

New records of Anthomyzidae and Stenomicridae (Diptera) from Turkey

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New records of Anthomyzidae and Stenomicridae (Diptera) from Turkey. – Čas. Slez. Muz. Opava (A), 60: 147-153, 2011.

Abstract: Three species of the family Anthomyzidae, viz. *Amygdalops thomasseti* Lamb, 1914, *Anagnota coccinea* Roháček & Freidberg, 1993 and *Typhamyza bifasciata* (Wood, 1911) and one species of Stenomicridae (Diptera), viz. *Stenomicra cogani* Irwin, 1982 are recorded from southern Turkey (Antalya province). All but *Anagnota coccinea* represent new faunal additions to this country and *S. cogani* (first member of Stenomicridae in Turkey) a new finding in Asia and easternmost known record. New and/or additional biological information with photographs of habitat are provided on these species and their distributions are reviewed.

Keywords: Diptera, Anthomyzidae, Stenomicridae, biology, distribution, Turkey.

Introduction

The families Anthomyzidae and Stenomicridae are relatively small groups of acalyptrate Diptera usually classified within the superfamily Opomyzoidea. While the biology and habitat association of Anthomyzidae have become better known recently (cf. Roháček 2009a; Roháček & Andrade 2011; Roháček & Barber 2011), the knowledge of Stenomicridae in these fields remains rather limited despite some recently acquired information (Merz & Roháček 2005; Roháček 2009b). Most species of Anthomyzidae have phytosaprophagous larvae feeding on at least partly damaged tissue of plants (mainly of graminoids but also in some soft dicotyledons) and sporocarps of fungi (species of *Fungomyza* Roháček, 1999 only); detailed information on W. Palaearctic species, including data for pre-imaginal stages, is provided by Roháček (2006, 2009a). The majority of Stenomicridae are probably also associated with graminoids but their larvae likely live in water-holding leaf bases of these plants as found by Williams (1939) in a Hawaiian species of *Stenomicra*. Roháček (2009b) reared two European species, viz. *Podocera delicata* (Collin, 1944) from *Carex vesicaria* L. and *Stenomicra cogani* Irwin, 1982 from *Scirpus sylvaticus* L. and *Carex elongata* L. and also recorded their association with several other sedge species.

There is a similar situation as regards the distribution of W. Palaearctic species of these two families. While relatively well known in Anthomyzidae, the previous records of Stenomicridae are generally scarce even in well-studied countries of Europe. The Stenomicridae have not been recorded from Turkey up to the present and the Anthomyzidae have been reported spottily. Only 3 species of the latter family are known from Turkey: the records of *Fungomyza albimana* (Meigen, 1830) were published by Roháček (1999, 2006), of *Anagnota coccinea* Roháček & Freidberg, 1993 by Roháček (2004, 2006) and of *Anthomyza gracilis* Fallén, 1823 by Roháček (2009a).

This short contribution presents results of the author's collecting trip to southern Turkey (Antalya province) in May 2011 during which 3 species of Anthomyzidae (two new to Turkey) and the first Turkish representative of Stenomicridae were found. These records are supplemented with data about habitat and host-plant association of these species in this country.

Material and methods

Material. All specimens listed below were collected by the author and are deposited in the collection of the Slezské zemské muzeum, Opava (SMOC).

Methods. Specimens examined were collected by sweeping over selected marshland vegetation, killed by ethyl acetate, air-dried and mounted on pinned triangular cards. Abdomens of several specimens were detached, relaxed by 10% KOH solution and after washing in acidic water solution examined in a drop of glycerine. After examination of genitalia all dissected parts of the abdomen were put in a sealed plastic tube with glycerine and pinned under the respective specimen. Habitat, host plant and/or living specimens of the collected species were documented by photography.

ANTHOMYZIDAE

Amygdalops thomasseti Lamb, 1914 – Fig. 1

Material examined: S. TURKEY: Antalya province, Dolbazlar 1 km S, tributary of Manavgat river, 36°50'05"N, 31°24'51"E, 16 m, sweeping *Arundo donax*, 12.v.2011, 1♂, 15.v.2011, 1♂; Odaönü 1 km S, Alara river, 36°40'24"N, 31°40'57"E, 11-13 m, sweeping riverside vegetation (*Arundo donax*), 13.v.2011, 1♂, 18.v.2011, 2♂5♀, all J. Roháček leg. (SMOC).

