–22 Jun 99 (1).
Eustalomyia hilaris (Fallén, 1823). RS: 16 Jun–22 Jun 99 (1).
Eustalomyia histrio (Zetterstedt, 1838). NH: 15 Jun–21 Jun 01 (1); RS: 16 Jun–22 Jun 01 (1), 21 Jun–20 Aug 99 (1); ZS: 21 Jun–20 Aug 99 (1), 15 Jun–21 Jun 99 (1).
Eutrichota pilimana (Ringdahl, 1918). MN: 29 Apr 099 (1).
Heterostylodes nominabilis (Collin, 1947). NH: 16 Jun–22 Jun 99 (1).
Heterostylodes obscura (Macquart, 1835). RS: 15–17 Jun 99 (1).
Heterostylodes pratensis (Meigen, 1826). MN: 16 Jun–20 Jun 99 (1); NH: 15 Jun–21 Jun 99(1); RS: 15 Jun–21 Jun 99 (1), 21 Jun–20 Aug 99 (1), 20 Aug–24 Sep 99 (1).
Hydrophoria albiceps (Meigen, 1826). MN: 16 Jun–20 Jun 99 (1); ZS: 17 Jun 99 (1).
Hydrophoria lancifer (Harris, 1780). MN: 29 Apr–16 Jun 99 (2), 16 Jun–20 Jun 99 (1); ZS: 15–17 Jun 99 (1).
Hydrophoria linogrisea (Meigen, 1826). RS: 15 May–17 Jun 99 (1).
Hydrophoria silvicola (Robineau-Desvoidy, 1830). MN: 29 Apr–16 Jun 99 (1); NH: 16 Jun–22 Jun 01 (1).
Hylemya nigrimana (Meigen, 1826).); HK: 21 Jun–21 Aug 99 (1); NH: 18–20 May 99 (1); 21 Jun–20 Aug 99 (1); RS: 20–22 Aug 99 (3); ZS: 20–22 Aug 99 (1).
Hylemya urbica van der Wulp, 1896. NH: 18 May–16 Jun 99 (1); RS: 18 May–16 Jun 99 (2); ZS: 19 May 99 (1).
Hylemya vagans (Panzer, 1798). MN: 16 Jun–20 Jun 99 (1); RS: 18–20 May 99 (2), 18 May–16 Jun 99 (2), 20 May 99 (1); 24–26 Sep 99 (1), 20–22 Aug 99 (2), 21 Jun–20 Aug 99 (1); T: 14 Jun–8 Aug 03 (2); ZS: 20–22 Aug 99 (1).
Hylemya variata (Fallén, 1823). RS: 18 May–16 Jun 99 (1); 16 Jun–22 Jun 01 (1), 21 Jun–20 Aug 99 (1); T: 24 Jun–2 Jun 03 (1); ZS: 17 Jun 99 (2), 18 May–16 Jun 99 (2), 16 Jun–22 Jun 99 (1).
Hylemyza partita (Meigen, 1826). MN: 29 Apr–16 Jun 99 (1); NH: 18–20 May 99 (2), 16 Jun–22 Jun 99 (1); RS: 18 May–16 Jun 99 (2); ZS: 21 Aug–14 Sep 99 (1).