Biology: The previously known biology of this species was summarized by Roháček (2009a) who considered it to be oligophagous on *Arundo donax* L. and *Phragmites australis* (Cav.) Steud. (Poaceae) and doubted the sedge *Bolboschoenus maritimus* (L.) Palla (occurrence in this plant growth recorded by Roháček & Freidberg 1993 in Israel) as its host plant. In southern Turkey, *A. thomasseti* was again only found to be associated with *Arundo donax*, almost all specimens being swept from young tillers of this giant grass (Fig. 7) on river banks. No specimen was caught in growths of *Bolboschoenus* spp. (explored in 3 localities) or other Cyperaceae, of *Juncus* spp. (Juncaceae), nor in those of *Phragmites australis* (examined in 4 localities) in marshland habitats.

Distribution: The species is probably Afrotropical in origin but has spread into southern areas of the Palaearctic Region (Mediterranean and Macaronesia areas). Its known distribution is reviewed by Roháček (2009a) – Afrotropical: Madagascar, Mauritius, Mozambique, Nigeria, Oman, Senegal, Seychelles, South Africa, Uganda, Yemen; Palaearctic: Canary Is. (Gran Canaria, Tenerife), Cyprus, Egypt, Greece (Crete only), Israel, southern Italy (Calabria), Jordan, Malta, Saudi Arabia, Spain (incl. Balearic Islands), Syria, United Arab Emirates. Consequently, its occurrence in Turkey was presupposed but is confirmed by the above new records.

Anagnota coccinea Roháček & Freidberg, 1993 – Fig. 2

Material examined: S. TURKEY: Antalya province, Odaönü 1 km S, Alara river, 36°40'24"N, 31°40'57"E, 11-13 m, sweeping riverside vegetation (*Arundo donax*), 18.v.2011, 1♂1♀ (3rd specimen lost during photography), J. Roháček leg. (SMOC).

Biology: The host plants of this species are not known for certain. Roháček & Freidberg (1993: 83) recorded its association with riverine vegetation dominated by *Bolboschoenus* (as *Scirpus*) *maritimus* (L.) Palla and other Cyperaceae but Roháček (2004) collected 3 males under *Arundo donax* L. (Poaceae). The latter habitat and plant are confirmed here by the above Turkish record, when 3 specimens (one lost) were swept/beaten from young offshoots of *Arundo donax* on gravel and sandy riverside of the Alara river (Figs 3, 7). This *Anagnota* may also be a poly-phytosaprophagous species as known for its congener, *A. bicolor* (Meigen, 1838), see Roháček (2009a: 140) although all attempts to find it in other graminoids (*Scirpus*, *Juncus*, *Bolboschoenus*, *Typha* spp., various grasses) in the above and other localities in the Manavgat vicinity were unsuccessful. Adults of *A. coccinea* were recorded in IV-V and IX-X and Roháček (2006) therefore suggested it is at least a bivoltine species.

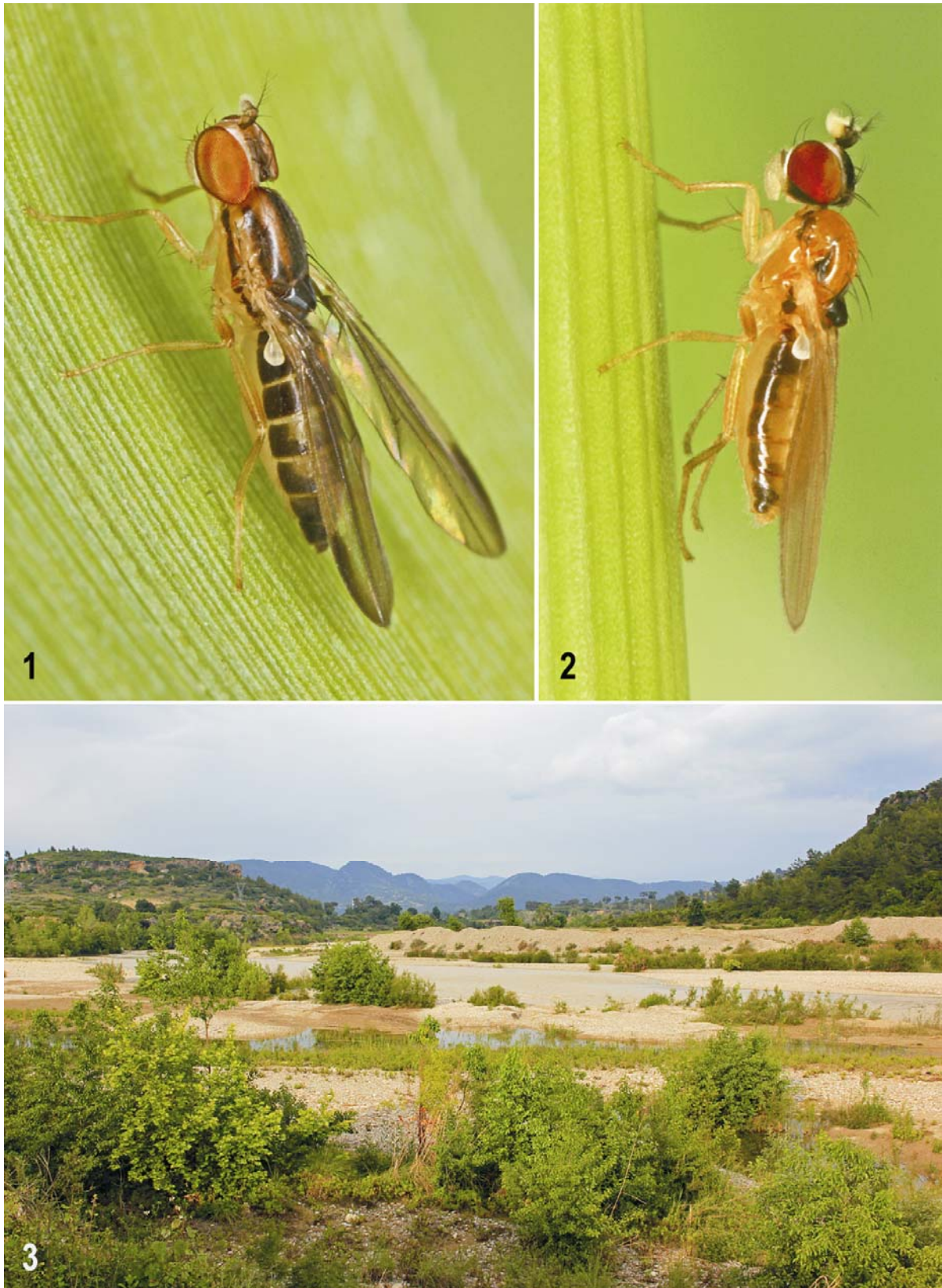
Distribution: *Anagnota coccinea* is only known from the Near East of Asia. It was described from Israel (Roháček & Freidberg 1993) and subsequently recorded from southern Cyprus (Roháček 2004) and southern Turkey where it was found near the Antalya airport (Roháček 2006).

Note: This is the first time a living adult of an *Anagnota* species has been photographed (Fig. 2).

Typhamyza bifasciata (Wood, 1911) – Fig. 5

Material examined: S. TURKEY: Antalya province, Manavgat 7.1 km SE, mouth of Manavgat river, 36°44'17"N, 31°29'44"E, 0-1 m, sweeping graminoid marshland vegetation (*Typha* sp.), 11.v.2011, 1♂2♀, 18.v.2011, 1♂; Manavgat 4.4 km S, Manavgat rivershore, 36°45'01"N, 31°28'03"E, 1 m, sweeping *Typha* sp. in riverside vegetation, 15.v.2011, 2♂; Odaönü 1 km S, Alara river, 36°40'24"N, 31°40'57"E, 11-13 m, sweeping *Typha* sp. in riverside vegetation, 18.v.2011, 4♂2♀, all J. Roháček leg. (SMOC).