Lasiomma cuneicorne (Zetterstedt, 1838). MN: 29 Apr–16 Jun 99 (2).
Lasiomma latipenne (Zetterstedt, 1838). HK: 17 Jun–24 Jun 99 (1); MN: 29 Apr–16 Jun 99 (1), 16 Jun–20 Jun 99 (2).
Lasiomma seminitidum (Zetterstedt, 1845). RS: 21 Jun–24 Aug 99 (3), 20–22 Aug 99 (2); T: 14 Jun–8 Aug 03 (1); ZS: 21 Aug–24 Sep 99 (1).
Lasiomma strigilatum (Zetterstedt, 1838). B: Jun 04 (6); RS: 21 Jun–20 Aug 99 (2); ZS: 21 Aug–24 Sep 99.
 **Paradelia brunneonigra* (Schnabl in Schnabl & Dziedzicki, 1911). ZS: 18 May–16 Jun 99 (1).
Paradelia intersecta (Meigen, 1826). B: Aug 04 (2); RS: 20 Aug–24 Sep 99 (6), 21 Jun–20 Aug 99 (3), 16 Jun–21 Jun 99 (1), 24 Jun–20 Aug 99 (1); T: 24 Jun–20 Aug 99 (1).
Paradelia lunatifrons (Zetterstedt, 1845). B: Sep–Oct 04 (3), Aug 04 (1); RS: 21 Jun–20 Aug 99 (1); T: 14 Jun–8 Aug 03 (3), 8 Aug–3 Sep 03 (1), 24 Jun–2 Jun 03 (2), 1 May–12 Jun 03 (1), 12–24 Jun 03 (1).
Paregle audacula (Harris, 1780). RS: 16 Jun–22 Jun 99 (1).
Pegomya calyptrata (Zetterstedt, 1846). B: Jun 04 (1).
Pegomya flavifrons (Walker, 1849). RS: 20 Aug–24 Sep 99 (1).
Pegomya fulgens (Meigen, 1826). T: 12 May–24 Jun 03 (1).
 **Pegomya fuscinata* (Tiensuu, 1939). T: 12 May–24 Jun 03 (1).
Pegomya geniculata (Bouché, 1834). HK: 21 Jun–20 Aug 99 (1), 17 Jun–24 Jun 99 (2); NH: 15 Jun–21 Jun 99 (2); RS: 18 Jun–21 Jun 99 (1), 24 Jun–28 Jun 00 (1), 21 Jun–20 Aug 99 (1); T: 14 Jun–8 Aug 03 (3), 24 Jun–2 Jun 03 (2), 12–24 Jun 03 (1).
Pegomya notabilis (Zetterstedt, 1846). T: 12 Jun–24 Jun 03 (1).
Pegomya pallidoscuteolata (Zetterstedt, 1852). HK: 21 Jun–20 Aug 99 (1).
Pegomya seitenstettensis (Strobl, 1880). T: 12 Jun–24 Jun 99 (1).
Pegomya solennis (Meigen, 1826). RS 21 Jun–20 Aug 99 (1); NH: 20 Aug–24 Sep 99 (1).
Pegomya testacea (De Geer, 1776). HK: 21 Aug–24 Oct 99 (5); NH: 15 Jun–21 Jun 99 (2), 24 Aug–24 Sep 99 (1); RS: 16 Jun–21 Jun 99 (1); T: 14 Jun–8 Aug 03 (1).
Pegomya vanduzeei (Malloch, 1919). NH: 18 Apr–20 May 99 (1).
Pegomya winthemi (Meigen, 1826). RS: 21 Jun–20 Aug 99 (1).
Pegoplata aestiva (Meigen, 1826). NH: 18–20 May 99 (1); RS: 24 Sep–26 Sep 99 (1), 18 May–16 Jun 99 (2), 20–22 Aug 99 (6); 16 Jun–22 Jun 99 (8), 20–22 Jun 99 (2), 18 May–20 May 99 (1), 20 May 99 (1); T: 12 Jun–24 Jun 03 (1); ZS: 16 Jun–21 Jun 99 (6), 15–17 Jun 99 (3), 18–20 May 99 (2).
Pegoplata infirma (Meigen, 1826). B: Jun 04 (1); RS: 20–22 Jun 99 (1); 20 Aug–24 Sep 99 (2); 21 Jun–20 Aug 99 (1); 16 Jun–22 Jun 99 (1); ZS: 16 Jun–22 Jun 99 (1).
Pegoplata palposa (Stein, 1897). MN: 20–22 Aug 97 (1), 29 Apr–16 Jun 99 (8), 16 Jun–20 Jun 99 (3). NH 15 Jun–17 Jun 99 (5), 24 Sep 99 (1); 18 May–16 Jun 99 (1); 15 Jun–21 Jun 99 (1); ZS: 15 Jun–17 Jun 99 (1), 15 Jun–21 Jun 99 (1).
Phorbia curvicauda (Zetterstedt, 1845). NH: 18 May–16 Jun 99 (1), 16 Jun–22 Jun 99 (2); ZS: 17 Jun 99 (1).
Phorbia fumigata (Meigen, 1826). NH: 18 May–20 May 99 (2); RS: 18–20 May 99 (1); ZS: 18 May–16 Jun 99 (1), 15–17 Jun 99 (1).
Phorbia kulai (Ackland, 1993). RS: 18 May–20 May 99 (7), 18 May–16 Jun 99 (1).
Phorbia molinaris (Karl, 1917). NH: 18 May–16 Jun 99 (1); RS: 18 May–20 May 99 (3).
 **Phorbia nuceicornis* (Pandellé, 1900). MN: 29 Apr–16 Jun 99 (2).
 **Phorbia nuditibia* (d'Assis Fonseca, 1966). MN: 29 Apr–16 Jun 99 (2).
Strobilomyia melania (Ackland, 1965). NH: 18 May–20 May 99 (1).
Zaphne ambigua (Fallén, 1823). MN: 22 Sep–2 Oct 99 (1), 29 Apr–16 Jun 99 (3); NH: 16 Jun–22 Jun 99 (3), 18 May–16 Jun 99 (1); KL: 21–23 Aug 97 (3).
 **Zaphne caudata* (Zetterstedt, 1855). KL: 21–23 Aug 97 (1); MN: 22 Sep–2 Oct 99 (1), 29 Apr–16 Jun 99 (3); NH: 15–17 Jun 99 (1), 16 Jun–22 Jun 99 (1), 15 Jun–21 Jun 99 (1).
Zaphne divisa (Meigen, 1826). NH: 29 Jun 98 (1); RS: 20 Aug–24 Sep 99 (1).
 **Zaphne inuncta* (Zetterstedt, 1838). A: 27 Aug 00 (1).
 **Zaphne proxima*. (Malloch, 1920). RS: 18 May–16 Jun 99 (1), 16 Jun–21 Jun 99 (2), 21 Jun–20 Aug 99 (4), 20 Aug–24 Sep 99 (2).