Biology: *T. bifasciata* is a monophagous species developing in dead (a previous year) stems of *Typha* species (Typhaceae); larvae live in the basal part of the stem between the leaf-sheath and the surface of the stem where they consume moist decaying tissues. Roháček (1992) studied its life history and preimaginal stages in



Figs. 1-3: Turkish Anthomyzidae and their habitats. 1 – *Amygdalops thomasseti* Lamb, female on leaf of *Arundo donax*; 2 – *Anagnota coccinea*, female on young offshoot of *Arundo donax*; 3 – Alara river near the village Odaönü, locality and habitat (growths in foreground) of all three species of Anthomyzidae. Photo by J. Roháček.

detail and confirmed *Typha latifolia* L. and *T. angustifolia* L. as its host plants. All subsequent records and rearings confirmed the strict association of the species with plants of the genus *Typha* (for summary see Roháček 2009a). This also holds for Turkish localities where it was only found in growths of *Typha* sp. (probably *T. angustifolia*, see Fig. 4). *T. bifasciata* is a univoltine species overwintering as a third-instar larva which pupariates in spring; adults emerge in the beginning of summer (Roháček 2006). The records of adults from southern Turkey are earlier (from V) than those formerly known from Europe, Kazakhstan and West Siberia (VI–VIII), clearly due to the warmer climate in the area.

Distribution: The species is widespread in the W. Palearctic area, reaching as far east as West Siberia (Novosibirsk Region). Knowledge of its contemporary distribution was summarized by Roháček (2009a): Austria, Czech Republic (both Bohemia and Moravia), Finland, France, Germany, Great Britain (England only), Greece, Hungary, Kazakhstan, The Netherlands, Poland, Romania, Russia (Central European Territory, West Siberia), Slovakia, Spain (Balearic Is. only), Sweden, Ukraine. The above (first from Turkey) records represent a new southernmost distribution limit of the species.

Note: Interestingly, the males from Turkey have the gonostylus more slender (elongate) than those from West and Central Europe and resemble, in this respect, the male specimen recorded from the Novosibirsk Region of Russia (cf. Roháček 2006: 314). Because no other dissimilarity was found in the male genitalia this aberration is considered to fall within the intraspecific variability of *T. bifasciata*.

STENOMICRIDAE

Stenomicra cogani Irwin, 1982

Material examined: S. TURKEY: Antalya province, Manavgat 7.1 km SE, mouth of Manavgat river, 36°44'17"N, 31°29'44"E, 0–1 m, sweeping graminoid marshland vegetation, 11.v.2011, 1♂1♀, 18.v.2011, J. Roháček leg. (SMOC).

Biology: The biology and distribution of this species were recently studied by Roháček (2009b) who also summarized previous knowledge (mainly of British authors – for references see Roháček 2009b) about its habitat and host-plant associations. *Stenomicra cogani* is a typically marshland species, preferentially associated with various large sedge species (Cyperaceae) in waterlogged meadows and swamps along rivers or at pond shores, more rarely in undergrowth of inundated alluvial forests. Roháček (2009b) reared it from *Scirpus sylvaticus* L. and *Carex elongata* L.; other (collecting) records indicate that *Carex acuta* L., *C. acutiformis* Ehrh., *C. elata* All., *C. paniculata* L., *C. riparia* Curtis, *C. rostrata* Stokes and *C. vesicaria* L. also can be its hosts. In addition, Drake (2004) recorded it from a stand of the grass *Glyceria maxima* (Hartman) Holmberg (Poaceae) and Merz (2002) found a single female on *Typha* sp. (Typhaceae) but these records are obviously occasional. A pair of *S. cogani* specimens from Turkey was swept in a wetland surrounding pools near the mouth of the Manavgat river from graminoid vegetation dominated by *Scirpus* sp., *Typha* sp. and *Iris* sp. with large tufts of *Juncus* sp. on the margins (see Fig. 6). Most probably, a large sedge (*Scirpus* sp.) was the host plant of *S. cogani* here.

Distribution: The species was long known only from West Europe (cf. Merz & Roháček 2005) but its range has recently been expanded to Central Europe and as far as to Romania (Roháček 2009b). Its present distribution (based on the summary given by Roháček 2009b and the new record from southern Turkey) is as follows: Spain, Ireland, Great Britain (England, Wales), S. Sweden, Germany, Italy, Czech Republic (Bohemia, Moravia), Romania (Banat) and S. Turkey (see also map in Fig. 8). The Turkish record (first from Asia) represents a new easternmost occurrence limit of this species.

Note. *Stenomicra jordanensis* Freidberg & Mathis, 2002 from Israel is a closely related species differing from *S. cogani* in retaining also the posterior cross-vein (dm-cu) and having longitudinal blackish vittae on the scutum, pleurae and scutellum and black paired spots on abdominal terga 3 and 4 (see Freidberg & Mathis 2002; Merz & Roháček 2005). It is possible that this species will also be found in Turkey, most probably in its middle southern part, because its localities in Israel are not far from this part of Turkey.

Discussion

With the above new records the Turkish fauna of Anthomyzidae now comprises a total of 5 species in 4 genera: *Amygdalops thomasseti* Lamb, 1914, *Anagnota coccinea* Roháček & Freidberg, 1993, *Anthomyza gracilis* Fallén, 1823, *Fungomyza albimana* (Meigen, 1830) and *Typhamyza bifasciata* (Wood, 1911). However, considering the taxa known from neighbouring European (Greece, Bulgaria, South European Russia) and Near East (Israel) areas (cf. Roháček & Freidberg 1993; Roháček 2006, 2009a), additional species can be presupposed to occur in Turkey. In northern areas of this huge country the following species can occur: *Anagnota major* Roháček & Freidberg, 1993 and/or *A. oriens* Roháček, 2009 (both recorded from Greece by Roháček 2009a), *Anthomyza anderssoni* Roháček, 1984 (known



Figs. 4-7: Turkish Anthomyzidae and habitats. 4 – stand of *Typha* sp., host plant and habitat of *Typhamyza bifasciata* on shore of the Alara river. 5 – *Typhamyza bifasciata* (Wood), male on dead stem of *Typha* sp.; 6 – wetland vegetation at pools near the mouth of Manavgat river, habitat of *Stenomicroa cogani* Irwin; 7 – growth of *Arundo donax* on shore of the Alara river, habitat of both *Amygdalops thomasseti* and *Anagnota coccinea*. Photo by J. Roháček.

from Greece, associated with *Typha* spp.), *A. macra* Czerny, 1928 and/or *A. pleuralis* Czerny, 1928 (both associated with dicotyledonous plants in undergrowth of humid forest and known from the South European Territory of Russia including Caucasus) and *Paranthomyza nitida* (Meigen, 1838) (polyphytophagous species living in undergrowth of wet forests, known from Bulgaria and Caucasus). In the middle southern and southeastern areas of Turkey two species with affinity to salt marshes could be found: *Cercagnota collini* (Czerny, 1928) and *Santhomyza inermis* Roháček, 1974 (both known from Israel). Possibly also two other Israeli species, *Amygdalops rufior* Roháček & Freidberg, 1993 (hitherto recorded only from the Dead Sea area) and *Receptrix receptrix* (Roháček & Freidberg, 1993) (known only from the female holotype from Har Dov Mt. in N. Israel), could occur in this area. On the other hand, no species of the genus *Stiphrosoma* Czerny, 1928 is expected to live in Turkey, despite *S. sabulosum* (Haliday, 1837) being a widespread Holarctic species (cf. Roháček & Barber 2005) because no member of this genus has hitherto been found in the Mediterranean or other southern areas of the Palaearctic Region. In conclusion, up to 10 additional species (and 4 genera) of named Anthomyzidae could occur in Turkey not to mention a possibility of discovery of some undescribed taxa. Thus, it can be estimated that the Turkish fauna will embrace more than 10 (possibly up to 15) species of Anthomyzidae.