Notes on interesting records

Some of these species are listed in Fauna Europea (MICHELSEN 2005) as recorded in the Czech Republic, but those records have never been published with details of their collection. The following species are not listed by KOMŽÁKOVÁ (2006) and they are first published with

details herewith.

Alliopsis brunneigena (Schnabl, 1915). The species is widespread mainly in Northern Europe. In the Czech Republic it is known from Moravia; the first record from Bohemia.

Alliopsis confrons (Zetterstedt, 1845) is distributed in Austria, Great Britain, Finland, Germany, Norway, Poland, Russia North, Spain, Sweden, and Switzerland. In the Czech Republic it is known from Moravia; the first record from Bohemia.

Anthomyia mimetica (Malloch, 1918) is known at present from Great Britain, Denmark, Finland, Norway, Poland, Russia, Sweden, and the Netherlands. This is the first record from the Czech Republic.

Chirosia betuleti (Ringdahl, 1935) has been recorded in Great Britain, Denmark, Finland, Germany, Ireland, Italy, Norway, Poland, Russia, Slovakia, Spain, Sweden, and the Netherlands. This is the first record from the Czech Republic.

Paradelia brunneonigra (Schnabl in Schnabl & Dziedzicki, 1911) is known from all Europe. This is the first record from the Czech Republic.

Pegomya fuscinata (Tiensuu, 1939). Denmark, Finland, Russia, and Sweden. This is the new record from the Czech Republic.

Phorbia nuceicornis (Pandellé, 1900) has been recorded in Great Britain, Czech Republic, Denmark, France, Germany, Poland, Sweden, and the Netherlands. This is the first record from Bohemia.

Phorbia nuditibia (d'Assis Fonseca, 1966) has been recorded in Great Britain and Czech Republic. This is the first record from Bohemia.

Zaphne caudata (Zetterstedt, 1855). The species is distributed in Europe, predominantly in the mountains. This is the first record from Bohemia.

Zaphne proxima (Malloch, 1920). This predominantly mountain species occurs in North and Central Europe, the East Palearctic region and Nearctic region. Nine specimens recorded here represented, in fact, the first findings of this species from the Czech Republic, however, specimen caught subsequently (2000) in Rokytecká slat' were already published (KOMŽÁKOVÁ & BARTÁK, 2007).

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