Stenomicra cogani Irwin, 1982 is the first representative of the family Stenomicridae found in Turkey. Its discovery on the southern coast of the country (see Fig. 8) is very surprising because its southeasternmost record has been known from SW Romania (Banat – Roháček 2009b). The occurrence of the Israeli *S. jordanensis* Freidberg & Mathis, 2002 was regarded more probable in Turkey; this species can be expected to reveal itself in the middle southern areas in particular. Consequently, it is probable that at least 2 species of Stenomicridae live in Turkey.

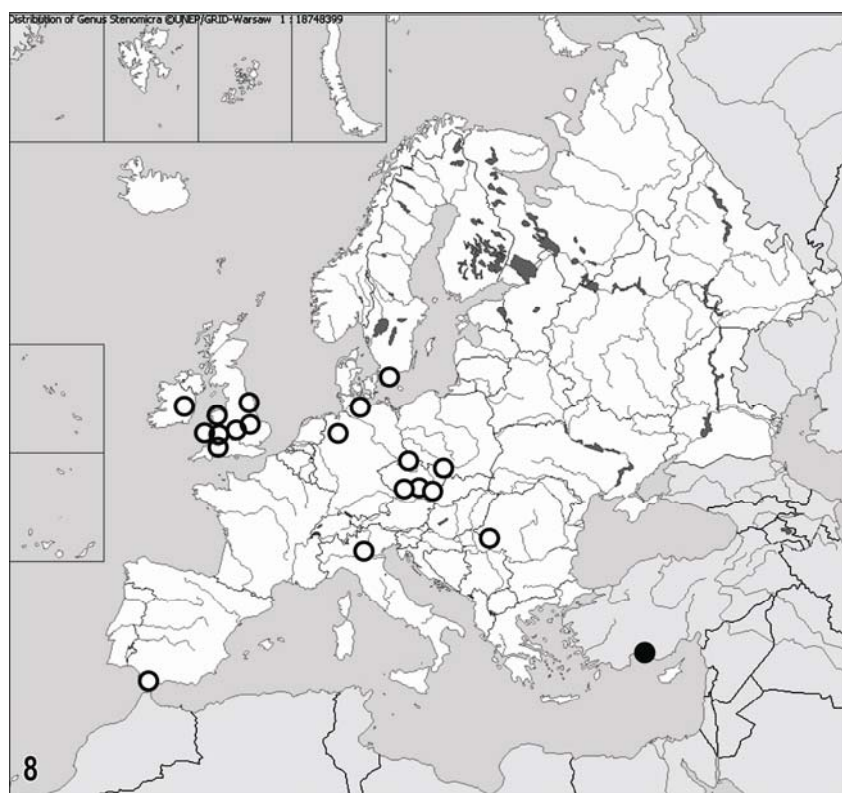


Fig. 8: Distribution of *Stenomicra cogani* Irwin (adapted from Roháček 2009b). Empty circles = records published previously, solid circle = new record from Turkey.

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References

- Drake C. M. (2004): Small Diptera collected preferentially using a suction sampler. – *Dipterists Digest* (2nd series), 11(1): 1-8.
- Freidberg A. & Mathis W. N. (2002): The Perisclididae (Diptera) of Israel, with description of a new species of *Stenomicro* Coquillett. – *Israel J. Zool.* 48: 43-51.
- Irwin A. G. (1982): A new species of *Stenomicro* Coquillett (Diptera, Aulacigastridae) from Anglesey, North Wales. – *Entomol. Mon. Mag.* 118: 235-238.
- Lamb C. G. (1914): The Percy Sladen Trust expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner, M.A. Vol. 5, No. XV. – *Diptera: Heteroneuridae, Ortalidae, Trypetidae, Sepsidae, Micropezidae, Drosophilidae, Geomyzidae, Milichiidae*. – *Trans. Linn. Soc. London* (2, Zoology), 16: 307-372.
- Merz B. (2002): Stenomicroidae. In Mason F., Cerretti P., Tagliapietra A., Speight M. C. D. & Zapparoli M. (eds): *Invertebrati di una foresta della Pianura Padana*. Bosco della Fontana. Primo contributo. *Conservazione Habitat Invertebrati* 1., 175 pp. (p. 125-126), Gianluigi Arcari Editore, Mantova.
- Merz B. & Roháček J. (2005): The Western Palaearctic species of *Stenomicro* Coquillett (Diptera, Perisclididae, Stenomicroinae), with description of a new species of the subgenus *Podocera* Czerny. – *Revue suisse Zool.* 112(2): 519-539.
- Roháček J. (1992): *Typhamyza* gen. n. for *Anthomyza bifasciata* Wood, with description of immature stages (Diptera, Anthomyzidae). – *Boll. Mus. Reg. Sci. Nat. Torino* 10: 187-207.
- (1999): A revision and re-classification of the genus *Paranthomyza* Czerny, with description of a new genus of Anthomyzidae. – *Studia dipterologica* 6: 373-404.
- (2004): New records of Clusiidae, Anthomyzidae and Sphaeroceridae (Diptera) from Cyprus, with distributional and taxonomic notes. In Kubík Š. & Barták M. (eds): *Dipterologica bohemoslovaca* 11. – *Folia Fac. Sci. Nat. Univ. Masaryk. Brun., Biologia* 109: 247-264.
- (2006): A monograph of Palaearctic Anthomyzidae (Diptera) Part 1. – *Čas. Slez. Muz. Opava (A)* 55, suppl. 1: 1-328.
- (2009a): A monograph of Palaearctic Anthomyzidae (Diptera) Part 2. – *Čas. Slez. Muz. Opava (A)* 58, suppl. 1: 1-180.
- (2009b): New biological and biogeographical data about two European species of Stenomicroidae (Diptera). – *Čas. Slez. Muz. Opava (A)* 58: 1-8.
- Roháček J. & Andrade R. (2011): Additional records of Anthomyzidae (Diptera) from Portugal, with new data about habitat and host-plant association of *Paranthomyza nitida* (Meigen). – *Čas. Slez. Muz. Opava (A)* 59(3)(2010): 193-197.
- Roháček J. & Barber K. N. (2005): Revision of the New World species of *Stiphrosoma* Czerny (Diptera: Anthomyzidae). – *Beitr. Entomol., Keltern* 55: 1-107.
- (2011): *Quametopia*, a new genus of Nearctic Anthomyzidae (Diptera), with description of two new species, immature stages and life history. – *Eur. J. Entomol.* 108: 287-326.
- Roháček J. & Freidberg A. (1993): The Anthomyzidae (Diptera) of Israel, with revision of *Anagnota* Becker. – *Israel J. Entomol.* 27: 61-112.
- Williams F. X. (1939): Biological studies in Hawaiian Water-Loving Insects. Part III. Diptera or Flies. B. Asteiidae, Syrphidae and Dolichopodidae. – *Proc. Hawaii. Entomol. Soc.* 10: 281-315.
- Wood J. H. (1911): A new species of *Anthomyza* (*A. bifasciata*). – *Entomologist's Mon. Mag.* (2), 22: 40-41.

Nové nálezy druhů čeledi Anthomyzidae a Stenomicroidae (Diptera) v Turecku

Při dipterologickém výzkumu v jižním Turecku (provincie Antalya) byly objeveny tři druhy čeledi Anthomyzidae, viz *Amygdalops thomasseti* Lamb, 1914, *Anagnota coccinea* Roháček & Freidberg, 1993 a *Typhamyza bifasciata* (Wood, 1911) a jeden druh čeledi Stenomicroidae, viz *Stenomicro cogani* Irwin, 1982. Všechny tyto druhy dvoukřídlých, kromě *Anagnota coccinea*, jsou nové pro faunu Turecka. Nález *Typhamyza bifasciata* v jižním Turecku představuje nový nejjižnější výskyt tohoto druhu. Druh *Stenomicro cogani*, který je vůbec prvním zástupcem čeledi Stenomicroidae v Turecku, je poprvé hlášen z Asie (z nejvýchodnější známé lokality). U každého studovaného druhu jsou prezentovány nové nebo upřesňující bionomické informace získané při terénním výzkumu spolu s fotografickou dokumentací jejich biotopů a předpokládaných hostitelských rostlin a přehled jejich celkového rozšíření.

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